Need to Know Criteria: Wastewater Certifications-All Levels

Subject	Certification Level
Activated sludge (ACTSL)	
Loading rates & efficiency	A, 3, 4
Hydraulic	A, 3, 4
Organics	A, 3, 4
Solids	A, 3, 4
Operating characteristics	A, 3, 4
Conventional AS	A, 3, 4
Extended aeration	A, 3, 4
Oxidation ditch	A, 3, 4
Sequencing batch reactors	A, 3, 4
Operation & maintenance	A, 3, 4
Aeration & mixing	A, 3, 4
Normal & abnormal conditions	A, 3, 4
Records	A, 3, 4
Solids wasting & return	A, 3, 4
Troubleshooting	A, 3, 4
Process control	A, 3, 4
Process description	A, 3, 4
Components	A, 3, 4
Purpose	A, 3, 4
Variations	A, 3, 4

Subject	Certification Level
Administration (ADMIN)	
Finance	A, 3, 4
Personnel	A, 3, 4
Supervision	A, 3, 4
Records	A, 3, 4
Collection systems (COLL)	
Cleaning & maintenance	S, A, 1, 2, 3, 4
Hydraulic cleaning	S, A, 1, 2, 3, 4
Preventive maintenance	S, A, 1, 2, 3, 4
Rodding	S, A, 1, 2, 3, 4
Stoppages	S, A, 1, 2, 3, 4
Lift stations	S, A, 1, 2, 3, 4
Components	S, A, 1, 2, 3, 4
Maintenance	S, A, 1, 2, 3, 4
Operation	S, A, 1, 2, 3, 4
Typical layout	S, A, 1, 2, 3, 4
Manholes	S, A, 1, 2, 3, 4
Components	S, A, 1, 2, 3, 4
Location & types	S, A, 1, 2, 3, 4
Maps	S, A, 1, 2, 3, 4

Subject	Certification Level
Collection systems (COLL)-continued	
Piping & joints	S, A, 1, 2, 3, 4
Bedding & backfill	S, A, 1, 2, 3, 4
Components	S, A, 1, 2, 3, 4
Installation	S, A, 1, 2, 3, 4
Materials	S, A, 1, 2, 3, 4
Operation	S, A, 1, 2, 3, 4
Problems & repairs	S, A, 1, 2, 3, 4
Service Connections	S, A, 1, 2, 3, 4
Cross-connection control (XCONN)	
Application	S, A, 1, 2, 3, 4
General	S, A, 1, 2, 3, 4
Maintenance	S, A, 1, 2, 3, 4
Types of devices	S, A, 1, 2, 3, 4
Dechlorination (DECHLOR)	
Gas dechlorination	S, A, 1, 2, 3, 4
Changing cylinders	S, A, 1, 2, 3, 4
Equipment used	S, A, 1, 2, 3, 4
Leaks	S, A, 1, 2, 3, 4
Maintenance	S, A, 1, 2, 3, 4
Operation	S, A, 1, 2, 3, 4

Subject	Certification Level
Dechlorination (DECHLOR)-continued	
Reactions of SO2 w/chlorine	S, A, 1, 2, 3, 4
Safety	S, A, 1, 2, 3, 4
Storage & handling	S, A, 1, 2, 3, 4
Troubleshooting	S, A, 1, 2, 3, 4
Process description	S, A, 1, 2, 3, 4
Components	S, A, 1, 2, 3, 4
Contact time	S, A, 1, 2, 3, 4
Dosage	S, A, 1, 2, 3, 4
Disinfection (DISINF)	
Gas chlorination	S, A, 1, 2, 3, 4
Changing cylinders	S, A, 1, 2, 3, 4
Components	S, A, 1, 2, 3, 4,
Equipment used	S, A, 1, 2, 3, 4
Leaks	S, A, 1, 2, 3, 4
Maintenance	S, A, 1, 2, 3, 4
Operation	S, A, 1, 2, 3, 4
Safety	S, A, 1, 2, 3, 4
Storage & handling	S, A, 1, 2, 3
Troubleshooting	S, A, 1, 2, 3, 4
Hypochlorination	S, A, 1, 2, 3, 4
Equipment used	S, A, 1, 2, 3, 4

