METRO CARIGARA WATER DISTRICT

OPERATIONS MANUAL
Water Service Facility Operations & Water Service Distribution Operations

Rev. 0-2016
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<td>Revision 0. December 2016.</td>
<td>All sections new</td>
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INTRODUCTION

The Operations Manual of the Metro Carigara Water District, which was duly approved by the Board of Directors, through Resolution No. 191-12-16 dated December 21, 2016, shall serve as guide for its officers and employees in carrying out their assigned tasks in their respective aspects of operations.

Embodied in this Manual are the general information about the water district, including the organizational structure and responsibilities, and the standard operating procedures to be observed in the key areas of operations which are: water service facility management and water service distribution management.
### DEFINITION OF TERMS

#### TERMS

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<td>Category C</td>
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</tr>
<tr>
<td>Conditional Certificate of Conformance</td>
<td>As part of its regulatory powers over the formation of local water districts LWUA requires “report from all water utilities, conduct field investigations and review all available information to determine whether there has been conformance to its standards and procedures. Upon a finding that said standards are met, the Administration shall issue a Certificate of Conformance to any such water utility. A Conditional Certificate of Conformance may be issued where procedures and practices have been adopted to assure conformances and reasonable time schedule has been adopted.” (Section 66 PD 198, as amended)</td>
</tr>
<tr>
<td>District</td>
<td>Refers to the “Metro Carigara Water District” as used in this manual.</td>
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### ACRONYMS

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<th>Description</th>
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<td>AGSD</td>
<td>Administrative and General Services Division</td>
</tr>
<tr>
<td>BOD</td>
<td>Board of Directors</td>
</tr>
<tr>
<td>CSA</td>
<td>Customer Service Assistant</td>
</tr>
<tr>
<td>DBM</td>
<td>Department of Budget and Management</td>
</tr>
<tr>
<td>ECD</td>
<td>Engineering and Construction Division</td>
</tr>
<tr>
<td>FCD</td>
<td>Finance and Commercial Division</td>
</tr>
<tr>
<td>GM</td>
<td>General Manager</td>
</tr>
<tr>
<td>LWD</td>
<td>Local water district</td>
</tr>
<tr>
<td>MCWD</td>
<td>Metro Carigara Water District</td>
</tr>
<tr>
<td>NRW</td>
<td>Non-revenue water</td>
</tr>
<tr>
<td>NWSC</td>
<td>New water service connection</td>
</tr>
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<td>OGM</td>
<td>Office of the General Manager</td>
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<td>PPE</td>
<td>Personal Protective Equipment</td>
</tr>
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<td>PWQD</td>
<td>Production and Water Quality Division</td>
</tr>
<tr>
<td>URR</td>
<td>Utility Rules and Regulations</td>
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<tr>
<td>WS</td>
<td>Water service</td>
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<td>WSA</td>
<td>Water Service Account</td>
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GENERAL INFORMATION

THE WATER DISTRICT MANDATE

Local water districts were created when the Presidential Decree 198, otherwise known as the Provincial Water Utilities Act of 1973, was enacted into law on September 1973, to ensure that Filipinos in the countryside had access to safe and potable water.

Originally named as Carigara Metropolitan Water District, the Metro Carigara Water District (MCWD) reckons its history way back in the 1960s when the water system was constructed and became operational under the now-defunct National Waterworks and Sewerage System Administration (NAWASA), but came into being (as a water district) in January 25, 1983, by virtue of the resolutions passed by the respective municipal councils of the municipalities of Carigara, Barugo, Tunga and Capoocan, pursuant to the mandate of the Local Water District Law or the PD 198. Consequently, it was granted by the Local Water Utilities Administration (LWUA) its Conditional Certificate of Conformance (CCC) No. 246 dated August 5, 1983, and operated then as a private corporation, or more particularly, a “quasi-public corporation performing public service and supplying public wants” until the Supreme Court decided on the case of Davao City Water District, et. al., vs. CSC, et. al. on February 12, 1992, that local water districts are government-owned and controlled corporations.

CORE PURPOSE and CORE VALUES

The MCWD envisions a quality of life in Metro Carigara through the delivery of a most basic need—water. This ideal is articulated in the Vision and Mission Statement:

“We envision a quality of life in Metro Carigara by providing and insuring safe, adequate and affordable water supply.

We envision an improved water supply system that can readily meet growing demand for clean and affordable water.”
We envision a well-protected, conserved and enhanced watershed area that can secure sufficient supply of water for ourselves, our children and our children’s children.

We envision ourselves to be a water service institution with the highest standard of efficiency in Management, competence and excellence.”

With this Core Purpose in mind and with hearts ignited by these Core Values: Public Service Centered on Love of God and Country, Excellence and Integrity, Professionalism and Performance and Stewardship of Tomorrow, the MCWD strives to achieve this Vision by transforming its organization to become a water service institution with the highest standard of efficiency, competence and excellence.

PROFILE

The MCWD is a Category C water district, having been issued the Certificate of Category on March 29, 2012, by the LWUA, in compliance with the guidelines as provided for in the DBM approved Revised Local Water District Manual on Categorization, Recategorization and Other Related Matters.

It serves four towns, namely: Carigara, Barugo, Tunga and Capocan. The water supply comes from two sources: a) Maulaug River, situated at Brgy. Paglaum, Carigara, Leyte, and b) Daraupay Spring, at Brgy. Daraupay, Pob. Zone II Capoocan, Leyte. Another source, the Kabahian River, also located at Brgy. Paglaum, is about to be developed through the government’s salintubig program and is expected to augment the supply and eventually, to meet growing demand for potable water.
ORGANIZATION & RESPONSIBILITIES

THE MCWD ORGANIZATIONAL STRUCTURE

The Metro Carigara Water District is a Category C water district with the following key offices/division:

1. Office of the General Manager
2. Production and Water Quality Division
3. Engineering and Construction Division
4. Finance and Commercial Division
5. Administrative and General Services Division

The illustration below shows the hierarchy of relationships and authority in the organization.

The Board of Directors, composed of five individuals representing five sectors in the community, namely: Civic, Professional, Business, Education, and Women, serve as the policy-
making body of the water district. Meanwhile, water district operations are manned by four
divisions under the leadership of the General Manager. Each division, on the other hand,
consists of functional sections and units. The chart illustrated in Figure 2 shows the
corresponding hierarchy of management as authorized under Category C and adopted by the
MCWD.

FUNCTIONS AND RESPONSIBILITIES

THE BOARD OF DIRECTORS

The Board of Directors derive their powers and duties from the provisions of PD 198, as
amended, which state as follows:

Chapter V – Powers and Duties of Board

Section 17. Performance of District Powers.- All powers, privileges, and duties
of the district shall be exercised and performed by and through the board:
Provided, however, that any executive, administrative or ministerial power shall
be delegated and redelegated by the board to officers of agents designated for
such purpose by the board.

Section 18. Functions Limited to Policy-Making.- The function of the board shall
be to establish policy. The board shall not be engaged in the detailed
management of the district.

THE GENERAL MANAGER

Likewise, the powers and responsibilities of the officers and employees, particularly the
General Manager, are anchored on the water district charter, which thus reads:

Chapter VI – Officers and Employees

Section 24. Duties.- The duties of the General Manager and other officers shall
be determined and specified from time to time by the board. The general
manager, who shall not be a director, shall have full supervision and control of the maintenance and operation of water district facilities, with power and authority to appoint all personnel of the district: Provided, that the appointment of personnel in the supervisory level shall be subject to approval by the board.

(As amended by Sec. 10, PD 768)

As such, the General Manager is in charge of the overall administration of the water district operations; oversees personnel management; directs and sets forth procedures; execute duly established policies and guidelines relative to its services in order to affect organizational effectiveness and efficiency.

**PRODUCTION & WATER QUALITY DIVISION**

The Production and Water Quality Division is mainly responsible for the safety and potability of the water supply. To this end, this division carries out the following responsibilities:

(a) Assist the General Manager in managing and directing the activities of the District pertaining to water production, water treatment and water quality operations;

(b) Implement potable water quality standards and collection and testing of water samples; troubleshoot problems with the water distribution system–ensuring flows are regulated and supervising day to day operations of the water treatment facilities;

(c) Analyze practices and recommend policies and procedures for the improvement of systems involving production and water treatment;

(d) Plan, organize, direct and review the activities and operations of the PWQ Division including operation and maintenance of the District’s dam-basin conveyance, water storage, and treatment facilities.

(e) Maintain, coordinate, monitor and supervise the potable water distribution system and appurtenances;
(f) Plan expenditures for the division, including purchase of materials, equipment and supplies; facilities maintenance; prepare and maintain required documents and paperwork;

(g) Coordinate with other divisions and/or agencies on water production, treatment and quality concerns;

(h) Ensures compliance with state regulations regarding water quality, employee safety, and environmental issues.

**ENGINEERING & CONSTRUCTION DIVISION**

The Engineering and Construction Division, which is primarily the technical team in a local water district, is responsible for the delivery of the following jobs and responsibilities:

(a) Management of water distribution systems;

(b) Installation of new service connections;

(c) Management of maintenance operations—encompassing the repairs and maintenance of water lines and performing major and minor plumbing services;

(d) Plan, direct and oversee water system projects implementation and constructions;

(e) Plan, organize, direct and coordinate District engineering projects and programs, including those that require significant interaction with other agencies and the general public, engineering design, securing permits, and project construction activities;

(f) Provide technical assistance and advice to the General Manager on water distribution systems;

(g) Analyze and recommend policies and procedures for improving management of systems facilities;

(h) Provide oversight and review of technical reports and designs;

(i) Plan and develop projects and programs for the improvement of the water system;

(j) Ensure District safety protocols are implemented throughout the division to ensure a safe and healthy work environment.
FINANCE & COMMERCIAL DIVISION

This division, which is composed of two sections (Finance Section & Commercial Section) and several units (Accounting and Budget; Billing and Commercial; Cash Management and Collection), is mainly responsible for the following functions:

(a) Plan, develop and implement programs to achieve corporate objectives for water service congeniality (excellent management of customer services) and sound financial management;

(b) Plan, develop and implement strategic marketing plans aimed at extending the District’s water services to waterless households within the service area;

(c) Provide responsible advice and counsel to the General Manager and Division Managers on a variety of financial issues;

(d) Manages the preparation and maintenance of financial records and reports as well as customer account records;

(e) Oversee the preparation and presentation of the District’s annual budget and assist in allocation and distribution of budgets as well as monitoring the budget performance;

(f) Supervise data gathering and financial planning work associated with water rate setting; prepare water rate analysis;

(g) Oversee cash management, investments, and debt management activities;

(h) Collection, deposits and disbursements;

(i) Oversee the management of customer services, meter reading and billing;

(j) Manage water meter maintenance, calibration, replacement and/or custody and recording;

(k) Plan and oversee advertising and promotion activities of the District;

(l) Monitor division work flow; review and evaluate work outputs, methods and procedures; implement needed work process and automation improvements and methods for improving customer service.
ADMINISTRATIVE & GENERAL SERVICES DIVISION

This division is particularly responsible for providing support to operations in terms of human resource, property and general services. Its functions are generally as follows:

(a) Human Resource management and development;
(b) Preparation of documents relative to the creation of positions, publication of vacant positions and process employees’ appointments and contracts;
(c) Direct personnel having administrative functions;
(d) Preparation of office memorandum and announcements on various concerns involving the personnel;
(e) Ensure the safekeeping and maintenance of employees’ data, records and profiles;
(f) Organize schedules for employees’ trainings, seminars and workshops;
(g) Attend to employees’ queries on personnel matters;
(h) Lead the health and wellness program of the water district;
(i) Property management;
(j) Renewal of registration of water district vehicles;
(k) Oversee the cleanliness and sanitation of the District’s premises;
(l) Represent the water district to other agencies when necessary.

