

Background Information for Treatment Plant Condition Assessment

The Building and Structural assessment was completed by Jeff Klawes, a structural engineer by training, in late June and early July.

The Mechanical assessment was completed by Dan McAdams, Mechanical Maintenance Supervisor; Steve Reusser; Operations Engineer; Paul Nehm, Director of Operations and Maintenance; and Joe Lynch, Senior Maintenance Supervisor at a meeting on June 23. I participated in this meeting as the note taker. A consensus rating was arrived at for each asset and noted on a spreadsheet. The spreadsheet was projected on an overhead screen for all to see. The agreed ratings along with any notes were typed in the spreadsheet as the meeting progressed.

The Electrical assessment was completed by Tom Werner; Electrical Maintenance Supervisor; Paul Nehm, Director of Operations and Maintenance; Dave Lundey, Electrical Construction Manager and a former electrical maintenance supervisor; John Bembinster, Electrical Engineer; and Mike Simon, Assistant Chief Engineer, at a meeting on June 25. I participated in the first half of this meeting as the note taker. Dave Lundey took over as the note taker for the second half of the meeting. A consensus rating was arrived at for each asset and noted on a spreadsheet. The spreadsheet was projected on an overhead screen for all to see. The agreed ratings along with any notes were typed in the spreadsheet as the meeting progressed.

The raters were asked to provide a condition rating for each asset considered, and an estimated year when major repair and replacement of the asset would be needed. These were the two pieces of information that Steve McGowan had indicated would be most useful for incorporating into the master planning process. Steve also reviewed a draft of the spreadsheet breakdown and the rating scales to be used in early June. The following scale was used for the condition rating:

Rating Scale

- 1- Excellent
- 2-Good
- 3-Adequate
- 4-Poor
- 5-Very Poor

The following scale was used for estimating when major rehabilitation and replacement was needed:

Year Major R & R is needed.

Period A	1-5 years	2011-2015
Period B	6 - 10 years	2016-2020

Period C	11-15 years	2021-2025
Period D	16-20 years	2025-2030
Period E	20-30 years	2040-2050
Period F	30-40 years	2050-2060

For the purposes of this assessment, work that would typically be included as part of our annual operations and maintenance budget was not considered major rehabilitation or replacement. For instance, the District funded replacement of many building roofs at the plant in past years out of the O & M budget. The same work needed again in 20 to 30 years was not considered major rehabilitation or replacement for the purposes of the condition assessment.

As a starting point for the asset breakdown we matched the processes used in the Master Planning TM 1. We then broke down the assets that supported particular processes into assets of a reasonable size and grouping for rating.

That covers the significant aspects of the condition assessment that come to my mind. If something has been overlooked or you have any further questions, please contact me.

NSWTP Facility Condition Assessment

Facility	Asset	Building and Structural		
		Condition Rating	When Major R & R is Needed	Notes
HEADWORKS				
Headworks	Structure	1	F	Construction: 2005
Influent Flowmeters	Influent Metering			
Influent Sampling	Influent Sampling			
Fine Screening System	Headworks Screening			
Grit Processing System	Grit Removal			
Septage Receiving Station	Septage Receiving			
LIQUID PROCESS				
Flow Splitter	Flow Splitting to East and West Plants	1	F	Construction: 2005
Primary Settling Facilities	Primary Clarification			
	Primary Tanks 1-2	3	C	Construction: 1935; C- Rehab exposed concrete
	Primary Tanks 5-8	3	C	Construction: PT5:1948, PT6-8:1961; C- Rehab exposed concrete
	Primary Tanks 9-16	2	E	Construction: 1973
	Primary Tanks 17-21	2	E	Construction: 1973
East Aeration (East Blowers) (motors)	Blower Building 1 (E. Blower Bldg)	3	F	Construction: 1935, 1948, 1961
	Blower 1			
	Blower Engine			
	Blower 2			
	Blower 3			
	Blower 4			
West Aeration (West Blowers)	Main Blower control panel			
	Blower Building 2 (W. Blower Bldg)	2	F	Construction: 1983
	Blowers 1-3			
Aeration Basins				
East Aeration Basin	Aeration Tanks			
	Aeration Tanks 1-18	2	F	Construction: AT1-4:1935, AT5-6:1938, AT7-8:1948, AT9:1961, AT10-15:1973, AT16-18:1983
	ATs 1-6 Diffuser systems			
	ATs 7-18 Diffuser systems			
	AT Mixers/pumps			

