

# Gap Analysis Tool

## Mechanical Technologist Grade 1

In the rows below, select "Do It All The Time", "Limited Experience" or "Never Do This" based on your current knowledge and experience. Based on your responses, you can assess your overall preparedness for each Domain.

	Do It All The Time	Limited Experience	Never Do This
<b>Domain 1 – Inspection, Maintenance, Installation, and Repair</b>			
<b>Sub-Domain 1.1 – Inspection of systems and equipment</b>			
1. Assist in the general inspection of water/wastewater plant and/or lift/pump station mechanical components (pumps, valves, motors, engines, compressors, actuators, computerized pneumatic and odor control systems, etc.)			
2. Assist in identifying and troubleshooting mechanical problems			
3. Assist in the tuning of engines, adjusting and setting valve clearance, cleaning and adjusting regulators, cleaning and inspecting magnetic points, cleaning and adjusting engine timing, and checking fueling and other controls and devices			
4. Inspect small motorized equipment and vehicles			
<b>Sub-Domain 1.2 – Maintenance and repair of tools, equipment, systems, and facilities</b>			
1. Assist in the disassembly and reassembly of equipment in order to clean parts and cases			
2. Perform general clean-up of tools, equipment, and work areas			
3. Assist in the maintenance and repair of equipment used for disinfection of water/wastewater treatment facilities, including the connection and disconnection of cylinders			
4. Clean, oil, and lubricate motors, generators, compressors, pumps, turbines, and other moving equipment			
5. Assist in the inspection, calibration, and maintenance of equipment used for confined space entries (atmospheric monitors, air testers, etc.)			
6. Assist with regularly scheduled preventative maintenance and repair work on water/wastewater plant and lift/pump station equipment, pipelines, and valves			
7. Assist in the maintenance of mechanical equipment necessary to the operation of water/wastewater facilities, including large pumps, portable gas and diesel driven pumps, motors, hydraulic controls and regulators, valves and allied pumping systems, chemical feed and processing equipment, compressors, heating and ventilating equipment, emergency generators, and all other related equipment			
<b>Sub-Domain 1.3 – Installation of components and equipment</b>			
1. Assist in the installation of plant, field, and shop equipment, components, and machinery			
<b>How would you rank Domain 1 based on what you selected for each Sub-Domain?</b>			
<b>Domain 2 – Tools and Equipment</b>			
<b>Sub-Domain 2.1 – Design and fabrication of equipment</b>			

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1. Assist in the fabrication and assembly of a variety of equipment and specialty tools			
2. Assist in the fabrication of parts and fittings, making of assemblies, and repair of units based on drawings, specifications, sketches, work orders, verbal instructions, or personal visual inspection			
<b>Sub-Domain 2.2 - Meters</b>			
1. Read and interpret meters accurately			
2. Chart and record results			
3. Notify senior staff members of issues			
<b>Sub-Domain 2.3 - Operation of tools, equipment, and vehicles</b>			
1. Assist in the operation of a crane or rigging equipment for moving/placing pumps, machinery, or other heavy equipment during installation, maintenance, and repair activities			
2. Operate vehicles used for installation, maintenance, and repair activities (trucks, forklifts, vactors)			
3. Operate equipment used for installation, maintenance, and repair activities (portable and stationary generators, steam cleaners, portable pumps, compressors, valves, pumps, gauges, engines, and electromechanical devices)			
4. Operate hand and power tools used for installation, maintenance, and repair activities (sandblaster, grinder, pneumatic, hydraulic, and electric tools, oxygen-acetylene torch)			
5. Operate precision measuring instruments in the performance of various work assignments (calipers, micrometers, dial indicators)			
<b>How would you rank Domain 2 based on what you selected for each Sub-Domain?</b>			
<b>Domain 3 - Records, Reports, and SCADA</b>			
<b>Sub-Domain 3.1 - Documentation</b>			
1. Basic understanding of the importance of accurate documentation			
2. Assist in the preparation of work orders and field reports			
3. Record data and run times for pump motors, standby generators, and related equipment			
4. Basic understanding of workflow process and documentation in computerized maintenance management system (CMMS)			
5. Follow Operations and Maintenance Manual (OMM) and standard operating procedures (SOPs)			
<b>Sub-Domain 3.2 - Supervisory Control and Data Acquisition (SCADA)</b>			
1. Basic understanding of Supervisory Control and Data Acquisition (SCADA) system			
2. Assist in identifying the status of a station or plant based on SCADA information			
<b>How would you rank Domain 3 based on what you selected for each Sub-Domain?</b>			
<b>Domain 4 - Safety and Facility Maintenance</b>			
<b>Sub-Domain 4.1 - Safety</b>			