OPERATIONAL CONTROL & SUPERVISION

The General Manager shall exercise operational control and supervision over all matters affecting operations. He organizes and directs the basic efforts of all divisions and officers towards achieving the utility objectives with the established policies.

The Division Managers provide assistance to the General Manager on their respective area of operations. As such, they:

(a) Organize and direct the performance of all employees in their particular divisions;
(b) Lead and initiate strategies by which specific group targets are met;
(c) Recommend policies and procedures to the GM to improve office systems and work practices;

(d) Evaluate the performance of personnel in their division;

(e) Implement policies and programs as directed to them by the GM;

(f) Ensure the observance of and regularly monitor workflows, communications and information protocols and reporting systems;
OPERATIONAL PROCEDURES

CATEGORIES OF OPERATIONS

The MCWD has two Focus Areas of Operation:

1. Water Service Facility Management; and

Water Service Facility Management involves various activities relating to the production of safe and potable water for distribution to the concessionaires.

Meanwhile, Water Service Distribution Management refers to the different operational activities involving the delivery or distribution of said water.

OPERATIONAL PROCEDURES ON SELECTED AREAS OF OPERATIONS

This Manual contains the following Operational Procedures underlining the abovementioned Categories of Water District Operations, including the Process Flow for selected areas of operations in the frontline, finance, as well as administrative services, to be followed by the MCWD officers and employees:

A. Water Service Facility Operations (SOP for Various Operations in the Production and Water Quality Division):

1. Water Treatment
2. Water Quality Monitoring
3. Water Level Monitoring
4. General Safety in the Treatment Plant
5. Maintenance of Equipment

B. Water Service Distribution Management (SOP for Various Operations in the Engineering and Construction Division):

1. Installation, Operation and Maintenance of System Appurtenances
C. Process Flow for Different Frontline Services
   1. Application for Water Service Connection
   2. Service Request
   3. Reconnection
   4. Transfer Tapping/ Change Pipe
   5. Voluntary Disconnection
   6. Change of Account Name

D. Process Flow for Different Administrative Services
   1. Issuance of Supplies and Materials
   2. Issuance and Recording of Property, Plant and Equipment
   3. Receiving and Recording of Purchased Supplies & Materials, Property, Plant and Equipment
   4. Procurement of Goods (Above 1K and Below 50K)
   5. Procurement of Goods (Above 50K and Below 500K)
   6. Procurement of Services (Above 1K and Below 50K)
   7. Recruitment of Personnel
   8. Appointment of Personnel

E. Communications Protocol
   1. Communications Flow During Sudden Water Interruptions and Other Incidents Affecting Water Quality & Quantity
   2. Communications Flow for Scheduled Water Interruptions
   3. Protocol for Emergency Responses
   4. Use of Hotline Number
   5. E-mail Accounts Management
   6. Website Management
   7. Use of Internet Connection
   8. Basic Radio Operation
WATER TREATMENT (Under Normal Condition)

**PWQD1 SOP for Macalpi Treatment Plant**

**PRE-TREATMENT PROTOCOL**

1. Wear proper PPE before proceeding with the chlorination as part of the standard safety protocol.
2. Dissolve 1 kg chlorine granules with about 10L of water.
3. Dilute the resulting solution with water of approximately 200L (1 drum).
4. Prepare and install pressure hose into the chlorine solution.
5. Inject the solution into the entrance of the small water maze and obtain a sample for testing of residual chlorine. The reading must be 0.3 – 0.5 ppm.
6. Log the procedure undertaken by completely filling out the Pre-Treatment Logbook.
7. Repeat the procedure every three hours.
8. Also, make intermediate periodic chlorine application at the sedimentation basin by directly strewing chlorine granules around the perimeter of the basin wall at least once a day to three times a week.

**DISINFECTION BY GAS CHLORINE**

Generally, disinfection (treatment) of the water stored in the sedimentation basin is done by the use of gas chlorine. For installation and operation of the chlorinator and chlorine gas cylinders, please refer to the section on “Installation of Chlorine Gas.” In checking the dosage and other related treatment procedures, the following must be observed:

1. Monitor the chlorine dosage as reflected in the chlorinator and log it in the Dosing Logbook every hour.
2. The dosage must be adjusted depending on the volume of water, such that if the production meter registers higher reading the dosage should be increased and if
becomes lower, then dosing shall likewise be decreased, but always targeting a residual chlorine of 1.0 to 1.5 mg/L at the product water sampling faucet.

3. In performing Step 2 above always concurrently check the residual chlorine of the product water (sampling faucet) to ensure that the reading is between 1.0 - 1.5 ppm.

4. Check, log (in the Residual Chlorine Logbook) and monitor the residual chlorine concentration every hour.

**PWQD2 SOP for Daraupay Treatment Plant**

**DISINFECTION BY CHLORINE SOLUTION**

1. Prepare the necessary materials to be used in the chlorination.
2. Observe safety protocol by using appropriate PPE before chlorination.
3. Prepare ¼ kilograms of chlorine granules.
4. Prepare 4 liters of water for the chlorine granules solution, storing the 1 liter in a separate container from the other 3 liters.
5. Dissolve ¼ kg chlorine granules with 1 liter of water.
6. Dilute the 1-liter chlorine solution with the remaining 3 liters of water and shake the same until the 1-gal solution is homogenous.
7. Install the feeding hose into the 1-gal chlorine solution.
8. Place the 1-gallon chlorine solution upside down on top of the spring box cover and let the solution flow into the water at a rate of 1 drop per 5 seconds.
9. Finally, collect water from the product water sampling faucet and check the residual chlorine to ensure that it is within the target of 0.3 - 1.0 ppm (mg/L).
10. The solution is estimated to be good for only two weeks, thus repeat the water treatment procedure on a regular basis following the said two-week timeline.
WATER QUALITY MONITORING

PWQD3 SOP for Water Sample Collection

General Rule:

In collecting water for samples, note that the sampling bottle should be kept unopened until the moment it is filled. Caution must be exercised to ensure that samples taken will be representative of the water being tested and to avoid contamination of the sample at the time of collection and in the period before examination.

1. **Clean** the tap.
   1.1 Open the tap then wipe using clean cloth or cotton swab.
   1.2 After cleaning the tap, flush for 1-2 minutes. Close the tap.

2. **Sterilize** the tap.
   2.1 Sterilize by flaming with ignited alcohol-sparked cotton swab, for about 2 to 3 minutes. For plastic tap, sterilize with cotton swab soaked in Chlorox or 100 mg/L sodium hypochlorite solution.

3. **Flush** the tap.
   3.1 Open the tap fully and allow the water to run for about 1 to 2 minutes.

4. **Open** the sampling bottle.
   4.1 Untie the string of the protective paper cover (hood) of the sampling bottle and unscrew cap. Hold the cap with the protective paper cover facing downward to avoid contamination.

5. **Fill** the bottle.
   5.1 Fill the bottle with water. While filling, make sure the mouth of the bottle does not touch the tap. Fill the bottle up to the shoulder to ensure that enough air space is left in it. This is to facilitate mixing by shaking prior to analysis.

6. **Cap** the bottle.
6.1 Tightly screw the cap together with the protective paper cover on the bottle.

6.2 Secure the cover with the string.

7. **Label** the bottle.

   7.1 Write the date and time of sampling, name of collector, water sampling point code on masking tape or an identification tag attached to the sampling bottle.

8. **Store** the bottle.

   8.1 Place the sampling bottle in a cooler with ice or ice-gel pack. Do not submerge the bottle in ice water during storage and transport. If it is not possible for water samples to reach the laboratory within one (1) hour after collection, the use of iced coolers for storage of water samples during transport to the laboratory is a must.

   8.2 The temperature should be kept below 10°C during maximum transport time of (6) hours.

**PWQD4 SOP for Residual Chlorine Monitoring**

**PROCEDURE:**

1. Collect water sample by following the SOP for “Water Sample Collection.” The sampling points should conform with the duly approved sampling plan.

2. Check, log the residual chlorine reading.

3. Submit the Residual Chlorine Monitoring Report in accordance with office policies and with LWUA requirements.

**PWQD5 SOP for Quality Testing by Primary Health Care Media**

**PROCEDURE:**

1. Collect water sample by following the SOP for “Water Sample Collection.” The sampling points should conform with the duly approved sampling plan.
2. Using the PHC Media observe changes on the color of the water for 2 to 3 days. If the color darkens the water is positive of bacteria.

**PWQD6** SOP for Bacteriological Test by External Laboratory

**PROCEDURE:**

1. Following the SOP for “Water Sample Collection,” samples for bacteriological test must be taken in accordance with the duly approved sampling plan.
2. The water samples should be refrigerated until brought to the laboratory. In transporting them, the SOPs as mentioned above must likewise be observed.

**PWQD7** SOP for Turbidity Monitoring

**References to Existing Source Documents**

This SOP references the Hach 2100Q Portable Turbidimeter and 2100Q/is Portable Turbidimeter Basic User Manual, DOC022.97.80041, 04/2013, Edition 2 (attached to the MCWD Operations Manual).

**Frequency of SOP**

Meter calibration and measurement procedures described in this SOP must be followed each day that field measurements are performed.

**Special Cautions and Considerations; Health and Safety**

Proper gloves must be worn to both prevent alteration of the field measurements, and to protect sampling personnel from environmental hazards. The user should wear at least one layer of gloves, but two layers help protect against leaks. All gloves must be powder-free. Disposable polyethylene, nitrile, or non-talc latex gloves are acceptable for field measurements.
Cautions

When performing measurements in areas of unknown water quality, especially in waters that are suspected to contain hazardous substances or human pathogens, at least one layer of gloves shall be of the “long-cuff” variety to cover the wrist and forearm to limit skin contact with the source water.