NSWTP Facility Condition Assessment

Facility	Asset	Building and Structural		
		Condition Rating	When Major R & R is Needed	Notes
West Aeration Basin	Aeration Tanks 19-30 Diffuser systems AT Mixers/pumps	2	F	Construction: 1983
Secondary Clarification Facilities	Secondary Clarification			
East Plant Secondary Clarifier	Final Tanks 1- 11	2	E	Construction: FT1-2:1935, FT3:1938, FT4:1948, FT5-6:1961, FT7-11:1973
West Plant Secondary Clarifier	Final Tanks 12-19	2	F	Construction: 1983
RAS/WAS	Aeration (WAS and RAS)			
East RAS/WAS	East Aeration (WAS and RAS)			
	ACB 1	3	E	Construction: 1935
	ACB 2	3	E	Construction: 1948
	ACB 3	2	F	Construction: 1973
	Piping			
West RAS/WAS	West Aeration (WAS and RAS)			
	ACB 4	2	F	Construction: 1983
	WAS			
	RAS			
	Piping			
U.V. Disinfection Facilities	UV Disinfection			
Plant Effluent Pumping Facilities	Effluent Pump House	2	F	Construction: 1983,1996
Effluent Storage Facilities	Effluent Storage Tanks	2	F	Construction: 1957, 2005
	Effluent Overflow Structures (plant and lagoon)	2	F	Construction: 1973, 1983, 1996, 2006
Effluent Pumps	Effluent Pumps			
	Motors			
	Effluent piping			
SOLIDS HANDLING & DISPOSAL PROCESS				
	Sludge Control Building 1	3	E	Construction: 1935, 1979
	Sludge Control Building 2	2	F	Construction: 1979, 2005
	Oil Storage Building	2	F	Construction: 1990
	Primary Sludge Pumping Station 1	2	F	Construction: 1961
	Primary Sludge Pumping Station 2	2	F	Construction: 1973
Gravity Thickeners	Primary Sludge Thickening Process (Gravity)			

NSWTP Facility Condition Assessment

Facility	Asset	Building and Structural		
		Condition Rating	When Major R & R is Needed	Notes
Dissolved Air Floatation Thickeners	Primary Sludge Thickeners 1 & 2	2	F	Construction: 1961
	Thickened PS Pumping			
	WAS (DAF) Thickening			
Dissolved Air Floatation Thickeners	DAF Thickeners 1 & 2	2	F	Construction: 1973, 1984
	Thickened WAS pumps			
Anaerobic Digesters	DAF Bldg	2	F	Construction: 1984
	Sludge Digestion (Anaerobic) Tanks, Pumps, Mixers			
	Digester 1	2	D	Construction: 1935, 1979
	Digester 2	2	D	Construction: 1935, 1979
	Digester 3	3	D	Construction: 1938
	Digester 4	2	F	Construction: 1979
	Digester 5	2	F	Construction: 1979
	Digester 6	2	F	Construction: 1979, 2005
	Digester 7	1	F	Construction: 2005
	Mixers 1-3			
	Gas Mixing Compressors for Dig 4-7			
	Heat Exchanger			
	Dig 1-3 spiral HEXs			
	Dig 4-6 spiral HEXs			
Dig 7 spiral HEX				
Lackey HEXs				
Digester Gas Storage	Sludge Digestion (Anaerobic) Tanks, Pumps, Mixers			
Digester Sludge Storage Tanks	Sludge Digestion (Anaerobic) Tanks, Pumps, Mixers			
	Storage Tanks 1 and 2	3	D	Construction: 1935
Gravity Belt Thickener (GBT)	Sludge Digestion (GBT)			
	GBT 1			
	GBT 2			
	GBT Polymer System			
	GBT Building	2	F	Construction: 1988
Dewatering Process (Centrifuge)	GBT Polymer Building	2	F	Construction: 1993, 2005
	Dewatering Process (Centrifuge)			
	Centrifuge Polymer System			
Dewatering Process (Centrifuge)	Dewatering Building	1	F	Construction: 2005
	Metrogro Storage and Pumping			
Metrogro Storage Tanks	Metrogro Storage Building & Equipment	1	F	Construction: 1993
	Metrogro Storage Tanks 1-3	1	F	Construction: 1993
	Mixers			
	Metrogro Storage Tanks Odor Control Beds			
Vehicle Loading Building		2	F	Construction: 1983, 1993

