New Mexico Environment Department
Utility Operator Certification Program

PUBLIC WASTEWATER FACILITY – LEVEL 4 (WW4)

Operator Guidebook with Need-to-Know Criteria

March 2026[1]

The New Mexico Environment Department (NMED) administers the Utility Operator Certification Program to implement and enforce the rules of 20.7.4 NMAC (New Mexico Administrative Code) pursuant to the Utility Operators Certification Act [Chapter 61, Article 33 NMSA 1978].

Public Wastewater Facility – Level 4 (WW4)
According to Subsection A of 20.7.4.13 NMAC, the Public Wastewater Facility – Level 4 (WW4) certification is required to operate the various types of treatment processes at public wastewater facilities as listed below.

Type of Treatment Process	Population Served				
	25 to 500	501 to 5,000	5,001 to 10,000	10,001 to 20,000	20,000+
Secondary treatment, trickling filter	←	←	←	←	**WW4**
Secondary treatment, aeration	←	←	←	**WW4**	**WW4**
Physical-chemical treatment processes	←	←	←	←	**WW4**
Advanced waste treatment process	←	←	**WW4**	**WW4**	**WW4**
Phosphorous and nitrogen removal	←	←	←	**WW4**	**WW4**

("←" *signifies WW4 also covers lower categories*)

According to Subsection J of 20.7.4.14 NMAC, an operator holding a Public Wastewater Facility – Level 4 certification is also certified to perform any activity or function or make any process control or system integrity decision which requires:

- ✓ Small Wastewater (SWW) certification,
- ✓ Small Wastewater Advances (SWWA) certification,
- ✓ Public Wastewater Facility – Level 1 (WW1) certification,
- ✓ Public Wastewater Facility – Level 2 (WW2) certification,
- ✓ Public Wastewater Facility – Level 3 (WW3) certification,
- ✓ Wastewater Laboratory Technician – Level 2 (WWLT2) certification,
- ✓ Wastewater Collection System – Level 1 (CS1) certification, and
- ✓ Wastewater Collection System – Level 2 (CS2) certification.

[1] This Guidebook was reviewed by the New Mexico Utility Operators Certification Advisory Board in January and February 2026.

According to Subsection C of 20.7.4.13 NMAC, an operator holding a Public Wastewater Facility – Level 4 certification is also certified to perform wastewater analysis for regulatory compliance at public wastewater facilities as listed below.

Level of Certification Needed	Type of Methodology Performed
SWW, SWWA, WW1, WW2, WW3, **WW4**, WWLT1, WWLT2 or WWLT3	Total Residual Chlorine (TRC) by the N-diethyl-p-phenylene-diamine (DPD) method, pH, Temperature, and Dissolved Oxygen (DO) by probe.

Certification Eligibility

To be eligible to take the Public Wastewater Facility – Level 4 (WW4) exam, an applicant must meet the following criteria. [References: 20.7.4.21 NMAC, and 20.7.4.22 NMAC]

- Submit a complete application through the NMED Utility Operator Certification Program online platform and pay the nonrefundable examination application fee.
- Be at least 18 years of age.
- Have a High School diploma or general equivalency diploma.
- Have a minimum of one year's experience* as a WW3 certification holder.
- Complete a minimum of eighty (80) training credits covering the topics listed in the need-to-know criteria of this document.

WW4 Eligibility Criteria		**Allowable Substitutions** as set forth in Subsection B of 20.7.4.22 NMAC
Application	Completed application	No substitutions
Fee	Payment of examination application fee	No substitutions
Age	Evidence of Age of Majority (18 years of age)	No substitutions
Education	High School or general equivalency diploma	No substitutions
Experience*	One (1) year experience as a WW3 certificate holder	No substitutions
Training	Eighty (80) hours of approved training credits	No substitutions
Exam	Pass the WW4 exam	No substitutions

*"**Experience**" means actual work experience, full or part-time, as an operator in the fields of public water supply or public wastewater treatment. [Reference: Subsection K of 20.7.4.7 NMAC]

Renewal Training Credits

WW4 operator certification must be renewed at three-year intervals. Certification renewal requires the holder obtain thirty (30) training credits for approved training during the three-year period preceding the date on which the renewal application is due. The thirty training credits must be in support of the WW4 operator's job and must include at least ten (10) training credits for approved training specifically in the operations and maintenance of public wastewater facilities. NMED Utility Operator Certification Program approval of training credits will be based on alignment with the topics listed in the need-to-know criteria of this document.