Equipment

1. The specified equipment for this SOP is the Hach Portable Turbidimeter, Model 2100Q, which is equipped with a complete kit ready for turbidity measurement in the field. Other equipment items also are required for personal safety, sample collection, field data recording, and quality control purposes.

2. A complete list of required equipment for field measurement of turbidity is provided in the checklist below:
   a. Hardhat
   b. Safety vest
   c. Box of powder-free gloves
   d. Long-cuff gloves as necessary
   e. Scientific Calculator
   f. Notebook (“write-in-the-rain” type)
   g. Field Meter Calibration Record Form
   h. Field Measurement Data Form
   i. Pencil(s) & Pen(s)
   j. Digital Camera
   k. Flashlight
   l. Extra batteries
   m. Deionized water for rinsing and cleaning
   n. Turbidity Standards (20 NTU, 100 NTU, and 800 NTU)
Field Meter Calibration

1. All field meters must be calibrated prior to use. Calibration shall be performed at a minimum of once per day for each day of instrument use. Calibration shall be performed prior to the first measurements of the day. Refer to page 10 of the Hach 210Q Portable Turbidimeter User Manual for specific calibration instructions.

2. The Hach 2100Q turbidity meter calibration is accomplished with three standards provided in the meter kit by the manufacturer. Start the calibration process by pushing the “Calibration” key to enter the calibration mode. Follow the instructions on the display. The calibration is performed using the 20 NTU, 100 NTU, and 800 NTU standards (in that order). To ensure that the standard solutions are well-mixed, gently invert each standard before inserting into the meter.

3. For best accuracy, use the same sample cell or four matched sample cells for all readings during calibration. Insert the sample cell in the instrument cell compartment so that the diamond or orientation mark aligns with the raised orientation mark in front of the cell compartment.

4. Record the results of the field meter calibration.

Sample Collection

1. The Hach 2100Q turbidity meter requires collection of a sample for subsequent turbidity measurement within the confines of the meter. The sample may be
collected using any clean container. A wide-mouth sample bottle provided by the laboratory is preferred for this purpose, as those bottles are shipped pre-cleaned.

2. Raw water samples for field measurement purposes are collected by direct submersion of the sample container into the flow whenever possible. Samples always should be collected upstream of sampling personnel and equipment, and with the sample container pointed upstream when the container is opened for sample collection. Care must be taken not to sample water downstream of areas where sediments have been disturbed in any manner by field personnel.

3. These samples are collected from a location where the sample stream visually appears to be completely mixed. Ideally this is at the centroid of the flow cross-section, but site conditions do not always allow centroid collection. (“Centroid” is defined as the midpoint of that portion of the stream width, which contains 50 percent of the total flow area.) The location should preferably be accessible by direct reach, or in the case of a receiving water body, via wading.

4. If the centroid of the flow cannot be sampled by direct reach or by wading into the flow, a sampling pole or other sampling device can be used to reach the sampling location. Such devices typically involve a means to extend the reach of the sampler, with the sample bottle attached to the end of the device for filling at the desired location. These methods do not allow opening of the sample container under water; therefore, there is potential for contamination when the container is opened prior to lowering the sample container into the stream. Caution is required when wading, as flowing water provides more force than visually anticipated. Only experienced personnel should perform this collection technique.

5. After the sample is collected, it must be transferred as soon as possible to the “sample cell” (small glass container) provided in the Hach 2100Q kit. The sample cell then is placed into the meter for turbidity measurement. During this process
care must be taken to avoid settling of any material that is suspended in the sample. Settling can be prevented by swirling the sample.

Field Measurement Methods

1. When using the Hach 2100Q turbidity meter for measurement of turbidity, samples must be collected using a clean container, and the instructions presented on the Hach 2100Q Portable Turbidimeter User Manual must be followed for sample preparation and analysis.

2. The following general instructions must be observed:
   a) During Use:
      a. Place the meter on a level, stationary surface during measurement. Note: Do not hold the meter in the hand during measurement.
      b. Avoid contamination of sample from construction site dust or any other source.
      c. Avoid dilution of sample from rain water.
      d. Avoid operation in direct sunlight; shade the meter during operation.
      e. Measure samples immediately to prevent temperature changes and settling. Before taking a measurement, always ensure that the sample is homogeneous throughout.
      f. Always close the sample compartment lid during measurement, calibration, and storage to prevent the entry of dust and dirt.
      g. Always cap the sample cell to prevent spillage of the sample into the instrument.
      h. Always use clean sample cells in good condition. Dirty, scratched, or damaged cells can cause inaccurate readings.
      i. Make sure that cold samples do not “fog” the sample cell.
   b) After Use:
      a. Store sample cells filled with laboratory-provided distilled or deionized (DI) water and cap tightly.
b. Remove sample cell and batteries from the instrument if the instrument is stored for an extended time period (longer than a month).

c) To perform measurement:
   a. Collect a representative sample in a clean container. Fill a sample cell to the line (about 15 milliliter). Take care to handle the sample cell by the top. Cap the cell.
   
b. Wipe the cell with a soft, lint-free cloth to remove water spots and fingerprints.

c. Apply a thin film of silicone oil (provided in meter kit). Wipe with soft cloth (provided in meter kit) to obtain an even film over the entire surface.

d. Push the “Power” key to turn on the meter. Place the instrument on a flat, sturdy surface. Note: Do not hold the instrument during measurement.

e. Gently invert the sample cell to ensure mixing, and then insert the sample cell in the instrument cell compartment so the diamond or orientation mark aligns with the raised orientation mark in front of the cell compartment. Close the lid.

f. Push the “Read” key. The display shows “Stabilizing” then displays the turbidity in NTU (FNU). The result is stored in the meter automatically.

g. Repeat sample collection and measurement process as needed per the Caltrans Construction Site Monitoring Program Guidance Manual.

h. After use, rinse the sample cells with DI water. Store the sample cells with caps on to prevent cells from drying. Do not air dry the sample cells after use.

d) To properly store the sample cells:
   a. Fill the sample cells with DI water.
   
b. Cap and store the sample cells.
   
c. Wipe the outside of the sample cells dry with a soft cloth.

e) Before leaving the sampling site, field personnel should review datasheets to ensure that they are complete and legible, and that all sampling-related materials and equipment have been collected.
**SOP for Flushing of Pipe Network**

**Flushing Schedule**

Flushing of the entire distribution system will be conducted in accordance with a duly approved flushing schedule or more often, if required to maintain water quality. In deciding when to undertake flushing of mains, observe the following:

1. Duly approved Flushing Routine;
2. Conditions for mandatory flushing:
   a) All new water mains;
   b) Any rehabilitated water mains (including replacement due to pipe bursting/ slip lining, swaging or re-lining). Flush the main lines following line or leak repairs in order to remove air, sediments, and potential contaminants from the repaired section of the line. If disinfection is necessary to comply with the Leak Repair SOP, the line will be flushed to remove the high chlorine content;
   c) All water main tie-ins;
   d) Water mains repair carried out under pressure. (Note that, if after recharging and flushing the main, the ‘Water Quality Control Officer’ is confident that the main has remained under pressure throughout the repair and the excavation has remained free from contamination, samples for bacteriological examination may no longer be necessary. However, in case of doubt, samples must be taken. Note further that samples need not be taken from repairs on service pipes below 50 mm diameter.)
   e) All water mains repairs requiring water to be turned off;
   f) Any suspected contamination of the water supply main, including incidents as laid out in the Troubleshoot Flushing Protocol;
   g) All tankering operations (either before filling a tanker or before directly pumping water back into the system);
   h) Boundary Valve Operations;
3. Whenever possible, flushing should be done during late-night and early morning hours (11 p.m. – 4 a.m.) to minimize inconvenience to customers and take advantage of high pressures.

**General Operations and Maintenance Steps Associated with Flushing**

1. Valves exercise program to ensure that all valves that should be open are open.
2. Routine valves and hydrants maintenance and exercise to be conducted before flushing to minimize interruptions during the flushing.
3. Routine tank maintenance and cleaning.
4. Operation of tanks to provide for turnover of at least 1/3 of the water in the tank every day.
5. Advanced notification of customers, especially hospitals and other large sensitive water users, about the flushing to be undertaken.

**Method of Flushing**

1. Generally, flushing will be done through Unidirectional Flushing (UDF) method as utilized by a growing number of utilities, said method being most capable of ensuring that water is delivered to the consumer’s tap with minimum degradation in quality, and is least expensive. The UDF is a refinement of conventional flushing and designed to bring the water through the system in a controlled fashion at velocities sufficient to provide a scouring action within the distribution piping. This technique consists of isolating a particular pipe section or loop (typically through closing appropriate valves) and exercising the hydrants in an organized, sequential manner generally progressing from the treatment plant to the periphery of the water system, from large-diameter pipes to smaller-diameter pipes, and always from cleaned sections to dirty ones.
2. For dead-ends, continuous blowoff or bleeding of water may be conducted to force a low-velocity flow through a small portion of the system.
Flushing Loops

1. Divide the system into individual loops. These loops should be sections within the water system, starting at the water source(s) and ending at the system’s periphery, to be flushed based on a duly approved sequence.

2. In determining the flushing loops, the following should be undertaken:
   a) Locate dead-end mains and low-use areas on the water distribution map (GIS);
   b) Locate all flush points such as fire hydrants and flush valves nearest to the affected areas (for troubleshoot flushing);
   c) Label flush points in the field to aid in timely field identification;
   d) Where flushing is directed at specific problems, place these areas on a monthly schedule.

Desired Velocity

Use the table below as an example of the number and size of hydrants that must be opened to attain a velocity of 6 fps (1.8 m/s).

<table>
<thead>
<tr>
<th>Pipe Diameter in. (mm)</th>
<th>Flow Required for Velocity = 6 fps in (60 mm)</th>
<th>Number = 2.5 in (60 mm) Outlets</th>
<th>Number = 4 in (100 mm) Outlets</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 (100)</td>
<td>235 (50)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6 (150)</td>
<td>525 (120)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8 (200)</td>
<td>940 (210)</td>
<td>†</td>
<td></td>
</tr>
<tr>
<td>10 (250)</td>
<td>1,470 (330)</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>12 (300)</td>
<td>2,010 (460)</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>16 (410)</td>
<td>3,750 (850)</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>18 (460)</td>
<td>4,750 (1,080)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>24 (610)</td>
<td>8,450 (1,920)</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

*Required flow and hydrants to produce adequate velocity*
*Velocity requirements are based on 30-psi (207 kPa) residual pressure.
†With a 30-psi (207 kPa) hydrant-outlet pressure, opening the 2.5 in (60 mm) outlet on a single hydrant would yield a velocity of approximately 5.9 fps (1.8 m/s). Therefore, depending on the velocity desired, one or two hydrants could be used.

