MONROE COUNTY

Frank E. Van Lare Wastewater Treatment Plant

Wet Weather Operating Guidelines

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New York State
Department of Environmental Conservation

Stearns & Wheler, LLC
ENVIRONMENTAL ENGINEERS & SCIENTISTS

SUNY MORRISVILLE

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SECTION 1 - INTRODUCTION

1.1 Background

This manual contains wet weather operating guidelines for Monroe County's Frank E. Van Lare Wastewater Treatment Plant and the wastewater and stormwater collection system serving the plant. The Van Lare plant serves the City of Rochester and other Monroe County communities, providing preliminary, primary, and secondary treatment to all dry weather wastewater flow entering the sewer system. The wastewater collection system is a combined sewer system which collects both wastewater and stormwater. During wet weather events, when stormwater flows enter the combined sewer system, overflows can occur at combined sewer overflows which discharge to the Genesee River, Irondequoit Bay, Lake Ontario, or their tributaries.

Monroe County has installed an extensive tunnel system to store combined stormwater and wastewater during wet weather events. The Combined Sewer Overflow Abatement Program (CSOAP) tunnel system was designed and built with several objectives in mind:

1. The first objective was to intercept any combination of sewer overflows that negatively impact the area's bodies of water.

2. The second objective was to provide storage for the intercepted flows and diminish the amount of uncontrolled flows that impact the Van Lare treatment plant. The ultimate goal is to store the flow until the plant is capable of giving the incoming flow the proper treatment before it is discharged to the lake.

3. The third objective was to provide in-line relief for some of the larger diameter surface sewers. This would help maintain capacity and prevent sewer backups in property basements.

Following a wet weather event, combined sewage is removed from the tunnels and sent to the Van Lare plant for treatment. The tunnel system has significantly reduced the frequency and volume of combined sewer overflows and has had a beneficial environmental impact on the area's surface waters.

The plant's NPDES discharge permit requires that flows up to 135 mgd receive full secondary treatment. Flows between 135 and 200 mgd may receive primary treatment and disinfection prior to discharge to Lake Ontario. This mode of operation is referred to as "split flow" by the plant staff. Flows in excess of 200 mgd can be sent to the Additional Treatment Facility (ATF) where they receive preliminary treatment consisting of screening and grit removal prior to discharge to the lake through the 120-inch outfall pipe. This

SECTION 1 (Continued):
operational mode is called "120 flow" by the plant staff. Total flow to the Van Lare plant can exceed 600 mgd during extreme wet weather events.

1.2 Performance Goals for Wet Weather Events

Many potential choices exist for handling flows and treatment processes during wet weather events. The County and NYSDEC have established a set of prioritized goals for protection of the County's receiving waters. The primary goals for protection of receiving waters during high flow storm events are divided into three groups:

1. **Highest Priority - Protect Irondequoit Bay.**

    a. Prevent overflows at Browncroft which relieves the Irondequoit Tunnel (i.e., IBPS).
    b. Prevent overflows from the Culver-Goodman Tunnel.
    c. Prevent overflows at the Densmore Creek Control Structure.
    d. Prevent overflows at the Thomas Creek Control Structure.

2. **Second Priority - Protect the Genesee River.** Maximize flows to the plant as early as possible to avoid overflows at Structures 243, 45, and 44.

3. **Third Priority - Protect Lake Ontario.** Maximize flows in an orderly fashion to prevent solids loss from the secondary clarifiers.

1.3 Purpose of This Manual

The purpose of this manual is to provide a set of operating guidelines to assist the Van Lare plant and collection/tunnel system staff in making operational decisions which will best meet the performance goals stated in Section 1.2 and the requirements of the NPDES discharge permit.

During a wet weather event, numerous operational decisions must be made to effectively manage storage of stormwater in the tunnel system and optimize wastewater treatment at the Van Lare plant. Storage is controlled through adjustment of gates at control structures in the collection/tunnel system. Flow rates at which "split flow" or "120 flow" are initiated depend upon a complex set of factors, including present conditions within specific treatment processes (such as sludge settling characteristics) and anticipated storm duration. Each new storm event provides new situations and new combination flow patterns and plant conditions. No manual can describe the decision making process for every possible wet weather scenario which will be encountered at Van Lare. This manual can, however, serve as a useful reference which both new and experienced operators can utilize during wet weather events. The manual can be useful in

SECTION 1 (Continued):
preparing for a coming wet weather event, a source of ideas for controlling specific processes during the storm, and a checklist to avoid missing critical steps in monitoring and controlling processes during wet weather.

1.4 Using This Manual

This manual is designed to allow use as a quick reference during wet weather events. It is broken down into sections which cover major unit processes at the Van Lare plant or major controls points in the plant, tunnels, or collection system. Each section is provided with a tab for easy access. Each section includes the following information:

- list of unit processes and equipment covered in this section
- steps to take before a wet weather event and who is responsible for these steps
- steps to take during a wet weather event and who is responsible for these steps
- steps to take after a wet weather event and who is responsible for these steps
- discussion of why the recommended control steps are performed
- identification of specific circumstances that trigger the recommended changes
- identification of things that can go wrong with the process

Sections on control structures in the collection/tunnel system include maps showing the control structure location and diagrams showing critical control elevations in the structure.

This manual is a living document. Users of the manual are encouraged to identify new steps, procedures, and recommendations to add to the descriptions contained herein. Modifications which improve upon the manual's procedures are also encouraged. If you have a suggestion for modifications or additions to the manual, mark them on copies of the affected pages and submit them to your supervisor, so they can be considered for insertion in the manual. With continued input from all users of the manual, it will become an even more useful and effective tool.

1.5 Acknowledgments

The content of this manual was developed by staff from the Van Lare plant and the collection/tunnel system during 1997. Through a series of group meetings, these wet weather operating guidelines were drafted, reviewed and finalized. Special thanks go to Bob Hamilton, Herm Thein, Dave Lukas, Dan Ross, Doug Alaimo, John Wurzbacher, Glenn Curtis, Sean Murphy, John Fiutko, Scott McEntee, Bob Salata, Jim Hetzer, and John Debelis for their input into this manual. Thanks also to Brandon Chew and Phil Smith of NYSDEC Facilities Operations Assistance for their efforts in facilitating preparation of this manual.

SECTION 2 - CONTROL ROOM

2.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
Control Room	· All Flow Meters · Radar (Weather) · DAQ · SYMAX · Indicating Lights · Flow Recording Sheets (Flow Log) · 2-Way Radios · SYVIEW · Graphics Panel · Cameras for Surveillance · FAX Machine · Phones · Phone to 243 · Power Logic · KW Demand

2.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
13	13, 11	The day before the event, make sure all tunnels are empty or low as possible. Check gate operation, enable commands at Culver-Goodman, IBPS, Control Structure 45, Densmore, GRI Shaft 1, and Control Structure 44.
11	8	Charge radio batteries in portable radios.
13	11	Check the west side siphon and fill if necessary.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
13	13, 11	Pre-set gates at Culver-Goodman, Control Structure 45, Control Structure 44, and Densmore.
13	11	Set up for samples (120" samples). Check availability of lab sample containers. Check auto samplers.
	16, 13	Watch radar for storm development.
	16, 13, 11	Observe weather fax information.
13	11	Take hourly logs of plant and pump flows.
13	13	Check personnel roster for adequacy. Person in charge makes call on who should be called in, if anyone to develop wet weather teams in the future.
13	11	Set up flow log sheets and precipitation sheets for high flow.
13	13, 11	Monitor water levels throughout tunnel system.
13, 11	8	Monitor final blanket levels.
13	11, 8	Monitor rain gauges, Control Structure 45, totalizer from Control Structure 46, and record on storm event level sheet.
	I&E, M	Repair any of the above things mentioned that are failed.
13		Use "Who to Call" list and post overtime sign-up sheets depending on storm size. Wet weather teams are to be developed.
During Wet Weather Event		
13	13, 11	Monitor tunnel sites. Monitor KW demand and record on storm event level sheet.
13	13, 11	Adjust water levels at tunnel sites as needed and check valves and gate positions; keep an eye on tunnel levels.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	**IMPLEMENTATION**	
13	13, 11	Start required equipment and open influent and effluent gates for ATF. Start ATF bridges, pumps and screws as needed. Drain tunnels as plant can accept flow.
13	13, 11	Watch primary weirs (east and west) by remote camera.
13	16, 13, 11	Track the storm on radar. Make flow adjustments as needed anticipating precipitation, tunnel levels, final tank levels, split flow flows, collector drive torques on primaries, aeration tank levels, final blanket levels, ATF flows, effluent quality, dissolved oxygen in aeration, and power consumption (record on storm event level sheet.).
13	13, 11	Monitor and record flows into the plant (east and west). Split flows Control Structure 46 totalizer, Cl_2 residual, primary and secondary blanket levels, tunnel sites, rain gauges, hourly logs of pump flows, St. Paul levels, IBPS flows and levels, Culver-Goodman gate positions and levels, Control Structure 44 levels, Control Structure 45 levels, Control Structure 243 levels, Norton Street site levels, Control Structure 60/31 level, site 12 level, Front Street level, GRI level and gate position, and 120" residual chlorine (if bypassing).
I&E, M		Repair or check out any equipment that has failed.
13	13, 11	Call crews to respond to problem sites.
After Wet Weather Event		
13	11	Dissolved oxygen draw down at Control Structure 46 and flush west side siphon. Try to do within 24 hours.
11	8	Clean out ATF units used during the storm. Turn off equipment as plant flow drops. Remove trains from service and clean channels when 120" no longer is needed.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
13	13, 11	Close split flows as required.
13	13, 11	Close 120" line when required.
13	13, 11	Switch to Control Structure 46 when required, switch IBPS when necessary. Call for Grit and Rag Canister pickup, if full. Close Cl_2 split flow gate.
13	11, PWT	Complete data collection and data processing if full.
13	11, PWT	Compile rainfall totals, flow total (to where i.e. 120", Conventional).
13	11, PWT	Record storm duration.
13	11, PWT	Trend storm data (15 minute intervals) for entire storm.
13	11, PWT	Generate wet weather report and critique.
13, 11	I&E	Repair computer or monitoring equipment via IE work orders.

