

So Your Looking for an Operator?

By:

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First *My* Questions to You

- ▶ Have you been to the WWTP or WTP?
- ▶ When was the last time you where there?
- ▶ What type of plant is it?
- ▶ When the last time you opening and IN PUBLIC complimented your operators?

Some Basics Common to Water & Wastewater Certifications.

- ▶ Education
- ▶ Experience
- ▶ Testing

Requirements of Wastewater Operators

- ▶ Wastewater Certifications are divided into 2 categories.
- ▶ Lagoons
 - ▶ L1 - Facultative Lagoons
 - ▶ L2 - Aerated Lagoons
- ▶ Mechanical Plants
 - ▶ A Highest
 - ▶ B
 - ▶ C
 - ▶ D Lowest

Lagoon Certification Requirement

- ▶ Education
 - ▶ High School or GED
- ▶ Experience
 - ▶ One year of hands on experience
- ▶ Testing
 - ▶ Pass a 75 question written exam by 70% or better

Mechanical Plants

- ▶ Because of the complexity of the processes the education and experience are handled differently.

Areas of Operational Experience Categories

- ▶ Pretreatment / Primary Treatment - Treatment at the Start
- ▶ Secondary / Advanced Treatment - RBC, Trickling Filters, & Act. Sludge
- ▶ Residuals Processing and Disposal - Biosolids Handling
- ▶ Laboratory Analysis / Industrial Pretreatment - Lab
- ▶ Maintenance - Fixing Stuff

Education Categories

- ▶ *Administration* - Accounting, Management, Environmental Law, PR, English to name a few.
- ▶ *Science* - Biology, Physics, Chemistry, Microbiology to name a few
- ▶ *Engineering* - mechanics, statics, technical drawing, electricity, hydraulics to name a few.

Mechanical Plant Certifications - Level D

- ▶ Level D is the entry level certification.
- ▶ Education
 - ▶ High School Diploma or GED
- ▶ Experience
 - ▶ One year (2000 hours) of on hands experience
 - ▶ Must be in a Level D or higher WWTP
 - ▶ Must be in one month of hands on in at least one experience category
- ▶ Testing
 - ▶ Pass the Level D exam by 70% or better

Mechanical Plant Certifications - Level C

- ▶ Education
 - ▶ High School Diploma or GED
- ▶ Experience
 - ▶ Two years (4000 hours) of on hands experience
 - ▶ Must be in a Level D or higher WWTP
 - ▶ Must have 160 hours in Secondary Treatment Category
 - ▶ Much have 160 hours in 2 other Experience Categories
- ▶ Testing
 - ▶ Obtained the level D certification
 - ▶ Pass the Level C exam by 70% or better

Mechanical Plant Certifications - Level B

▶ CASE I

▶ Education

- ▶ One year of college (30 semester hours)
- ▶ Must include 3 semester hour in each of the 3 specified categories

▶ Experience

- ▶ Four years (8000 hours) of on hands experience at a C level WWTP or higher
- ▶ Two years of either Supervisory or Major Operational Responsibility
- ▶ The above must include 480 hours of secondary treatment
- ▶ and at least 480 in two of other specified areas

Mechanical Plant Certifications - Level B

▶ CASE II

▶ Education

- ▶ Less than one year of college (30 semester hours)
- ▶ College must include 3 semester hour in each of the 3 specified categories
- ▶ Plus 10 contact hours of Approved Semester Hour Equivalent (SHE) Courses

▶ Experience

- ▶ Four years (8000 hours) of on hands experience at a C level WWTP or higher
- ▶ Two years of either Supervisory or Major Operational Responsibility
- ▶ The above must include 480 hours of secondary treatment
- ▶ and at least 480 in two of other specified areas

Mechanical Plant Certifications - Level B

- ▶ Testing
 - ▶ Obtained the level C certification
 - ▶ Pass the Level B exam by 70% or better

Mechanical Plant Certifications - Level A

▶ CASE I

▶ Education

- ▶ Four Year College Degree
- ▶ Must include 9 semester hour in each of the 3 specified categories
- ▶ Or equivalent contact hours of Approved Semester Hour Equivalent (SHE) Courses in the specified categories

▶ Experience

- ▶ Four years (8000 hours) of on hands experience at a B level WWTP or higher
- ▶ Two years of either Supervisory or Major Operational Responsibility
- ▶ The above must include 480 hours of secondary treatment
- ▶ and at least 480 in two of other specified areas