Exam Content

NMED and a panel of subject-matter experts developed the **Public Wastewater Facility – Level 4 (WW4)** operator certification exam. The WW4 certification exam consists of 121 multiple-choice questions that cover the 20 main content areas listed below. A total of 112 exam questions are worth one point each, while nine (9) exam questions are worth two points each, making the entire exam worth a combined total of 130 points. This need-to-know criteria document provides a breakdown of the topics and subtopics within each main content area. A list of suggested study references is provided at the end of this document. The minimum passing score on the WW4 exam is 70% (91 points out of 130 points).

	Main Content Areas	Number of Exam Questions
1	Activated Sludge*	45
2	Administration	2
3	Analyze / Interpret LT	2
4	Collection Systems	2
5	Cross-Connection Control	2
6	Dechlorination	2
7	Disinfection*	9
8	Effluent Polishing	5
9	General	2
10	Laboratory Procedures	11
11	Mechanical Systems	2
12	Nutrient Removal	7
13	Rotating Biological Contractors	2
14	Regulations	2
15	Safety	2
16	Sampling & Reporting	1
17	Sedimentation*	7
18	Sludge Thickening	8
19	Solids Digestion & Handling	16
20	Trickling Filters	1
	Total:	121 questions on exam worth 130 total points

*Weighting: Some questions in the Activated Sludge, Disinfection, and Sedimentation content areas are worth two points, rather than one point.

NEED-TO-KNOW CRITERIA FOR
PUBLIC WASTEWATER FACILITY – LEVEL 4 (WW4)

Content Area and Topics	Number of Exam Questions
1. Activated Sludge	**45**
Loading rates & efficiency Hydraulic Organics Solids Operating characteristics Conventional AS Extended aeration Oxidation ditch Sequencing batch reactors Operation & maintenance Aeration & mixing Normal & abnormal conditions Records Solids wasting & return Troubleshooting Process control Process description Components Purpose Variations	Weighting: 39 activated sludge questions are worth one point each, while six activated sludge questions are each worth two points.

Content Area and Topics	Number of Exam Questions
2. Administration	**2**
Finance Personnel Supervision Records	

Content Area and Topics	Number of Exam Questions
3. Analyze / Interpret LT	**2**
Laboratory test techniques Coliform bacteria Nutrients Lab test results Permit analytes Toxicity testing Purpose	

Content Area and Topics	Number of Exam Questions
4. Collection Systems	**2**
Cleaning & maintenance Hydraulic cleaning Preventative maintenance Rodding Stoppages Lift stations Components Maintenance Operation Typical layout Manholes Components Location & types Maps Piping & joints Bedding & backfill Components Installation Materials Operation Problems & repairs Service connections	

Content Area and Topics	Number of Exam Questions
5. Cross-Connection Control	**2**
Application General Maintenance Types of devices	

Content Area and Topics	Number of Exam Questions
6. <u>Dechlorination</u>	**2**
Gas dichlorination Changing cylinders Equipment used Leaks Maintenance Operation Reactions of SO2 w/chlorine Safety Storage & handling Troubleshooting Process description Components Contact time Dosage	

Content Area and Topics	Number of Exam Questions
7. Disinfection	**9**
Gas chlorination Changing cylinders Components Equipment used Leaks Maintenance Operation Safety Troubleshooting Hypochlorination Equipment used Maintenance Operation Safety Storage & handling Process description Components Contact time Dosage Factors affecting disinfection Purpose Reactions of chlorine Typical pathogens Residual Sampling for fecal coliforms Ultraviolet light	Weighting: eight disinfection questions are worth one point each, while one disinfection question is worth two points.