WHY DO WE DO THIS?

Observe the tunnel sites and watch weather radar to prepare for the wet weather event the best way we can taking into account equipment that is out and how our finals are settling out, sludge inventory. Since every storm event is different, we observe local radar and get hourly readouts of pumps and flow rates.

Observe final levels, rain gauges, Structure 46 totalizer to collect data to better help us with what is coming at us. Call lists for mechanical, instrumental, and electrical operations have to be ready for any problems that may develop.

Monitor tunnel sites for inflow rate to determine future adjustments.

- We adjust outflow from tunnel sites as possible and necessary with the strategy outlined in the "Unit Process Equipment List" titled, "Flow Meters," "AGF Screen and Grit Conventional," and "ATF Screen."

- Starting ATF and NAG to treat storm flows using the strategies outlined under "Unit Process Equipment List" titled "Flow Meters and ATF Screen and Grit."

- Watch the primary weirs for flooding and balanced flow using the guidelines outlined in "Unit Process & Equipment List" titled, "PS" (West Primaries).

- Track the storm on radar to improve operator judgement concerning holding or releasing tunnel flows, split flow adjustments, aeration adjustments, etc.

- Record flows into and through the plant totalizer reading at Control Structure 46, chlorine residue, blanket levels of final clarifiers, tunnel sites, rain gauges, hourly logs of pump flows, St. Paul levels, IBPS flows and levels, (gate positions, Control Structure 44, Control Structure 45, Control Structure 243 levels, Norton Street site levels, Control Structure 60 and 31, site 12 level, Front Street level, 120" residual chlorine so that we have a record of storm data.

WHAT TRIGGERS THE CHANGE?

High flow triggers the change.

WHAT CAN GO WRONG?

Power failure or any failures of pertained equipment (monitoring equipment). Communication failure at sights or with personnel. Too much flow to contain.

SECTION 3 - SAMPLES AND SAMPLER

3.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
	· 4 Sampler · A.T.F. Raw · 120″ Auto Sampler

3.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
13	11	The day before the event make sure refrigerator is working. Clean jug in sample machine. Check unit for proper operation. Report failure to supervisor.
13	11	Repair old tubing, sample suction lines that are bad. Clean any dirty looking jugs.
	I&E	Any malfunctions of sampler.
During Wet Weather Event		
13	11, PWT	Amount of sample taken. Refrigerator working.
13	11, PWT	Make sure sampler is working properly. Adjust amount of sample taken if needed. Volume or frequency of sampler must be set up flow proportioned.
13	11	Chain of custody for samples - properly labeled or marked samples, date on jug also.
13	11	Repair any failures of sample machines to supervisor.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
After Wet Weather Event		
13	11, PWT	Shut off sample machines, but not refrigerator.
13	11	Check out sample machines for anything wrong.
13	11, 13	Clean out jugs and put back in machines. Replace any worn or dirty tubing.
13	11, PWT	Make sure jugs are properly marked for next use (don't want to have them mixed up).

WHY DO WE DO THIS?
It is a permitted requirement that sampling is required. Control Structure 46 is not mandated but is done for internal use.
WHAT TRIGGERS THE CHANGE?
Flow that can't be treated conventionally.
WHAT CAN GO WRONG?
Power failures, plugged sample tubes, program problems.

SECTION 4 - FLOW METERS

4.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
Flow Meters	· IBPS · St. Paul · 2 AGF 72” · 3 ATF 84” · 2 Primary Influent 72” · Split Flow Master 96” · Primary Pump Flow Meters · Wasting Pumps · Return Sludge Pumps · Return Dilution Pumps · Return Effluent Pumps · 2 Process Water Pumps - W6, W7 · Effluent Flow Meters 2” (Parshall Flume)

4.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
13	11	Just before the event, balance flows accordingly just prior to flows arriving.
13	11	84" check. (3-84" lines to NAG building.). If flow meters are not reading properly, call instrumentation to repair. Make sure all flow meters operate properly.
13	11, PWT	Record flows everywhere in plant on high flow event sheets, as indicated by high flow 120" sheets.
	I&E	Calibrate meters when necessary.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
13	11	Write work orders for meters as necessary.
During Wet Weather Event		
13	11, PWT	Balance flows. Balance east and west conventional flows. Generally, the east side can take more flow than west (east circular drive, west flights/chain). May be 55/45.
13	11, PWT	84" check NAG flows for balance.
13	11, PWT	Hourly take flow reading on flow sheets.
	I&E	Repair or calibrate if possible.
After Wet Weather Event		
13	11, PWT	Balance flows.
13	11, PWT	84" check. Check flow meters for balance.
	I&E	Repair any flow meters that failed.
13	11	Bleed RAS lines if needed based on RAS flows fluctuating wildly.

WHY DO WE DO THIS?
Balance flows 55/45 percent with east getting 55 percent. This is due to the west primaries being constructed of the plastic chain and flights that are more prone to high flow failures.
WHAT TRIGGERS THE CHANGE?
Plant flows in excess of 140 mgd to minimize impact on west primaries.
WHAT CAN GO WRONG?
Hard to say. If flow is not balanced quickly enough then west primaries will be overloaded (power failures, gate closing during power failures, locking gates open in case of power failures).

SECTION 5 - PROCESS WATER

5.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
Process Water	· 2 W6 and W7 Strainers · 4 W1, 2, 3, 4 Pumps · 3 New Pumps · 3 New Strainers · Valves on Suction and Discharge Lines · Pressure Gauges · Differential Gauges · Flow Meters

5.2 Wet Weather O&M Practices

DECISION CONTACT	WHO DOES IT?	WHAT DO WE DO?
Before Wet Weather Event		
11	11	The day before the event back flush suction lines, if needed.
11	11, PWT, 8	Check strainers; if plugged, report to supervisor immediately.
13, 11	11	Availability of equipment.
13, 11	11, PWT, 8	Pressure of system plant water.
	PWT, 8	Pressures of inlet and outlet strainers.
	M	Clean strainers if necessary.
During Wet Weather Event		
13, 11	11	Back flush suction lines.
13, 11	11, PWT, 8	Check pressure (we are targeting for 55 psi to 65 psi plant water pressure).

DECISION CONTACT	WHO DOES IT?	WHAT DO WE DO?
11, 13	11, PWT, 8	Strainers to see if they are getting plugged.
13	13, 11	Pressure. Turn pumps on or off to maintain good pressure.
	M	Clean strainers when or if needed.
After Wet Weather Event		
13	13, 11	Backwash suction lines if needed.
13	11, PWT, 8	Differential gauges, pressures.
13	11, PWT, 8	Lb. pressure (plant water). 55 psi to 65 psi normal operating pressure.
	M	Clean strainers if necessary.

WHY DO WE DO THIS ?

Pay close attention to process water pressure, more during wet weather if the split flows are open because effluent quality is not as good as normal and process water draws from our effluent and is more apt to plug up strainers. Back flush pumps to blow out screens on suction lines and clean strainers when differential gauges before and after baskets show more than 10 psi variance. 60 psi is our goal of operating process water pressure.

WHAT TRIGGERS THE CHANGE?

Split flow gates being open. Effluent turbidity.

WHAT CAN GO WRONG?

Strainers get dirty. Suction line screens get dirty.

SECTION 6 - CONTROL STRUCTURE 46

6.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
Coordinate 41 and 46 Volume Tunnel Flush, Etc.	· Hydraulic Unit · Sluice Gates 1-9 Siphon Gates; Sluice Gate 11 - Conventional Plant; Sluice Gate 12 - ATF Direct · Louvers · Carbon Tower, Fan · Level Indicator · Sampler · Electronic Room (Control Structure)

6.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
13	11	One to three days before event, fill siphon if not already (with river water). Gates 11 and 12 position (switch to ATF if not already).
13	11, PWT	Observe level, gate position, flow. Gates 1 through 9 should already be closed at this point.
13	11, PWT	Record level, flow, totalizer.
13	11, PWT, I&E, M	Check gates, check hydraulics. If problem found, report to shift supervisor immediately.
During Wet Weather Event		
13	11	Gates 11 and 12 switch if needed.
13	11, PWT	Observe level, flow, totalizer.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
	I&E, M	As needed (work orders).
13	11, PWT	Samples of Control Structure 46.
After Wet Weather Event		
13	11	Flush siphon within 24 hours if possible.
13	11	Fill siphon with river water.
13	11	Flush siphon from Control Structure 45 (river water). Drain siphon to CIPS (Gates 1 through 9). Refill with river water after siphon and ATF flush. Switch gates 11 and 12 if necessary.
13	11	Observe gate position. Draw down and refill. Check debris in siphon, grit buildup.
13	11, PWT	Measure levels, totalizer.

WHY DO WE DO THIS?
Direct flows (IBPS, ATF, or conventional).
WHAT TRIGGERS THE CHANGE?
When flow arrives.
WHAT CAN GO WRONG?
Hydraulic failure, communication failure. When draining siphon, excessive draining rate can cause damage down stream.

