

PERFORMING INDUSTRY SKILLS NEED ASSESSMENT AND DEVELOPING TECHNICAL PACKAGES

Using DACUM Job Analysis to Build a Skilled
Workforce Capable of Meeting Industry Needs

APPENDIX

A 2015 International Specialised Skills Institute Fellowship.

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DACUM Research Chart for Class 4 Water Supply Operator

Produced for



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DACUM Research Chart for Class 4 Water Supply Operator

DUTIES

TASKS

A. Maintain Water Quality	A.1 Develop water quality parameters	A.2 Set plant process water treatment goals	A.3 Sample source water	A.4 Sample process water
	A.10 Write test results report	A.11 Develop source water/watershed protection plan	A.12 Implement source water protection plan	A.13 Review plant processes via SCADA system
B. Manage Plant Operations	B.1 Staff plant to minimum required levels	B.2 Produce monthly EPA operating reports	B.3 Produce water quality reports (e.g., chemicals, raw water)	B.4 Order process chemicals
	B.10 Approve contractor requests	B.11 Coordinate planned plant outages	B.12 Verify plant safety procedure compliance	B.13 Conduct plant tours (staff, contractors, vendors)
C. Manage Lab Operations	C.1 Update lab SOPs (e.g., HAB, TCR, LTESWR)	C.2 Maintain lab certification	C.3 Update lab safety plan	C.4 Verify lab inventory
	C.10 Prepare lab for EPA review	C.11 Update distribution sampling site plan	C.12 Test redundant lab equipment	C.13 Procure outside lab testing
D. Manage Plant Maintenance	D.1 Create scheduled maintenance and PM plans	D.2 Prioritize repair jobs	D.3 Create tools/parts inventory	D.4 Update tools/parts inventory
	D.10 Set up new maintenance vendors	D.11 Organize maintenance manuals	D.12 Adjust plant processes to accommodate maintenance operations	D.13 Review maintenance report
E. Maintain Regulatory Compliance	E.1 Schedule sanitary survey	E.2 Facilitate information exchange with district regulatory office	E.3 Update mandated log books (e.g., Ohio EPA, OSHA)	E.4 Oversee record retention
	E.10 Participate in public comment periods for new environmental regulations	E.11 Administer public notices and verification forms	E.12 Develop emergency plans for compliance	E.13 Post current mandated signage

A.5 Sample tap water	A.6 Sample distribution system	A.7 Perform water quality tests*	A.8 Review sample test results	A.9 Adjust water treatment processes
A.14 Supervise backflow prevention program				
B.5 Enforce plant operations policies	B.6 Update plant standard operating procedures	B.7 Prepare equipment for emergencies	B.8 Coordinate system operation with distribution projects	B.9 Perform plant walkthroughs
B.14 Conduct plant operations meetings	B.15 Respond to plant operations irregularities			
C.5 Replenish lab chemicals and supplies	C.6 Monitor lab safety procedures	C.7 Review lab test results	C.8 Perform lab tests*	C.9 Train employees for lab certification
D.5 Meet with maintenance personnel	D.6 Schedule employees for specialized maintenance tasks	D.7 Procure repair parts/tools	D.8 Oversee parts and tools security	D.9 Research new maintenance equipment
D.14 Outsource contractors for specialized maintenance	D.15 Track critical equipment uses	D.16 Oversee safety programs (e.g., lockout/tagout, confined space)	D.17 Update maintenance SDS	
E.5 Monitor operating parameters for compliance	E.6 Interpret test results for compliance	E.7 Oversee activities to meet regulatory deadlines	E.8 Update employees on current and upcoming regulations	E.9 Update SCADA alarm points to current regulations

DACUM Research Chart for Class 4 Water Supply Operator

DUTIES

TASKS

F. Maintain Emergency Plans	F.1 Update emergency contact data	F.2 Update emergency supply vendors	F.3 Develop new emergency procedures (e.g., HAB, lead, giardia)	F.4 Update emergency plans
	F.10 Oversee plant life/safety equipment (e.g., fire alarms, first aid kits, AED)	F.11 Update emergency supply and equipment lists	F.12 Participate in Ohio WARN	F.13 Coordinate emergency response evaluation with fire department
G. Manage Plant Personnel	G.1 Determine plant staffing needs	G.2 Participate in hiring plant personnel	G.3 Conduct new employee orientation	G.4 Oversee plant personnel training
	G.10 Update staff on CIPs	G.11 Conduct plant personnel performance evaluations	G.12 Determine plant personnel performance improvement strategy	G.13 Provide staff job advancement opportunities
	G.19 Participate in formal grievance processes			
H. Maintain Public Relations	H.1 Respond to customer complaints and inquiries	H.2 Conduct community-based plant tours	H.3 Participate in community events	H.4 Host water industry educational events
	H.10 Participate in city council meetings			
I. Oversee Asset Management	I.1 Maintain source water quantity	I.2 Maintain distribution water quantity	I.3 Oversee asset depreciation (e.g., equipment/plant failure, aging infrastructure)	I.4 Review asset management plans and proposals
J. Manage Plant Budget	J.1 Forecast chemical and equipment costs	J.2 Participate in grant funding procurement	J.3 Gather staff budget requests	J.4 Coordinate department budget process with finance
	J.10 Request budget reappropriations (e.g., transfer, supplement)	J.11 Confirm utilization of budgetary allocations		