Quality Control

1. Ensure that the following parameters are met in flushing activities:
   a) Dead end and low usage mains are flushed periodically;
   b) Drinking water standards are met;
   c) Sediments and air are removed; and
   d) The required chlorine residual is maintained.

2. Flushing should last until the following conditions are met:
   a) The chlorine residual is at 0.3 mg/L – 1.0 mg/L;
   b) No air is detected;
   c) Water is clear, with no visible sediment;
   d) No objectionable taste or odor remains.

Spot Flushing Protocol

In some instances, flush specific areas in the distribution system more frequently to correct problems. These problems may include but are not limited to the following:

a) Air in the lines;

b) Turbidity/ sediment in the lines;

b) Maintaining the required chlorine residual;

d) Taste, odor or color problems.
General Safety Protocol

1. Flushing should be performed by trained personnel, and may include local firemen if it involves the hydrants.

2. The wearing of prescribed PPE must be followed.

Documentation and Reporting

Records of each flushing will be maintained by the assigned office staff of the Production and Water Quality Division. They will include the following:

a) Date;

b) Time;

c) Location;

d) Persons Responsible, with Field Assignment;

e) Length of flushing;

f) Chlorine residual after flushing dead-end mains;

g) Flushing Report with attached time-stamped on-site photographs; and

h) Other information deemed useful to the water district.

WATER QUALITY MONITORING (Incident Protocol)

PWQD9 Boil Water Alert Protocol

When to Issue the “Boil Water” Alert:

A self-imposed boil water alert must be issued by the MCWD when any of the following occurs:

1. A waterborne disease outbreak occurs within the service jurisdiction of the MCWD, regardless of the findings of the Department of Health;
2. A preponderance of the samples collected are total coliform positive (TC+) or e. Coli positive (EC+);

3. The water system loses pressure or the system is compromised and there is a significant probability that contamination can or will enter the potable water supply;

4. A catastrophic event or natural disaster occurs;

5. Turbidity is notably high, uncontrolled and occurring in an affected area or in the large part of the system.

**Figure 2 When to Declare a Boil Water Alert**

- **Is there a waterborne disease outbreak within the service area?**
  - Yes. **BOIL WATER!**

- **Is a majority of the samples collected in an area TC+ of EC+?**
  - Yes. **BOIL WATER!**

- **Is there negative (or low) water pressure in an area or the system is compromised and there is high probability that contamination can enter the supply?**
  - Yes. **BOIL WATER!**

- **Did a catastrophe or natural disaster occur?**
  - Yes. **BOIL WATER!**

- **Is turbidity notably high, uncontrolled and occurring in an affected area or in the large part of the system?**
  - Yes. **BOIL WATER!**
How Should the “Boil Water” Alert be Constructed:

The Boil Water Alert should be constructed in such a way that the language of the alert depends on the situation. However, regardless of the circumstances, the language should be factual, concise, and easily understood.

Communications Protocol During Boil Water Alert:

The following communications channel must be observed during Boil Water Alerts:

*Figure 3 Communications Protocol for Boil Water Alert*

If reason for the alert is uncontrolled/ notably high turbidity:
PWQD Head submits a Boil Water Advice to the GM

The GM decides on the Boil Water Advice; or, due to occurrence of any of the aforementioned cases, he may, moto proprio, issue a Boil Water Order.

Information office drafts the Boil Water Alert

Submit the Boil Water Alert (draft) for review

Information Officer reviews the draft, edits (if necessary) and endorses the same to the GM for approval

The GM acts on the draft and directs Information Officer to act as directed

Information Officer acts on the instructions received from the GM and facilitates release of the alert when approved.

Information office disseminates the announcement.

- By personal contact, door-hangers or notes taped to their doors:
  IF ONLY A FEW CONCESSIONAIRES ARE AFFECTED.

- By notification of local officials, use of local media, website or social media, and public announcements:
  IF A LARGE PART OF THE WATER SYSTEM IS AFFECTED.
**Lifting the Boil Water Alert:**

The Boil Water Alert shall be lifted by an order made by the GM when the cause(s) of the alert was (were) resolved.

**Communications Protocol in Lifting the Boil Water Alert:**

*Figure 4 Communications Protocol for Lifting the Boil Water Alert*

- **PWQD** recommends lifting the Boil Water Alert (if reason for alert is turbidity).
- GM decides on the recommendation; or moto propio, issues an order to lift the Boil Water Alert.
- Information office issues a Notice Lifting the Boil Water Alert.

**By personal contact, door-hangers or notes taped to their doors:**
- IF ONLY A FEW CONCESSIONAIRES ARE AFFECTED.

**By notification of local officials, use of local media, website or social media, and public announcements:**
- IF A LARGE PART OF THE WATER SYSTEM IS AFFECTED.
WATER LEVEL MONITORING

In addition to the operating procedures enumerated above, the following protocol shall be observed concurrently with other daily activities in the Macalpi treatment plant.

**PWQD10 SOP for Water Level Monitoring & Control of Valves**

1. Check, log and monitor the dam-basin flow meter every hour.

2. Water level at the sedimentation basin must also be monitored and recorded every hour by visual inspection of the measuring gauge located at the center of the basin.

3. The opening of the main gate valve shall be at 9:00 o’clock in the evening in accordance with the following standard parameter and turns:

<table>
<thead>
<tr>
<th>If the Water Level is</th>
<th>The Number of Turns should be</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.86 to 3.0 m</td>
<td>18</td>
</tr>
<tr>
<td>2.76 to 2.85 m</td>
<td>19</td>
</tr>
<tr>
<td>2.70 to 2.75 m</td>
<td>20</td>
</tr>
<tr>
<td>0 to 2.69 m</td>
<td>21</td>
</tr>
</tbody>
</table>

4. At 2:00 o’clock in the morning, the main gate valve shall be opened at 2 turns every after five minutes.

5. The opening of the main gate valve after the basin cleaning activity shall be at 2 turns and 1 turn every after 15-minute interval.
GENERAL SAFETY IN THE TREATMENT PLANT

**PWQD11** SOP for Installation of Chlorine Gas

**Procedure:**

1. Prepare the necessary tools, like the open wrench, before installing the chlorine gas cylinder.
2. Personnel prepares himself by using proper PPE before proceeding with the installation of the chlorine gas as part of the standard safety protocol.
3. Close the chlorine gas valve tightly before detaching the chlorinator.
4. Unlock the chlorinator valve and detach the said chlorinator from the chlorine cylinder.
5. Replace the empty cylinder.
6. Place the chlorinator into the mouth of the chlorine cylinder. Make sure that the mouth is tightly placed in order to prevent leaking of gas chlorine.
7. Tighten the valve using the open wrench.
8. Observe for possible leaks after installing the cylinder.
9. When installation of the chlorinator is completed, turn the pressure feed (chlorinator) valve and set it to 28 ppd pressure to control the chlorine gas feed rate.
10. Open the chlorine gas valve after Step 9.
11. Check, log (Dosing Logbook) and monitor the pressure feed rate every hour to ensure proper dosing/disinfection of the water being supplied.

**PWQD12** SOP for Storage of Chlorine

**Procedure:**

1. Keep chlorine cylinders and chlorine granules drums in storage rooms used mainly for this purpose.
2. These chlorine stores should be located indoors.
3. Access doors should fit closely to help contain any leak.
4. Chlorine stores should be protected from any nearby radiant heat hazards.
5. The stores should be at least five meters away from any roadway.
6. The cylinder store should be at least 20 meters from the site boundary and the drum store, 60 meters.
7. Carry out risk assessments to consider hazards arising from mishandling (dropping of containers in transport/handling), incorrect operation of valves and failure to connect properly, maintenance errors and damaged external sources (domino, vehicle impacts, etc.).
8. Observe safety protocols by using PPE.

**PWQD13 SOP for Chlorine Cylinder Leak – Major (Inside Room)**

**General:**

A major leak is when a cylinder is ruptured or the valve is broken during handling or changing a cylinder. A minor leak would be if there were a leak around a fitting that can be easily repaired using the tools and supplies provided in the vicinity of the chlorine room. The following procedure is to be followed in the event of a major chlorine cylinder leak that has occurred during the handling or changing of a cylinder and it is felt that the leak can be addressed locally.

**Procedure:**

1. Leave the room and shut off ventilation equipment to contain the leak;
2. Call the local fire station and advise them of a chlorine leak and that assistance may be required;
   a. If there are 3 people on-site, advise the fire station that you currently have adequate staff and self-contained breathing apparatus and that you have a repair kit. If staff
are trained in use of the cylinder repair kit, advise the fire station that all staff have been trained in application of the repair kit and that an attempt will be made to stop any further leakage if approved by the head/manager of the water quality division.

b. The fire station is to be advised of the exact location where the leak is and how to get to the site.

3. Call the head/manager of the water quality division and report the condition.

4. With the head/manager’s approval, a minimum of two staff must don a SCBA (self-contained breathing apparatus); ensure proper fit prior to entering the room with the repair kit. The repair kit is located beside the emergency eye-wash station.

5. If there is no manager’s approval, staff must wait for the fire officers to respond and control the situation.

6. The 3rd person must hold a portable phone or radio and position himself in a safe location and be in eye contact at all times with the two people attempting the repair.

7. The two staff may only enter when everyone is in position and the fire station has confirmed that it is responding.

8. If the leak is liquid, when possible, position the cylinder in a manner that the rupture is leaking chlorine gas.

9. Apply the proper repair part from the kit and secure the cylinder to limit further movement.

10. Both people must immediately leave the room if:
   a. The cylinder has been secured and no further leaks need to be addressed;
   b. Either of the air packs has sounded an alarm indicating a low supply of oxygen;
   c. No further entry is allowed unless both staff have replaced the oxygen cylinders with fully charged ones.

11. Wait for the fire officers and ventilate the chlorine room only if directed by them.

12. Continue to follow all directions given by the person in charge from the fire station.
13. Call the chlorine supplier to report the ruptured cylinder and request immediate pickup and record a confirmation number.

14. All staff are to document the incident immediately after the fire station has determined the area to be safe.

15. Continue to document issues until back to normal operations.

16. Note that if a shift change occurs during the emergency, all staff will remain on site and continue to assist with the emergency. Staff involved in containing the chlorine leak can only leave if directed otherwise by management.