SECTION 7 - GRIT HANDLING BUILDING

7.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
Grit Handling Building	· 5 Classifiers · Canisters 20 yards "3" · SYMAX Programmable Logic Controller · Sand Trap · Winches "3" · 2 Carbon Towers · Grit Valves

7.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
11	11, 8	Direct drop chutes to canisters when needed.
11	11, 8	Two to four days before event, make sure canisters are empty. If not emptied, have them emptied.
11	11, 8	Hydrogritters - operating at correct pressure (7 to 10 psi).
13	13, 11	Check valve connections from NAG channels to hydrogritters.
13, 11	11, 8	Make sure flow coming out of hydrogritters (7 to 10 psi).
11	11, 8	Pressure on hydrogritters.
	M	Grease screws.
During Wet Weather Event		
11	11, 8	Redirect drop chutes.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
11	11, 8	Clean out any hydrogritters that are plugged or not flowing well.
11	11, 8	Pressure on hydrogritters.
11	11, 8	Make sure flow out of hydrogritters is good.
13	13, 11, PWT	Back flush hydrogritters as required.
11	11, 8	Rod out any plugged hydrogritters or take nose cone off and clean.
After Wet Weather Event		
11	11, PWT	Order grit pickups - log in operations book.
13	11, 8	Observe equipment.
11	11, 8	Pressure and flows at hydrogritter.
11	8	Clean up floors up and down.
11	8	Clean sand pit if necessary.

WHY DO WE DO THIS?

Monitor pressures at classifiers to assure proper grit removal (10 psi optimum, <10 psi potentially wet, <8 psi possible plugging). Check for grit stream out of the classifier to assure grit removal is taking place from the NAG or AGF grit channel. Monitor dumpsters to not overfill (switch valves, raiser, or order pickup).

WHAT TRIGGERS THE CHANGE?

Rain runoff on roads into collection systems.

WHAT CAN GO WRONG?

Equipment failures, communication failure. If grit classifiers plug and pumps are pumping the grit and stones, then go into the primary tanks and from there to the thickeners and day tanks. This causes plugged lines and excessive wear on pumps.

SECTION 8 - PLANT AREA: SCREENING AND AERATED GRIT FACILITY (AGF)

8.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
AGF Screen and Grit	· 4 Bar Screens · 4 Bar Screen Influent Gates · 4 Bar Screen Effluent Gates · 4 Grit Pumps · 3 Blowers (Lamson) · 2 Hydraulic Power Packs · 4 Grit Screws · 2 Carbon Towers, Blowers · 2 72" Flow Meters · 4 Level Sensors, 8 Heads (Milltronics) · Grit Screw Motion Detectors · Air Header and Diffusers · Sump Pumps · Equalization Gate · 4 Rag Canisters (2 yards each) · Flush Water Lines (process water) · SYMAX · Raw Auto Sampler

8.2 Wet Weather O&M Practices

WHO DOES IT?		
SUPERVISORY	IMPLEMENTATION	WHAT DO WE DO?
Before Wet Weather Event		
11	11, 8	The day before, check rag canisters - dump if half full.
11	11, 8	Check grit pumps to make sure they are clean, pumping good (steady grit stream - 7 to 10 psi).

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
11	11, 8	Check grit screws and hydraulic units (temp. >110°F, pressure, oil level of hydraulic units).
13	11, 8	Monitor grit output (steady stream to classifiers).
13	13, 11	Flow equalization - balance flows to east and west channels.
13	I&E, M	Place all units in service.
During Wet Weather Event		
13	11	If two blowers are on, shut off second blower at 100 mgd and valve other blower to go to both east and west grit channels.
13	11	Over 150 mgd - turn off all blowers.
13	11	Divert pump station flow to non-aerated grit facility as needed based on amount of grit loading in the influent.
13	11, PWT	Restrict flow to 180 mgd by throttling 72-inch gates in main influent distribution center.
13	13, 11	Divert remainder of flow to non-aerated grit facility.
13,11	11, 8	Check rag canisters - dump when 2/3 full or anticipated being full.
13,11	11, 8	Check grit pumps for proper operation and 7 to 10 psi pressure.
13,11	11, 8	Check hydraulic units (temp. >110°F, high pressure, oil level sight tube). Report problems to shift supervisor.
	13, 11	Monitor flow rates.
	13, 11	Monitor loadings.
13	11, 8	Make sure bar screens are operating properly (pulling rags and free movement).
13	11, 8	Balance flows to east and west.
13	11, 8	Measure grit output.
	13, 11, PWT	Record flows hourly.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
13	11, 8	Pressure readings on classifiers, make sure that nose cones are free allowing grit to flow out slowly.
	I&E, M	Repair failures.
After Wet Weather Event		
13,11	11,8	Reverse order for gates and blowers (<150 mgd, turn on one blower) (see "During Wet Weather Event").
13,11	11,8	Check grit dumpsters - dump if 2/3 full. Log in operations book.
13,11	11,8	Check rag dumpsters - dump if 2/3 full. Log in operations book.
13,11	11,8	Check hydraulic units - report problems to the supervisor
	I&E, M	Repair any items that failed.

WHY DO WE DO THIS?
To prevent overloading of the aerated grit facility. Maximum flow of 180 mgd is maintained to prevent build up of grit. Overloads can cause screw failures and plugged grit lines. Shutting off blowers during high flows prevents excess grit carryover into primary tanks and the rest of the plant.
WHAT TRIGGERS THE CHANGE?
Specific flow rates described above.
WHAT CAN GO WRONG?
Screw failures. Plugged grit lines. Hydraulic power pack failures. Bar screen failures.

SECTION 9 - N TANKS (EAST PRIMARIES) AND DISTRIBUTION

9.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
N's	· 3 Tanks · 3 Collectors · 12 Sludge Pumps · 3 Scum Pumps · 6 Influent Distribution Gates · 3 Scum Wells · 3 Scum Skimmers · 1 Air Compressor

9.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
13, 11	13, 11	Just before event, balance influent gates for the three tanks to balance flows.
13	11, 8	Check blanket levels.
13	11, 8	Monitor flow rates to primaries.
13	11, 8	Make sure scum pumps are working.
13	11, 8	Check collector operation.
13	11, 8	Check pump flow rate. Report any problems or anomalies to supervisor.
	I&E, M	Repair any malfunctions or equipment out of service.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
During Wet Weather Event		
13	13, 11	Increase number of tanks in service based on flow if possible.
13, 11	8	May need pumps on hand based on sludge blanket levels in tanks.
13, 11	8	Make sure all primary sludge pumps are pumping well. Observe hourly handouts.
13	13, 11	Watch water level in tanks (weirs) for flooding of weir and split flow as needed to prevent serious ponding.
13	11	Monitor distribution boxes for flooding.
11	8	Check torque meters on collector arms for high torque. Report high torque to shift supervisor.
13	11	Monitor flows.
13	11	Monitor sludge blanket levels in tanks.
13	11	Pump rates.
	I&E, M	Repair equipment failures as needed.
11	11, 8	Clean pumps if needed.
After Wet Weather Event		
13	13	Take tank out of service if needed and clean out.
13	11	Return sludge pumps to “auto” mode.
13	11, 8	Monitor pump flow rates.
13	11, 8	Check equipment in operation, such as collectors, etc., and torque on arm.
13	11, 8	Pump scum wells.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
13	11, 8	Remove floating debris on tanks.
	13, 11, PWT	Record the time split flow gates are closed.
13, 11	11, 8	Measure blanket levels.
	I&E, M	Repair any failures.
11	11, 8	Back sludge flush lines and pumps as needed. Clean sludge pumps if needed. Clean weirs if needed. Clear scum ramps of scum as needed.

SECTION 10 - P'S (WEST PRIMARIES)

10.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
West Primaries	· 6 Floc Pumps · 5 Running Sedimentation Pumps · 6 Running Floc Collectors (Longitudinal and Screw) · 5 Sedimentation Collectors (Longitudinal and Cross) · Scum Collectors · Scum Pumps · Ferrous Sulfate Feed · Motor Control Centers · 11 Flow Meters (Floc and Sedimentation) · Primary for Influent Sedimentation Flow Meter · Total of 17 Primary Sludge Pumps · Each Pump Has One Suction and Two Discharge Plug Valves · Each Pump Can Run Off Timer or On Hand

10.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
13	8, 11	When in summer mode, prepare to put out of service tanks in service if flow conditions warrant (for surge relief and detention time) just before event.
11	8	Run pumps for floc or sedimentation basins on hand if high sludge blankets are observed. Clean pump if it is not pumping properly.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
13	8, 11	Visually check to assure all floc and sedimentation collectors are operating properly.
13	11	Take a computer readout of pump rates for all floc and sedimentation pumps.
11	8	Check blanket levels in floc and sedimentation basins.
13	11	Run any mechanical, instrumentation, and electrical work that was outstanding that could affect wet weather operation.
During Wet Weather Event		
13	8, 11	If high blankets are observed, run flow or sedimentation pumps on hand.
13, 11	8	Check distribution box for flooding. Report high level to supervisor.
13, 11	8	Check collectors for operation in primaries. Report failures to shift supervisor.
13, 11	8	Monitor free board of water at primary weirs for ponding or flooding (by camera or live).
13	11	Balance of flows to east and west primaries and to ATF.
11	8	Monitor blanket levels (sludge) in primary clarifiers. Report high blankets to supervisor and run primary pump on hand.
13	11	Check pump rates (computer readout) hourly to assure pumps (floc and sedimentation) are pumping properly.
	I&E, M	As needed maintenance for mechanical, instrumentation, and electrical. Shear pin replacement for collector if broken.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
After Wet Weather Event		
11	8	Sludge pumps (floc and sedimentation) that were turned on hand can go back to automatic operation.
13	11	When in summer mode, we might want to take a tank out of service (surge relief and detention time).
11	8	Check collectors for operation.
11	8	Clear out scum trapped by weirs and on the surface of the floc tanks.
	I&E, M	Repair anything broken during event.

