DACUM Research Chart for Class IV Water Supply Operator

DACUM Panel

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OSU Consultant

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<table>
<thead>
<tr>
<th>Duties</th>
<th>Tasks</th>
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</thead>
<tbody>
<tr>
<td><strong>A</strong> Plan Operational Workload</td>
<td>A-1 Check log books/work orders/SCADA System (e.g., plant &amp; distribution system)</td>
</tr>
<tr>
<td><strong>B</strong> Supervise Maintenance Program</td>
<td>B-1 Prioritize jobs based on critical equipment</td>
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<tr>
<td><strong>C</strong> Manage Plant Staff</td>
<td>B-11 Check spare parts inventory</td>
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<tr>
<td><strong>D</strong> Perform Lab Work</td>
<td>C-11 Consult with staff</td>
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<tr>
<td><strong>E</strong> Monitor Plant Operations</td>
<td>E-1 Review daily operations sheets</td>
</tr>
<tr>
<td><strong>F</strong> Prepare Reports &amp; Documentation</td>
<td>F-1 Complete MORs</td>
</tr>
<tr>
<td><strong>G</strong> Manage Financial Matters</td>
<td>G-1 Solicit bids (e.g., equipment &amp; supplies)</td>
</tr>
<tr>
<td>A-5</td>
<td>Prioritize facility workload</td>
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<tr>
<td>B-5</td>
<td>Review maintenance program (e.g., computer/paper notebook)</td>
</tr>
<tr>
<td>C-5</td>
<td>Maintain minimum staffing</td>
</tr>
<tr>
<td>D-5</td>
<td>Verify documentation of lab tests (e.g., logbook, LIMs)</td>
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<tr>
<td>E-5</td>
<td>Review jar testing results</td>
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<tr>
<td>F-5</td>
<td>Prepare annual report</td>
</tr>
<tr>
<td>F-18</td>
<td>Maintain employee documentation</td>
</tr>
<tr>
<td>G-12</td>
<td>Maintain employee documentation</td>
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<th>Duties</th>
<th>Tasks</th>
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<tr>
<td><strong>H  Plan Capital Investments</strong></td>
<td>H-1 Research technology/treatment options</td>
</tr>
<tr>
<td></td>
<td>H-2 Prioritize capital improvement wish list</td>
</tr>
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<td></td>
<td>H-3 Forecast demand based on historical data</td>
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<td></td>
<td>H-4 Justify capital improvement requests</td>
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<td></td>
<td>H-5 Prepare RFPs &amp; RFQs</td>
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<tr>
<td><strong>I  Manage Capital Improvements</strong></td>
<td>I-1 Acquire capital improvement funding</td>
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<td>I-2 Solicit project bids</td>
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<td></td>
<td>I-3 Award capital improvement contracts</td>
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<td></td>
<td>I-4 Review equipment submittals</td>
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<td>I-5 Attend progress meetings</td>
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<tr>
<td><strong>J  Maintain Water Distribution Assets</strong></td>
<td>J-1 Manage valve exercise program</td>
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<td>J-2 Maintain altitude valves &amp; PRVs</td>
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<td></td>
<td>J-3 Manage meter exchange program</td>
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<td>J-4 Maintain pump station</td>
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<td></td>
<td>J-5 Maintain back-up power generation equipment</td>
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<tr>
<td><strong>K  Maintain Distribution System Water Quality</strong></td>
<td>K-1 Verify tank turnover</td>
</tr>
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<td>K-2 Coordinate equipment outages</td>
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<td></td>
<td>K-3 Manage hydrant flushing program</td>
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<td></td>
<td>K-4 Maintain rechlorination system</td>
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<td></td>
<td>K-5 Conduct chemical &amp; bacteriological water quality tests (see Lab Tests &amp; Samples list)</td>
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<tr>
<td><strong>L  Pursue Staff Development</strong></td>
<td>L-1 Conduct team building exercises (e.g., cookouts)</td>
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<td>L-2 Participate in continuing education</td>
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<td></td>
<td>L-3 Participate in in-house training</td>
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<td>L-4 Participate in succession planning process</td>
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<td>L-5 Provide knowledge transfer opportunities</td>
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<td>L-12 Provide employee awards/recognition</td>
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<td>L-13 Participate in conferences</td>
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<td>L-14 Provide licensing incentive</td>
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<tr>
<td><strong>M  Maintain Public Relations</strong></td>
<td>M-1 Conduct plant tours</td>
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<td></td>
<td>M-2 Conduct plant open house</td>
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<td>M-3 Respond to customer complaints &amp; inquiries</td>
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<td>M-4 Give presentations to different groups</td>
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<td></td>
<td>M-5 Participate in community service (e.g., food basket, blood drives, cancer walks)</td>
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</tbody>
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*Although panelists are licensed Class 4 Water Supply Operators, all members of the panel do not perform every task on this chart.*
| H-6  Prepare legislation to hire consultant | H-7 Hire consulting engineer | H-8 Attend design meetings | H-9 Pilot project/demonstration study(ies) | H-10 Solicit EPA approval (e.g., plans demo studies, tracer studies) | H-11 Review capital improvement plan & specifications |
| I-6 Plan for shut downs (e.g., equipment, process) | I-7 Process change orders | I-8 Participate in factory acceptance tests | I-9 Train operations & maintenance staff on new equipment | I-10 Conduct operational availability demonstration(s) | I-11 Monitor equipment during warranty period |
| J-6 Maintain outlying station security | I-7 Conduct site inspections | I-8 Verify grounds maintenance | I-9 Maintain elevated & ground water storage |
| K-6 Respond to trouble calls |
| L-6 Network with other professionals | L-7 Participate in professional organizations (e.g., AWWA, ORWA) | L-8 Attend workshops/seminars | L-9 Volunteer for work groups | L-10 Read professional publications & journals | L-11 Provide incentives for continuing education (e.g., tuition reimbursement) |
| M-6 Promote water education & conservation (e.g., school science projects) | M-7 Write articles for publication | M-8 Maintain working relationships with other community departments | M-9 Maintain working relationships with master meter accounts | M-10 Promote environmental stewardship |