Subject	Certification Level
Disinfection (DISINF)-continued	
Hypochlorination-continued	S, A, 1, 2, 3 ,4
Maintenance	S, A, 1, 2, 3, 4
Operation	S, A, 1, 2, 3, 4
Safety	S, A, 1, 2, 3, 4
Storage & handling	S, A, 1, 2, 3, 4
Process description	S, A, 1, 2, 3, 4
Components	S, A, 1, 2, 3, 4
Contact time	S, A, 1, 2, 3, 4
Dosage	S, A, 1, 2, 3, 4
Factors affecting disinfection	S, A, 1, 2, 3, 4
Purpose	S, A, 1, 2, 3, 4
Reactions of chlorine	S, A, 1, 2, 3, 4
Typical pathogens	S, A, 1, 2, 3, 4
Residual	S, A, 1, 2, 3, 4
Sampling for fecal coliforms	S, A, 1, 2, 3, 4
Ultraviolet light	S, A, 1, 2, 3, 4
Effluent polishing (EFFPOL)	
Operating characteristics	S, A, 1, 2, 3, 4
Land application of effluent	S, A, 1, 2, 3, 4
Sand filters	S, A, 1, 2, 3, 4
Wetlands *(constructed)*	S, A, 1, 2, 3, 4

Subject	Certification Level
General (GENERAL)	
Basic Chemistry	S, A, 1, 2, 3, 4
Formulas	S, A, 1, 2, 3, 4
pH	S, A, 1, 2, 3, 4
Calculations (*Generally under topics!)*	
Dosage	S, A, 1, 2, 3, 4
Efficiency	S, A, 1, 2, 3, 4
Flow	S, A, 1, 2, 3, 4
Hydraulics	S, A, 1, 2, 3, 4
Power *(efficiency)*	A, 3, 4
Solids	A, 3, 4
Temperature	A, 3, 4
Volume	S, A, 1, 2, 3, 4
Measurement units	S, A, 1, 2, 3, 4
Pollutant removal	S, A, 1, 2, 3, 4
Effluent limits	S, A, 1, 2, 3, 4
Removal efficiencies	S, A, 1, 2, 3, 4
Wastewater characteristics	S, A, 1, 2, 3, 4
BOD	S, A, 1, 2, 3, 4
Chemical	S, A, 1, 2, 3, 4
Microbiological	S, A, 1, 2, 3, 4
Physical	S, A, 1, 2, 3, 4
Prohibited substances	S, A, 1, 2, 3, 4

Subject	Certification Level
General (GENERAL)-continued	
Wastewater characteristics-continued	
Solids	S, A, 1, 2, 3, 4
Terms	S, A, 1, 2, 3, 4
Laboratory procedures (LAB)	
Laboratory safety	3, 4
Tests *(some lab tests on lower levels)*	S, A, 1, 2, 3, 4
BOD	A, 3, 4
Fecal coliforms	A, 3, 4
pH	S, A, 1, 2, 3, 4
Residual chlorine	S, A, 1, 2, 3, 4
Suspended solids	S, A, 1, 2, 3, 4
Mechanical systems (MECHSYS)	
Chemical feeders	S, A, 1, 2, 3, 4
Calibration	S, A, 1, 2, 3, 4
Operation & maintenance	S, A, 1, 2, 3, 4
Types	S, A, 1, 2, 3, 4
Instrumentation	A, 3, 4
General maintenance	S, A, 1, 2, 3, 4
Measurements	A, 3, 4
Metering equipment	S, A, 1, 2, 3, 4

Subject	Certification Level
Mechanical systems (MECHSYS)-continued	
Motors	S, A, 1, 2, 3, 4
Components	S, A, 1, 2, 3, 4
Maintenance	S, A, 1, 2, 3, 4
Operation	S, A, 1, 2, 3, 4
Pumps	S, A, 1, 2, 3, 4
Components	S, A, 1, 2, 3, 4
Hydraulics	S, A, 1, 2, 3, 4
Maintenance	S, A, 1, 2, 3, 4
Operation	S, A, 1, 2, 3, 4
Power *(efficiency)*	A, 3, 4
Troubleshooting	S, A, 1, 2, 3, 4
Types	S, A, 1, 2, 3, 4
Valves	S, A, 1, 2, 3, 4
Characteristics	S, A, 1, 2, 3, 4
Operation & maintenance	S, A, 1, 2, 3, 4
Nutrient removal (NUTRIEN)	
Operating characteristics	A, 4
Nitrogen removal	A, 4
Phosphorus removal	A, 4