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1. Knowledge of basic safety rules and safe work practices			
2. Basic knowledge of CalOSHA standards and safety procedures for working with chemicals (e.g., Safety Data Sheets)			
3. Basic knowledge of safety practices for confined space entry			
4. Assist with confined space entries per CalOSHA and local regulations			
5. Perform vehicle, tool, and equipment safety checks and air quality tests			
6. Follow Lockout Tagout (LOTO) safety procedures			
7. Identify and implement proper Personal Protective Equipment (PPE) for work environment (safety glasses, hard hat, gloves, ear protection, respirator, face shield, hazmat suit)			
<b>Sub-Domain 4.2 - Building and grounds maintenance</b>			
1. Assist with building and grounds maintenance including plumbing, painting, moving furniture, basic carpentry, masonry, and irrigation			
2. Perform housekeeping duties in facilities including cleaning and removing waste products, cleaning screens and vents, and performing janitorial tasks			
3. Basic knowledge of general methods of related electrical, carpentry, plumbing, HVAC, and pipefitting repair to identify building and grounds maintenance and repair issues			
<b>How would you rank Domain 4 based on what you selected for each Sub-Domain?</b>			
<b>Domain 5 - Communication</b>			
<b>Sub-Domain 5.1 - Communication</b>			
1. Communicate clearly and concisely, both orally and in writing			
2. Understand and follow oral and written instructions			
3. Establish and maintain cooperative working relationships with those contacted in the course of work, including peers, operators, superiors, vendors, contractors, customers, and the general public			
<b>How would you rank Domain 5 based on what you selected for each Sub-Domain?</b>			
<b>Domain 6 - Math</b>			
<b>Sub-Domain 6.1 - Math calculations and basic computations</b>			
1. Calculate flow rates			
2. Calculate volume and area			
3. Calculate pressure			
4. Basic understanding of converting metric and American standard measurements			
<b>How would you rank Domain 6 based on what you selected for each Sub-Domain?</b>			
You may want to focus your studying in the areas where you selected "Limited Experience" or "Never Do This". See Mechanical Technologist Candidate Handbook.			

# Gap Analysis Tool

## Mechanical Technologist Grade 2

In the rows below, select "Do It All The Time", "Limited Experience" or "Never Do This" based on your current knowledge and experience. Based on your responses, you can assess your overall preparedness for each Domain.

	Do It All The Time	Limited Experience	Never Do This
<b>Domain 1 - Inspection, Maintenance, Installation, and Repair</b>			
<b>Sub-Domain 1.1 - Inspection of systems and equipment</b>			
1. Inspect water/wastewater machinery and equipment (pumps, valves, motors, engines, compressors, actuators, computerized pneumatic and odor control systems, etc.)			
2. Independently troubleshoot and diagnose mechanical and electrical malfunctions and determine effective course of action for correcting them			
3. Basic electrical knowledge of pumps, motors, and other equipment			
4. Basic knowledge of standard practices and procedures for precision alignment of rotating equipment varispeed drives, gear-reduction drives, shafts, and belts			
5. Adjust and set valve clearance, clean and adjust regulators, clean and inspect magnetic points, clean and adjust engine timing, and check fuel and other controls and devices			
6. Inspect small motorized equipment and vehicles			
<b>Sub-Domain 1.2 - Maintenance and repair of tools, equipment, systems, and facilities</b>			
1. Perform regularly scheduled preventative maintenance and repair work on water/wastewater plan and lift/pump station equipment, pipelines, and valves			
2. Maintain and troubleshoot mechanical equipment necessary to the operation of water/wastewater facilities (including large pumps, portable gas and diesel driven pumps, motors, hydraulic controls and regulators, valves and allied pumping systems, chemical feed and processing equipment, compressors, heating and ventilating equipment, emergency generators, and all other related equipment)			
3. Maintain and repair of equipment used for disinfection of water/wastewater treatment facilities using various disinfection processes			
4. Clean, oil, and lubricate motors, generators, compressors, pumps, turbines, and other moving equipment			
5. Participate in the work of a crew that performs major and minor repair work on water/wastewater facility equipment such as engines, sewer and storm pumping stations, pumps, lift stations, pneumatic control systems, and ventilation blower units			
6. Inspect, calibrate, and maintain equipment used for confined space entries (atmospheric monitors, air testers, etc.)			
7. Investigate interruptions of service, identify defects, and resolve complex mechanical repair problems			
<b>Sub-Domain 1.3 - Installation of components and equipment</b>			