Content Area and Topics	Number of Exam Questions
8. Effluent Polishing	**5**
Operating characteristics Land application of effluent Sand filters Wetlands (constructed)	

Content Area and Topics	Number of Exam Questions
9. General	**2**
Basic chemistry Formulas pH Calculation (generally under specific topics) Dosage Efficiency Flow Hydraulics Power (efficiency) Solids Temperature Volume Measurement Units Pollution removal Effluent limits Removal efficiencies Wastewater characteristics BOD Chemical Microbiological Physical Prohibited substances Solids Terms	

Content Area and Topics	Number of Exam Questions
10. Laboratory Procedures	**11**
Laboratory safety Tests (some lab tests on lower levels) BOD Fecal coliforms pH Residual chlorine Suspended solids	

Content Area and Topics	Number of Exam Questions
11. Mechanical Systems	**2**
Chemical feeders Calibration Operation & maintenance Types Instrumentation General maintenance Measurements Metering equipment Motors Components Maintenance Operation Pumps Components Hydraulics Maintenance Operation Power (efficiency) Troubleshooting Types Valves Characteristics Operations & maintenance	

Content Area and Topics	Number of Exam Questions
12. Nutrient Removal	**7**
Operating characteristics Nitrogen removal Phosphorus removal Operation & maintenance Normal & abnormal conditions Troubleshooting Process control Process description Components Purpose Types	

Content Area and Topics	Number of Exam Questions
13. Rotating Biological Contractors	**2**
Loading rates & efficiencies Hydraulic Organic Operating characteristics Operation & maintenance Maintenance Normal & abnormal conditions Troubleshooting Process control Process description Components Purpose	

Content Area and Topics	Number of Exam Questions
14. Regulations	**2**
EPA sec. 503 sludge regs NM Utility Operator Certification Regs (20.7.4 NMAC) NM ground water regulations (20.6.2 NMAC) NPDES permit requirements	

Content Area and Topics	Number of Exam Questions
15. Safety	**2**
Chemical handling Confined space entry Electrical Excavation & shoring Fire First aid Hazardous gases Safety Data Sheets (SDS) Personal Protective Equipment Programs Rotating machinery Working in streets	

Content Area and Topics	Number of Exam Questions
16. Sampling & Reporting	**1**
Non-compliance reporting NPDES sampling Records Reporting requirements Sampling procedure Preservation Representative sampling Testing BOD DO Solids pH	

Content Area and Topics	Number of Exam Questions
17. Sedimentation	**7**
Loading rates & efficiency Hydraulic Removal efficiency Solids Weirs Operating Characteristics Primary clarifier Secondary clarifier Operation & maintenance Maintenance Normal & abnormal conditions Problems & corrections Troubleshooting Process control Detention time Process description Components Purpose	Weighting: five sedimentation questions are worth one point each, while two sedimentation questions are worth two points.

Content Area and Topics	Number of Exam Questions
18. <u>Sludge Thickening & Dewatering</u>	**8**
Loading rates & efficiency Hydraulic Solids Operating characteristics Aerobic digestion Belt filer press Chemical coagulation Dissolved air flotation Gravity thickening Sand drying bed Vacuum filtration Operation & maintenance Normal & abnormal conditions Troubleshooting Process control Coagulation Process description Components Purpose Types	

Content Area and Topics	Number of Exam Questions
19. Solids Digestion & Handling	**16**
Loading rates & efficiency Hydraulic Solids Operating characteristics Aerobic Anaerobic Anaerobic-two-stage Clarigester & Imhof tanks Operation & maintenance Gas systems Mixers Normal & abnormal conditions Operation Tank & cover Troubleshooting Process control Aerobic Anaerobic Process description Components Purpose Solids handling Characteristics Drying beds Land disposal Sampling & testing Sludge draw-off	

Content Area and Topics	Number of Exam Questions
20. Trickling Filters	**1**
Loading rates & efficiency Hydraulic Organic Operating characteristics Operation & maintenance Maintenance Normal & abnormal conditions Operation Troubleshooting Process control Process description Components Purpose Types	

SUGGESTED STUDY RESOURCES

The following is a non-inclusive, non-endorsement listing of reference sources that can be reviewed to help prepare for the New Mexico **Public Wastewater Facility – Level 4 (WW4)** operator certification exam.