F.5 Disseminate updated emergency plans	F.6 Oversee staff emergency plan training (e.g., EPA, HAZWOPER)	F.7 Practice emergency response procedures (e.g., tornado drills, natural disasters, spills)	F.8 Oversee plant PPE programs	F.9 Oversee facilities security (e.g., fence, locks, watershed cameras)
G.5 Authorize staff payroll	G.6 Perform plant personnel scheduling (e.g., vacation, shifts)	G.7 Determine employee work assignments	G.8 Conduct staff meetings	G.9 Evaluate staff work assignment performance (e.g., completion, quality)
G.14 Provide professional development/idea incentives	G.15 Develop plant personnel related policies	G.16 Arrange staff appreciation activities	G.17 Participate in plant personnel mentoring and coaching	G.18 Participate in labor relations negotiations
H.5 Distribute annual consumer confidence report	H.6 Conduct public forums (e.g., lead, copper)	H.7 Participate in media interviews	H.8 Participate in educational programs (e.g., stewardship, career, agriculture)	H.9 Participate in water industry conferences (e.g., AWWA, OTCO, ORW)
I.5 Request quote for new or replacement asset	I.6 Review bids for new and replacement asset	I.7 Develop future asset forecast (e.g., usage, equipment, regulatory)	I.8 Create asset wish list	I.9 Manage capital improvement projects
J.5 Forecast payroll and overtime costs	J.6 Review plant operation anomalies for budget impact	J.7 Create department budget	J.8 Track monthly department expenses	J.9 Authorize plant expenditures

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DUTIES

TASKS

K. Engage in Personal Professional Development	K.1 Attend professional conferences	K.2 Complete online training courses	K.3 Participate in table top exercises	K.4 Develop table top exercises
	K.10 Conduct mandatory training (e.g., contact hours, policy, HAB)	K.11 Participate in new equipment training		

* Water Tests

Jar test

pH

Total alkalinity

Total hardness

Calcium hardness

Temperature

Fluoride

Turbidity

Total Trihalomethanes (TTHM)

Haloacetic Acid 5S (HAAS)

Volatile Organic Compounds (VOC)

Synthetic Organic Compounds (SOC)

Chlorine (free and total)

Total Organic Carbon (TOC)

Organics

Metals

Cryptosporidium

Nitrates

Nitrites

Total phosphorus

Cyanobacteria

Algae Identification

Magnesium

Taste and Odor Profiles

Characterization

Giardia

UV254

Stability

TDS

Color

Phenol Alkalinity

Particle count

K.5 Participate in professional organizations	K.6 Review professional publications	K.7 Participate in skill enhancing events	K.8 Participate in mandatory training (e.g., contact hours, policy, HAB)	K.9 Develop mandatory training (e.g., contact hours, policy, HAB)

General Knowledge and Skills

Knowledge

Safety procedures
Policies and procedures
Chemistry
Basic math
Basic accounting
Computer software
SCADA system
Safety program
Labor laws
Management practices
Union policies

Skills

Communication (oral and written)
Strategic planning
Problem solving
Decision making
Multi-tasking
Time management
Leadership
Negotiating
Analytical
Planning
Administrative
Report writing

Acronyms

PM	Preventative Maintenance
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
SCADA	Supervisory Control and Data Acquisition
CCR	Consumer Confidence Report
MOR	Monthly Operating Report
RFP	Request for Proposal
SOP	Standard Operating Procedure
AWWA	American Water Works Association
RFQ	Request for Qualifications
AED	Automated External Defibrillator
OTCO	Operator Training Committee of Ohio
SDS	Safety Data Sheets

Behaviors

Team player
Dependable
Patient
Flexible
Detail oriented
Trustworthy
Professional
Independent
Punctual
Calm
Open minded
Courteous
Ethical
Safety oriented
Self motivated
Good hygiene
Good temperament
Accessible
Drug free
Ability to distinguish color
Able to work in extreme conditions

Tools, Equipment, Supplies and Materials

Portable generators
Traffic control devices
Mobile phone
Cameras
Electrical test equipment
Computer
Copier
Calculator
Basic hand tools
GPS
PPE
Basic office supplies
Core sampler
Fork lift
Dump truck
Skid loader
Lawn equipment
Gas monitors
Trash pumps
Tap machine
Line stop equipment
Lab equipment
Leak survey equipment
Compressors
Vac-con
Whole hogs
Welder
Water level indicators
Fly ladders
Gate operators
Sludge removal pumps
SCADA system
Coupon rack
Backhoe/trackerhoe
Sampling supplies
Road runners - hand held, laptop
Booms

Future Trends and Concerns

Unfunded mandates
New technologies
Stricter regulations
Social media access and speed - example is bad publicity re: lead
Customers' computer literacy
Upgrading of facilities; construction
Decrease in basic water supply quality
Lack of certified operations staff
Increased grants and government funding
"Uncontaminated" regulations (chemicals with no current standards)
Increasingly intense security
Water rate structures



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