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1. Install and adjust a variety of mechanical equipment necessary to the operation of water/wastewater facilities, including large pumps, portable gas and diesel driven pumps, motors, hydraulic controls and regulators, valves and allied pumping systems, chemical feed and processing equipment, compressors, heating and ventilating equipment, emergency generators, and other related equipment			
2. Recommend improvements to the design and installation of water/storm/sewer stations and equipment used to operate water/wastewater facilities			
<b>How would you rank Domain 1 based on what you selected for each Sub-Domain?</b>			
<b>Domain 2 - Collection Systems Tools and Equipment</b>			
<b>Sub-Domain 2.1 - Design and fabrication of equipment</b>			
1. Design, fabricate, and assemble a variety of equipment and specialty tools			
2. Fabricate parts and fittings, make assemblies, and repair units based on drawings, specifications, sketches, work orders, verbal instructions, or personal visual inspection			
<b>Sub-Domain 2.2 - Meters</b>			
1. Read and interpret meters accurately			
2. Chart and record results			
3. Troubleshoot minor issues and notify senior staff members of complex issues			
<b>Sub-Domain 2.3 - Operation of tools, equipment, and vehicles</b>			
1. Operate a crane or rigging equipment for moving/placing pumps, machinery, or other heavy equipment during installation, maintenance, and repair activities			
2. Operate vehicles used for installation, maintenance, and repair activities (trucks, forklifts, vactors)			
3. Operate equipment used for installation, maintenance, and repair activities (portable and stationary generators, jackhammers, steam cleaners, portable pumps, compressors, valves, pumps, gauges, engines, and electro-mechanical devices)			
4. Operate hand and power tools used for installation, maintenance, and repair activities (sandblaster, grinder, drill, drill press, pneumatic, hydraulic, and electric tools, oxygen-acetylene torch)			
5. Operate precision measuring instruments in the performance of various work assignments (calipers, micrometers, dial indicators)			
6. Basic knowledge of practices, procedures, tools, and equipment of machinery and welding shops (plasmacutting, MIG, TIG, and ARC welding)			
<b>How would you rank Domain 2 based on what you selected for each Sub-Domain?</b>			
<b>Domain 3 - Records, Reports, and SCADA</b>			
<b>Sub-Domain 3.1 - Maps and blueprints</b>			
1. Read street and utility maps (GIS)			
2. Read and interpret blueprints, basic electrical schematics, drawings, and as-builts			
<b>Sub-Domain 3.2 - Documentation</b>			
1. Maintain comprehensive and detailed records of maintenance and repairs			