Mechanical Plant Certifications - Level A

▶ CASE II

▶ Education

- ▶ At least 2 years of college but less than a 4 year degree(60 semester hours)
- ▶ College must include 9 semester hour in each of the 3 specified categories
- ▶ Or equivalent contact hours of Approved Semester Hour Equivalent (SHE) Courses in the specified categories

▶ Experience

- ▶ Four years (8000 hours) of on hands experience at a B level WWTP or higher
- ▶ Two years of either Supervisory or Major Operational Responsibility
- ▶ The above must include 480 hours of secondary treatment
- ▶ and at least 480 in two of other specified areas

Mechanical Plant Certifications - Level A

▶ CASE III

▶ Education

- ▶ College must include 9 semester hour in each of the 3 specified categories
- ▶ Or equivalent contact hours of Approved Semester Hour Equivalent (SHE) Courses in the specified categories

▶ Experience

- ▶ Eight years (16000 hours) of on hands experience at a B level WWTP or higher
- ▶ Two years of either Supervisory or Major Operational Responsibility
- ▶ The above must include 480 hours of secondary treatment
- ▶ and at least 480 in two of other specified areas

Mechanical Plant Certifications - Level A

- ▶ Testing
 - ▶ Obtained the level B certification
 - ▶ Pass the Level A exam by 70% or better

Maintaining the Wastewater Certifications

- ▶ All operators need to maintain their certifications by obtaining Continuing Education Credits or CEC's
- ▶ Certifications are renewed on a 3 year cycle
- ▶ CEC's are broken up into 3 categories
 - ▶ Technical
 - ▶ Managerial
 - ▶ Other

CEC's needed

- ▶ L1, L2 & D - 1.2 CEC's in any category
- ▶ C - 1.2 CEC's with at least 0.6 in either T or M categories.
- ▶ A & B - 2.4 CEC's with at least 0.6 in T and 0.6 in M categories

- ▶ After these are obtained the operator must pay a renewal fee and submit a renewal application.

Future Requirements

- ▶ Communities with Collection Only Systems will be receiving a NPDES-style permit on the system.
- ▶ It will likely require the following:
 - ▶ Asset Management Plan
 - ▶ Collection System Certified Operator
 - ▶ New certification

Requirements for Water Operators

- ▶ Systems are divided into the following groups
 - ▶ F - Complete Treat plants
 - ▶ D - Limited Treatment Plants or Just chlorination
 - ▶ S - Distribution
 - ▶ If you have either a F or D facility it will be coupled with a S certification requirement.
 - ▶ Many communities have just a S requirement if water is purchased from a neighboring community.

Levels

CLASSIFICATION OF TREATMENT AND DISTRIBUTION SYSTEMS

CLASS	POPULATION	DESIGN CAPACITY
Complete Treatment		
F-1	Greater than 20,000	Greater than 5 MGD
F-2	4,000 to 20,000	2 to 5 MGD
F-3	1,000 to 4,000	0.5 to 2 MGD
F-4	Less than 1,000	Less than 0.5 MGD
Other Treatment		
D-1	Greater than 20,000	Greater than 5 MGD
D-2	4,000 to 20,000	2 to 5 MGD
D-3	1,000 to 4,000	0.5 to 2 MGD
D-4	Less than 1,000	Less than 0.5 MGD
Distribution		
S-1	Greater than 20,000	-----
S-2	4,000 to 20,000	-----
S-3	1,000 to 4,000	-----
S-4	Less than 1,000	-----

Educational Requirements

EDUCATIONAL QUALIFICATIONS

F-1	80	D-1	70	S-1	70
F-2	70	D-2	60	S-2	60
F-3	60	D-3	60	S-3	60
F-4	60	D-4	60	S-4	60
F-5	60	D-5	60	S-5	60

SCHEDULE OF POINTS GIVEN FOR FORMAL EDUCATION

8 th Grade	40	*Approved Two Year Water-Wastewater Tech.	80
10 th Grade	50	** B. S. in Engineering, Chemistry or Microbiology	80
H.S. Diploma or GED	60	** Advanced Degree in Engineering, Chemistry, Microbiology, or Limnology	90
2 yr. Associate Degree	70		
Bachelor's Degree	70		
Advanced Degree	70		