WHY DO WE DO THIS?

Balance flows with slightly more flow to N tanks (to protect chains and flights on P tanks). Check for ponding on tanks. Measure sludge blankets in tanks for excessive sludge in tanks. May have to run pumps on hand. Get hourly readouts for pumps to make sure pumps are not dirty. N tanks - check also for ponding of weirs and hourly readouts. Check shear pins on P tanks and torque drives on N tanks for high torque. Check for floating sludge coming to surface of primaries. Floating sludge may indicate a broken chain or chain slipped off its sprocket. Check distribution boxes for flooding on P's and N's. We may have to open four split for gates for relief so we don't hydraulically overload the primaries at weirs (send primary effluent to Cl_2 contact chamber).

WHAT TRIGGERS THE CHANGE?

WHAT CAN GO WRONG?

Broken shear pins, broken or slipped chains, plugged pumps, or flow imbalance to our flow of distribution boxes. Any equipment failures with above mentioned.

SECTION 11 - SPLIT FLOW

11.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
	4 Gates

11.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
None		
During Wet Weather Event		
13	13, 11	Open as needed to protect final clarifiers effluent quality and aeration MLSS. Also opened to allow more or less flow into conventional treatment plant.
13	13, 11	Open to prevent overflow of the P and N primary distribution boxes and ponding of the primary weirs.
13	13, 11	Open to protect final blanket levels.
13	13, 11	Open to prevent aeration flooding.
	13, 11	Record the amount we are split flowing in (mgd).
	13, 11	Open to provide adequate clearance of final tanks channel at discharge of split flow to prevent back pressure.
	I&E, M	Repair failures as necessary.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
After Wet Weather Event		
13	13, 11	Proceed by closing these gates slowly, taking final levels hourly, and observing tanks for ponding and/or flooding (see During Wet Weather Event).
13	13, 11	Repair failures if any. Make sure all split flow gates are closed.
13	13, 11	Check master split flow controller to see that it indicates zero flow. Report to shift supervisor immediately if other than zero.

WHY DO WE DO THIS?

To relieve flow to aeration system. We open split flow gates proportionally. Hydraulic limitations to treat all the flow. Primary tanks may be ponded.

WHAT TRIGGERS THE CHANGE?

High blankets in finals 8 ft.+ (biggest reason).

WHAT CAN GO WRONG?

Uneven proportion to aeration - opening them too much or not enough; malfunction of gates (won't seat correctly or work properly). (Stuck open or closed). Cannot split flow under 135 mgd (permit requires).

SECTION 12 - AERATION AND DISTRIBUTION STRUCTURES

12.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
Aerators	· 60 RAS Gates 36 (On Line) · 60 PE Gates · 4 Dissolved Oxygen Probes · 60 Aerator Motors · 60 Aerator Gear Boxes and Impellers · 80 Tank Effluent Gates · 2 Frequency Drives · 4 Distribution Structures with Gates · 1 Frequency Drive Structure · 10 Motor Control Center Panels and Enclosures · 1 Control Room (Remote Area for Start/Stop) · 4 Tank Structures · 60 Feed Lines to Aerator Effluent Channel

12.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
13	11	The day before the event, clean the dissolved oxygen probes and check the status of aerators not presently in service.
13	11	Adjustment for dissolved oxygen levels.
13	11	Dissolved oxygen visual checks on all aerators. Check gate status making sure the right gates are opened.
13	11	Check dissolved oxygen - MLSS - RAS flow.
13	11, PWT	Clean dissolved oxygen probes if necessary.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
During Wet Weather Event		
13	11	Turn center aerators on to slow speed and vary according to dissolved oxygen available. Possibly adjust split flow rates (by head on aerators). Switch frequency drive aerators on manual. If flow goes higher put a conventional two-speed aerator on slow for tank 11 only and shut off frequency drive aerators.
13	11, PWT	Dissolved oxygen visual checks of liquid level.
13	11, PWT	Monitor dissolved oxygen (automatically). Power (head).
After Wet Weather Event		
13	11	Put aeration mixers back to normal configuration. Put frequency drive aerators back on line. Put two end aerators back on line with center aerator off line on each aeration basin.
13	11, PWT	Dissolved oxygen. Visual checks of entire system.
13	11, PWT	Monitor dissolved oxygen again automatically.

WHY DO WE DO THIS?

Perform visual check on aeration basins to see if they are flooded. If they are, turn outside aerators off and middle aerators on high (saves electricity as with a dilute influent - there is less oxygen required). By shutting one-half of the aerators off, we can start another large pump at IBPS with no net gain of electricity consumed.

WHAT TRIGGERS THE CHANGE?

High flow triggers change.

WHAT CAN GO WRONG?

Dissolved oxygen problems depending on biological mass (high or low). Turning aerators on too fast may cause electrical surge problems. Aerators may not start on fast. (Failure)

SECTION 12 (Continued):

SECTION 13 - RECIRCULATION

13.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
	· 18 Return Sludge Pumps · 4 Return Effluent Pumps · 4 Return Dilution Pumps · 2 Process Water Pumps (6 and 7) · 2 Process Water Strainers

13.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
13	11	Just before event, balance returns. Adjust process water pressure (55 to 65 psi).
11		Re-balance returns sludge flow rates.
11	13	Check return effluent flows and return dilution flows.
11	11	Make sure process water strainers are both clean. Speed the repair of any down or backup equipment if possible.
During Wet Weather Event		
11	13	Bleed out air from discharge lines for return sludge pumps as needed.
11		Switch process water strainers if process water pressure drops off (<55 psi).

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
11		Observe return sludge, return dilution and return effluent flow rates for stability and balance. Report variations to shift supervisors.
11		Shut down or reduce dilution water to thickeners as to allow more sludge flow to the thickener tanks.
	13, I&E, M	Make emergency repairs if necessary.
After Wet Weather Event		
11	13	Adjust return dilution rates back to normal.
11	13	Balance return effluent, return dilution, return sludge flows.
11	13, PWT	Measure flows (return effluent, return dilution, return sludge).
	13	Clean process water strainers if needed.

WHY DO WE DO THIS?

To maintain process normal return rates and good process water pressure in plant usage.

WHAT TRIGGERS THE CHANGE?

Increased flow and possible turbidity can plug process a water strainer causing us to switch to another one. If return rates fluctuate or get unbalanced, we bleed air out of pump or readjust controllers to maintain proper return rates.

WHAT CAN GO WRONG?

Strainers (process water) can plug. Return sludge pumps can get air in them. Returns can become unbalanced (unlikely).

SECTION 14 - FINAL CLARIFIER AND DISTRIBUTION

14.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
	· 6 Final Tanks · 6 Drives and Skimmers · 12 Wasting Pumps · 6 Scum Pumps · 2 Cl_2 Splits, Gates · 12 Influent Gates · 6 Scum Mixers · Return Sludge Ports · Dissolved Oxygen Probe

14.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
13	11	The day of the event, balance blankets and gates if needed (routine). Stems all low on gates. Balance stems to same position. Free up plugged return ports.
13	11, 8, PWT	Observe blanket levels, effluent quality, tank surface (note if scum build up).
11	8, PWT	Measure, record levels.
13	11, PWT	Balance, if necessary. All tanks in service (put all available tanks in service as possible).
During Wet Weather Event		
13	11	Distribution gate adjustments to keep blanket levels even.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
13	13, 11	Make adjustments of Cl_2 split flow gate if necessary (via the clearance of the split flow line to final tank #6, clearance is needed to insure relief point) no higher than shoulder of tank.
13	11, 8, PWT	Observe blanket levels. Report high blankets to supervisor.
13	11, PWT	Observe clarity of effluent, solids loss, return pump flow, level of effluent channel (for split flow purposes). Report solids loss, low return pump flow, and high effluent channel level immediately to supervisor.
13	11, 8	Take hourly levels of finals.
13, 11	11, PWT	Record how much we are split flowing through Cl_2 effluent gate hourly.
13	11	Raise or lower gates to help adjust levels to keep blankets balanced.
13	13, 11	Air bound return pump (bleed air) out to prevent fluctuations of flow.
After Wet Weather Event		
13	11	Rebalance tanks.
13	11	Make sure Cl_2 split is closed. Report to shift supervisor immediately if you have any doubt.
11	11, 8	Gate stem height.
13	11, 8, PWT	Effluent clarity.
11	11	Blanket levels.
11	11	Scum clarifier ring.
11	8	Measure, record levels.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
11	8	Clean scum clarifier rings.

WHY DO WE DO THIS ?

Watch blankets, effluent channels, return ports, effluent quality at least hourly.

WHAT TRIGGERS THE CHANGE?

As flow comes up, balance flow to "f" clarifiers based on blanket levels to keep blankets even. (Change would be triggered by poor effluent quality). If split flow gates are open, keep effluent channel level low enough to allow split flow to enter "f" effluent channel freely by opening chlorine split flow gate. When flow comes up to 135 mgd plus.

WHAT CAN GO WRONG?

Loss of effluent quality due to imbalance of flow, imbalance of sludge blankets, return pump being air bound, or too much split flow.

