

**PROCESS CONTROL PLAN**

Description		Effective Date:	Control Plan No.	EMS Representative	V-P Manufacturing	Director, Technical Services						
<b>Waste treatment</b>		DRAFT Feb. 23, 2001	CP80			Manager, Chemical Process Engineering						
Plant		Industrial Code	Plant Superintendent		Maintenance Manager							
Oper. Ref. No.	Process Operation Description	Equipment, Tools, Fixtures for Operation	Characteristics		Critical Char. < >	Responsibility	Procedure					
			Product	Process			Product / Process Specification & Tolerance Range	Evaluation Measurement Technique	Sample		Control Method and Quality Record	Reaction Plan
								Size	Freq.			
00	Waste treatment START-UP									WTD-002 General WT		
01	Pit # 1 Neutralization of paint line waste	Mixer Acid addition pump and feed tank		level		Waste treat Operator	ensure adequate acid supply	visual, manual fill of acid supply		once/shift	WTD-002 General WT	fill acid supply tank when level is low
	Pit # 1 Neutralization of paint line waste	pH controller		pH controller adds acid to reduce pH		Waste treat Operator	< 8 units	visual, manually verify pH		Once per shift	WTD-002 General WT	
02	Pit # 2 Holding weak alkaline solution dumps or spills			manual transfer		Waste treat Operator	pH 3-8	Manual sample		prior to processing	WTD-002 General WT	if pH > 8.0 add acid to reduce if pH < 3.0 add lime to increase
03	Pit # 3 Emergency neutralization back up pit	22" radial impeller		manual transfer			pH 3-8	Manual sample		prior to processing	WTD-002 General WT	if pH > 8.0 add acid to reduce if pH < 3.0 add lime to increase
04	Pit #4 Holding weak acidic solutions	Air operated S.S. diaphragm pump		manual transfer			pH 3-8	Manual sample		prior to processing	WTD-002 General WT	if pH > 8.0 add acid to reduce if pH < 3.0 add lime to increase
05	Pit#1 to #4	pits used as holding capacity		level		Waste treat Operator	Full	Visual			WTD-002 General WT	See RP#74
06	Pit # 5 Mixed stream collection pit	Mixer 15" radial impeller		mixing defoamer addition		Waste treat Operator		visual inspection of general pit foam condition			WTD-002 General WT automatic defoamer addition by timer, manual push button for additional injection	use manual pushbutton if not in control
07	Pit # 6A Main treatment pit	Mixer 22" radial impeller		pH		Waste treat Operator	9.5 - 10.5	CPVC chamber containing a pH electrode.		Ongoing	WTD-002 General WT pH alarm if pH below 7.5 WTD-004 Probe Cleaning	See RP #98 and #99 in RP binder located in the A.A. Room
08	Pit # 6B Secondary treatment pit	Mixer 22" radial impeller Air line from air blower		pH		Waste treat Operator	9.5 - 10.5	Same CPVC chamber containing a pH electrode.		Ongoing	WTD-002 General WT pH alarm if pH above 11 WTD-004 Probe Cleaning	See RP #98 in RP binder located in the A.A. Room

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08	Emptying bags of lime into bucket elevator system.	Bag loading hopper with vibrator at ground level. Bucket elevator Dust collector				Waste treat Operator	45-50 rpm	Verify feed screw is operating			WTD-002 General WT	See RP #85
09	Lime slurry system	Level control system		Level		Waste treat Operator	Approximatly 6%	Metered into a water mixing tank		Ongoing	WTD-002 General WT High and low level alarms	verify concentration
10	Lime slurry transfer to pit 6A	Moyno progressive cavity pump.		Flow		Waste treat Operator	Flow rate 0-5 rpm Discharge pressure 50 psi				WTD-002 General WT	See RP #85
11	Pit # 7 Solution transfer	Electric submersible pump				Waste treat Operator	0 - 110 gpm				WTD-002 General WT Inability to maintain level Pumps all the time	Call Maintenance Replace pump Clean out lines
12	Polymer system A make up solution	Volumetric helix powder feeder with hopper. Wetting drum, spreader tray mixing box, eductor, mixing tank.				Waste treat Operator	0 - 0.5% Minimum mix time of 45 minutes	30 - 50 s polymer feed			WTD-002 General WT	
13	Polymer system A Feeding polymer to the clarifier	Feed tank. Metering pump				Waste treat Operator	Flow rate of 0- 2 U.S. gpm Discharge pressure of 75 psig	Verify maximum polymer feed rate		Once per shift	WTD-002 General WT	See RP #78 in RP binder located in the A.A. Room
14	Polymer system B Feed polymer to the press	Pre-mix tank, transfer pump and working tank				Waste treat Operator					WTD-002 General WT	
15	Polymer system C	Mix tank, mixer, feed pump.				Waste treat Operator	250 ml of liquid polymer added to one tank of water				WTD-002 General WT	