Experience Requirements

EXPERIENCE QUALIFICATIONS

F-1 60 D-1 48 S-1 48
 F-2 30 D-2 24 S-2 24
 F-3 15 D-3 12 S-3 12
 F-4 3 D-4 6 S-4 6
 F-5 (NR) D-5 (NR) S-5 (NR)

EDUCATION POINT

RIENCE

	F-1		F-2		-3		S-4	
**Science B.S.	12	9	6	0	12	9	6	3
**Advanced Degree	18	12	6	0	18	12	6	3
Bachelor's Degree	4	4	0	0	2	2	0	0
Advanced Degree	-4	4	0	0	2	2	0	0
* W/WW Tech	0	0	0	3	0	0	6	0

EXPERIENCE IN ALLIED FIELDS

Applicants holding multiple drinking water certificates may apply and qualify for the following exams

	F	D	S
Water Treatment Certificate F-1	---	D-4	S-4
Water Treatment Certificate F-2	---	D-4	S-4
Limited Treatment Certificate D-1	F-4	---	S-4
Limited Treatment Certificate D-2	---	---	S-4
Water Distribution Certificate S-1	F-4	D-4	---
Water Distribution Certificate S-2	---	D-4	---
Wastewater Treatment Certificate A	F-4	D-4	---
Registered Professional Engineer in a Responsible Drinking Water System Design or Construction Position, and Approved Two Year Water-Waste Water Tech.	F-4	D-4	S-4

NUMBER OF FULL CATEGORIES WORKING IN	POINTS/MONTH	ALLOWABLE EXAM LEVEL	EXPERIENCE QUALIFICATIONS MUST INCLUDE
4	1	S-1	48 Points plus: work in 4 or more full categories for at least 1 year AND at least 2 years of operating experience of which 1 year is in an S-2 system or higher.
3	1	S-2	24 Points plus: work in 3 or more full categories for at least 1 year AND at least 1 year of operating experience in an S-3 system or higher.
2	1/2	S-3	12 Points plus: work in 2 or more full categories for 1 year.
1	1/2	S-4	6 Points
½	1/4	S-4	6 Points

NUMBER OF FULL CATEGORIES WORKING IN	POINTS/MONTH	ALLOWABLE EXAM LEVEL	EXPERIENCE QUALIFICATIONS MUST INCLUDE
4	1	F-1	60 Points plus: work in 4 or more full categories for at least 1 year AND at least 3 years of operating experience of which 1 year is in an F-2 system or higher.
3	1	F-2	30 Points plus: work in 3 or more full categories for at least 1 year AND at least 15 months of operating experience in an F-3 system or higher.
2	1/2	F-3	15 Points plus: work in 2 or more full categories for 1 year
1	1/2	F-4	3 Points

NUMBER OF FULL CATEGORIES WORKING IN	POINTS/MONTH	ALLOWABLE EXAM LEVEL	EXPERIENCE QUALIFICATIONS MUST INCLUDE
3	1	D-1	48 Points plus: work in 3 or more full categories for at least 1 year AND at least 2 years of operating experience of which 1 year is in a D-2 system or higher.
2	1	D-2	24 Points plus: work in 2 or more full categories for at least 1 year AND at least 2 years of operating experience in a D-3 system or higher.
1	1/2	D-3	12 Points plus: work in 1 or more full categories 1 year.
1	1/2	D-4	6 Points

F Categories

COMPLETE TREATMENT PUMP OPERATION

- Operate Low & High Service Pumps
- Exercise Plant Valving
- Operate Standby Power Equipment
- Operate Chemical Feed Pumps

COMPLETE TREATMENT PLANT MAINTENANCE

- Maintain & Repair Chemical Feed Pumps
- Maintain & Repair Low & High Service Pumps
- Maintain & Repair Electrical Equipment & Controls
- Maintain & Repair Basins & Piping
- Maintain & Repair Filters
- Maintain & Repair Instrumentation

COMPLETE TREATMENT PLANT FILTERS

- Monitor Filter Performance
- Adjust Filtration Rates
- Perform & Monitor Backwash Filter(s) Cycles
- Calibrate On-Line Instrumentation

COMPLETE TREATMENT CHEMICAL TREATMENT

- Calculate Chemical Dosage
- Prepare Chemical Solutions
- Adjust Treatment Rate
- Collect Daily Water Samples
- Ordering and Inspecting Chemical Deliveries