SECTION 15 - CHLORINATION

15.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
Cl_2	· 6 Cl_2 Chlorinators · 6 Cl_2 Evaporators · 2 Scales · 4 Cl_2 Leak Detectors · Process Pumps (2) Strainers · Cl_2 Containment and Programmable Logic Controller · 2 Effluent Flow Meters · Programmable Logic Controller · 2 Contact Chambers · West Drain Gates · Cl_2 Bypass Gates · Diffusers 3″

15.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
13	11	The day before, make sure chlorinators feed enough (0 to 4000 lb/day).
13	11	Enough ton cylinders on hand (4 tons).
13	11	Enough ton cylinders on scale (4000 lb. +).
13, 11	11, PWT	Residual (routine).
13	13, 11	Work on equipment if not performing properly.
13	13, 11	Preventative maintenance equipment if necessary.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
13	13, 11	Report problems to shift supervisor immediately.
During Wet Weather Event		
11	11, PWT	Check feed rates (Cl_2).
13	11, PWT	Adjust Cl_2 split flow gate as needed to keep effluent channel level no higher than shoulder of tanks.
13	11, PWT	Check effluent and effluent channels for high levels (see above).
13	13, 11	Anticipate flows.
13	13, 11	Process water pressure is adequate (55 to 65 psi).
13	13, 11	Vacuum adequate on chlorinators (15 to 25 psi).
13, 11	11, PWT, 8	Check Cl_2 residual; check every hour or when flow changes, especially if Cl_2 bypass gate is open.
13, 11	11, PWT, 8	Check lbs., feed rate.
13, 11	11, PWT, 8	Check temperature of evaporators and pressure (165°F to 185°F).
13, 11	11, PWT	Back flush process water pumps as needed (and suction).
After Wet Weather Event		
13, 11	11, 8	Drop feed rates as needed.
13	11	Close split Cl_2 gate as needed (see split flow from section).
	13, 11, 8	Check effluent clarity.
13	11	Order Cl_2 tanks.
13	11	Take empty cylinder off.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
13	11	Reload Cl_2 scales.
13	11, PWT, 8	Process water strainers - check, clean if necessary. Chlorinator vacuum. Check for normal range.
11	8	Cl_2 scale record consumption.
13	11, 8	Feed rates - change and readjust with flow changes.
13	11, 8	Check evaporator temperatures and pressure (165°F to 185°F).
13, 11	PWT, 8	Clean contact chambers if needed (debris).
13	13, 11	Repair items that failed. Especially any chlorinators and evaporators.

WHY DO WE DO THIS?

As flow rises, we increase Cl_2 based on residual. Based on flow or deteriorating effluent. (Split flow gates open).

WHAT TRIGGERS THE CHANGE?

As flow comes up, balance flow to "f" clarifiers based on blanket levels to keep blankets even. (Change would be triggered by poor effluent quality). If split flow gates are open, keep effluent channel low enough to allow split flow to enter "f" effluent channel freely by opening chlorine split flow gate. When flow comes up to 135 mgd plus.

WHAT CAN GO WRONG?

With rapid flow changes and effluent quality changes, chlorine residual can be too high or too low (also caused by mechanical failure of equipment). Deteriorating effluent results in increase amounts of Cl_2 needed and causes strainers to plug up quicker. Loss of effluent quality due to imbalance of flow, imbalance of sludge blankets, return pump being air bound, or too much split flow.

SECTION 16 - 66-INCH DIVERSION GATE

16.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
	Diversion Gate (by Ash Lagoon)

16.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
None		
During Wet Weather Event		
16, 13	16, 13	Open the diversion gate to the 66 gate as needed based on the partial flume level (if very high).
After Wet Weather Event		
16, 13	13, 11	Close gate.

WHY DO WE DO THIS?
We open 66-inch diversion gate in flows in excess of 450+ mgd (variable based on hydraulic conditions at effluent partial flume), if flow has trouble leaving plant.
WHAT TRIGGERS THE CHANGE?
Hydraulic bottleneck at partial flume (flow not exiting outfall quickly enough).
WHAT CAN GO WRONG?
Gate problems.

SECTION 17 - NAG AND HYPO/120[2]

17.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
	· 3 Traveling Bridges · 3 Gates (Drain) · 3 Channel Gates · 2 Gates (120″) · 2 Gates 9, 10 to Primary Influent · 2 Scum Wells · 2 Scum Pumps · Hypochlorite Tank · Jet Pump · SYMAX · 3 Grit Screws · 5 Grit Pumps · Grit Pipe Valve Gallery

17.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
13	PWT, 11	The day before, test run bridges. Check piping to hydrogritters to ensure that proper valves are open.
13	11, PWT	Make sure grit channels are clean. Check hypo tank level. Check scum wells (level).
	I&E, M	P.M. and repair any failures of equipment.
13	11, PWT	Clean the strainer basket for hypochlorite process water feed.
13	11, PWT	Order hypo if needed.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
During Wet Weather Event		
13	11	Alter the number of trains - based on a flow 90 mgd per train. Adjust the feed of hypo - based on residual. Back flush the grit pumps as needed.
13	11	Make sure gates 7, 8 (120 "), 9, 10 (primary influent) are open as needed. (Based on plant flow plus tunnel flow). Observe for floatables in channels.
13	11	Record all flows - hourly. Dissolved oxygen floatable observation every four hours. If using 120". Also, lab samples must be taken every four hours if using 120". Report any floatables to supervisor.
	I&E, M	Repair any breakdowns when possible.
13	11, PWT	Order hypo if needed.
After Wet Weather Event		
13	11	Take trains out of service as flow drops to maintain 90 mgd to trains in service until all three trains are okay. Then return flow to the conventional plant.
13	11, PWT	Check grit channels for grit. Check hypo tank and equipment for chemical storage to assure there is enough hypochlorite on hand for the next event.
13	11	Measure hypo tank, consumption.
	I&E, M	Repair any equipment that failed.
13	11, PWT	If hypo is being used for odor control, monitor and record usage.

SECTION 17 (Continued):

WHY DO WE DO THIS ?
Send flow in excess of 180 mgd at AGF to ATF screen and NAG to protect AGF from excess grit which can cause screw failure, plugged lines, and to prevent washout of grit from AGF to primaries. Maintain 90 mgd/train (ATF screen and non-aerated grit channel) with maximum of 120 mgd/train. (<90 = organics in grit and >90 can lead to grit carryover). Send as much flow as possible through the primary influent until the conventional plant cannot treat it effectively, then send excess flow out the 120" line. Run sodium hypochlorite when utilizing 120" line to maintain sufficient fecal coliform kill. Take lab samples to monitor effluent.
WHAT TRIGGERS THE CHANGE?
Flow makes us decide when to go to wet weather mode.
WHAT CAN GO WRONG?
Bridge failure, screw failure, plugged grit line, plugged clarifiers. Too high or too low flow through train (see above).

SECTION 18 - ATF SCREEN

18.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
Screen	· 3 Screens · 3 Influent Gates · 3 Effluent Gates · 5 Conveyors · 4 Dumpsters · 2 Bypass Channels with 2 (Influent and 2 Effluent) Gates · 2 Carbon Towers · 2 Fans (Nos. 4 and 5)

18.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
13	11	Test and set up screens after each event. Put screen controls in auto - make sure conveyor directions are correct when starting screens.
13	11, 8	Observe conditions of conveyors, tracking of conveyors. If tracking poorly, report to supervisors. Positions of switches for direction of conveyor belts to go to proper dumpster. How full canisters are.
11	11, PWT	Record debris in dumpster. Call for pickup one day in advance if 2/3 full.
	I&E, M	Make sure anything inoperable is repaired.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
During Wet Weather Event		
13	11	Number of screens in service depending on flow.
11	11, 8	Observe quantity in dumpster. Dumpster - winch forward as it fills up if necessary. Tracking of conveyors. Make sure screens are coming on in auto and going in desired direction.
13	11, PWT	Record dumpster debris. Call to be pulled if 2/3 full or if you anticipate canister will be full during wet weather event.
	I&E, M	Repair any failures of equipment.
After Wet Weather Event		
13	11	When flow returns to normal: (1) leave gates in position for next high flow event; (2) observe conditions of screens, dumpsters, belts; (3) record debris in dumpster. Call for dumpster pickup if 2/3 full.
	I&E, M	Repair any failures of equipment. Hose floor and screens.

18.3 ATF NAG

WHY DO WE DO THIS?
Optimum is 90 mgd per traveling bridge to maintain optimal grit removal. (Higher flow equals carry over in grit, and less than 90 mgd equals organics in the grit.)
WHAT TRIGGERS THE CHANGE?
Flow in excess of 180 mgd.
WHAT CAN GO WRONG?
Bridge failures. Plugged grit lines. Conveyor failures. Screen failures.

SECTION 18 (Continued):
18.4 ATF 3 84[2]

WHY DO WE DO THIS ?
Put each train on line to maximize flow with conjunction of the AGF. Each train has a working capacity of 90 mgd with a 120 mgd max. The switch from one train to two trains is that 90 mgd has to be going through the line to prevent grit settling out.
WHAT TRIGGERS THE CHANGE?
Flow around 150 mgd would initiate the opening of one train through ATF with flow going back to primaries.
WHAT CAN GO WRONG?
Flow meters giving erroneous readings. Too much or not enough flow to one channel (<90 mgd or >90 mgd/channel).