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16	1st stage flocculation and settling 50:50 blend of polymer A and B added at the overflow.					Waste treat Operator					WTD-002 General WT	
17	Overflows into flocculation tank	Overflow weir		Polymer addition at weir		Waste treat Operator		Visual as required			WTD-002 General WT	
18	Flocculation tank Polymer A	Variable speed air operated mixer				Waste treat Operator	Drop test 30 -90 s	Verify polymer quantity drop time			WTD-002 General WT	See RP #80 in RP binder located in the A.A. Room
19	Lamella Gravity Settler	Inclined plate clarifier		Flow rates		Waste treat Operator	40 - 200 US gpm  no visible solids in overflow	visual inspection  Verify visible overflow clarity		3t/shift	WTD-002 General WT	See RP #81  See RP #79
	Lamella Gravity Settler			pH		Waste treat Operator	9 - 10.5	Continuous pH monitor verify with manual sample		2 t/shift	WTD-002 General WT	WTD-004 Probe Cleaning
20	Sludge Transfer	Two air operated diaphragm pumps with surge suppressor				Waste treat Operator		Visual check for solids quality			WTD-002 General WT Manually controlled	See RP #82
21	2nd Stage Flocculation and Dewatering Flocculation Tank Polymer B	Variable speed mixer				Waste treat Operator		Visual verification of floc size			WTD-002 General WT	See RP #80 in RP binder located in the A.A. Room

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22	Magnum Press Polymer B added to sludge feed.	Polyester screen width 40" Top length 33' Bottom length 46' 9"				Waste treat Operator	Spiral weave (no seam) Porosity 300-400 cfm Motor rating 2-3 horsepower Spray water flow 35 - 50 gpm Spray water pressure 150 psig Air flow @ 100 psig 1.0 scfm Main air pressure 100 psig High pressure section weight 3000 lbs	Visual verification of floc de-watering & collection on screen			WTD-002 General WT	See Magnum Press Reaction Plans RP #86 - #97 depending on problem  Reaction Plan binder is located in the A.A. Room
	Magnum Press			Upper and Lower pneumatic screen tension		Waste treat Operator	Minimum 20 psig Maximum 80 psig					
	Magnum Press			Hydraulic Pressure		Waste treat Operator	Minimum 200 psig Maximum 1500 psig Tension on lower screen should never be less than the upper screen.					
23	Sludge removal	Sludge bin	Sludge pickup			Waste treat Operator	approx. 3/4 filled	Visual check of level				Notify disposal company for pickup
		Log book		Pick up service quality		Waste treat Operator		Keep track of solids weight			Log book	

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24	Obtain sample from lamella overflow					Waste treat Operator			200-250 ml	Once per shift		
25	Obtain sample from external sewer manhole					Chemical Co-ordinator			200-250 ml	Once per shift		
26	Test sample for Fe content	Atomic Absorption unit		Concentration	Yes	Chemical Co-ordinator	< 50 ppm			Daily	C203	See RP #75 in RP binder in A.A. Room
27	Test sample for Zn content	Atomic Absorption unit		Concentration	Yes	Waste treat Operator	< 2 ppm			2 times/shift	C202	See RP #75 in RP binder in A.A. Room
28	Test sample for Ni content	Atomic Absorption unit		Concentration	Yes	Chemical Co-ordinator	< 2 ppm			Daily	C204	See RP #75 in RP binder in A.A. Room
29	Test sample for Pb content	Atomic Absorption unit		Concentration	Yes	Chemical Co-ordinator	< 1 ppm			Daily	C205	See RP #75 in RP binder in A.A. Room
30	Test sample for Cr content	Atomic Absorption unit			Yes	Waste treat Operator	< 2 ppm			2 times/shift	C200	See RP #75 in RP binder in A.A. Room
31	Test sample for Co content	Atomic Absorption unit		Concentration	Yes	Chemical Co-ordinator	< 5 ppm			Daily	C206	See RP #75 in RP binder in A.A. Room
32	Test sample for SO4 content	Hach kit colorimeter		Concentration	Yes	Chemical Co-ordinator	TBD	EGL-017	5 ml diluted to 100 ml in volumetric flask.	Daily	C207	See RP #77 in RP binder in A.A. Room
33	Test sample for suspended solids	Turbidity meter			Yes	Chemical Co-ordinator	< 350 ppm			Daily	C208	See RP #75
34	Test sample for PO4 content	Hach kit		Concentration	Yes	Waste treat Operator	< 30 ppm			2 times/shift	C201	See RP #76 in RP binder in A.A. Room
35	Test sample for pH	pH meter			Yes	Waste treat Operator	pH 9-10.5			2 times/shift	C209	See RP #75