NSWTP Facility Condition Assessment

Facility	Asset	Building and Structural		
		Condition Rating	When Major R & R is Needed	Notes
	Pumps			
Biosolids End- Use	Biosolids End Use Facility	1	F	Construction: 2005
W2 system				
W3				
BB1 W3				
BB2 W3				
Plant Water System	W4 Water			

NSWTP Facility Condition Assessment

Facility	Asset	Building and Structural		
		Condition Rating	When Major R & R is Needed	Notes
Side Stream Phosphorus Removal	Ferric Chloride Vault	1	F	Construction: 1996
Engine Generators				
Control Panels				
Generators				
Gas Blending Process	Gas Control Building	1	F	Construction: 1993
Gas Treatment System (AFT)				
Process Hot Water System	Boiler Building	3	E	Construction: 1961
Boiler Building Boilers				
SCB2 Boilers				
Pumps, piping, JW, LOCW, and exhaust HEXs, etc.				
Metrogro Vehicles				
Nine Springs Power Distribution System				
Main Switchgear S1, inside Effluent Bldg				
Starter Panel M51, West Blower Bldg				
Starter Panel M71, Effluent Bldg				
Starters				
Effluent pump starter controls				
S141, East Blower Bldg, electric Blowers 4 &5, feed Blowers 2 &3				
Starter Panel S142, East Blower Bldg (Blowers 2 & 3)				
Switchboard 902, inside SCB2				
Service Switchgear H1				
Unit Substation U1, south of Gas Control Bldg		1	F	Construction: 1996
Unit Substation U2, west of FT 3				
Unit Substation U3A, outside SCB2, west of Dig 4 & 5				
Unit Substation U3B, outside SCB2, west of Dig 4 & 5				
Unit Substation U11, west of BB2				
Unit Substation U12, north of Effluent Pumphouse				
Unit Substation U13, west of Shop 1				
Unit Substation U14, Metrogro Pump Station				
Unit Substation U15, near PT 19		1	F	Construction: 1996

NSWTP Facility Condition Assessment

Facility	Asset	Building and Structural		
		Condition Rating	When Major R & R is Needed	Notes
Distribution feeders, 4.16 kV				
Process Control System				
Process Control Hardware				
Process Control software (Operating system[e.g., Windows NT], HMI, trending, driver, etc.)				
Process programming (control algorithms, control logic)				
Field wiring (control wiring)				
Fiber Optics infrastructure				
Nine Springs Grounds				
Roads		2,3	B-E	Total: 500,000 sf Construction: 24%-1983, 48%-1993, 28%-2005
Underground Piping at Nine Springs				
54" Primary Influent Line to east plant				
Badfish Creek Effluent Diversion				
Effluent pump discharge manifold				
Effluent meter vault				
BFC Forcemain				
Badger Mill Creek Effluent Diversion				
BMC Forcemain				
Telemetry System at Nine Springs Plant and Repeater Stations				
Operations Building		2	F	Construction: 1979, 1993, 2007
HVAC controls				
HVAC mechanical system				
Maintenance Shop 1		2	F	Construction: 1957, 1983, 1996
Maintenance Shop 2		2	F	Construction: 1983
Service Building		3	E	Construction: 1935, 1938, 1957
Storage Building 1		3	E	Construction: 1973
Storage Building 2		2	F	Construction: 1993
Storage Building 3		2	F	Construction: 1983, 2007