MAINTENANCE OF EQUIPMENT – WATER TREATMENT FACILITY

PWQD14 SOP for Manual Switching of Standby Power

Procedure:

The generator set will need to be manually switched from automatic setting. This will be done every 2 weeks, usually on Wednesdays, to ensure that it is in operational condition when it is needed during an emergency situation. The following procedure is to be followed:

1. Before running diesel, check:
   a. Oil level;
   b. Cooling system level;
   c. Water in batteries (use only distilled water to maintain proper level);
   d. Wear hearing protection.

2. If either or both of the pumps are in operation, turn pump selector switch to “off” position.

3. Start diesel generator by disconnecting the “Main Breaker” on the MCC panel.

4. In approximately 1 minutes the “Transfer Switch” in the panel beside the main breaker will activate.
a. If the switch does not activate, turn the main breaker back on and call in a repair order for the transfer switch;
b. If the switch does activate, complete the procedure.

5. Diesel generator will start. After about 1 minute the motor should be up to full speed and the pump selector switch can be turned “on” if it was switched to “off.”

6. Complete the “Diesel Operation” sheet, monitoring all data indicated.

7. Run for 1 hour. To return to normal operation, activate the “Main Breaker” switch.

8. After about 1 minute, the “Transfer Switch” will activate back to the “normal” position.

9. Diesel will continue to run for about 4-5 minutes for cool-down.

10. Sign and date the “Diesel Operation” sheet after completing all the data.

11. Ensure that all settings are back to normal.

12. Note that, if at any time the system fails to function according to the above procedure, contact the division head/manager and report the problem. This will ensure that maintenance can be determined and the problem repaired as soon as possible.

SECURITY PROTOCOL (MACALPI TREATMENT FACILITY)

**PWQD15 SOP for Security at the Treatment Plant**

**Visitor Control**

A visitor is defined as any individual not authorized unescorted access into the facility. The security guard must verify from the Office of the General Manager a visitor’s access before granting access into the facility.

1. Visitors will enter their full name, rank/designation/position, organization, and signature; the escort is required to enter his/her name and signature, and the visitor’s arrival/ departure times.
2. Ask the visitor if he/she has any prohibited item(s). If yes, ask the visitor to immediately remove it from the facility; a lockable cabinet is available immediately at the main entrance for storage of such items.

3. All visitors, regardless of access level, must remain under the constant surveillance of an escort while in the facility. It is the escort’s responsibility for ensuring all remaining occupants are fully aware of the “common access” level while a visitor is present. Furthermore, it is the escort’s responsibility to ensure information discussed with visitors is kept within the framework of must-know and need-to-know, and at the “common access” level of all who are present.

**Prohibited Items**

Items that constitute a threat to the security and integrity of operations are prohibited unless specifically authorized by Management. A list of prohibited items is usually posted on the wall directly outside the facility’s main entrance.

1. Bags, personally-owned equipment and the like brought into the facility is subject to inspection at all times. Any device, material or object removed from the facility is also subjected to an inspection.

2. All personnel entering the facility will be reminded of the prohibited items list prior to admittance. Any prohibited item found thereafter will be confiscated and immediately removed or destroyed, based on the discretion of security.
INSTALLATION, OPERATION & MAINTENANCE OF SYSTEM APPUR TENANCES

ECD1 SOP for Water Main/Distribution Line Installation

Purpose:
Pipe laying requires quality workmanship especially in trenching, bedding, leveling and jointing. This SOP describes the steps to be followed by the utility in pipe installation.

Responsibility:
The Engineering and Construction Division personnel headed by the ECD Manager or Officer-in-Charge is responsible for this pipe installation works.

Procedure:
It is hereby agreed that this SOP shall be followed subsequent to the approval of the as-built plan and design of the water main/distribution including the Program of Work (POW) by the MCWD General Manager. Likewise, all necessary permits required by the appropriate regulatory agencies have been obtained and complied by the utility.

Site Preparation
1) Preparation around Trees and Shrubs
2) Subsurface Investigation/Line Location
3) Dewatering
4) Trenching, Sloping, Shoring, and Spoils
5) Private Property/Public Access
6) Temporary Fences and Barriers
7) Temporary Services
Pipe Installation

1) General Pipe Specifications
2) Pipe Identification
3) Placement, Bedding, Backfilling, and Compaction
4) Joint Deflection
5) Casing Installation
6) Trenchless Pipe Installation

Installation of Fittings

1) General Pipe Fittings Specifications
2) Offset Fabrication
3) Installation and Restraint

Valve Installation

1) General Valve Specifications
2) Installation and Restraint

Fire Hydrant Installation

1) General Fire Hydrant Specification
2) Fire Hydrant Location and Spacing
3) Installation and Restraint

Site Restoration

1) Cleaning and Grading
2) Pavement Repair and Resurfacing
# ECD2 SOP for ECD Handling of Maintenance Order (MO) and Service Application and Construction Order (SACO)

**Purpose:**

This SOP describes the steps to be followed by the Engineering and Construction Division personnel to carry out Maintenance Order (MO) and Service Maintenance Request (SR)

**Procedure:**

This procedure commences after the acknowledgment by the Engineering and Construction Division Manager or Officer-in-Charge of the Maintenance Order (MO) and approved Service Application and Construction Order (SACO) from the Finance and Commercial Division.

<table>
<thead>
<tr>
<th>Steps</th>
<th>Procedure</th>
<th>Person Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Acknowledge Maintenance Order (MO) together with the approved Service Application and Construction Order (SACO).</td>
<td>ECD Manager / Officer-in-Charge</td>
</tr>
<tr>
<td>2</td>
<td>Record approved SACO. Prepare requisition of materials using the Requisition and Issue Slip (RIS) and Job Order (JO) to be accomplished by the field personnel during installation. Post the same to the Daily Work Sheet.</td>
<td>Assigned ECD Personnel</td>
</tr>
<tr>
<td>3</td>
<td>Receive Maintenance Order (MO) together with the approved Service Application and Construction Order (SACO) for implementation. Issue job order using Job Card (Form...) to assigned field personnel and facilitate proper issuance of needed materials from the Property and Supply Management Section.</td>
<td>Water Utility Development Officer</td>
</tr>
<tr>
<td>4</td>
<td>Accept Job Order and receive/check/verify materials issued by the Property Officer against the Bill of Materials listed in the Inspection Report attached in the approved Service Application and Construction Order (SACO).</td>
<td>Water Maintenance Men</td>
</tr>
<tr>
<td>5</td>
<td>Perform necessary service connection works in accordance with the MCWD General Policy and Procedures for Service Installation. Supervise and/or verify installation works. Secure signature of concessionaire upon accomplishment of job order.</td>
<td>Water Maintenance Men</td>
</tr>
<tr>
<td>6</td>
<td>Return accomplished Job Card and Maintenance Order (MO) together with the Concessionaire’s signed Service</td>
<td>Water Utility Development Officer</td>
</tr>
</tbody>
</table>
Application and Construction Order (SACO) to the ECD assigned personnel for recording, filing and monitoring.

Call the concessionaire to verify the accomplished Job Card.

Record accomplished Job Order and transmit copies of the accomplished Maintenance Order (MO) and Service Application and Construction Order (SACO) to the Finance and Commercial Division for monitoring and billing purposes.

Generate and submit Monthly Accomplishment for Service Application and Construction Order to Office of the General Manager.

### ECD3 SOP for Meter Installation

**Purpose:**

This SOP describes the steps to be taken by the utility for the proper manner prior, during and after installation of water meter.

**General:**

It is the Metro Carigara Water District’s intention to consistently and economically manage and deliver a sufficient quantity of maximum purity and quality to every customer as required. Success in this endeavor depends, to a great extent, on the proper design of not only the distribution system but of the proper sizing of individual service lines and water meters.

**HANDLING AND STORAGE**

1. Protect water meters from cold temperatures: water meters are not to be exposed to temperatures below 3 ° Celsius to prevent freeze damage and void warranty.

2. Water meters are to be kept in clean and dry environment and not exposed to particulates (dust, grim etc.) which could impair/damage the flow mechanisms.

3. Do not remove the protective caps in order to prevent the inside from debris during storage.
4. Do not drop or cause sudden impact to water meters: Physical impact could impair/damage the flow mechanisms and produce cracks in casings and collars causing leaks.

5. Do not disassemble the display register housing.

6. Do not carry water meters by pulse output leads.

**STANDARD INSTALLATION**

*Prior to Installation, Inspect and Ensure:*

1. Service lines, valves, connections and meters must be watertight.

2. Repair the piping system if pipes are corroded or damaged.

3. Provide an upstream and downstream shut-off valve of high quality and with low pressure drop.

4. (A valve before the meter will allow local shutoff of the water if change or repair is later needed. A valve or check valve on the outlet side of the meter will keep water from draining from the building if you change or remove the meter.)

5. Provide a drain cock between the meter and the downstream valve.

6. Install and support the meter horizontally in the line to obtain optimum performance.

7. Ensure that the installed meter will be easily accessible for reading, inspection, and service.

8. Protect the meter and piping against frost, flooding, mechanical damage and tampering.

9. The installed meter must not be an obstacle or a hazard to the customer or interfere with public safety.

10. Standard water meters are for cold potable water only.
11. If you have high pressure you must install a pressure regulator. Most meters are rated to 16 BAR (150 psi). If you already have a pressure regulator, verify that the regulator works and is adjusted correctly.

12. The service pipe entering and exiting the meter box should be properly bedded to ensure that it is not axially misaligned. Ensure that pipe alignment is maintained so that the service pipe or meter will not be damaged by eventual ground shifts.

**CAUTION!**

**DO NOT** attempt to use any meter as a lever or crowbar to straighten misaligned meter settings.

**DO NOT** attempt to set a meter into a meter opening which is too long and attempt to force the piping into place with the coupling nuts on the meter setting. This can cause serious damage to the threaded ends of the meter and to the meter itself. This can also cause leaks because improper seal of the rubber gasket.

**INSTALLATION:**

1. Verify the existing setting for proper alignment and spacing. Correct any misalignment and spacing in the setting. Skewness of pipes often makes it difficult to obtain a watertight connection.

2. Place the connection gaskets inside the connection coupling nuts.

3. Set the meter between the coupling nuts, properly positioned so that the flow indication/arrow on the meter housing points in the direction of flow.

4. Start the coupling nuts at the threaded meter ends. Verify that the coupling nuts are properly aligned to avoid cross threading damage (stripping) to the meter ends.