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2. Record repair actions and parts requests			
3. Record work orders and field reports			
4. Record data and run times for pump motors, standby generators, and related equipment			
5. Prepare reports on operations and activities (posting of work orders, daily logs, ledgers, parts lists, invoices, and inventories)			
6. Basic knowledge of documentation and regulatory requirements (such as Air Pollution Control District (APCD), Department of Toxic Substances Control (DTSC), Certified Unified Program Agencies (CUPA), California Code of Regulations Title 22)			
7. Assist in the development and updating of the computerized maintenance management system (CMMS) and use the system for preventative, predictive, and corrective repair of assets			
<b>Sub-Domain 3.3 - Supervisory Control and Data Acquisition (SCADA)</b>			
1. Basic understanding of Supervisory Control and Data Acquisition (SCADA) system			
2. General knowledge of SCADA trending tools to monitor equipment status and predict/anticipate equipment failure			
<b>How would you rank Domain 3 based on what you selected for each Sub-Domain?</b>			
<b>Domain 4 - Safety and Facility Maintenance</b>			
<b>Sub-Domain 4.1 - Safety</b>			
1. Knowledge of safety rules and safe work practices with basic understanding of local, state, and federal laws, ordinances, and rules			
2. Handle all work-related chemicals in accordance with CalOSHA standards and safety procedures (e.g., Safety Data Sheets)			
3. Knowledge of safety practices for confined space entry			
4. Perform confined space entries per CalOSHA and local regulations			
5. Maintain and use self-contained breathing apparatus			
6. Perform vehicle, tool, and equipment safety checks, chemical tests, and air quality tests			
7. Understand and follow Lockout Tagout (LOTO) safety procedures			
8. Identify and implement proper Personal Protective Equipment (PPE) for work environment (safety glasses, hard hat, gloves, ear protection, respirator, face shield, hazmat suit)			
<b>Sub-Domain 4.2 - Building and grounds maintenance</b>			
1. Perform building and grounds maintenance including plumbing, painting, moving furniture, basic carpentry, masonry, and irrigation			
2. Perform housekeeping duties in facilities including cleaning and removing waste products, cleaning screens and vents, and performing janitorial tasks			
3. Basic knowledge of general methods of related electrical, carpentry, plumbing, HVAC, and pipefitting repair to identify and resolve building and grounds maintenance and repair issues			
<b>How would you rank Domain 4 based on what you selected for each Sub-Domain?</b>			
<b>Domain 5 - Administration and Communication</b>			

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<b>Sub-Domain 5.1 - Administration</b>			
1. Assist in the development of a preventative maintenance schedule			
2. Work with others to accomplish the planned maintenance routines			
3. Evaluate operations and activities of assigned responsibilities and recommend improvements/modifications			
4. Participate in work activities with other departments and divisions			
5. General knowledge of process to solicit bids and purchase equipment, parts, tools, and contractor work			
6. Knowledge of how to prepare rough estimates of labor and materials necessary to accomplish the maintenance and repair activities			
7. Follow Operations and Maintenance Manual (OMM) and standard operating procedures (SOPs) and provide input for improvement			
<b>Sub-Domain 5.2 - Communication</b>			
1. Communicate clearly and concisely, both orally and in writing			
2. Understand and follow oral and written instructions			
3. Establish and maintain cooperative working relationships with those contacted in the course of work, including peers, operators, direct reports, superiors, vendors, contractors, customers, and the general public			
<b>How would you rank Domain 5 based on what you selected for each Sub-Domain?</b>			
<b>Domain 6 - Math</b>			
<b>Sub-Domain 6.1 - Math calculations and basic computations</b>			
1. Calculate flow rates			
2. Calculate volume and area			
3. Calculate horsepower (brake and motor)			
4. Calculate precision measurements (using calipers, micrometers, etc.)			
5. Calculate drive ratios			
6. Calculate pressure			
7. Basic understanding of converting metric and American standard measurements			
<b>How would you rank Domain 6 based on what you selected for each Sub-Domain?</b>			
You may want to focus your studying in the areas where you selected "Limited Experience" or "Never Do This". See Mechanical Technologist Candidate Handbook.			

# Gap Analysis Tool

## Mechanical Technologist Grade 3

In the rows below, select "Do It All The Time", "Limited Experience" or "Never Do This" based on your current knowledge and experience. Based on your responses, you can assess your overall preparedness for each Domain.

