

APPENDIX A

PROCESS CONTROL TESTS AND CALCULATIONS

The following Process Control Tests and Calculations chart (page 19) was obtained, with permission, from the University of Florida TREEO Center's *Sequencing Batch Reactor Operations and Troubleshooting Manual*.

Acronyms Used:

COD	Chemical Oxygen Demand
BOD	Biochemical Oxygen Demand
CBOD	Carbonaceous Biochemical Oxygen Demand
TOC	Total Organic Carbon
MLSS	Mixed-Liquor Suspended Solids
MLVSS	Mixed-Liquor Volatile Suspended Solids
MCRT	Mean Cell Residence Time
WAS	Waste-Activated Sludge
F/M	Food-to-Microorganism Ratio
SSV	Settled-Sludge Volume
TSS	Total Suspended Solids
VSS	Volatile Suspended Solids
DOB	Depth of Blanket
SVI	Sludge Volume Index
NO ₃ -N	Nitrate-Nitrogen
NO ₂ -N	Nitrite-Nitrogen
NH ₃ -N	Ammonia-Nitrogen
PO ₄ -P	Phosphate-Phosphorus
OUR	Oxygen-Uptake Rate
SOUR	Specific Oxygen-Uptake Rate
ORP	Oxidation Reduction Potential
mg/L	milligram per liter

PROCESS CONTROL TESTS AND PROCESS CALCULATIONS				
	DATA REQUIRED/ ANALYSIS			UNIT
ORGANIC LOADING				
COD	Colorimetric analysis			mg/L
BOD, CBOD	Bioassay			mg/L
TOC	Colorimetric analysis			mg/L
SOLIDS INVENTORY				
MLSS	Gravimetric analysis			mg/L
MLVSS	Gravimetric analysis			mg/L
Centrifuge Spin	Volumetric analysis			%
SOLIDS INVENTORY CALCULATIONS				
MCRT	MLSS	WAS TSS	WAS Flow	days
Sludge Age	AT%	CL%	WAS%	days
F/M	MLVSS	#BOD/COD/day		#BOD/day/#MLVSS
SLUDGE QUALITY				
SSV _x	Physical analysis			ml/L or %
SSV ₅	Physical analysis			
Supernatant TSS or Turbidity	Gravimetric or scattered light			mg/L or NTU
DOB	Physical measurement			ft
Microscopic Analysis	Visual analysis			N/A
SLUDGE QUALITY CALCULATIONS				
SVI	SSV ₃₀	MLSS		ml/g
NUTRIENTS				
NO ₃ -N, NO ₂ -N	Colorimetric or electrometric analysis			mg/L
NH ₃ -N	Colorimetric or electrometric analysis			mg/L
PO ₄ -P	Colorimetric analysis			mg/L
TROUBLESHOOTING ANALYSES				
OUR	Analysis			mg O ₂ /L/hr
SOUR	OUR	MLVSS		mg O ₂ /g/hr
pH	Electrometric analysis			SU
ORP	Electrometric analysis			mV
Alkalinity	Titrimetric analysis			mg/L