Wastewater Collection

- California State University, Sacramento (CSUS) Foundation, Office of Water Programs, *Operation and Maintenance of Wastewater Collection Systems, Volume 1* and *Volume 2*, (latest edition)

Wastewater Treatment

- California State University, Sacramento (CSUS) Foundation, Office of Water Programs, *Operation of Wastewater Treatment Plants, Volume 1* and *Volume 2*, (latest edition)
- California State University, Sacramento (CSUS) Foundation, Office of Water Programs, *Operation of Wastewater Treatment Plants, Volume 3*, (latest edition)
- Water Environment Federation (WEF), *Wastewater Treatment Fundamentals I – Liquid Treatment* (latest edition)
- Water Environment Federation (WEF), *Wastewater Treatment Fundamentals II – Solids Handling and Support Systems* (latest edition)
- Water Environment Federation (WEF), *Wastewater Treatment Fundamentals III – Advanced Treatment* (latest edition)
- Water Environment Federation (WEF), *Activated Sludge and Nutrient Removal, Manual of Practice, OM-9,* (latest edition)

Utility Management

- American Water Works Association (AWWA), *Utility Management for Water and Wastewater Operations*
- California State University, Sacramento (CSUS) Foundation, Office of Water Programs, *Utility Management*, (latest edition)
- California State University, Sacramento (CSUS) Foundation, Office of Water Programs, *Manage for Success: Effective Utility Leadership Practices*, (latest edition)

Mathematics

- American Water Works Association (AWWA), *Math for Wastewater Treatment Operators, Grades 3 and 4* (latest edition)
- *Applied Math for Wastewater Plant Operators*, by Joann Kirkpatrick Price, (latest edition)

Laboratory Procedures

- American Water Works Association, American Public Health Association, and Water Environment Federation, *Standard Methods for the Examination of Water and Wastewater* (latest edition)
- CRC Handbook of Laboratory Safety, (latest edition)
- Water Environment Federation (WEF), *Basic Laboratory Procedures for the Operator—Analyst*, (latest edition)
- Water Environment Federation (WEF), *Water and Wastewater Laboratory Techniques*, (latest edition)

Regulations

- Clean Water Act, https://www.epa.gov/laws-regulations/summary-clean-water-act, and U.S. Code of Federal Regulations, Title 40
- U.S. Environmental Protection Agency, National Pollutant Discharge Elimination System (NPDES), https://www.epa.gov/npdes
- U.S. Environmental Protection Agency, Sewage Sludge Laws and Regulations, https://www.epa.gov/biosolids/sewage-sludge-laws-and-regulations, and U.S. Code of Federal Regulations, Title 40, Part 503.
- New Mexico Administrative Code, Title 20, Chapter 6, Part 2, Ground and Surface Water Protection (20.6.2 NMAC)
- New Mexico Administrative Code, Title 20, Chapter 6, Part 8, Ground and Surface Water Protection – Supplemental Requirements for Water Reuse (20.6.8 NMAC)
- New Mexico Administrative Code, Title 20, Chapter 7, Part 4, Utility Operator Certification (20.7.4 NMAC)

Safety and Security

- Water Environment Federation (WEF), *Safety, Health, and security Standards for Water Resource Recovery, Manual of Practice 1* (latest edition)

Wastewater Sampling

- American Water Works Association, American Public Health Association, and Water Environment Federation, *Standard Methods for the Examination of Water and Wastewater* (latest edition)
- U.S. Environmental Protection Agency, *NPDES Compliance Inspection Manual, EPA 300-B-94-014, Chapter 5 – Sampling*, (latest edition)
- U.S. Environmental Protection Agency, *Wastewater Sampling Operating Procedures*, (latest edition)

Additional Study Aids

- Water Environment Federation (WEF), *Wastewater Treatment Fundamentals I – Liquid Treatment Operator Certification Study Questions* (latest edition)
- Water Environment Federation (WEF), *Wastewater Treatment Fundamentals II – Solids Handling and Support Systems Operator Certification Study Questions* (latest edition)
- Water Environment Federation (WEF), *Wastewater Treatment Fundamentals III – Advanced Treatment Operator Certification Study Questions* (latest edition)
- Water Environment Federation (WEF), *Wastewater Operator's Guide to Preparing for the Certification Examination* (latest edition)
- Water Environment Federation (WEF), *Wastewater Laboratory Analysts' Guide to Preparing for the Certification Examination*, (latest edition)