COMPLETE TREATMENT LABORATORY

- Collect Drinking Water Samples
- Perform Bacteriological Tests
- Perform Daily Chemical/Turbidity Tests
- Perform Analysis using GS/MS Chromatograph and Atomic Adsorption
- Prepare Reagents & Calibration Standards
- Calibration of Online Instrumentation

COMPLETE TREATMENT PLANT ADMINISTRATION

- Complete EGLE Operation Reports
- Respond to Customer Complaints
- Schedule Routine Maintenance
- Maintain Spare Parts & Chemical Inventory
- Prepare Treatment Plant Budgets
- Train & Manage Treatment Plant Personnel
- Prepare & Maintain Emergency Plans

D Categories

LIMITED TREATMENT PLANT OPERATION

- Set Chemical Feed Rates
- Determine Chemical Doses
- Prepare Chemical Solutions
- Operate Treatment System Pumps
- Operate Chemical Pumps
- Operate Well Pumps

LIMITED TREATMENT PLANT MAINTENANCE

- Maintain Well/High Service Pumps
- Maintain Filters
- Maintain Chemical Feed Pumps
- Maintain Treatment System Pumps

LIMITED TREATMENT PLANT LABORATORY DUTIES

- Collect Routine Water Samples
- Perform Chemical Tests
- Perform Residual Tests
- Perform Coliform Tests
- QA/QC of Lab Equipment
- Calibration of Lab Equipment

LIMITED TREATMENT PLANT ADMINISTRATION

- Complete EGLE Operation Reports
- Respond to Customer Complaints
- Schedule Routine Maintenance
- Maintain Spare Parts and Chemical Inventory
- Prepare Treatment Plant Budgets
- Train & Manage Personnel
- Prepare & Maintain Water System Emergency Plans
- Maintain Operational/Plant Data Records & Files
- Schedule Limited Treatment Workforce

S Categories

WATER DISTRIBUTION SYSTEM CONSTRUCTION

- Install or Replace Water Mains
- Install or Replace Fire Hydrants
- Install or Replace System Valves
- Perform Construction Flushing
- Perform Pressure Tests & Leakage Calculations
- Disinfect & Sample New Mains

WATER DISTRIBUTION SYSTEM REPAIRS

- Repair Water Mains
- Repair Hydrants
- Repair Well or Booster Pumps
- Repair Control Valves
- Repair Distribution Valves

WATER DISTRIBUTION SYSTEM OPERATION

- Perform Routine Flushing
- Perform Routine Valve Turning
- Operate Well or Booster Pumps
- Collect Routine Monthly Bacteriologic Samples
- Operate or Control Water Storage
- Perform Leak Detection

WATER DISTRIBUTION SYSTEM CUSTOMER METERS

- Read Meters/Remotes
- Test Meters/Remotes
- Repair Meters/Remotes
- Install Meters/Remotes

WATER DISTRIBUTION SYSTEM SERVICE LINES

- Install Services, Taps, Curb Stops
- Repair Services, Taps, Curb Stops
- Perform Line Locating
- Perform Turn Ons & Shut Offs

WATER DISTRIBUTION CROSS CONNECTIONS

- Conduct Formal Cross Connection Inspections
- Enforce Formal Cross Connection Program
- Maintain Cross Connection Records
- Review Device Test Reports
- Prepare Annual EGLE Cross Connection Report

WATER DISTRIBUTION SYSTEM ADMINISTRATION

- Prepare/Maintain EGLE Reports & Plans
- Respond to Customer Complaints
- Schedule Maintenance
- Maintain Spare Parts Inventory
- Prepare Water System Budgets
- Train & Manage Personnel
- Maintain Distribution Appurtenance Records
- Schedule Distribution Work Force

Additional Requirements

- ▶ An operator can only write an exam one level above his experience in a system.
 - ▶ Example: If an operator is working in a D3 system then he can write a maximum level of a D2 certification.
- ▶ An operator can “skip” over levels.
 - ▶ Example: If an operator is working in a D3 system then he can write the D3 exam without having first to obtain the D4 certification
 - ▶ Note: Experience for a 3 system is a year in a system while the 4 system is 6 months. It is always recommended that a new operator write the 4 exam as soon as they can as it gives them experience in writing an EGLE exam.