	Do It All The Time	Limited Experience	Never Do This
<b>Domain 1 – Inspection, Maintenance, Installation, and Repair</b>			
<b>Sub-Domain 1.1 – Inspection of systems and equipment</b>			
1. Supervise and participate in the inspection of water/wastewater machinery and equipment (pumps, valves, motors, engines, compressors, actuators, computerized pneumatic and odor control systems, etc.)			
2. Independently troubleshoot and diagnose complex mechanical and electrical malfunctions and determine effective course of action for correcting them			
3. Advanced knowledge of standard practices and procedures for precision alignment of rotating equipment, vari-speed drives, gear-reduction drives, shafts, and belts			
4. Advanced knowledge of standard practices and procedures for emergency diesel generator operation, maintenance, and repair			
5. Advanced knowledge of standard practices and procedures for natural gas engines			
6. Advanced knowledge of standard practices and procedures for co-generation systems			
7. Oversee acceptance testing for any new equipment or stations, and after any major overhaul of equipment, systems, and facilities, and assist in the inspection of newly constructed water/wastewater facilities			
8. Knowledge of condition monitoring and predictive maintenance			
<b>Sub-Domain 1.2 – Installation, maintenance, and repair of tools, equipment, systems, and facilities</b>			
1. Supervise and participate in troubleshooting and repairing defects within mechanical equipment necessary to the operation of water/wastewater facilities (including large pumps, portable gas and diesel driven pumps, motors, hydraulic controls and regulators, valves and allied pumping systems, chemical feed and processing equipment, compressors, heating and ventilating equipment, emergency generators, and all other related equipment)			
2. Knowledge of standard practices, procedures, tools, and materials used in the installation, maintenance, and repair of heavy plant equipment, pump motors, controllers, variable speed and chain drives, and lift/pump stations			
3. Supervise and participate in the installation of pumps, variable speed drives and motors, controllers, and timing devices			
4. Supervise maintenance and repair of equipment used for disinfection of water/wastewater treatment facilities using various disinfection processes			
5. Supervise and participate in the replacing of packing/mechanical seals in pumps and valves and bearings in motors, pumps, and other equipment			
6. Investigate interruptions of service, identify defects, and resolve complex mechanical repair problems			



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7. Recommend improvements to the design and maintenance of water/storm/sewer stations and equipment used to operate water/wastewater facilities			
<b>How would you rank Domain 1 based on what you selected for each Sub-Domain?</b>			
<b>Domain 2 - Tools and Equipment</b>			
<b>Sub-Domain 2.1 - Design and fabrication of equipment</b>			
1. Design, fabricate, and assemble a variety of equipment and specialty tools			
2. Fabricate parts and fittings, make assemblies, and repair units based on drawings, specifications, sketches, work orders, verbal instructions, or personal visual inspection			
3. General knowledge of rigging and installing a variety of equipment			
4. General knowledge of pipe-fitting and application			
<b>Sub-Domain 2.2 - Operation of tools, equipment, and vehicles</b>			
1. Supervise and operate various cranes/hoists/lifting/rigging equipment for moving/replacing pumps, machinery, or other heavy equipment during installation, maintenance, and repair activities (overhead, gantry, mobile cranes, etc.)			
2. Supervise and operate vehicles used for installation, maintenance, and repair activities (trucks, forklifts, vactors)			
3. Supervise and operate equipment used for installation, maintenance, and repair activities (portable and stationary generators, jackhammers, steam cleaners, portable pumps, compressors, valves, gauges, engines, and electro-mechanical devices)			
4. Supervise and operate hand and power tools used for installation, maintenance, and repair activities (lathe, milling machine, sandblaster, grinder, drill, drill press, pneumatic, hydraulic, and electric tools, oxygenacetylene torch)			
5. Supervise and operate precision measuring instruments in the performance of various work assignments (shaft alignment, calipers, micrometers, atmospheric testers, vibration analyzers, dial indicators)			
6. Knowledge of practices, procedures, tools, and equipment of machinery and welding shops (plasma-cutting, MIG, TIG, and ARC welding)			
<b>How would you rank Domain 2 based on what you selected for each Sub-Domain?</b>			
<b>Domain 3 - Records, Reports, and SCADA</b>			
<b>Sub-Domain 3.1 - Maps and blueprints</b>			
1. Knowledge of practices, procedures, tools, and equipment of machinery and welding shops (plasma-cutting, MIG, TIG, and ARC welding)			
2. Read and interpret sketches, blueprints, manufacturer diagrams, basic electrical schematics, drawings, and as-builts			
3. Provide input on design blueprints and recommend changes before finalization			
4. Record updates for maps when discrepancies are found, or upgrades are made (repair jobs, small pipe repair jobs, etc.)			
<b>Sub-Domain 3.2 - Documentation</b>			

