

DRAFT DACUM Research Chart for Class I Water Distribution System Operator

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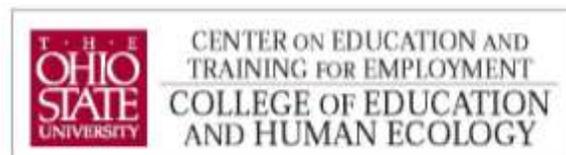
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Duties		← Tasks →				
A	Perform Water Quality Control & Testing	A-1 Check chlorine residuals	A-2 Collect routine bacteria samples	A-3 Collect nitrate/nitrite samples	A-4 Collect iron samples	A-5 Collect asbestos samples
		A-13 Collect arsenic samples	A-14 Collect TTHM samples	A-15 Collect HAA ₅ samples	A-16 Collect unregulated contaminants samples	A-17 Prepare water samples for outside lab/ internal testing
B	Provide Customer Service	B-1 Read water meters	B-2 Respond to customer emergencies (e.g., no water, broken pipe)	B-3 Check water meter accuracy	B-4 Investigate high/unusual water usage	B-5 Turn off/on household water (e.g., vacation, leaks, non-payment)
C	Respond to Emergency Water Distribution Issues	C-1 Repair water main breaks	C-2 Complete emergency hydrant repairs (e.g., fire, flush)	C-3 Complete emergency main line valve repair	C-4 Troubleshoot booster station malfunctions	C-5 Complete booster station repairs (e.g., power loss, telemetry)
		C-12 Complete emergency service line repairs	C-13 Thaw frozen mains, service lines, hydrants	C-14 Replace frozen meters	C-15 Issue boil alerts (e.g., flyer, radio, newspaper)	C-16 Collect special bacteria samples
D	Perform Administrative Tasks	D-1 Maintain daily records & logs (e.g., distribution, maintenance, chlorine)		D-2 Complete Ohio EPA distribution MOR	D-3 Complete Ohio EPA bacteria MOR	D-4 Complete Ohio EPA TTHM report
		D-11 Complete sample citing plan	D-12 Maintain backflow reports	D-13 Participate in Ohio EPA	D-14 Update distribution mapping plan	D-15 Update maintenance plans (e.g., valves, hydrants)
		D-22 Participate in construction plan review	D-23 Participate in pre-construction meetings	D-24 Track customer complaints	D-25 Distribute shut-off notices	D-26 Calculate unaccounted-for water
E	Perform Preventive Maintenance	E-1 Exercise main line valves	E-2 Flush hydrants (e.g., fire, flush)	E-3 Maintain fire hydrants (e.g., lubricate, inspect, pressure test)	E-4 Perform flow test on fire hydrants	E-5 Paint hydrants (e.g., fire, flush)
		E-12 Perform security checks (e.g., water towers, booster stations)		E-13 Test water system alarms (e.g., water level, power failure)	E-14 Maintain SCADA system	E-15 Maintain cathodic protection system
		E-23 Perform building maintenance (e.g., equipment, booster station buildings)				
F	Repair Non-Emergency Water Distribution Components	F-1 Repair hydrants (e.g. fire and flushing)	F-2 Repair main line valves	F-3 Repair curb valves	F-4 Repair pump motors	F-5 Repair pumps

A-6 Collect lead & copper samples	A-7 Collect inorganic samples	A-8 Collect organic samples	A-9 Collect SOC samples	A-10 Collect VOC samples	A-11 Collect metals samples	A-12 Collect radiological samples
A-18 Flush main lines	A-19 Flush dead end mains	A-20 Monitor water tank turnover	A-21 Maintain backflow prevention program			
B-6 Replace water meters	B-7 Locate water utilities (e.g., main, service, meter)	B-8 Clarify bills for customers	B-9 Instruct customers on installation standards	B-10 Bill customers	B-11 Respond to customer complaints (e.g., color, odor, taste)	B-12 Provide bulk water
C-6 Implement contamination procedures	C-7 Troubleshoot total loss of water pressure issues	C-8 Troubleshoot overflowing water tower	C-9 Troubleshoot loss of raw water supply	C-10 Implement source water protection plan	C-11 Complete emergency curb valve repairs	
C-17 Respond to low chlorine residual	C-18 Coordinate traffic control					
D-5 Complete EPA water HHA5 report	D-6 Complete EPA water total chlorine report	D-7 Complete EPA water lead & copper reports	D-8 Complete EPA abnormal system conditions report (e.g., depressurization, backflow)	D-9 Update emergency contingency plan	D-10 Complete consumer confidence report	
D-16 Update safety program	D-17 Complete reports to local authorities (e.g., council, mayor)	D-18 Schedule calibration of equipment	D-19 Develop annual operating budget	D-20 Reconcile monthly operating budget	D-21 Administer inventory control (e.g., tools, materials, supplies)	
E-6 Winterize fire hydrants	E-7 Perform pump maintenance	E-8 Maintain booster station components (e.g., motors, pumps, heaters)	E-9 Maintain large pits (e.g., meters, valves)	E-10 Maintain emergency generators	E-11 Inspect water storage structures	
E-16 Coordinate water tower painting	E-17 Perform leak detection program	E-18 Coordinate maintenance contractors	E-19 Perform vehicle maintenance	E-20 Perform heavy equipment maintenance	E-21 Perform tool maintenance	E-22 Perform grounds maintenance
F-6 Repair water meters	F-7 Repair main line pipes	F-8 Replace meter pit (e.g., lids, risers, pit)	F-9 Repair valve boxes (e.g., curb, main)	F-10 Replace lead service lines	F-11 Repair service lines	F-12 Replace water system gauges

