DACUM Research Chart for
Class III Water Supply Operator

DACUM Panel

Darren S. Drumm
Superintendent
Logan, OH

Bob Gardner
Chief Operator
City of Westerville Division of
Water
Westerville, OH

Kevin Gleich
Water Plant Operator I
Galloway, OH

Jonathan D. King
General Manager
Lucasville, OH

Tim E. Newland
Water Superintendent
Bellefontaine, OH

Lance Willard
Wastewater Superintendent
Columbiana, OH

DACUM Facilitators

Phillip D. Crockett
Marcio Moreira
Manal Ismail
Christine Wagner, Team Leader

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COLLEGE OF EDUCATION
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### DACUM Research Chart for Class III Water Supply Operator

<table>
<thead>
<tr>
<th>Duties</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A Analyze Water Quality</strong></td>
<td>A-1 Analyze source (raw) water</td>
</tr>
<tr>
<td></td>
<td>A-2 Perform water treatment plant chemical analyses</td>
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<td></td>
<td>A-3 Conduct jar test</td>
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<td></td>
<td>A-4 Test finished water</td>
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<td></td>
<td>A-5 Test water in distribution system</td>
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<tr>
<td></td>
<td>A-13 Conduct fluoride tests</td>
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<td></td>
<td>A-14 Conduct chlorine tests</td>
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<td></td>
<td>A-15 Conduct manganese tests</td>
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<td></td>
<td>A-16 Conduct TOS tests</td>
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<tr>
<td></td>
<td>A-17 Conduct TOC tests</td>
</tr>
<tr>
<td><strong>B Comply with Regulatory Requirements</strong></td>
<td>B-1 Secure license to operate</td>
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<tr>
<td></td>
<td>B-2 Maintain laboratory certification(s)</td>
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<tr>
<td></td>
<td>B-3 Create well head/source water protection plan</td>
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<tr>
<td></td>
<td>B-4 Update well head/source water protection plan</td>
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<td></td>
<td>B-10 Secure discharge permit(s)</td>
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<td></td>
<td>B-11 Complete NPDES report</td>
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<tr>
<td></td>
<td>B-12 Complete water quality test(s) per monitoring schedule</td>
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<tr>
<td></td>
<td>B-13 Secure wet chemistry laboratory certification</td>
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<tr>
<td><strong>C Participate in Fiscal &amp; Capital Improvement Planning</strong></td>
<td>C-1 Develop proposed annual budget</td>
</tr>
<tr>
<td></td>
<td>C-2 Justify proposed annual budget</td>
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<tr>
<td></td>
<td>C-3 Supervise departmental budget adherence</td>
</tr>
<tr>
<td></td>
<td>C-4 Develop 5- and 10-year capital improvement plans</td>
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<tr>
<td></td>
<td>C-5 Apply for grants</td>
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<tr>
<td></td>
<td>C-12 Generate asset management reports</td>
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<tr>
<td></td>
<td>C-13 Perform analysis of production &amp; distribution costs</td>
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<tr>
<td></td>
<td>C-14 Oversee annual bidding for supplies</td>
</tr>
<tr>
<td></td>
<td>C-15 Develop cost comparisons for purchases</td>
</tr>
<tr>
<td></td>
<td>C-16 Procure purchase orders</td>
</tr>
<tr>
<td><strong>D Ensure Customer Satisfaction</strong></td>
<td>D-1 Respond to customer water quality complaints (e.g., taste, odor, color, pressure, hardness, chlorine levels)</td>
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<tr>
<td></td>
<td>D-2 Respond to customer billing questions &amp; complaints</td>
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<td></td>
<td>D-3 Notify customers of water quality problems &amp; scheduled outages</td>
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<td></td>
<td>D-11 Participate in community meetings (e.g., CCR explanation, infrastructure upgrades, grant caucus)</td>
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<td></td>