5. The best method for properly starting meter coupling nuts is to position the nuts squarely against the meter spud end. Turn the nut counterclockwise (in reverse) while holding the nut against the meter spud end. When the first threads on both the coupling
nut and the meter spud end coincide, a slight click will be heard and the movement of the nut into the starting position will be felt. At this point, turn the nut clockwise to complete the connection. In a good installation, this can be accomplished by turning the nut by hand until it is tight. When firmly hand-tight, apply an additional 1/4 to 1/2 turn using an open-end wrench with a short handle.

6. DO NOT over tighten (TIGHTENING TORQUE SHALL NOT EXCEED 8 Nm for a 3/4" nut, and 17 Nm for a 1" nut). Do not use pipe dope or sealants

**SOP for Meter Test and Calibration**

**Procedure:**

**Meter Calibration**

Note: TO ENSURE TEST ACCURACY, PLEASE PERFORM THE FOLLOWING STEPS BEFORE BEGINNING TEST

- Make sure that no water is being used at the time of the test (i.e. dishwasher, shower, faucet, toilet running etc.)
- Empty a 4 Liter container into the 20 Liter bucket 5 times and mark the top of the water level with a black permanent marker to determine exact level for 20 Liter of water in the bucket. Empty the bucket and begin the test.

1) Read and record initial reading of water meter dial

2) Run water from the tap until the sweep hand on the meter dial is located at "0."
   Have one person stationed at the meter to monitor this sweep hand.

3) Place a 20 Liter bucket underneath the tap, making sure that it is on level ground.

4) Fill the bucket to the 20 Liter level and shut the water off.
5) Read and record the final reading of water meter dial. (Final Reading less Initial Reading to get the result).

6) Mark as pass if the test result is equal or within 100% ± 2% accuracy, while mark as fail if the test result is not equal to 100% ± 2% accuracy.

**ECD5 SOP for Service Request**

**Purpose:**

This SOP describes the steps to be followed by the Engineering and Construction Division personnel to carry out Service Maintenance Request (SR) or complaint reported by customer.

**Procedure:**

<table>
<thead>
<tr>
<th>Steps</th>
<th>Procedure</th>
<th>Person Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Record Service Maintenance Request (SR) forwarded from the Public Assistance and Complaint Desk (PACD). <strong>Post</strong> the same to the Daily Work Sheet to assess and prioritize request.</td>
<td>Assigned ECD Personnel</td>
</tr>
<tr>
<td>2</td>
<td>Prepare and <strong>Issue</strong> job order using the JOB Card <em>(Form...)</em> to assigned water maintenance men.</td>
<td>Project Planning &amp; Development Assistant</td>
</tr>
<tr>
<td></td>
<td>Accept job order and <strong>perform</strong> necessary service maintenance work.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td><strong>Complete</strong> the Service Maintenance Request (SR) Form and <strong>secure</strong> signature of concessionaire upon accomplishment of job order. <strong>Return</strong> accomplished Job Card and Service Maintenance Request (SR) to the ECD assigned personnel for recording.</td>
<td>Water Maintenance Men</td>
</tr>
<tr>
<td></td>
<td><strong>Call</strong> the concessionaire to verify the accomplished job order.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td><strong>Record</strong> accomplished job order and return the accomplished Service Maintenance Request (SR) to the Finance and Commercial Division for filing and monitoring purposes.</td>
<td>Project Planning &amp; Development Assistant</td>
</tr>
<tr>
<td></td>
<td><strong>Generate</strong> and <strong>submit</strong> Monthly Accomplishment for Service Maintenance Request to Office of the General Manager.</td>
<td></td>
</tr>
</tbody>
</table>
**SOP for Leak Detection & Repair**

**Purpose:**

This SOP describes the steps to be taken by the water district to reduce water leakage. It outlines the procedure to be deployed by the staff to detect and repair leaks within the transmission lines, distribution lines and in the customer service lines.

**Procedure:**

Information on leaks come from varied sources like complaints channeled through the Public Assistance and Complaints Desk (PACD) and through the findings of the leak detection group. The standard length of time to repair the leak is within 24 hours from the time it was reported to the time it was repaired.

<table>
<thead>
<tr>
<th>Steps</th>
<th>Procedure</th>
<th>Personnel Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Log the complaint and process the Service Request.</td>
<td>PACD Staff</td>
</tr>
<tr>
<td>2</td>
<td>Receive the SR, prepare the Leak Detection Report, log it in the Leak Register, and forward the same to the Head of the Engineering and Construction Division (ECD).</td>
<td>Assigned Office Staff (ECD)</td>
</tr>
<tr>
<td>3</td>
<td>Direct the investigating supervisor to inspect the leak.</td>
<td>ECD Head</td>
</tr>
<tr>
<td>4</td>
<td>Visit the site and assess the leak. If leaking pipe is submerged or covered, expose the same in order to clearly evaluate the extent of the damage. Photographs may be taken to document activities whenever applicable.</td>
<td>Investigating Supervisor (referred to in #3 above)</td>
</tr>
<tr>
<td>5</td>
<td>Submit the Leak Inspection Report and Leak Repair Form to the Water Utility Development Officer.</td>
<td>Investigating Supervisor</td>
</tr>
<tr>
<td>6</td>
<td>Request the materials, assign a leak repair team, and process their field assignment.</td>
<td>Water Utility Development Officer</td>
</tr>
<tr>
<td>7</td>
<td>Repair the leak, noting compliance of the operating procedures as follows:</td>
<td>Leak Repair Team and Assigned Field Supervisor</td>
</tr>
</tbody>
</table>
Make sure that all necessary tools, equipment and materials indicated in the checklist are brought to the repair site.

See to it that the repair team use the prescribed Personal Protective Equipment (PPE) such as safety vest, safety goggles, safety gloves, safety shoes and safety helmet.

Check that signage, barricades and warning devices are in place.

Close isolation valves in the system to isolate the leak. Clearly mark each valve that is closed, for instance on a worksheet or with a physical marker such as danger tape on the valve itself.

Excavate the identified section, carefully avoiding further damage to the pipe.

Drain water from the trench using an extractor pump capable of handling sludge.

Repair the damage:
  - For small leaks, a repair clamp may be fixed over the leak to seal it. Small leaks in steel pipe may be welded closed.
  - For more extensive leaks:
    - Cut the busted pipe;
    - Disinfect the replacement pipe;
    - Install the replacement pipe and its appropriate fittings.
    - PVC is often used for the replacement section since special fittings are available to connect PVC to other pipe materials. Note that AC pipes should not be cut – rather replace a whole length of pipe.
    - Replace a whole length of pipe if damage is extensive or it is clear that the pipe is in bad condition and likely to fail again.
    - Take special care to ensure that any solids that may have entered the pipe during the repair are removed.

Slowly open the isolation valves that were closed, including nearby valves to allow air to exit the system. Ensure that all involved isolation and scour valves are reinstated to their correct state.

Open blow-off valve or fire hydrant near the repair site for flushing.
- Check for further leaks.
- Restore the pipe bedding, blanket and then backfill using appropriate placing and compaction methods and materials.
- Restore the work area to its former condition.

8. Complete a Leak Repair Report, including an analysis of the likely cause of the leak, and submit to the Head of the Engineering and Construction Division.  
   Assigned Field Supervisor

9. Sign the Leak Repair Report Form and, using a standard Routing Slip, forward the same to the assigned office staff (as referred to in Step #2) for any of the following instructions:
   - File
   - Forward to: PACD or OGM
   - Inform the GIS administrator to update the system map
   - Others:

10. Carry out the instructions indicated in the Routing Slip.  
    Personnel indicated in the slip

    Water Utility Development Officer

    ECD Head

**ECD7 SOP for Main Pipe Line Leak Repair**

**Purpose:**

It is one of the most important responsibilities of MCWD to properly maintain the transmission and distribution mains in order to prevent waste and provide a constant pressurized flow of safe water to the consumers.

**General Procedure:**

Following procedure must be followed by the ECD personnel in addressing pipe leaks:
Monitoring of Internal mobilization.

a) Necessary information to the Senior Level Management may be submitted and their interim approval sought. Details approval can follow in due course of time.

b) The entire staff must be made fully aware of the likely activities required to be undertaken so as to ensure minimum possible interruption in the system.

c) Alternative arrangement for water supply may be planned and duties of staff fixed accordingly.

d) Necessary staff may be arranged for the following duties;
   - Location of section;
   - Isolation of section;
   - Scouring of section;
   - Arranging transport, material, machinery, equipment, tools, pipes, fittings etc.
   - Other miscellaneous duties.

e) Manpower, material, machinery, transport, lighting, safety measures, communication, pipes with fittings and specials etc. for the repairing operation

Detection of pipe failure.

a) Inspect site and ascertain the nature of failure.

b) Assess any possible damage or dispute that may arise and take steps to face such situations.

c) Assess urgency of repair, availability of men and equipment, effect on consumers and fix time and day of repair.

d) Locate isolating valves for proper control of requisites activities required for repair work.

e) Depending upon the seriousness of the leakage or burst, the likely effect on the local supplies, decision may be taken on

f) Maintenance of supplies as long as possible
g) Prevention of possible contamination of the pipeline and

h) Quick location of the actual position of the pipeline.

i) Establish control and communication network after deciding the time of repair work to be undertaken.

j) Ascertain the sensitivity of the affected area and take steps to avoid undesirable situations.

k) Issue notification and warnings the likely interruptions.

l) Mobilize men, material and equipment for repairs.

**Notification of interruption in water supply and related issues.**

a) Issue notices to the affected consumers and the departments looking after other affected facilities like telephones, cables, electric lines etc. Such notifications may be by mobile loud speakers, telephones, local media channels, etc.

   The content of the notification will be under:
   
   o Time of closure and affected area;
   
   o A brief and simple reason for interruption;
   
   o An estimated time of restoration of supplies;
   
   o Contact point for any problems;
   
   o Advice on conservation, flushing, boiling, etc.

**Location and demarcation.**

a) Before undertaking any excavation work, all protective measures may be taken including signs, lighting etc. Traffic rules must be complied with. All local utilities must be located and marked and liaison kept with local representatives of these affected utilities.

b) The conventional methods of excavation may be supplemented with more mechanized processes keeping in view the existence and location of the water main.
c) Pay due attention to safety below ground by providing support to trench sides and any exposed pipes and cables.

d) The full extent of damage, both to pipe work and any support works, should be assessed.

e) The discharge of any dewatering apparatus should be checked to ensure free outflow and to avoid any danger or inconvenience caused by flooding.

f) Ensure effective operation of repair work by proper control of valves which should be in perfect working condition.