SECTION 19 - CULVER-GOODMAN CONTROL STRUCTURE

19.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
Tunnels	· 4 Sluice Gates · 1 Roller Gate · 1 Rain Gauge · 1 Hydraulic Unit · Air Compressor · 1 Upper Tunnel Level Meter · 1 Connecting Chamber Level Meter · 1 Overflow Weir Level Meter · 1 Upper Chamber Level Meter · Generator

19.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
13	8, 11	Check site for alarms and failures.
13	8, 11	Confirm that the gate controllers are enabled. Operate Sluice Gates 1 through 4. Preset Sluice Gates 1 through 4 closed roller gate 3 percent open. Check butterfly gates to be sure they're in correct position. Municipal butterfly valve 1 open. Atlantic butterfly valve 1 open, butterfly valve 2 closed. Garson butterfly valve 1 closed.
13	8, 11	Check rain gauge and air pressure.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
During Wet Weather Event		
13	8, 11	If possible, store at Culver-Goodman Control Structure until after the event. If the connecting chamber (level 3) reaches 35 feet, check radar for expected duration and intensity. Overflow level is 50 feet, so be aware that flows might need to be released soon. If flow is released and the wet well at CIPS is 35 feet or less, open Sluice Gates 1 through 4 = 30 percent to 40 percent. If the wet well at CIPS is above 35 feet, release flow at the highest rate possible to prevent settling of solids. Sluice Gates 1 through 4 = 10 percent to 20 percent. If the wet well at CIPS is more than 40 feet, do not release flow; air pockets could cause damage to equipment and structures.
13	8, 11	Continue recording rain gauge reading and monitoring tunnel readings.
13	8, 11	Retain 22 feet in the connecting chamber for cleaning after the event.
After Wet Weather Event		
13	8, 11	Open Sluice Gates 1 through 4, 50 percent with the roller gate at 3 percent to allow the 22 feet stored to scour the connecting chamber.
13	8, 11	Monitor the CIPS wet well level for slight increase.
13	8, 11	Discuss any problems with the collection operation group so they can investigate and submit work orders to the appropriate support groups.
13	8, 11	Return gates to their preset positions. Sluice Gates 1 through 4 at 30 percent, roller gate at 3 percent.

SECTION 19 (Continued):

WHY DO WE DO THIS ?
To eliminate overflow into Densmore Creek, Thomas Creek, and Irondequoit Bay. Limit flow to Irondequoit Tunnel (IBPS) during storage mode. Prevent surcharge of surface sewers.
WHAT TRIGGERS THE CHANGE?
When flow enters tunnel. Rain.
WHAT CAN GO WRONG?
Hydraulic failure, communication loss. Storm exceeds capacity.

SECTION 20 - CONTROL STRUCTURE 44

20.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
Structure 44	· 7 Sluice Gates · Hydraulic Unit · 3 Level Meters · St. Paul Level Meter · Bubbler System with Compressor · Pump and Water Cannon

Note: All control and monitoring equipment for Control Structure 44 is located at Control Structure 243.

20.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
13	11, 13, 8, 9, PWT	Check for abnormalities or alarms. Confirm gate controllers are "enabled." Test remote operation of gates. Preset gate positions. Sluice Gates 1, 2, 3, 4, and 7 at 100 percent; Sluice Gates 5 and 6 at approximately 30 percent.
13	11, 13, 8, 9, PWT	Watch level at Site 60, flow relieves to the tunnel at 3.5 feet.
13	11, 13, 8, 9, PWT	Watch level at Site 31 - levels between 0 feet and 2 feet = minor inflow to tunnel - levels between 2 feet and 4 feet = moderate inflow levels above 4 feet = excessive inflow (overflow level at Site 31 is 9.9 feet). Note: On initial flow to Site 31, there is a 45 minute (±) delay before the flow arrives at Control Structure 44.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
13	11, 13, 8, 9, PWT	Watch levels at Waring, Portland, and Jewel. Rising levels and/or high water alarms at these sites indicate flow will be relieved to the Seneca Norton Tunnel.
13	11, 13, 8, 9, PWT	Watch radar for storm direction and intensity, and weather fax.
During Wet Weather Event		
13	11, 13, 8, 9, PWT	Adjust gates according to conditions throughout the system.
13	11, 13, 8, 9, PWT	Watch siphon flow (through Control Structure 46) which impacts the plant.
13	11, 13, 8, 9, PWT	Watch levels at Control Structure 243 (overflow level at 243 is 14.1 feet).
13	11, 13, 8, 9, PWT	Watch level in surge chamber. This tunnel can fill very quickly, extra attention should be paid when the surge chamber level reaches 25 feet ($\pm$). Overflow level in surge chamber is 36.3 feet. Make small gate adjustments to avoid surges, waves, and overflows at other structures. If the rain event is excessive or long term, flow diversions out of SPBI and into the Lake Avenue Tunnel, this can be performed at Front Street, Malvern Street, and both Glenwood and Cliff Street screen houses. This will also relieve the flow at Control Structure 44, so the operator (FEV Dispatcher) can concentrate on controlling the level at Control Structure 45.
13	11, 13, 8, 9, PWT	Continuously monitor levels at the surge chamber, SPBI, Site 60, Site 31, Waring, Portland, and Jewel.
13	11, 13, 8, 9, PWT	Monitor rain gauges, storm direction and intensity of storm. When tunnel level is low (approximately 7 feet to 8 feet), drain at a high rate to scour grit from tunnel. (Remember to monitor plant flow when performing this function).

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
After Wet Weather Event		
13	11, 13, 8, 9, PWT	Check for level of 0 feet at Site 31 - this indicates no inflow to the tunnel.
13	11, 13, 8, 9, PWT	Return gates to normal position - Sluice Gates 1, 2, 3, 4, and 7 at 100 percent. Sluice Gates 5 and 6 at 30 percent. Note: If flow is to be released at Control Structure 45, close Sluice Gates 5 and 6 at Control Structure 44 to prevent flow backups.
13	11, 13, 8, 9, PWT	Contact Collection Operations and Plant Operations with any questions or problems. Check dispatchers "Who to Call List."

WHY DO WE DO THIS?
To eliminate overflow to the river. To prevent surcharge of the surface sewers. To control flows to FEV. To control levels at Control Structure 243.
WHAT TRIGGERS THE CHANGE?
When flow occurs into structure (by level indicators).
WHAT CAN GO WRONG?
Hydraulic failure, communication. failure. Excessive flow can release overflow at Control Structure 243. Storm exceeds capacity.

SECTION 21 - CONTROL STRUCTURE 45

21.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
Structure 45	· 8 Sluice Gates · 1 Hydraulic Unit · 2 Surge Chamber Level Meters · 2 Isolation Chamber Level Meters · Deaeration Chamber Level Meters · 2 Overflow Level Meters · 1 Compressor for Bubbler System · 1 Generator

21.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
13	8, 15	Check for failures or alarms, look for any abnormalities.
13	8, 15	Confirm that the gate controllers are enabled. Exercise the gates through the control system. Preset the gates, Sluice Gates 1 through 4 - 100 percent open. Sluice Gates 5 and 6 - 3 percent to 5 percent open, confirm that Sluice Gate 8 is open 100 percent, and confirm that Sluice Gate 2 at Control Structure 243 is open 100 percent.
13	8, 15	Track the direction of the storm on radar.
During Wet Weather Event		
13	8, 15	Watch Site 12 level, normal dry weather flow is 0 feet. Ranges are 0.5 feet to 1.5 feet low impact, 1.5 feet to 4 feet moderate impact, and over 4 feet is excessive impact.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
13	8, 15	Watch the level at Front Street normal dry weather is 1.2 feet and the overflow weir to the tunnel is at 4.2 feet.
13	8, 15	Concentrate on keeping the level low at Control Structure 44, which has limited storage (3.8 million gallons). Close Sluice Gates 5 and 6 at Control Structure 45, which has large storage (66 million gallons).
13	8, 15	If there is no flow at Control Structure 243, start opening Sluice Gates 5 and 6 - 3 percent to avoid plugging the bar screens at Control Structure 243. If levels at Control Structure 243 are high (over 10 feet), make small limited adjustments.
13	8, 15	Remember there is a 3 to 4 minute delay between opening a gate at Control Structure 45 and flow reaching the Control Structure 243 channel. Control Structure overflow level is at 41.4 feet. Control Structure 243 overflow is at 14.1 feet.
13	8, 15	Continuously monitor rain gauges, radar, and levels at Control Structure 45, Control Structure 44, Control Structure 243, Site 12, Front Street, St. Paul Blvd. Interceptor, and FEV.
13	8, 15	Contact Collection Operations for recommendations or investigation of alarms or problems. Check the "Who To Call" dispatcher list.
After Wet Weather Event		
13	8, 15	Check Site 12 level - this is the best indicator of any inflow to the tunnel.
13	8, 15	When Control Structure 45 level gets low (10 feet) increase flow to 50 to 60 mgd to scour grit out of the tunnel.
13	8, 15	Return gates to their normal positions. Sluice Gates 1 through 4 - 100 percent open, Sluice Gates 5 and 6 - 5 percent open.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
13	8, 15	Contact Collection Operations for recommendations or investigation of alarms or problems. Contact collection operations and plant operations with questions or problems experienced. Check the "Who To Call" dispatcher list.

WHY DO WE DO THIS?
To eliminate overflow to the river. To prevent surcharge of the surface sewers. To control flows to FEV. To control levels at Control Structure 243.
WHAT TRIGGERS THE CHANGE?
When flow occurs into structure (by level indicators).
WHAT CAN GO WRONG?
Hydraulic failure, communication failure. Excessive flow can release overflow at Control Structure 243. Storm exceeds capacity.

SECTION 22 - JEWEL STREET

22.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
	· 2 Sluice Gates · 1 Hydraulic Unit · 1 Level Meter · 1 Relief to Seneca Norton Tunnel

22.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
11	11, 8	Confirm both 42-inch and 72-inch sluice gates are open.
During Wet Weather Event		
11	11, 8	Flows from the east side trunk sewer can be diverted into the Seneca Norton Tunnel by closing the 42-inch gate. This is not a logical diversion during a wet weather event because of limited storage capacity in the Senaca Norton Tunnel (Control Structure 44). Monitor level at site to estimate flow expected at Seneca Norton Tunnel.
After Wet Weather Event		
11	11, 8	Monitor level to confirm the end of the event. Normal dry weather level is approximately 1 foot.

WHY DO WE DO THIS?
Monitor east side tunnel system levels.

WHAT TRIGGERS THE CHANGE?
WHAT CAN GO WRONG?
Gate failure, hydraulic failure, communication failure.