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1. Maintain comprehensive and detailed records of maintenance, repair, and inspection activities			
2. Update asset information in computerized maintenance management system (CMMS)			
3. Establish a preventative maintenance (PM) schedule			
4. Record repair actions and parts requests			
5. Record work orders and field reports			
6. Record data and run times for pump motors, standby generators, and related equipment			
7. Prepare reports on operations and activities (posting of work orders, daily logs, ledgers, parts lists, invoices, and inventories)			
8. Knowledge of underground storage tank (UST) regulations and documentation requirements (Title 23, Chapter 16; CA Health and Safety Code, Chapter 6.7)			
9. Knowledge of diesel engine documentation and regulatory requirements for emergency equipment (Rule 1147; BAAQMD Regulation 2, Permits Rules 1 and 2; Airborne Toxic Control Measure for Diesel Particulate Matter from Portable Engines Rated at 50 HP and Greater; CCR Title 17, Sections 933116.1-933116.5)			
10. Knowledge of natural gas engine documentation and regulatory requirements (Rule 1110.2)			
11. Knowledge of boiler documentation and regulatory requirements (Rule 1179.1)			
12. Knowledge of pressure vessel regulatory requirements (air receivers)(CA Labor Code 7620 7771)			
13. Knowledge of Spill Prevention Control and Countermeasure (SPCC) documentation and regulatory requirements (40CFR112 (Federal); CA Health and Safety Code, Chapter 25270.1-25270.13; CA Unified Program Agencies, under Chapter 6.67)			
<b>Sub-Domain 3.3 - Supervisory Control and Data Acquisition (SCADA)</b>			
1. Knowledge of Supervisory Control and Data Acquisition (SCADA) system			
2. Knowledge of SCADA trending tools to monitor equipment status and predict/anticipate equipment failure			
<b>How would you rank Domain 3 based on what you selected for each Sub-Domain?</b>			
<b>Domain 4 - Safety and Facility Maintenance</b>			
<b>Sub-Domain 4.1 - Safety</b>			
1. Knowledge of safety rules and safe work practices (local, state, and federal laws, ordinances, and rules)			
2. Knowledge of occupational hazards and safety precautions necessary in the work			
3. Ensure that assigned personnel adhere to all safety regulations (CalOSHA, National Fire Protection Association (NFPA) 70E arc flash safety, Fall Protection, Heat Protection, Traffic Control)			
4. Maintain and use self-contained breathing apparatus			
5. Handle all work-related chemicals in accordance with CalOSHA standards and safety procedures (e.g., Safety Data Sheets)			
6. Ensure confined space entry and rescue are performed per CalOSHA and local regulations			
7. Perform vehicle, tool, and equipment safety checks including chemical tests, air quality tests, and routine meter readings			