Duties		Tasks				
F	Repair Non-Emergency Water Distribution Components – cont	F-13 Repair water tower components (e.g., screens, ladders, base)		F-14 Repair electrical components (e.g., starters, fuses, circuit breakers)		F-15 Complete job site restoration (e.g., landscaping, paving, concrete)
	G	Install New Water Distribution Components	G-1 Install fire/flush hydrants	G-2 Install water mains	G-3 Install main line valves	G-4 Install service lines
G-6 Install new water meters		G-7 Install corporation stops	G-8 Install meter yokes	G-9 Install meter pits	G-10 Install curb stops/boxes	
G-11 Install sample stations		G-12 Inspect new installations	G-13 Install valve box risers	G-14 Perform new line sampling & testing		
H		Pursue Professional Development Activities	H-1 Participate in operator certification training	H-2 Obtain Class I Distribution System certification	H-3 Obtain professional memberships (e.g., AWWA, ORWA)	H-4 Participate in continuing education (e.g., workshops, seminars)
	H-5 Participate in regional/state meetings	H-6 Participate in vendor training	H-7 Review professional publications	H-8 Participate in internal training	H-9 Participate in supportive training (e.g., plumbing, software, electrical)	
	H-10 Maintain contact hour records	H-11 Pursue higher level certification				

Acronyms

AWWA	American Water Works Association
CCR	Consumer Confidence Report
EPA	Environmental Protection Agency
PPE	Personal Protective Equipment
SCADA	System Control and Data Acquisition
SOC	Synthetic Organic Compound
VOC	Volatile Organic Compound
ORWA	Ohio Rural Water Association
OUPS	Ohio Utility Protection Service
OSHA	Occupational Safety and Health Administration
TTHM	Total Trihalomethane
HAA5	Halo Acetic Acid

General Knowledge and Skills

Problem solving skills
Troubleshooting skills
Organization skills
Decision making skills
CPR/first aid knowledge
Basic mechanical knowledge
Basic electrical knowledge
Basic plumbing/pipe fitting knowledge
Communication skills (written listening, speaking)
Knowledge of safety standards/OSHA requirements
Knowledge of state & federal EPA laws
Basic budgeting/financial knowledge
Schematic/blueprint/map reading skills

Worker Behaviors

Self motivated
Team oriented
Dependable
Responsible
Detail oriented
Safety oriented
Mechanically inclined
Problem solver
Diplomatic
Ethical
Independent
Pride in work
Common sense

Tools, Equipment, Supplies and Materials

Curb wrench
Hydrant wrench
Valve wrench
Speed wrench
Curb keys
Meter keys
Trash pump
Hydrostatic pump
Cutoff saw
Crimping tools
Basic hand tools
Shovels
Locating instruments
Backhoe
Dump truck
Pipe cleaner
Scraper
Hand tools
Safety signs
Calculator
Tape measure
Pipe tape measure
Pipe cutter
Cutting torch
pH meters
Chlorine meters
Colorimeter
Iron meter
Trash pumps
Digital multimeter
Portable generators
Sample bottles
Flashlights/work lights

Barricades
Air compressor/jackhammer
Differential pressure gauge
Cell phone/radio
Pneumatic tools
Digital camera
Basic office equipment
Utility truck
Mops/brooms/cleaning supplies
TV/VCR
Light bar
Metering pumps
Flow meter
Pressure washer
Hydrant markers
Air monitoring equipment/hazardous gas meter(s)
Trench boxes
Ladders
Water main repair clamps
Pipe probe
Touch meter readers
Computer & Internet
Meter reading equipment
AWWA standards
10-State standards
Ohio Administrative Code (OAC)
Equipment manuals
Operations manual
Commercial driver's license
PPE

Future Trends and Concerns

Shrinking workforce (shortage of licensed operators)
Increasing regulations
Increasing operating costs (fuels, chemicals, insurance)
Increased automation through electronics (meter reading)
Aging infrastructure
Shrinking raw water supplies
Increasing threats of terrorism/security concerns
Increased need to be multi-dimensional
Lack of employee self-motivation