NSWTP Facility Condition Assessment

Facility	Asset	Mechanical		
		Condition Rating	Year Major R & R Needed	Notes
				Assessment performed 6/23/08
HEADWORKS				
Headworks	Structure			
Influent Flowmeters	Influent Metering	1	F	
Influent Sampling	Influent Sampling	1	B or C	
Fine Screening System	Headworks Screening	2	F	Maci pump, LiSeps and Lipactors will need replacement periodically, part of O & M budget.
Grit Processing System	Grit Removal	1	F	
Septage Receiving Station	Septage Receiving	1	F	Will likely replace/improve for performance reasons within 5-10 years
LIQUID PROCESS				
Flow Splitter	Flow Splitting to East and West Plants	1	F	
Primary Settling Facilities	Primary Clarification			
	Primary Tanks 1-2	3	A	Withdrawal valves and actuators, and collector drives need to be replaced in 5 yrs
	Primary Tanks 5-8	3	A	Withdrawal valves and actuators, and collector drives need to be replaced in 5 yrs
	Primary Tanks 9-16	3	A	Need new collector drives because we can't get parts
	Primary Tanks 17-21	2	D	Can still get parts
East Aeration (East Blowers) (motors)	Blower Building 1 (E. Blower Bldg)			
	Blower 1	2	D	
	Blower Engine	2	D	Overhauling engine in 2008
	Blower 2	2	D	Control panel issues, cover under electrical
	Blower 3	2	D	Control panel issues, cover under electrical
	Blower 4	2	D	
West Aeration (West Blowers)	Main Blower control panel			
	Blower Building 2 (W. Blower Bldg)			
	Blowers 1-3	3	C	Long lead time on parts, must make parts if needed. Silencers may need replacement.
Aeration Basins				
East Aeration Basin	Aeration Tanks			
	Aeration Tanks 1-18			
	ATs 1-6 Diffuser systems	1	E	
	ATs 7-18 Diffuser systems	4	A	
	AT Mixers/pumps	1	F	

NSWTP Facility Condition Assessment

Facility	Asset	Mechanical		
		Condition Rating	Year Major R & R Needed	Notes
West Aeration Basin	Aeration Tanks 19-30			
	Diffuser systems	4	A	
	AT Mixers/pumps	1	F	
Secondary Clarification Facilities	Secondary Clarification			
East Plant Secondary Clarifier	Final Tanks 1- 11	2	E	
West Plant Secondary Clarifier	Final Tanks 12-19	2	E	
RAS/WAS	Aeration (WAS and RAS)			
East RAS/WAS	East Aeration (WAS and RAS)			
	ACB 1	2	F	
	ACB 2	2	F	
	ACB 3	2	F	
	Piping	3	C	Erosion/corrosion of spiral wound steel pipe. Look at replacing.
West RAS/WAS	West Aeration (WAS and RAS)			
	ACB 4	2	F	
	WAS			
	RAS			
	Piping	4	C	Erosion/corrosion of spiral wound steel pipe. Look at replacing
U.V. Disinfection Facilities	UV Disinfection	2	F	Many electrical issues, mechanical stuff is fine
Plant Effluent Pumping Facilities	Effluent Pump House			
Effluent Storage Facilities	Effluent Storage Tanks	2	D	only mechanical equipment are the sluice gates
	Effluent Overflow Structures (plant and lagoon)			
Effluent Pumps	Effluent Pumps	2	E	
	Motors			
	Effluent piping	3	C	spiral wound steel piping has had leaks
SOLIDS HANDLING & DISPOSAL PROCESS				
	Sludge Control Building 1			
	Sludge Control Building 2			
	Oil Storage Building			
	Primary Sludge Pumping Station 1			
	Primary Sludge Pumping Station 2			
Gravity Thickeners	Primary Sludge Thickening Process (Gravity)			

NSWTP Facility Condition Assessment

Facility	Asset	Mechanical		
		Condition Rating	Year Major R & R Needed	Notes
Dissolved Air Floatation Thickener	Primary Sludge Thickeners 1 & 2	2	D	
	Thickened PS Pumping	1	D	
	WAS (DAF) Thickening			
	DAF Thickeners 1 & 2	3	D	Coating of thickener mechanisms budgeted for 2008
Anaerobic Digesters	Thickened WAS pumps	1	D	
	DAF Bldg	2	D	
	Sludge Digestion (Anaerobic) Tanks, Pumps, Mixers			
	Digester 1	1	E	
	Digester 2	1	E	
	Digester 3	1	E	
	Digester 4	1	E	
	Digester 5	1	E	
	Digester 6	1	E	
	Digester 7	1	E	
	Mixers 1-3			
	Gas Mixing Compressors for Dig 4-7	2	D	Having reliability problems, no redundancy, parts hard to get
	Heat Exchanger			
	Dig 1-3 spiral HEXs	1	F	
	Dig 4-6 spiral HEXs	1	F	
Dig 7 spiral HEX	1	F		
Lackeby HEXs	4	B	HEX-10 has holes in tubing, failing	
Digester Gas Storage	Sludge Digestion (Anaerobic) Tanks, Pumps, Mixers			
Digester Sludge Storage Tanks	Sludge Digestion (Anaerobic) Tanks, Pumps, Mixers			
	Storage Tanks 1 and 2	NA	NA	
Gravity Belt Thickener (GBT)	Sludge Digestion (GBT)			
	GBT 1	4	A	
	GBT 2	1	E	
	GBT Polymer System	1	D	
	GBT Building			
Dewatering Process (Centrifuge)	GBT Polymer Building			
	Dewatering Process (Centrifuge)	1	E	Move this to Dewatering Bldg.
	Centrifuge Polymer System	1	D	
Metrogro Storage Tanks	Dewatering Building	1	D	
	Metrogro Storage and Pumping			
	Metrogro Storage Building & Equipment	2	E	
	Metrogro Storage Tanks 1-3			
	Mixers	2	D	
	Metrogro Storage Tanks Odor Control Beds	4	A	Odor Control Beds in bad shape, still appear to be working
Vehicle Loading Building				