Subject	Certification Level
Nutrient removal (NUTRIEN)-continued	
Operation & maintenance	A, 4
Normal & abnormal conditions	A, 4
Troubleshooting	A, 4
Process control	A, 4
Process description	A, 4
Components	A, 4
Purpose	A, 4
Types	A, 4
Plant pretreatments (PRETRT)	
Communitor	S, A, 1, 2, 3, 4
Operating characteristics	S, A, 1, 2, 3, 4
Operation & maintenance	S, A, 1, 2, 3, 4
Grit removal	S, A, 1, 2, 3, 4
Characteristics	S, A, 1, 2, 3, 4
Grit channels	S, A, 1, 2, 3, 4
Operating characteristics	S, A, 1, 2, 3, 4
Operation & maintenance	S, A, 1, 2, 3, 4
Screening/grit disposal	S, A, 1, 2, 3, 4
Screens & racks	S, A, 1, 2, 3, 4
Operating characteristics	S, A, 1, 2, 3, 4
Operation & maintenance	S, A, 1, 2, 3, 4

Subject	Certification Level
Regulations (REGS)	
EPA sec.503 sludge regs	A, 3, 4
NM Utility Operator Certification Regs (20.7.4 NMAC)	S, A, 1, 2, 3, 4
NM ground water regulations	S, A, 1, 2, 3, 4
NPDES permit requirements	S, A, 1, 2, 3, 4
Rotating biological contractors (RBC)	
Loading rates & efficiency	A, 3, 4
Hydraulic	A, 3, 4
Organic	A, 3, 4
Operating characteristics	A, 3, 4
Operation & maintenance	A, 3, 4
Maintenance	A, 3, 4
Normal & abnormal conditions	A, 3, 4
Troubleshooting	A, 3, 4
Process control	A, 3, 4
Process description	A, 3, 4
Components	A, 3, 4
Purpose	A, 3, 4
Safety (SAFETY)	
Chemical handling	S, A, 1, 2, 3, 4
Confined space entry	S, A, 1, 2, 3, 4

Subject	Certification Level
Safety (SAFETY)-continued	
Electrical	S, A, 1, 2, 3, 4
Excavation & shoring	S, A, 1, 2, 3, 4
Fire	S, A, 1, 2, 3, 4
First aid	S, A, 1, 2, 3, 4
Hazardous gases	S, A, 1, 2, 3, 4
Safety Data Sheets (SDS)	S, A, 1, 2, 3, 4
Personal Protective Equipment	S, A, 1, 2, 3, 4
Programs	A, 3, 4
Rotating machinery	S, A, 1, 2, 3, 4
Working in streets	S, A, 1, 2, 3, 4
Sampling & reporting (SAMP)	
Non-compliance reporting	S, A, 1, 2, 3, 4
NPDES sampling	S, A, 1, 2, 3, 4
Records	S, A, 1, 2, 3, 4
Reporting requirements	S, A, 1, 2, 3, 4
Sampling procedure	S, A, 1, 2, 3, 4
Preservation	S, A, 1, 2, 3, 4
Representative Sampling	S, A, 1, 2, 3, 4
Testing	2, 3, 4
BOD	A, 3, 4

Subject	Certification Level
Sampling & reporting (SAMP)-continued	
Testing-continued	
DO	S, A, 1, 2, 3, 4
Solids	A, 3, 4
pH	S, A, 1, 2, 3, 4
Sedimentation (SED)	
Loading rates & efficiency	2, 3, 4
Hydraulic	2, 3, 4
Removal efficiency	S, A, 1, 2, 3, 4
Solids	2, 3, 4
Weirs	2, 3, 4
Operating characteristics	S, A, 1, 2, 3, 4
Primary clarifier	S, A, 1, 2, 3, 4
Secondary clarifier	S, A, 1, 2, 3, 4
Operation & maintenance	S, A, 1, 2, 3, 4
Maintenance	S, A, 1, 2, 3, 4
Normal & abnormal conditions	S, A, 1, 2, 3, 4
Problems & corrections	S, A, 1, 2, 3, 4
Troubleshooting	S, A, 1, 2, 3, 4
Process control	S, A, 1, 2, 3, 4
Detention time	S, A, 1, 2, 3, 4

Subject	Certification Level
Sedimentation (SED)-continued	
Process description	S, A, 1, 2, 3, 4
Components	S, A, 1, 2, 3, 4
Purpose	S, A, 1, 2, 3, 4
Sludge thickening & dewatering (Thicken)	
Loading rates & efficiency	4
Hydraulic	4
Solids	4
Operating characteristics	4
Aerobic digestion	A, 3, 4
Belt filer press	4
Chemical coagulation	4
Dissolved air flotation	4
Gravity thickening	4
Sand drying bed	S, A, 1, 2, 3, 4
Vacuum filtration	4
Operation & maintenance	4
Normal & abnormal conditions	4
Troubleshooting	4
Process control	4
Coagulation	4