SECTION 23 - GLENWOOD AVENUE SCREENHOUSE

23.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
	· 2 Level Meters (Differential Only) · 2 Bar Screens · 5 Sluice Gates that Control Channels · Overflow to River · Relief to Lake Avenue Tunnel

23.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
11	Collection System Operations Group	Confirm that remote monitoring system is operational and everything appears to be normal. Report abnormalities or problems to Collection Operations.
During Wet Weather Event		
11	8, 11	If Plant Operations needs flow diverted out of the SPBI, contact Collections Operations. Collection Operations will manually close the north and south sluice gates at the screenhouse. This will divert the flow away from the SPBI and into the Lake Avenue Tunnel. The bar screens will be shut off during the flow diversion. Note: Refer to SOG for Control Structure 44 for more information regarding flow diversion.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
After Wet Weather Event		
11	8, 11	When Plant Operations decides that the flow should be diverted away from the Lake Avenue and back to the SPBI, Collection Operations will be contacted to open the north and south sluice gates and switch the bar screens to "auto."

WHY DO WE DO THIS?
To divert flow from surface system to tunnel system to reduce flow west through SPBI for the purpose of controlling conventional flow from SPBI at the plant (FEV), SPBI, Site 60/31, or when Control Structure 44 sees excessive flows.
WHAT TRIGGERS THE CHANGE?
When plant operations need to reduce uncontrolled gravity flows to plant.
WHAT CAN GO WRONG?
Gate failure, communication failure.

SECTION 24 - CLIFF STREET SCREENHOUSE

24.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
	· Sluice Gates that Control Channels · Overflow to River · Relief to Lake Avenue Tunnel · Gates

24.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
11	Collection System Operations Group	Confirm that remote monitoring system is operational and everything appears to be normal. Report abnormalities or problems to Collection Operations.
During Wet Weather Event		
11	8, 11	If Plant Operation needs flow diverted out of SPBI, contact Collection Operations. Collection Operations will close both east and west side sluice gates manually at the screenhouse. The bar screens will be shut off during the flow diversion.
After Wet Weather Event		
11	8, 11	When Plant Operations decides that the flow should be diverted away from the Lake Avenue and back to the SPBI, Collection Operations will be contacted. The sluice gates will be opened and the bar screens will be switched to "auto."

SECTION 24 (Continued):

WHY DO WE DO THIS ?
To divert flow from surface system to tunnel system to reduce flow west through SPBI for the purpose of controlling conventional flow from SPBI at the plant (FEV), SPBI, 60/31, or when Control Structure 44 sees excessive flows.
WHAT TRIGGERS THE CHANGE?
When plant operations need to reduce uncontrolled gravity flows to plant.
WHAT CAN GO WRONG?
Gate failure, communication failure.

SECTION 25 - GENESEE RIVER INTERCEPTOR SHAFT NO. 1

25.1 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
13	8, 13	Check for alarms, failure, or abnormalities.
13	8, 13	Confirm that gate controllers are "enabled." Test remote operation of both sluice gates.
13	8, 13	Preset gate positions, S #2 (84") at 0 percent; S #1 (36") at 100 percent.
During Wet Weather Event		
13	8, 13	Monitor tunnel level. When level reaches 15 feet to 16 feet, its time to consider releasing some flow. When the level reaches 20 feet, the stored flow has reached the invert level of a 42-inch flap gate located at Plymouth Avenue and Doran Street. This could cause a surcharge and possibly flood out home basements. There is an emergency overflow to the river at GRI Shaft #2. The level of overflow at Shaft #1 is 32.9 feet.
13	8, 13	When tunnel is draining, open S #1 (36") 100 percent to prevent settling of grit. Note: The use of the 84-inch sluice gate (#2) should be limited to extreme storage only. The invert of S #2 (84") is 4.5 feet higher than the invert of S #1 (36"). The GRI tunnel was originally used as storage to prevent overflow to the Genesee River at Front Street. There is now relief to the State/Mt. Hope tunnel at Front Street, so control at GRI Shaft #1 is not as critical.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
After Wet Weather Event		
13	8, 13	Confirm levels, normal dry weather level is approximately 1.1 feet to 1.5 feet.
13	8, 13	Reset gate levels - Sluice Gate #1 (36") at 100 percent; Sluice Gate #2 (84") at 0 percent.

SECTION 26 - IRONDEQUOIT SHAFT NO. 5 (FORMERLY THOMAS STREET)

26.1 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
13	8, 13	Check for alarms, failures, or abnormalities.
13	8, 13	Confirm gate controllers are "enabled" and test remote operation of Sluice Gates Nos. 1 and 2.
13	8, 13	Do not operate the roller gate.
13	8, 13	Preset sluice gates to approximately 30 percent to 50 percent, depending on expected storm severity. Confirm roller gate is closed.
During Wet Weather Event		
13	8, 13	Monitor the level in the overflow chamber. Do not allow level to exceed 7 inches. (At 7 feet, the flow crests over the roller gate and enters Thomas Creek, ultimately impacting Irondequoit Bay.)
After Wet Weather Event		
13	8, 13	Reset sluice gates to approximately 10 percent. This allows normal groundwater to drain to Irondequoit Tunnel, but limits possibility of odors from tunnel.

WHY DO WE DO THIS?
To eliminate overflows to creeks, streams, bay, limit flows to Irondequoit Tunnel, prevent surcharge of surface sewers.
WHAT TRIGGERS THE CHANGE?
Rain (when flow enters tunnel).

WHAT CAN GO WRONG?
Gate failure, hydraulic failure, communication failure. Storm exceeds capacity.

SECTION 27 - CIPS (IRONDEQUOIT PUMP STATION)

27.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
	· 4 8-20 mgd Pumps · 5 50 mgd Pumps · 2 Air Oil Systems · 2 Vacuum Primers · 2 Bar Screens · 2 Grit Pumps · 2 Grit Classifiers · 1 Hydraulic System · 1 S&G Cross Conveyor · 1 S&G Incline Conveyor · 1 S&G Canister · 3 Turbine Generators · 2 Station Influent Gates (East and West Nos. 1 and 2) · 2 Isolation Gates for Wetwell Sluice Gate Nos. 1 and 10 (North and South) · 2 Exhaust Fans for Dry Wells · 1 Ozonation System · 1 Valve Chamber with Surge Relief · 1 Bubbler for Wetwell (Additional One Could Be in Service)

27.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
11	11, PWT	Check S&G canister, record quantity.
11	11, PWT	Observe conditions of conveyors, tracking of conveyors.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
13	I&E, M	Make sure anything inoperable is repaired.
		Record wetwell level.
During Wet Weather Event		
11	11, 11, PWT	Verify rag collection system is working.
11	11, 11, PWT	Empty canister if needed.
11	11, 11, PWT	Make round of station and record condition on check sheet.
13	11, 11, PWT	Observe wetwell level. Adjust pump rates to prevent overflow of Cross Irondequoit Tunnel while operating in conjunction with other tunnel sights and the FEV Treatment Plant. Cross Irondequoit Tunnel level and Culver-Goodman Tunnel level (upstream).
13	11, 13, PWT	If wetwell reaches 30-foot level, fans shut down on auto and ozone system needs to be put in "airprep" until wet well level lowers below 30 feet.
13	I&E, M	Repair failures if needed.
After Wet Weather Event		
13	11, 13, PWT	Observe conditions of screens, belts, and dumpsters.
13	11, 13, PWT	Record debris in dumpster.
13	11, 13, PWT	Repair any failures. Hose floor and screens.

WHY DO WE DO THIS?
To balance tunnel levels in system while holding FEV treatment plant flows at desirable maximum levels.
WHAT TRIGGERS THE CHANGE?
High flow.

WHAT CAN GO WRONG?
Equipment failures of equipment on equipment list.

SECTION 28 - STRUCTURE 243

28.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
	· 6 Sluice Gates · 2 Bar Screens · 4 Level Meters · 1 Overflow Level Meter · 1 Flow Meter for Siphon · Generator (Powers Control Structure 243 and 44) · 1 Conveyor · 2 Dumpsters

28.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
13	8, 11	Determine if siphon is full or empty (i.e., are Control Structure 46 gates closed and is Control Structure 46 full)?
13	8, 11	Confirm that at least one channel is open at Control Structure 243. Normal operation is both channels are open (SG's 3, 4, 5, and 6 open).
13	8, 11	Check condition of bar screens and conveyor.
13	8, 11	Confirm that north bridge conduit is open (SG 8 at Control Structure 45 and SG 2 at Control Structure 243 must be open).
13	8, 11	Check position of level meters.
13	8, 11	Check dumpster levels (call operators on duty).

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
During Wet Weather Event		
13	8, 11	If siphon is empty, levels #1 and #3 should be kept near 5 feet or below. If levels reach 8 feet or 9 feet, air pockets can build up in the siphon tunnel and the resulting air release can blow open the access hatches at Control Structure 243. Overflow level at Control Structure 243 is 14.1 feet at level #1 or #3. If channel levels #1 and #3 are 12 feet or higher, open SG's at Control Structure 44 and 45 in small increments (approximately 3 percent to 5 percent). Remember there is a 3 to 4 minute delay between the time a sluice gate is moved at Control Structure 45 and the time the channel level at Control Structure 243 changes.
13	8, 11	Report any alarms or abnormalities to Collection Operations group.
13	8, 11	Check the dispatcher's "Who To Call" list.
13	8, 11	Watch levels in dumpsters, empty with Vactor if needed. (Call operators.)
After Wet Weather Event		
13	8, 11	Confirm Control Structures 44 and 45 are drained.
13	8, 11	Check level #1 at Site 31 - 0 feet indicates no more flow is entering the Seneca/Norton Tunnel.
13	8, 11	Check level #1 at Site 12 - 0 feet indicates no flow is entering the Lake Avenue Tunnel.
13	8, 11	Check gates at Front Street and Malvern Street. Gates should be open 100 percent.
13	8, 11	Confirm that flow is not being diverted into the tunnel at Cliff Street Screenhouse or Glenwood Avenue Screenhouse.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
13	8, 11, ROC Team	Empty dumpsters.