NSWTP Facility Condition Assessment

Facility	Asset	Mechanical		
		Condition Rating	Year Major R & R Needed	Notes
	Pumps	4	A	Vaughan pump to keep top well filled is obsolete and in poor shape
Biosolids End- Use	Biosolids End Use Facility	NA		
W2 system		2	E	
W3				
BB1 W3		3	C	
BB2 W3		2	E	
Plant Water System	W4 Water	2	E	PLC failures and pump control problems have occurred. Will likely want to change pump controls eventually.

NSWTP Facility Condition Assessment

Facility	Asset	Mechanical		
		Condition Rating	Year Major R & R Needed	Notes
Side Stream Phosphorus Removal	Ferric Chloride Vault	2	C	includes pumps and storage tank
Engine Generators		2	D	
Control Panels				
Generators				
Gas Blending Process	Gas Control Building	2	E	
Gas Treatment System (AFT)		1	E	
Process Hot Water System	Boiler Building			
Boiler Building Boilers		2	D	
SCB2 Boilers		1	D	Some control issues
Pumps, piping, JW, LOCW, and exhaust HEXs, etc.		2	D	Ongoing O & M R& R expense
Metrogro Vehicles		3	C	
Nine Springs Power Distribution System				
Main Switchgear S1, inside Effluent Bldg		NA		
Starter Panel M51, West Blower Bldg		NA		
Starter Panel M71, Effluent Bldg		NA		
Starters				
Effluent pump starter controls				
S141, East Blower Bldg, electric Blowers 4 &5, feed Blowers 2 &3		NA		
Starter Panel S142, East Blower Bldg (Blowers 2 & 3)				
Switchboard 902, inside SCB2		NA		
Service Switchgear H1		NA		
Unit Substation U1, south of Gas Control Bldg		NA		
Unit Substation U2, west of FT 3		NA		
Unit Substation U3A, outside SCB2, west of Dig 4 & 5		NA		
Unit Substation U3B, outside SCB2, west of Dig 4 & 5		NA		
Unit Substation U11, west of BB2		NA		
Unit Substation U12, north of Effluent Pumphouse		NA		
Unit Substation U13, west of Shop 1		NA		
Unit Substation U14, Metrogro Pump Station		NA		
Unit Substation U15, near PT 19		NA		

NSWTP Facility Condition Assessment

Facility	Asset	Mechanical		
		Condition Rating	Year Major R & R Needed	Notes
Distribution feeders, 4.16 kV		NA		
Process Control System				
Process Control Hardware		3	A	product no longer supported by OEMs.
Process Control software (Operating system[e.g., Windows NT], HMI, trending, driver		3	A	
Process programming (control algorithms, control logic)		1	D	Process programming may need to be modified because of hardware changes
Field wiring (control wiring)		NA	NA	
Fiber Optics infrastructure		NA	NA	
Nine Springs Grounds				
Roads		NA		
Underground Piping at Nine Springs				
54" Primary Influent Line to east plant		4	A	
Badfish Creek Effluent Diversion				
Effluent pump discharge manifold				The discharge manifold is steel pipe. Do we try to assess the condition of this piping or just wait and observe?
Effluent meter vault		2	E	
BFC Forcemain		2	D	
Badger Mill Creek Effluent Diversion				
BMC Forcemain		1	F	
Telemetry System at Nine Springs Plant and Repeater Stations				electrical
Operations Building		2	D	
HVAC controls				electrical
HVAC mechanical system		2	C	
Maintenance Shop 1		2	D	
Maintenance Shop 2		2	D	
Service Building		2	D	
Storage Building 1		2	D	
Storage Building 2		2	D	
Storage Building 3		2	D	