Subject	Certification Level
Sludge thickening & dewatering (Thicken)-cont'd	
Process description	4
Components	4
Purpose	4
Types	4
Solids digestion & handling (DIGSST)	
Loading rates & efficiency	3, 4
Hydraulic	3, 4
Solids	3, 4
Operating characteristics	S, A, 1, 2, 3, 4
Aerobic	A, 3, 4
Anaerobic	A, 3, 4
Anaerobic-two-stage	3, 4
Clarigester & Imhof tanks	S, A, 1, 2, 3, 4
Operation & maintenance	A, 3, 4
Gas systems	A, 3, 4
Mixers	A, 3, 4
Normal & abnormal conditions	A, 3, 4
Operation	A, 3, 4
Tank & cover	A, 3, 4
Troubleshooting	A, 3, 4

Subject	Certification Level
Solids digestion & handling (DIGSST)-continued	
Process control	A, 3, 4
Aerobic	A, 3, 4
Anaerobic	A, 3, 4
Process description	A, 2, 3, 4
Components	A, 2, 3, 4
Purpose	A, 2, 3, 4
Solids handling	A, 2, 3, 4
Characteristics	A, 2, 3, 4
Drying beds	A, 2, 3, 4
Land disposal	A, 3, 4
Sampling & testing	A, 2, 3, 4
Sludge draw-off	A, 2, 3, 4
Trickling filters (TFILT)	
Loading rates & efficiency	A, 2, 3, 4
Hydraulic	A, 2, 3, 4
Organic	A, 3, 4
Operating characteristics	A, 2, 3, 4
Operation & maintenance	A, 2, 3, 4
Maintenance	A, 2, 3, 4
Normal & abnormal conditions	A, 2, 3, 4
Operation	A, 2, 3, 4

Subject	Certification Level
Trickling filters (TFILT)-continued	
Troubleshooting	A, 2, 3, 4
Process control	A, 2, 3, 4
Process description	A, 2, 3, 4
Components	A, 2, 3, 4
Purpose	A, 2, 3, 4
Types	A, 2, 3, 4
Membrane Biological Reactors (MBR)	
Advantages	A, 3, 4
Typical MBR system schematic	A, 3, 4
Three types of MBR	A, 3, 4
Membrane Desalting (Nanofiltration, Reverse Osmosis)	A, 3, 4
Difference between nanofiltration & RO	A, 3, 4
RO process design (schematic)	A, 3, 4
RO terminology	A, 3, 4
Concentrate disposal for RO systems	A, 3, 4
RO theory	A, 3, 4
Typical osmotic pressures	A, 3, 4
Water flux calculation	A, 3, 4
Recovery calculation	A, 3, 4
System salt rejection calculation	A, 3, 4
Strategies to increase recovery	A, 3, 4

Subject	Certification Level
Membrane Biological Reactors (MBR)-continued	
RO/NF limitations	A, 3, 4
RO membrane operating parameters	A, 3, 4
RO pressure vessel assembly	A, 3, 4
RO unit array design	A, 3, 4
RO pressure problems	A, 3, 4
RO membrane fouling & scaling (causes & impact)	A, 3, 4
Threshold inhibitors (antiscalants)	A, 3, 4
Waste Treatment ponds (PONDS)	
Loading rates & efficiency	S, A, 1, 2, 3, 4
Detention time	S, A, 1, 2, 3, 4
Hydraulic	S, A, 1, 2, 3, 4
Population	S, A, 1, 2, 3, 4
Operating characteristics	S, A, 1, 2, 3, 4
Faculative ponds	S, A, 1, 2, 3, 4
Operation & maintenance	S, A, 1, 2, 3, 4
Normal & abnormal conditions	S, A, 1, 2, 3, 4
Troubleshooting	S, A, 1, 2, 3, 4
Organic Loading	S, A, 1, 2, 3, 4
Process control	S, A, 1, 2, 3, 4
Faculative ponds	S, A, 1, 2, 3, 4

Subject	Certification Level
Waste Treatment ponds (PONDS)-continued	
Process description	S, A, 1, 2, 3, 4
Components	S, A, 1, 2, 3, 4
Purpose	S, A, 1, 2, 3, 4
Types	S, A, 1, 2, 3, 4

Operator Level Key

S = Small Wastewater

A = Small Wastewater Advanced

1 = Wastewater Level 1

2 = Wastewater Level 2

3 = Wastewater Level 3

4 = Wastewater Level 4