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8. Ensure that proper Personal Protective Equipment (PPE) for work environment is implemented (safety glasses, hard hats, gloves, ear protection, respirator, face shields, hazmat suit)			
<b>Sub-Domain 4.2 - Building and grounds maintenance</b>			
1. Supervise and participate in general building and grounds maintenance and repair including plumbing, painting, moving furniture, basic carpentry, masonry, and irrigation			
2. Knowledge of general methods of related electrical, carpentry, plumbing, HVAC, and pipefitting repair to identify and supervise building and grounds maintenance and repair issues			
<b>How would you rank Domain 4 based on what you selected for each Sub-Domain?</b>			
<b>Domain 5 - Administration and Communication</b>			
<b>Sub-Domain 5.1 - Administration</b>			
1. Supervise, train, and evaluate subordinates			
2. Develop and oversee the implementation of standard operating procedures (SOPs)			
3. Inform budget development by preparing estimates of labor and materials necessary to accomplish maintenance and repair activities			
4. Order and maintain inventory of mechanical equipment, materials, and parts			
5. Perform detailed job preparation including job scope, step-by-step procedures, man-hour estimates, skills and materials required, and safety concerns/procedures			
6. Inspect the work of personnel and crews engaged in field and plant maintenance and repair			
7. Utilize a computerized maintenance management system (CMMS) to monitor and improve the reliability of equipment and productivity of assigned personnel			
8. Review and screen work requests for completeness, accuracy, and necessity			
9. Layout, assign, and review work of subordinates			
10. Coordinate work activities with other departments, divisions, and outside contractors			
11. Solicit bids to purchase equipment, parts and tools, and contractor work			
12. Monitor and control expenditures			
13. Provide training and use of operation and maintenance manuals (OMM) and CMMS			
<b>Sub-Domain 5.2 - Communication</b>			
1. Communicate clearly and concisely, both orally and in writing			
2. Understand direction and effectively instruct subordinates			
3. Establish and maintain cooperative working relationships with those contacted in the course of work, including peers, operators, direct reports, superiors, vendors, contractors, customers, and the general public			
<b>How would you rank Domain 5 based on what you selected for each Sub-Domain?</b>			
<b>Domain 6 - Math</b>			
<b>Sub-Domain 6.1 - Math calculations and basic computations</b>			
1. Calculate flow rates			



# Gap Analysis Tool

## Mechanical Technologist Grade 4

In the rows below, select "Do It All The Time", "Limited Experience" or "Never Do This" based on your current knowledge and experience. Based on your responses, you can assess your overall preparedness for each Domain.

	Do It All The Time	Limited Experience	Never Do This
<b>Domain 1 – Inspection, Maintenance, Installation, Repair, and Tools</b>			
<b>Sub-Domain 1.1 – Inspection of systems and equipment</b>			
1. Perform, facilitate, and report root cause analysis			
2. Perform failure and reliability analysis			
3. Perform field inspections of work in progress and at completion			
4. Inspect and monitor water/wastewater systems for needed maintenance and repairs			
5. Inspect work sites before, during, and after completion of work to assure the work is completed in a satisfactory and thorough manner			
6. Inspect and approve work completed by outside contractors			
<b>Sub-Domain 1.2 – Installation, maintenance, and repair of tools, equipment, systems, and facilities</b>			
1. Manage, direct, and organize advanced preventative and predictive maintenance on a variety of equipment (including central power generation systems), for water/wastewater treatment facilities			
2. Oversee major testing, troubleshooting, and repair projects and upgrades to plants, lift/pump stations and recharge basin facilities, systems, and related equipment			
3. Advanced knowledge of types and levels of maintenance and repair activities generally performed in water/wastewater systems			
4. Advanced knowledge of principles and practices, methods, techniques, tools, and equipment used in the design, installation, testing, calibration, maintenance, and repair of facilities, equipment, machinery, and vehicles common to a complex water/wastewater system			
5. Knowledge of principles, practices, documents, and terminology used in condition-based maintenance and repair activities			
6. Ensure proper operation and maintenance of tools and equipment			
7. Troubleshoot issues arising from inspection of tools and equipment for compliance with safety standards			
8. Operate condition monitoring tools and software			
<b>How would you rank Domain 1 based on what you selected for each Sub-Domain?</b>			
<b>Domain 2 – Administration</b>			
<b>Sub-Domain 2.1 – Budgeting</b>			
1. Assist in the preparation and administration of operating and capital improvement budgets			