NSWTP Facility Condition Assessment

Facility	Asset	Electrical		
		Condition Rating	Year Major R & R Needed	Notes
HEADWORKS				
Headworks	Structure			
Influent Flowmeters	Influent Metering	1	E	
Influent Sampling	Influent Sampling	1	E	
Fine Screening System	Headworks Screening	1	E	
Grit Processing System	Grit Removal	1	E	
Septage Receiving Station	Septage Receiving	1	E	
LIQUID PROCESS				
Flow Splitter	Flow Splitting to East and West Plants	NA		
Primary Settling Facilities	Primary Clarification			
	Primary Tanks 1-2	3.5	B/C	Varies on tank by tank basis. Needs more definition. Conduits have failed.
	Primary Tanks 5-8	3.5	B/C	Varies on tank by tank basis. Needs more definition. Conduits have failed.
	Primary Tanks 9-16	3.5	B/C	Varies on tank by tank basis. Needs more definition. Conduits have failed.
	Primary Tanks 17-21	3	C	
East Aeration (East Blowers) (motors)	Blower Building 1 (E. Blower Bldg)			
	Blower 1			
	Blower Engine	2	C	
	Blower 2	2	D	
	Blower 3	2	D	
	Blower 4	2	C/D	Need to be tested
	Blower 5	2	C/D	Need to be tested
	Main Blower control panel	4	A/B	
West Aeration (West Blowers)	Blower Building 2 (W. Blower Bldg)			
	Blowers 1-3	2	E	
Aeration Basins				
East Aeration Basin	Aeration Tanks			
	Aeration Tanks 1-18			
	ATs 1-6 Diffuser systems	NA		
	ATs 7-18 Diffuser systems	NA		
	AT Mixers/pumps	2	D	

NSWTP Facility Condition Assessment

		Electrical		
Facility	Asset	Condition Rating	Year Major R & R Needed	Notes
West Aeration Basin	Aeration Tanks 19-30			
	Diffuser systems	NA		
	AT Mixers/pumps	2	D	
Secondary Clarification Facilities	Secondary Clarification			
East Plant Secondary Clarifier	Final Tanks 1- 11	3	C	Some conduit has gone bad.
West Plant Secondary Clarifier	Final Tanks 12-19	3	D	
RAS/WAS	Aeration (WAS and RAS)			
East RAS/WAS	East Aeration (WAS and RAS)			
	ACB 1	2	D	
	ACB 2	2	D	
	ACB 3	1	E	
	Piping			
West RAS/WAS	West Aeration (WAS and RAS)			
	ACB 4			
	WAS	1	E	
	RAS	3	D	
	Piping			
U.V. Disinfection Facilities	UV Disinfection	2	B	
Plant Effluent Pumping Facilities	Effluent Pump House			
Effluent Storage Facilities	Effluent Storage Tanks			
	Effluent Overflow Structures (plant and lagoon)			
Effluent Pumps	Effluent Pumps			
	Motors	2	E	
	Effluent piping			
SOLIDS HANDLING & DISPOSAL PROCESS				
	Sludge Control Building 1			
	Sludge Control Building 2			
	Oil Storage Building			
	Primary Sludge Pumping Station 1			
	Primary Sludge Pumping Station 2			
Gravity Thickeners	Primary Sludge Thickening Process (Gravity)			

NSWTP Facility Condition Assessment

Facility	Asset	Electrical		
		Condition Rating	Year Major R & R Needed	Notes
Dissolved Air Floatation Thickener	Primary Sludge Thickeners 1 & 2	3	C	
	Thickened PS Pumping	1	E	
	WAS (DAF) Thickening			
	DAF Thickeners 1 & 2	3	C	
Anaerobic Digesters	Thickened WAS pumps	1	E	
	DAF Bldg	2	D	
Anaerobic Digesters	Sludge Digestion (Anaerobic) Tanks, Pumps, Mixers			
	Digester 1			
	Digester 2			
	Digester 3			
	Digester 4			
	Digester 5			
	Digester 6			
	Digester 7			
	Mixers 1-3	1	E	
	Gas Mixing Compressors for Dig 4-7	1	E	
	Heat Exchanger			
	Dig 1-3 spiral HEXs			
	Dig 4-6 spiral HEXs			
	Dig 7 spiral HEX			
Lackeby HEXs				
Digester Gas Storage	Sludge Digestion (Anaerobic) Tanks, Pumps, Mixers			
Digester Sludge Storage Tanks	Sludge Digestion (Anaerobic) Tanks, Pumps, Mixers Storage Tanks 1 and 2			
Gravity Belt Thickener (GBT)	Sludge Digestion (GBT)			
	GBT 1	4	A	
	GBT 2	1	D	
	GBT Polymer System	1	D	
	GBT Building			
Dewatering Process (Centrifuge)	GBT Polymer Building			
	Dewatering Process (Centrifuge)	1	E	
	Centrifuge Polymer System	1	D	
Metrogro Storage Tanks	Dewatering Building	1	E	
	Metrogro Storage and Pumping			
	Metrogro Storage Building & Equipment	1.5	D	
	Metrogro Storage Tanks 1-3			
	Mixers	2	D	
	Metrogro Storage Tanks Odor Control Beds			
Vehicle Loading Building		3	C	MCC needs replacement in 6-10