**Lab Tests & Samples**

| Cl2 – Free and Total | Turbidity | Fluoride | DBPs | pH | DO | TOC | Alkalinity | Hardness | Stability | VOC | SOC | RADS | Copper | Lead | Arsenic | Phosphate | Nitrates |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Asbestos | SVI | Algae | Total coliform | UV254 | E-coli | Cryptosporidium | Giardia | DOC | TON | Metals | KMnO4 | Temperature | Taste | Ca | Mg | Iron | Manganese |

**Calibrations**

General Knowledge and Skills

Communication skills: listening, speaking, writing (surveys, EPA reports)
Team building skills
Ability to motivate
Safety procedures
Computer skills (Internet, word processing, data base, spreadsheet)
Ability to navigate a bureaucracy
Local civil service rules
Chemistry and laboratory procedures
Water treatment field
Class 4 operator’s certificate
State and federal EPA rules and regulations
OSHA/safe work practice

Mentoring skills
Decision-making skills
Research skills
Electrical/electronic skills
Mechanical skills
Time management skills
Data processing skills
Critical thinking skills
Interpersonal skills
Delegation skills
Troubleshooting skills
Prioritization skills
Leadership skills
Basic first aid
Union contracts

Worker Behaviors

Supportive
Advocacy
Team player
Honest
Diplomatic
Ethical
Persuasive
Detail-oriented
Organized
Mentoring skills
Decision-making skills
Research skills
Electrical/electronic skills
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Future Trends and Concerns

Privatization
Regionalization
Disinfection
Treatment techniques
Aging infrastructure
Aging workforce
Regulations
Cost of commodities

Growth – population, demand
Compliance issues
Rate increases
Unfunded mandates causing hardships (CCR)
Upcoming workforce: minimum work for maximum benefits

Tools, Equipment, Supplies and Materials

General office supplies
Computer
Laptop
Fax, scanner, copier, printer
LCD projector
Time clocks
File cabinets, book case
Desk
Climbing gear
Safety equipment – PPE
Waders, rain gear
Camera
Blueprints
Cell phones
Walkie-talkies (radios)

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Acronyms

AWWA American Water Works Association
Ca Calcium
CEUs Continuing Education Units
Cl₂ Chlorine
CCR Consumer Confidence Report
DBP Disinfectant By-Product
DPD Salt of N,N-Diethyl-p-phenylenediame
DO Dissolved Oxygen
DOC Dissolved Organic Carbon
IDSE Initial Distribution System Evaluation
IT Information Technology
KMnO₄ Potassium Permanganate
LIMS Laboratory Information Management System
Mg Magnesium
MORs Monthly Operating Reports
NPDES National Pollution Discharge Elimination Sys.
O&M Operation & Maintenance
ODNR Ohio Department of Natural Resources
OEPA Ohio Environmental Protection Agency
ORWA Ohio Rural Water Association
OSHA Occupational Health and Safety Administration
OTCO Operator Training Committee of Ohio
PPE Personal Protective Equipment
PO Purchase Orders
PPM Policy & Procedures Manual
PRVs Pressure Reducing Valves
QA/QC Quality Assurance/Quality Control
QORs Quarterly Operation Reports
RADS Radiological
RFP Request for Proposals
RFQ Request for Qualifications
RMP Risk Management Plan
SCADA Supervisory Control & Data Acquisition
SOC Synthetic Organic Carbon
SOP Standard Operating Procedure
SVI Sludge Volume Index
SWEET Source Water Environmental Education Team
TOC Total Organic Carbon
TON Threshold Odor Number
UV254 Ultra Violet
VOC Volatile Organic Carbon