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2. Knowledge of budgeting procedures and techniques			
3. Participate in the forecasting of funds needed for labor, equipment, materials, and supplies			
4. Oversee or assist in the solicitation of bids to purchase equipment, parts, tools, and contractor work			
<b>Sub-Domain 2.2 - Supervision and training</b>			
1. Knowledge of principles and practices of supervision, training, and personnel management			
2. Provide leadership, guidance, and direction for subordinate staff			
3. Evaluate employee work performance, behavior, and technical ability			
4. Participate in scheduling, assigning, and monitoring work of employees for completeness, accuracy, and conformance with standards			
5. Provide information, instruction, and training on work processes, proper use of equipment, and safe work practices			
6. Educate and train staff on new and revised approaches, and operation/inspection of new equipment and tools			
7. Participate in the selection and recommendation of the appointment of personnel			
8. Establish performance standards for personnel, implement discipline procedures, and work with staff to correct deficiencies			
9. Oversee and participate in employee development and advancement initiatives and succession planning			
10. Provide training and use of operation and maintenance manuals (OMM) and computerized maintenance management system (CMMS)			
<b>Sub-Domain 2.3 - Management and planning</b>			
1. Review job plans			
2. Estimate personnel, equipment, and material requirements for assigned jobs			
3. Requisition work materials, tools, equipment, and supplies			
4. Provide input on asset replacement schedules			
5. Provide recommendations for development/enhancement of maintenance programs and strategies			
6. Work with contractors and engineers to resolve potential problems with new installation and construction, and the purchase of new equipment			
7. Monitor performance of contractors and employees to ensure timely completion of maintenance/repair projects and work orders			
8. Schedule and coordinate activities with other sections and departments			
9. Research new technologies, equipment, work methods, and processes			
10. Analyze and recommend new or modified equipment, tools, methods, processes, forms, and materials to improve productivity, efficiency, and employee safety			
11. Assist in the development and implementation of policies and procedures			
12. Assist in the setting of goals and objectives for the organization			
13. Review capital improvement plans (CIPs) and provide input regarding future maintenance activities			

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14. Identify and initiate needed capital improvement projects			
<b>How would you rank Domain 2 based on what you selected for each Sub-Domain?</b>			
<b>Domain 3 - Records, Reports, and SCADA</b>			
<b>Sub-Domain 3.1 - Documentation</b>			
1. Maintain detailed documentation and work records, including data on facilities, detail of failures, descriptions of work performed, as-built sketches and drawings			
2. Maintain maintenance records and requests including work order tracking			
3. Knowledge of recordkeeping and reporting procedures			
4. Knowledge of underground storage tank (UST) regulations and documentation requirements (Title 23, Chapter 16; CA Health and Safety Code, Chapter 6.7)			
5. Knowledge of diesel and natural gas engine documentation and regulatory requirements for emergency equipment (Rule 1147; BAAQMD Regulation 2, Permits Rules 1 and 2; Airborne Toxic Control Measure for Diesel Particulate Matter from Portable Engines Rated at 50 HP and Greater; CCR Title 17, Sections 933116.1-933116.5; Rule 1110.2 Natural Gas)			
6. Knowledge of boiler documentation and regulatory requirements (Rule 1179.1)			
7. Knowledge of pressure vessel regulatory requirements (air receivers)(CA Labor Code 7620 7771)			
8. Knowledge of Spill Prevention Control and Countermeasure (SPCC) documentation and regulatory requirements (40CFR112 (Federal); CA Health and Safety Code, Chapter 25270.1-25270.13; CA Unified Program Agencies, under Chapter 6.67)			
9. Basic understanding of Sanitary Sewer Overflow (SSO) regulations			
<b>Sub-Domain 3.2 - Supervisory Control and Data Acquisition (SCADA)</b>			
1. Knowledge of Supervisory Control and Data Acquisition (SCADA) system			
2. Knowledge of SCADA trending tools to monitor equipment status and predict/anticipate equipment failure			
3. Assist in the development of key performance indicator reports for the monitoring of equipment condition and reliability			
<b>How would you rank Domain 3 based on what you selected for each Sub-Domain?</b>			
<b>Domain 4 - Safety and Emergency Response</b>			
<b>Sub-Domain 4.1 - Safety</b>			
1. Knowledge of local, state, and federal laws and regulations regarding the transmission of water, including the Safe Drinking Water Act and relevant Environmental Protection Agency (EPA) regulations			
2. Ensure compliance with applicable local, state, and federal laws, rules, and regulations			
3. Knowledge of safety policies, procedures, and safe work practices applicable to assignment including CalOSHA regulations, confined space entry, lockout/tagout (LOTO) procedures, National Fire Protection Association (NFPA) 70E arc flash safety, Fall Protection, Heat Protection, Spill Protection Control Countermeasure (SPCC)			
4. Knowledge of occupational hazards and standard safety precautions			