NSWTP Facility Condition Assessment

Facility	Asset	Electrical		
		Condition Rating	Year Major R & R Needed	Notes
	Pumps			
Biosolids End- Use	Biosolids End Use Facility			
W2 system				
W3				
BB1 W3				
BB2 W3				
Plant Water System	W4 Water	1	D	Back-up system may be needed

NSWTP Facility Condition Assessment

Facility	Asset	Electrical		
		Condition Rating	Year Major R & R Needed	Notes
Side Stream Phosphorus Removal	Ferric Chloride Vault	4	A	
Engine Generators				
Control Panels		4	A	
Generators		1	E	
Gas Blending Process	Gas Control Building	2	C	
Gas Treatment System (AFT)		1	D	
Process Hot Water System	Boiler Building			
Boiler Building Boilers		2	C	
SCB2 Boilers		1	D	
Pumps, piping, JW, LOCW, and exhaust HEXs, etc.		2	D	
Metrogro Vehicles		Junk		
Nine Springs Power Distribution System				
Main Switchgear S1, inside Effluent Bldg		2	E	24 yrs old, indoors, very maintainable, redundant feeds
Starter Panel M51, West Blower Bldg		2	C	controls replaced ~2000
Starter Panel M71, Effluent Bldg				
Starters		2	C	
Effluent pump starter controls		5	A	
S141, East Blower Bldg, electric Blowers 4 &5, feed Blowers 2 &3		3	A/B	cables are bad, not sure if parts are available for contactors
Starter Panel S142, East Blower Bldg (Blowers 2 & 3)		3	B	
Switchboard 902, inside SCB2		5	A	needs to be replaced
Service Switchgear H1		3	C	outside
Unit Substation U1, south of Gas Control Bldg		1	F	
Unit Substation U2, west of FT 3		1	E	
Unit Substation U3A, outside SCB2, west of Dig 4 & 5		3	B	installed as part of 6th Addition ~1980
Unit Substation U3B, outside SCB2, west of Dig 4 & 5		2	F	installed as part of SGUF, ~1990
Unit Substation U11, west of BB2		3	B/C	
Unit Substation U12, north of Effluent Pumphouse		3	B	
Unit Substation U13, west of Shop 1		3	B/C	
Unit Substation U14, Metrogro Pump Station		1	F	
Unit Substation U15, near PT 19		1	F	

NSWTP Facility Condition Assessment

Facility	Asset	Electrical		
		Condition Rating	Year Major R & R Needed	Notes
Distribution feeders, 4.16 kV		2	F	
Process Control System				
Process Control Hardware		2	B	
Process Control software (Operating system[e.g., Windows NT], HMI, trending, driver Process programming (control algorithms, control logic)				
Field wiring (control wiring)		2	D	
Fiber Optics infrastructure		1	E	
Nine Springs Grounds				
Roads		2	D	Lighting
Underground Piping at Nine Springs				
54" Primary Influent Line to east plant				
Badfish Creek Effluent Diversion				
Effluent pump discharge manifold				
Effluent meter vault				
BFC Forcemain				
Badger Mill Creek Effluent Diversion				
BMC Forcemain				
Telemetry System at Nine Springs Plant and Repeater Stations		2	B	
Operations Building		3	C	MCC replace in 11-15 years
HVAC controls		4	A	
HVAC mechanical system				
Maintenance Shop 1		2	C	
Maintenance Shop 2		2	C	
Service Building		3	C	
Storage Building 1		2	D	
Storage Building 2		2	D	
Storage Building 3		2	D	