<td>D-12 Provide public education on industry policies &amp; procedures</td>
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<td></td>
<td>D-13 Provide CCRs using media (e.g., newspaper, mail, Internet)</td>
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<tr>
<td><strong>E Maintain Source Water Supply</strong></td>
<td>E-1 Secure water source (e.g., reservoir, storage tanks &amp; well fields)</td>
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<tr>
<td></td>
<td>E-2 Protect source water from surface contamination</td>
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<td></td>
<td>E-3 Maintain source water security system (e.g., cameras, fence, gates, locks)</td>
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<tr>
<td></td>
<td>E-10 Replace water pumps</td>
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<tr>
<td></td>
<td>E-11 Repair water pumps</td>
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<td></td>
<td>E-12 Clear intake screens (e.g., debris, fish, leaves)</td>
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<tr>
<td></td>
<td>E-13 Clean storage tanks, reservoirs, &amp; wells</td>
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<tr>
<td></td>
<td>E-14 Clean water lines (well to plant)</td>
</tr>
<tr>
<td><strong>F Manage Water Treatment Plant</strong></td>
<td>F-1 Maintain treatment plant facility security systems</td>
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<td></td>
<td>F-2 Supervise deliveries &amp; visitors (e.g., chemical deliveries)</td>
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<tr>
<td></td>
<td>F-3 Regulate flow rates &amp; levels</td>
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<td></td>
<td>F-4 Regulate chemical feed rates</td>
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<td></td>
<td>F-10 Scrape slow sand filter(s)</td>
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<tr>
<td></td>
<td>F-11 Inspect water treatment equipment (See List a)</td>
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<tr>
<td></td>
<td>F-12 Repair water treatment equipment (See List a)</td>
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<tr>
<td></td>
<td>F-13 Conduct plant safety inspections (See List b)</td>
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<tr>
<td></td>
<td>F-14 Clean water treatment plant structures (see List c)</td>
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<tr>
<td>A-6 Conduct PH tests</td>
<td>A-7 Conduct total coliform tests</td>
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<tr>
<td>A-18 Conduct iron tests</td>
<td>A-19 Conduct stability tests</td>
</tr>
<tr>
<td>B-5 Prepare contingency plans (e.g., power outage, loss of source, chlorine levels)</td>
<td>B-6 Update contingency plans</td>
</tr>
<tr>
<td>B-14 Secure bacteriological laboratory certification</td>
<td>B-15 Maintain facilities to meet OEPA recommendations</td>
</tr>
<tr>
<td>C-6 Apply for loans</td>
<td>C-7 Recommend capital improvement projects</td>
</tr>
<tr>
<td>C-17 Maintain parts &amp; chemical inventory</td>
<td>C-18 Approve invoices &amp; checks (e.g., A/P, payroll)</td>
</tr>
<tr>
<td>D-4 Investigate possible leaks</td>
<td>D-5 Inspect customer water lines</td>
</tr>
<tr>
<td>D-14 Paint fire hydrants</td>
<td>D-15 Provide rate discounts (e.g., senior citizens)</td>
</tr>
<tr>
<td>E-4 Manage monitoring wells</td>
<td>E-5 Monitor water supply (e.g., water table, reservoir levels)</td>
</tr>
<tr>
<td>E-15 Install source water telemetry &amp; electrical controls</td>
<td>E-16 Perform source water telemetry &amp; electrical controls maintenance</td>
</tr>
<tr>
<td>F-5 Perform process control analysis (e.g., alkalinity, coliforms, PH)</td>
<td>F-6 Manage chemical inventory</td>
</tr>
<tr>
<td>F-15 Troubleshoot electrical controls (e.g., contactors, heaters, VFDs, &amp; soft starts)</td>
<td>F-16 Perform building maintenance (e.g., paint, replace lights)</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Duties</th>
<th>Tasks</th>
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<tbody>
<tr>
<td>Manage Water Distribution System</td>
<td>G-1 Regulate water tank levels</td>
</tr>
<tr>
<td></td>
<td>G-12 Read water meters</td>
</tr>
<tr>
<td>Perform Administrative Activities</td>
<td>H-1 Seek approval for raises (HR)</td>
</tr>
<tr>
<td></td>
<td>H-12 Approve payroll (e.g., time sheets)</td>
</tr>
<tr>
<td>Continue Professional Development</td>
<td>I-1 Teach classes (CEU credit)</td>
</tr>
</tbody>
</table>

Acronyms:

AWWA American Water Works Association  
CCR Consumer Confidence Report  
CERCLA Comprehensive Environmental Response, Compensation and Liability Act  
CEU Continuing Education Unit  
HR Human Resources  
MOR Monthly Operating Report  
NPDES National Pollutant Discharge Elimination System  
OTCO Operator Training Committee of Ohio  
ORWA Ohio Rural Water Association  
ODNR Ohio Department of Natural Resources  
PTI Permit to Install  
QA/QC Quality Assurance Quality Control  
SARA Superfund Amendments and Reauthorization Act  
SCADA Supervisory Control & Data Acquisition  
TDS Total Dissolved Solids  
TOC Total Organic Carbon  
VA Vulnerability Assessment  
VFD Variable Frequency Drive
<table>
<thead>
<tr>
<th>G-6</th>
<th>Repair water distribution infrastructure (See List d)</th>
<th>G-7</th>
<th>Flush distribution system (e.g., fire, flush hydrants, dead end lines)</th>
<th>G-8</th>
<th>Test fire hydrants</th>
<th>G-9</th>
<th>Maintain fire hydrants</th>
<th>G-10</th>
<th>Replace fire hydrants</th>
<th>G-11</th>
<th>Test water meter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G-16</td>
<td>Conduct telemetry tests</td>
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<tr>
<td>H-6</td>
<td>Develop safety policies</td>
<td>H-7</td>
<td>Develop employee handbook</td>
<td>H-8</td>
<td>Develop job descriptions</td>
<td>H-9</td>
<td>Develop job hazard analysis</td>
<td>H-10</td>
<td>Manage personnel schedules (e.g., vacations, comp time, shift coverage)</td>
<td>H-11</td>
<td>Assign job duties</td>
</tr>
<tr>
<td>H-15</td>
<td>Perform record retention (e.g., MOR, personnel records, customer records)</td>
<td>H-16</td>
<td>Determine need for new employee(s)</td>
<td>H-17</td>
<td>Hire new employee(s)</td>
<td>H-18</td>
<td>Evaluate personnel performance</td>
<td>H-19</td>
<td>Mentor personnel</td>
<td>H-20</td>
<td>Provide personnel training &amp; development</td>
</tr>
<tr>
<td>I-5</td>
<td>Network with other water professionals</td>
<td>I-6</td>
<td>Pursue higher education (e.g., college degrees)</td>
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</tbody>
</table>
List a: Water Treatment Equipment

* Lime slakers
* Chemical pumps
* Turbid I meters
* Augers
* Altitude valves
* Chlorinators
* Actuators
* Analyzers
* Probes
* SCADA system
* Scales
* Rotometers
* Ph meters
* Flow meters
* Conductivity meters
* Level indicators
* DP cells
* Chemical detectors
* VFDs
* Air quality monitors
* Noise level monitors

Gates
Pumps/motors
Filters
Basins
Rakes
Collectors
Floculators
Rapid mix
Channels
Upflow clarifiers
Recarbonation tanks

Air scour system
Blowers
GAC
Bulk storage containers
Heaters
Injectors
Back flow preventers
Pump control systems
Evaporators
Scrubber system
Generators
Valves
Storage tanks
Roto dips
Air bubblers
Diffusers
Sludge thickeners
Softeners (ion exchange)
Brine tanks
Water lines (supply)
Chemical feed lines
Low service pumps
High service pumps
Dehumidifiers
Sump pumps
A/C unit
Doors
Manways
Hatches
Pilot plant
Fork lifts
Rotating Screen
Gates

List b: Safety Plant Inspections

Fire extinguisher
Eye wash stations
Showers
Exit lights, doors
Emergency exits
Fall protection systems
MSDS reports
Chemical leak detectors (P)
Scrubber system
SCBA packs
Incident/accident reports

A, B, & C chlorine kits
Emergency evaluation & notification procedures
Overhead lifts
Safety equipment
Emergency first aid kits
Chlorine evaporators
Chlorinators
Foul weather gear
Vehicles
Chemical feed pumps
Emergency generator
List c: Water Treatment Plant Structures

Basins
Channels
Brine tanks
Filters
Aerators
Recarbonation tanks
Solid contact

Air stripping towers
Influent lines
Floculators
Tanks
Drains
Sample lines
Gates

List d: Water Distribution Infrastructure (* = installed)

Booster pumps*
Water meters*
Control valves*
Isolation valves*
Telemetry*
Pressure sensors*
Leak detections*
Pressure reducers*
Backflow preventer*
Chemical feeders*
Water mains*
Storage tanks
Generators
Vehicles
Heavy equipment
Booster stations

Monitor:
Water pressure (suction and discharge)
Water pressure flow rates
Water pressure tank levels
Water pressure communication between remote sites
Meter readings

List e: Operational Plans and/or Procedures

Preventive maintenance
Standard operating procedures (e.g., filter backwash, customer notification)
Emergency plans
Contingency plans
Emergency response plans
New employee operational manuals
Mapping program
Safety plans & procedures