**Repair Planning.**

a) Note full details of the failed pipe and/or fitting including material type, approximate age, class and general condition. Reasons for failure should be established as accurately as possible and recorded. Check actual external dimensions of the pipe and determine any tendency to ovality for effective repair.

b) Identify type of repair – wet or dry.

   i. A ‘wet’ repair is defined as repair which can be achieved while maintaining a nominal pressure in the pipeline. Split collars or identical fittings can be installed in this way if the conditions are favorable.

   ii. A ‘dry’ repair is defined as one in which the main is completely isolated and drained out. ‘Cut out’ repairs necessitating the removal of a section of the pipe and/or joints will require ‘dry’ main on which to work and the pipeline should be drained out.

c) Determine extent of repair and availability of repair fittings and tool

d) Assess and make available the bedding material if required.

e) Report to Office of the General Manager when ready to start repair.

**Repair work: Selection of most appropriate method for repair.**

a) Repair of small, local defects – ‘wet repair’
For small local defects, such as pinholes a single split collar or wraparound clamp may be all that is required. The repair can be carried out as a ‘wet’ or ‘dry’ operation. In case of ‘wet’ repair care should be taken to maintain a steady, gentle flow so as not to dislodge the sealing elements.

b) Cut out – ‘dry repair’

For a more extensive damage e.g. longitudinal fracture, a section of pipe is cut out and replaced by the use of two appropriate couplers. If full extent of the fracture is not clearly defined cuts should be made at least 300mm beyond each end of the visible crack or defect and in case of any doubt the full length of damaged pipe should be replaced. This necessitates cutting out the joint at both ends of the affected pipe, thus the repair normally requires two replacement pipe sections and three couplers.

c) Replacement repairs – following observations are important

- Carryout correct measurements and give allowance for expansion;
- All cuts should be made clean and square;
- In A.C. pipes, cuttings should be avoided;
- All cut edges should be prepared (scraped, deburred, chamfered etc.) to the manufacturer’s recommendations.
- Both exposed ends of the existing pipe should be similarly treated;
- Couplers should have their sealing rings lubricated if recommended;
- Correct expansion gaps should be allowed;
- Good alignment is essential particularly if narrow couplers are used;
- All couplers and collars should be centralized;
- Tighten all bolts evenly;
- Do not over tighten bolts or compression joints;
- Restore any damaged coatings on the parent pipe;
Ensure full protection to the bolts and any exposed bare metal before burial.

d) Record details of repair while the repair is still visible. Record the following items:
- Any visible damage to the pipe;
- State of protective system coating;
- Depth of cover
- Description of the soil/backfill

### REPAIR METHOD FOR DIFFERENT TYPES OF PIPES

Some of the methods of repair for different types of pipes are given in the following tables.

#### Table 1

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>CAST IRON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burst</td>
<td>Action</td>
</tr>
<tr>
<td>Joint failure</td>
<td>Enclose joint</td>
</tr>
<tr>
<td></td>
<td>Two couplers</td>
</tr>
<tr>
<td>Brittle failure</td>
<td>Remove section/joint</td>
</tr>
<tr>
<td></td>
<td>Enclose failure</td>
</tr>
<tr>
<td>Corrosion</td>
<td>Remove section/joint</td>
</tr>
<tr>
<td></td>
<td>Rehabilitation technique</td>
</tr>
<tr>
<td></td>
<td>Enclose failure</td>
</tr>
</tbody>
</table>

#### Table 2

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>DUCTILE IRON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burst</td>
<td>Action</td>
</tr>
<tr>
<td>Joint failure</td>
<td>Enclose joint</td>
</tr>
<tr>
<td></td>
<td>Remove section/joint</td>
</tr>
<tr>
<td>Extensive pin holing</td>
<td>Rehabilitation technique</td>
</tr>
<tr>
<td></td>
<td>Remove section/joint</td>
</tr>
<tr>
<td>Ductile failure</td>
<td>Remove section/joint</td>
</tr>
<tr>
<td></td>
<td>Enclose burst</td>
</tr>
<tr>
<td>Localized pin holing</td>
<td>Enclose burst</td>
</tr>
</tbody>
</table>

#### Table 3

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>STEEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burst</td>
<td>Action</td>
</tr>
<tr>
<td>Extensive pin holing</td>
<td>Rehabilitation technique</td>
</tr>
<tr>
<td></td>
<td>Remove section/joint</td>
</tr>
<tr>
<td>Joint failure</td>
<td>Rehabilitation technique</td>
</tr>
<tr>
<td></td>
<td>Enclose joint</td>
</tr>
<tr>
<td>Isolated pin holing</td>
<td>Enclose burst</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>POLYETHYLENE/ POLYVINYL CHLORIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burst</td>
<td>Action</td>
</tr>
<tr>
<td>Fast crack propagation</td>
<td>Remove damaged section</td>
</tr>
<tr>
<td>Brittle failure</td>
<td>Remove damaged section</td>
</tr>
<tr>
<td></td>
<td>Enclose burst</td>
</tr>
<tr>
<td>Joint failure</td>
<td>Cut out joint</td>
</tr>
</tbody>
</table>

**Testing of ‘dry repair’**.

a) Give additional support to repaired pipe portion, if necessary;
   
   All wet slurry should be removed to the extent possible, and the bottom of the excavation should be filled and the exposed pipe network rebedded, with suitable material sufficiently compacted to give adequate support to the invert and lower quadrants of the pipe and any fittings.

b) Renew bedding and compact
   
   Additional material may be placed to support the repaired pipeline when under test pressure, but it is advisable to leave all joints visible in case of leakage.

c) Arrange air bleeding and slowly refill isolated section
   
   Refilling the isolated section of the main with water should be done slowly and from one direction only. Arrangements should be made for the expulsion of the air by means of any convenient air valves, hydrants, washouts or taps. The repaired pipe is subjected to a pressure equivalent to the normal working pressure.

**Restoration.**

a) Restore valves and the system in accordance with the original operation plan

b) Remove all standby pipes, temporary supplies and emergency equipment

c) Notification and acknowledgments should be made wherever necessary

**Hygiene**

During the execution of the repair work hygienic conditions must be made to prevail at various stages till the completion of work.
a) Site Cleanliness

During the repair work the area should be kept as clean as possible. All debris and contaminants should be removed from the site and the contamination of the trench from plant, equipment or any other potentially hazardous materials must be avoided.

b) Storage of tools and equipment

All pipes, fittings, tools, equipment and vehicles to be used on site should be regularly maintained and cleaned.

Equipment used for disinfection and sampling should be kept for this purpose and regularly maintained.

c) Prevention of contamination during repair work

Clean and spray with disinfectant, on all surfaces that come in contact with potable water including the broken main, repair fittings and replacement pipe. Ensure that the contaminants do not enter the main where it is cut for repair.

After completing the repair, flush the main at the nearest hydrant to remove any dirt etc.

d) Disinfection procedure

For small repairs, which do not require the main to be cut, the fracture should be cleaned and this along with the repair collar should be sprayed with disinfectant.

For more major repairs requiring cut out, every care must be taken to prevent contamination.

Completion.

a) Wherever joints have been left exposed for testing purposes these should be restored to their original position. The bolts, bare metal surfaces etc. should be properly protected prior to side fill.

b) Side filling work should be suitably accomplished.
c) On completion of the work all materials and protective barriers should be removed from site and the working area left clean and tidy. All records should be completed and submitted

ECD8 SOP for Blow Off Valve Assemblies

Scope:

This section describes the requirements for furnishing and installing Blowoff Valve Assemblies as an appurtenance to treated water mains. These requirements include the materials to be used, methods and requirements for installation.

Description of Work:

Work as described in this section shall include, but not be limited to, excavation, installing the connection to the main, blowoff lateral and valve, blowoff discharge pipeline, corrosion protection, backfilling, installing the blowoff valve box and riser box along with lid and extensions, forming and pouring of valve and riser box pad, installing and testing the locating wire, installing a valve operator extension shaft, placement of stone slope protection, restoration of the surface area around the Blowoff Valve Assembly, and installing a post and guide marker.

Location:

Blowoff Valve Assemblies shall be located:

1. At the low points of the water main;
2. At the end of all water mains that are not looped; and
3. At other locations shown on duly approved plans.

Design:

1. The minimum size blowoff valve assembly is 2 inches. Larger assemblies shall be sized in 2-inch increments.
2. Blowoff Valve Assemblies shall be designed to withstand working pressures as shown on plans, or to a design working pressure of 150 psi, whichever is greater.

3. Plans or submittals for approval shall include:
   a. Catalog data or shop drawings for the valves:
      (1) Valve boxes;
      (2) Lids; and
      (3) Extensions.
   b. Catalog data or shop drawings for the valve operator extension shaft.
   c. All other materials as described elsewhere in specifications.

**Inspection and Quality Control:**

1. Make all blowoff valves, piping and fittings, and valve boxes available for inspection by the supervising engineer (Inspector) prior to installation.

2. All necessary equipment should be available for the Inspector to examine all materials thoroughly.

3. Each step of the work should pass inspection by the supervising engineer before commencing work on the next step. Refer to the succeeding section for the steps to be taken. After installation is complete, the blowoff valve will be inspected for leaks and proper operation.

**Installation:**

Blowoff valves shall be stored and handled in their original containers, which shall not be unpacked until 24 hours prior to the installation, except for inspection. The valves shall be maintained free from dirt and foreign matter and shall be stored on wooden pallets in their original containers. Blowoff valves and discharge piping and related fittings and valve boxes shall not be strung out on the job more than 3 days prior to installation. Steps in installing shall include, but not limited to:

1. Cut the pavement.
2. Excavate the section.
3. Tap the water main;
4. Install the blowoff lateral, valve and discharge piping.
5. Apply corrosion protection. All brass and galvanized pipe and fittings to be buried shall
   be primed and wrapped with tape after assembly is complete. The tape shall be made
   of coal tar and/or synthetic resin compounds and shall be laminated to an outer film of
   vinyl for added strength. The tape, with the vinyl cover, shall have a total minimum
   thickness of 45 mils. The pipe and fittings shall be cleaned of all loose scale and dirt,
   and all grease, oil and other foreign matter before applying the primer. The tape shall
   be spiral-wrapped with a minimum ½-inch minimum overlap. Blowoff valve assembly
   laterals and discharge pipes constructed with ductile iron pipe shall have all bolts,
   glands, set screws and other metal fasteners protected from corrosion.
6. Backfill the trench/excavated section.
7. Raising the valve box and riser box to final grade.
8. Test the locating wire.
9. Restore the surface. After backfill and compaction is complete, the surface over the
   Blowoff Valve Assembly and all other surfaces disturbed by this work shall be restored
   to an “equal to, or better than” condition as it existed prior to the start of the
   construction.