WHY DO WE DO THIS ?
Screen flow going into (7-foot) siphon tunnel.
WHAT TRIGGERS THE CHANGE?
When flow arrives (by level indication).
WHAT CAN GO WRONG?
Bar screens plug (broken rakers, etc.). Communication failure, conveyor problems. Excessive release at Control Structure 44 and/or 45 causes overflow to river.

SECTION 29 - INFLUENT DISTRIBUTION

29.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
	· Sluice Gates 1, 2, 72″ Gates (East and West Conventional) · 5 CIPS - 96″ (Goes to ATF Direct) · 6 CIPS - 60″ (Goes to Conventional Side) · 3 Direct 102″ · 4 West + Structure 46 102″ · Siphon Drain Pumps (Sluice Gate #4 Line) · 8-Foot Distribution Wall · Level Meter · Carbon Fan and Tower · CIPS Distribution Gates · 42″ Gate · 60″ Gate

29.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
13	11	The day before the event, check gate operation (Sluice Gates 1 and 2), one in remote, one in off/local, to guard against both gates closing in the event of a power failure; Sluice Gate 6 opened (until 130 mgd); Sluice Gate 5 open after 130 mgd to desired amount; Sluice Gates 3 and 4 check for position.
11	11, PWT	Gate positions, level.
11	11, PWT	Flows, levels.
	I&E, M	As needed, repair.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
During Wet Weather Event		
13	11	Maintain desired conventional flow Sluice Gates 1 and 2 to east and west side; 180 mgd ± 30 mgd dependent on plant conditions. Adjust 5 and 6 gates by flow from CIPS. Control Structure 46 from convention ATF if conventional flow from SPBI is enough for convention flow (60" interceptor).
13	11, PWT	Flows from CIPS, St. Paul, 46 to conventional and ATF. Level in distribution. Gate positions.
	I&E, M	As needed.
After Wet Weather Event		
13	11	Readjust Sluice Gates 1 and 2 for even east and west conventional flows. As flow drops and we reach 200 mgd ± 30 mgd, go back to conventional plant.
13	11, PWT	Monitor flows, levels.
11	11, PWT	Pump out Sluice Gate 4 line after use. (Siphon pumps).
	I&E, M	Repair anything that failed.

SECTION 30 - FRONT STREET DIVERSION

30.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
	· 2 Level Meter (Front Street Central Avenue) · Hydraulic Unit · 1 Sluice Gate · Overflow to River · Relief to Lake Avenue Tunnel

30.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
11	8, 11	Check remote monitoring system. Report problems or abnormalities to Collections Operations. Confirm the gate controller is enabled. Test remote operation of the sluice gate. Reset sluice gate to 100 percent.
During Wet Weather Event		
11	8, 11	If Plant Operations needs flow diverted out of the SPBI, close the sluice gate. This will divert the flow into the Lake Avenue Tunnel. Normal dry weather level is approximately 1.2 feet. Sewer relieves to the Lake Avenue Tunnel at 4.2 feet. Sewer overflows to the river at 8 feet. Note: Refer to SOG for Control Structure 45 for more information regarding flow diversion.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
After Wet Weather Event		
11	8, 11	When Plant Operations wants flow diverted away from the Lake Avenue Tunnel and back into the SPBI, open the sluice gate to 100 percent.

WHY DO WE DO THIS?
To divert flows from the surface system to the tunnel system. This reduces the uncontrolled flow to the plant and allows for storage of excessive flow.
WHAT TRIGGERS THE CHANGE?
When Plant Operations need to reduce uncontrolled gravity flows to the plant.
WHAT CAN GO WRONG?
Gate failure, communication failure, hydraulic failure.

SECTION 31 - MALVERN STREET DIVERSION

31.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
	· Hydraulic Unit · 1 Sluice Gate · 1 Level Meter for West Side Trunk Sewer · 2 Reliefs to Lake Avenue Tunnel

31.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
11	8, 11	Check remote monitoring system. Report problems or abnormalities to Collections Operations. Confirm the gate controller is enabled. Test remote operation of the sluice gate. Reset sluice gate to 100 percent.
During Wet Weather Event		
11	8, 11	If Plant Operations needs flow diverted out of the SPBI, close the sluice gate. This will divert the flow into the Lake Avenue Tunnel. Normal dry weather level is approximately 1 foot. Sewer relieves to the Lake Avenue Tunnel at 4.2 feet. Note: Refer to SOG for Control Structure 45 for more information regarding flow diversion.
After Wet Weather Event		
11	8, 11	When Plant Operations wants flow diverted away from the Lake Avenue Tunnel and back into the SPBI, open the sluice gate to 100 percent.

SECTION 31 (Continued):

WHY DO WE DO THIS ?
To divert flows from the surface system to the tunnel system.
WHAT TRIGGERS THE CHANGE?
When surface system is up. When plant operations need to reduce uncontrolled gravity flow to the plant by diverting flow into the Lake Avenue Tunnel.
WHAT CAN GO WRONG?
Gate failure, communication failure, hydraulic failure.

SECTION 32 - DENSMORE DIVERSION

32.1 Unit Processes and Equipment List

UNIT PROCESS	EQUIPMENT
	· 2 Sluice Gates · 2 Roller Gates · 2 Flow Meters (Flume to Irondequoit Tunnel) · 1 Flow Meter (Influent from Norton Street Relief Tunnel) · 1 Level Meter (Densmore Creek) · 1 Level Meter (Influent Chamber from Norton Street Relief Tunnel) · 1 Hydraulic Unit · 1 Overflow to Densmore Creek (Ultimately Irondequoit Bay)

32.2 Wet Weather O&M Practices

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
Before Wet Weather Event		
11	8, 11	Check for alarms, failures, or abnormalities.
11	8, 11	Confirm gate controllers are "enabled" and test remote operation of sluice gates and at least one of the roller gates.
11	8, 11	Preset sluice gates to 50 percent.
11	8, 11	Preset one or both roller gates to 10 percent.
During Wet Weather Event		
11	8, 11	Monitor level - if level reaches 4 feet, open sluice gates further to prevent overflow.

WHO DOES IT?		WHAT DO WE DO?
SUPERVISORY	IMPLEMENTATION	
11	8, 11	If this level reaches 7 feet, sewage flows over the weir and enters Densmore Creek, ultimately impacting Irondequoit Bay.
11	8, 11	During unusually heavy downpours, one or both roller gates should be opened to 50 percent to prevent the creek flow from rising over the weir height and entering the Irondequoit Tunnel.
After Wet Weather Event		
11	8, 11	Reset both sluice gates to approximately 10 percent to allow drainage of groundwater and limit odors from tunnel.
11	8, 11	Reset both roller gates to 8 percent or less to prevent entry to chamber by unauthorized persons

WHY DO WE DO THIS?
To eliminate overflows to creeks, streams, and Irondequoit Bay. Limit flows to Irondequoit tunnel. Prevent surcharge to surface sewers.
WHAT TRIGGERS THE CHANGE?
When flow enters tunnel. Rain.
WHAT CAN GO WRONG?
Gate failure, hydraulic failure, communication failure. Storm exceeds capacity.

SECTION 33 - GLOSSARY

120 Flow	A 120" bypass line around the plant. 120 flow receives ATF (screening) and NAG (grit removal), scum removal, and chlorination.
AGF	Aerated Grit Facility
ATF	Additional Treatment Facility
CI	Cross Irondequoit (Pump Station)
CIPS	Cross Irondequoit Pump Station
CSOAP	Combined Sewer Overflow Abatement Plan
DAQ	Data Acquisition System Used to Control Plant Operations
FEV	Frank E. Van Lare Wastewater Treatment Plant
GRI	Genesee River Interceptor
IBPS	Irondequoit Bay Pump Station
MGD	Million Gallons per Day
MLSS	Mixed Liquor Suspended Solids
N's	East Primaries (N Stands for "New" Primaries)
NAG	Non-Aerated Grit Removal Facilities
NPDES	National Pollutant Discharge Elimination System - The system under which the wastewater treatment plant and CSO discharge permits are issued.
P's	West Primaries
RAS	Return Activated Sludge
ROC	Rochester Operations Center
SOG	Standard Operating Guideline
SPBI	Saint Paul Boulevard Interceptor
SYMAX	Computer System That Monitors Structure Alarms
SYVIEW	SYMAX View Screen
Split Flow	Flow which receives preliminary treatment, primary treatment, and disinfection, but bypasses secondary treatment.

SECTION 33 (Continued):
Personnel Classifications

Tunnels Persons	Collection System Operating Staff
I&E	Instrumentation and Electrical Personnel - Perform electrical and instrumentation maintenance and repair.
M	Mechanical Personnel - Perform equipment maintenance and repair tasks.
PCO	Group 13 - Process Control Operator. Responsible for scheduling, report preparation, process adjustments and modifications, overseeing projects.
PPA	Group 8 - Pump and Process Assistant. Assists Group 11 personnel. Runs and cleans process equipment and pumps. Collects samples.
PPO	Group 11 - Pump and Process Operator. Oversee process systems and equipment, opertae control room, adjust flow rates, troubleshoot processes, and assist with PPA and PWT tasks.
PWT	Pure Waters Technician - Performs technical work including lab analyses, computer work, recordkeeping, and PPA tasks.
Senior Managers	Group 16 - Overall responsibility for operations, personnel, and major projects.