Maintaining the Water Certifications

- ▶ Certification are based on a 3 year cycle
- ▶ CEC's are divided into categories just like wastewater. - T, M & O
- ▶ Level 4 Certification - 1.2 CEC's
- ▶ Levels 1 to 3 Certifications - 2.4 CEC's of which 1.2 CEC's must be either T or M

GOAT

- ▶ Top ten list of Greatest of All Time lists of health advances include:
 - ▶ Typically #1 is Vaccination
 - ▶ Then close 2nd are 3rd are -
 - ▶ Drinking Water Treatment
 - ▶ Wastewater Treatment
 - ▶ Sometimes these are combined with garbage disposal and called Sanitation.
 - ▶ Then somewhere towards the bottom on most lists is:
 - ▶ Fluoridation of Drinking

Argument

- ▶ I've been told we need to have lower standards so people can pass these exams.
- ▶ First - This is a NATIONAL problem not just Michigan. So its not Michigan's testing that causing the issue. ALL states are experiencing a shortage of the skilled trades.
- ▶ 2nd - Would you want to go to a doctor for surgery with lower requirements? Or would you want to lower food quality standards? Yet you'd be willing to drink water from poorly qualified operator?

Let's talk about liability

- ▶ Google Walkerton, Ontario Water Crisis
 - ▶ In short - In May of 2000, Operator misconduct caused contamination of the water system.
 - ▶ Out of a town of just over 5000 over 2000 were sickened and 6 DIED
 - ▶ 22 Children had permanent kidney damage
 - ▶ 1 Person committed suicide siting the chronic sickness caused.
 - ▶ The two operators both received jail time
- ▶ Michigan
 - ▶ Morenci - Unlicensed Operator

NOW HIRING!



Starting rate \$14.00!

We hire 14 years and older.

**\$16.00 for adults after 30 days with flexible
full time availability!**

This is just think about this

- ▶ Right now McDonald's is starting its employees in Mt. Pleasant at \$16/hour
- ▶ I know lead operators making \$18.50 / hour
- ▶ Ask yourself - is \$5200 a YEAR worth taking a job you can go to prison over?

Benefits VS Pay

- ▶ When I started in 1990 I made around \$10.50 / hour after 2 years

▶ BUT

- ▶ My health insurance cost me NOTHING
- ▶ Copay health insurance cost me \$10 a visit
- ▶ Prescriptions cost me \$2 or free if generic
- ▶ A B3 MERS defined benefit

Benefits VS Pay

- ▶ During those years employees accepted lower pay because the benefits outweighed the lower pay.
- ▶ Municipalities once were able to steal people from private industry. Why? Because of the benefits.
- ▶ This isn't happening anymore. Why? The benefits are the same as the private sector and the pay lower than the private sector.

Rate Studies - Need to Understand Water & Sewer Rates

- Michigan Rural Water Association
- Free Water and Sewer Rate Studies
- Importance of doing yearly rate studies

Statement of Cash Flows Proprietary Funds For The Year Ended June 30, 2020		
	<u>Business-Type Activities Enterprise Funds</u>	<u>Governmental Activities</u>
	<u>Utilities Fund</u>	<u>Internal Service Fund</u>
<u>Cash Flows From Operating Activities</u>		
Cash Received from Customers	\$ 691,121	\$153,605
Cash Payment to Suppliers For Goods and Services/Employees	(921,200)	(91,826)
Net Cash Provided (Used)	(230,079)	61,779
<u>Cash Flows From Capital and Related Financing Activities</u>		
Grant Revenue - State	272,273	---
Purchase of Capital Assets	(277,884)	---
Bond Principal Payments	(310,000)	---
Bond Interest Payments	(111,237)	---
Loan Proceeds	131,935	---
Transfer In	313,945	---
Net Cash (Used) by Capital and Related Financing Activities	(19,032)	---
<u>Cash Flows From Investing Activities</u>		
Investment Income	---	423
Net Cash Provided (Used) by Investing Activities	---	423
<u>Net Increase (Decrease) in Cash and Cash Equivalents</u>		
	(175,517)	62,202
Cash and Cash Equivalents, Beginning of Year	79,792	108,466
Cash and Cash Equivalents, End of Year	\$ (95,725)	\$170,668
<u>Reconciliation to Statement of Net Assets</u>		
Cash and Cash Equivalents (Overdrawn)	\$ (95,725)	\$170,668
	\$ (95,725)	\$170,668

Questions?