**Materials:**

Materials needed for Blowoff Valve Assemblies shall include, but not limited to:

1. Saddles or fittings for the connection to the main;
2. Pipe and fittings used for the blowoff discharge line;
3. Blowoff valve;
4. Valve and riser boxes along with lid and extensions;
5. Drain rock;
6. Concrete for valve and riser box pads;
7. Valve operator extension shafts, primed and painted with two coats of asphalt varnish or coal-tar enamel;
8. Stone slope protection;
9. Materials necessary for restoration of the area around the assemblies, posts and guide markers.

**SOP for Automatic Air Release Valves**

**Safety:**

Since Air Valves operate in pressurized water systems you are required to carefully read this manual before using the valve. Handle the valve with care and make sure to comply with all the relevant required safety instructions and standards, general and local.

**Unpacking and Post-Shipment Inspection:**

1. Make sure that till the actual installation the valve remains dry and clean in its original package.
2. Unpack the valve and make sure that all the wrapping materials are removed.
3. Before installation it is necessary to inspect that no damage to the valve had occurred during shipment; do not install a damaged valve.
4. Verify that the valve to be installed meets the design specifications of the specific installation site; take extra care and make sure that the expected system pressure complies with the pressure rating of the valve.

**Site Preparation:**

1. Air Valves located above ground should be protected from freezing, contamination and vandalism.
2. If the valve is to be installed in a pit, make sure that the pit has proper drainage and sufficient dimensions for servicing the valve.
3. Flush the pipeline prior to the Air Valve installation in order to prevent damage to the valve internals due to large debris carried by the water during startup.

**Installation:**

1. Install the Air Valve as close as possible to the pipe, at a high point of its circumference, in vertical position (within 5 degrees of vertical alignment) and with its inlet facing down.
2. The diameter of the pipe connecting the Air Valve with the pipeline should be at least equal to the Air Valve inlet diameter.
3. Install a shutoff valve between the Air Valve and the pipeline for allowing easy inspection and maintenance.

**Start-up and First Operation:**

1. Open the shutoff valve and verify that the Air Valve connections are not leaking; if needed follow the troubleshooting instruction section of this document. Please note that at the first time the valve is filled up some water may exit through its outlet port.
2. Prevent water hammer during startup and pipeline filling; maintain the velocity lower than 0.5m/sec (1.6 feet/sec).

**Operation and Maintenance:**

1. Principles of Operation
   a. During pressurized operation of a pipeline, air accumulates in the upper part of the Air Valve chamber, causing the float to gravitate downwards. This in turn causes the automatic orifice to open, releasing the accumulated air. Once the air is discharged, the water level and float rise, causing the automatic orifice to close.
2. Inspection
   a. The valve does not require any specific maintenance; however, a periodical inspection of the seals is recommended for removing debris and foreign objects.
3. Troubleshooting

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leakage at the inlet connection.</td>
<td>Tighten the valve connection, use thread sealant. Check whether any part/seal is covered.</td>
</tr>
<tr>
<td>Leakage at the valve cover.</td>
<td>Tighten the valve’s cover.</td>
</tr>
<tr>
<td>Leakage at the valve’s outlet.</td>
<td>Flush the valve to remove debris, disassemble and inspect the valve’s orifice, float and seals. Remove any foreign objects, check and replace any damaged part.</td>
</tr>
<tr>
<td>Valve does not release air.</td>
<td>Verify that the operating pressure does not exceed the valve’s rated working pressure.</td>
</tr>
</tbody>
</table>

**ECD10 SOP for Fire Hydrants Maintenance**

**Inspection:**

1. Position apparatus as necessary to assure the safety of employees from passing traffic. Do not obstruct traffic unnecessarily. Personnel used to direct traffic shall adhere to appropriate traffic control and flagger standards, and wear appropriate reflective clothing.

2. Inspect the fire hydrant for accessibility. There should be no obstructions, including the ground, preventing easy coupling of hoses or turning of spanners. The hydrant should be visible from all approaches. There should be no brush or tree limbs that could interfere with authorized personnel to approach the hydrant, to connect or operate it. Crews should make minor corrections such as pruning and minor digging. More significant work such as heavy brush removal, significant digging, placing of retaining walls to prevent soil slough off, or the raising of bodies which are set too low, should be referred for correction by submitting a repair request.
a. Trim brushes away from hydrant to maintain at least a 3-foot clear space. Inform the customer prior to removing any plant or landscaping. Allow said customer an opportunity to remove impediments.
b. Remove dirt from hydrant’s base.
c. Expose shut-off valve box.

3. Remove all caps and inspect threads and outlets for damage or obstruction. Replace caps with hydrant wrench slightly tighter than hand tight.

4. Open hydrant completely with caps in place. Determine water has filled hydrant and turn hydrant off completely. All personnel in the vicinity of a charged hydrant/hose line must wear their helmet. Note any difficulty opening hydrant.

5. Observe hydrant for proper draining.

6. Document inspection by indicating hydrant number, location and any deficiencies noted, and date inspected.

7. Submit inspection report.

**Hydrant Maintenance Operations:**

1. Lubrication
   a. Remove oil filler plug.
   b. Add food grade oil until full.
   c. Reinstall plug. Do not over tighten.
   d. Remove nozzle caps.
   e. Replace gasket if necessary.
   f. Add oil to threads.
   g. Put caps back on nozzles. Do not over tighten.

2. Valves. Valves should open and close properly and should not leak at either the stem or nozzle. Leaky packings on older hydrants should be tightened. Valves that are difficult to operate, have bent stems, or do not open and close fully, should be reported.
a. Locate valve box.

b. Open and close valve until it operates properly.

c. Close valve, turn on hydrant to verify valve shuts tight.

d. Slowly open the valve to charge the hydrant while flushing the valve seat.

e. Turn off the hydrant then fully open the valve.

f. Check that the hydrant barrel drains before installing the caps.

3. Flow

a. Carefully remove the nozzle caps (they may be under pressure if weep holes are not working).

b. Look into hydrant barrel to see if it is draining properly.
   1) If barrel does not drain, the weep holes may be obstructed.
   2) To clear the drain ports, install the nozzle caps tightly then open the hydrant 2 to 3 turns using water pressure to flush the weep holes.

c. If still obstructed, remove the operating rod assembly and clean the drain mechanism.

d. If neither b nor c work, the draining area around the hydrant needs to be rebuilt.
   1) Cover the hydrant with an “out of service” bag;
   2) Notify the local fire station;
   3) Notify supervisor of need for repair or replacement.

e. Attach hose and diffuser with dechlorination tablets.

f. Take appropriate measures to prevent erosion.

g. Fully open hydrant then close slowly to prevent water hammer.

4. Paint. - Paint should be in good condition. Hydrants with chips or rust showing should be touched up with aerosol paint. Hydrants in severe need of repainting should be reported. Bodies should be the correct color.

a. Wire brush hydrant and apply fresh coat of paint (color appropriate to hydrant).

b. Wire brush valve box lid and apply fresh coat of paint (color appropriate to hydrant).
5. **Blue Reflector.** - The blue reflector should be relatively clean and reflective. At least 2/3 of its reflective surface should be intact and in good condition. Severely damaged or missing reflectors should be reported.

6. **Gate Pot.** – The gate pot for the street shutoff valve should be accessible and readily discernible from water main zone valves. All hydrant gate pots should be painted white in order to be easily spotted under water, if a hydrant gets knocked off. Any gate pots which cannot be located should be reported.

7. **Curb Paint.** – Curb paint involves two issues. One is a “red zone” painted on the curve where appropriate. The other indicates the distance from the curb to the street valve which is painted in contrasting roman numerals. Missing red zones or numerals should be reported.

8. **Markings.** – Markings are indicators on the hydrant bodies of special conditions such as a hydrant on a regular zone or a dead end main. Markings shown on the checklist that do not appear on the hydrant should be reported.

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**FRONTLINE SERVICES**

**FCD1 Application for Water Service Connection**

**General Policies:**

The following policies laid out in the Utility Rules and Regulations (URR) of the MCWD govern the application water service connection:

1. **Basic Rules.**- In applying for water service, the applicant shall be required to sign an application for service, wherein the District is released by the applicant from all liability that may be caused by water escaping or flowing from any water pipe, hose, water conduit, faucet, hydrant, valve or other connections or appliances at any point within said premises, and wherein said applicant also guarantees payment of all sums to
become due for water service furnished in pursuance of the said application until notification to discontinue or transfer such services.

If a new tenant/concessionaire applies for reconnection/reutilization of water service connection that had been disconnected by the District due to delinquency/non-payment of accounts, the said applicant shall be required to pay all outstanding account and other expenses incidental to the reopening/reutilization of the said cut connection. In no way shall the new tenant/concessionaire be allowed to apply for a new/separate connection which had been cut for reason aforesaid in order to circumvent the above requirement.

If upon application for water service, a service connection is found to have produced no revenue in the previous one year immediately prior to date of application and the service has been physically disconnected from the main, such connection shall be considered abandoned and all requirements under these regulations shall be in effect considered as establishing a service connection.

2. Who May Make an Application for Service Connection.- A person, firm, or corporation may avail of the services of the water district provided that he complied with the prescribed requirements of the District.

3. Requirements for Application.- The requirements for application for water service connection shall be, but may not be limited to, the following:

(a) Application Fee, the amount of which shall be determined by Management and approved by the Board. Transient applicants however, shall be required to pay a guarantee deposit as follows:

<table>
<thead>
<tr>
<th>Classification of Connection</th>
<th>Guarantee Deposit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>PHP 1,000.00</td>
</tr>
<tr>
<td>Commercial/ A</td>
<td>5,000.00</td>
</tr>
<tr>
<td>Semi-commercial</td>
<td>2,000.00</td>
</tr>
<tr>
<td>Industrial</td>
<td>5,000.00</td>
</tr>
</tbody>
</table>
(b) Water permit, clearances and other necessary documents which may be determined by Management and approved by the Board.

4. Water Service Contract.- Before a service connection can be installed, the concessionaire shall be acquainted with and consequently sign the water service contract.

If the concessionaire, for whatever reason, may decide to withdraw his application for water service connection, the District shall return the amount of application fee with corresponding deductions effected by the withdrawal, the amount of which shall be determined by Management and approved by the BOD.

5. Concessionaire’s Obligations.- The water concessionaire shall observe the following:

(a) Water bills and other miscellaneous charges are due and payable only at the office of the MCWD;

(b) Concessionaires shall be given 15 calendar days after the billing/ meter reading date to pay their water bills on time (due date). Likewise, a grace period of 5 calendar days after due date, with a corresponding surcharge of 10% shall be added to the current amount when payment is made after due date;

(c) If, after 20 days from the date of billing the water bills remain unpaid, water service shall be disconnected in accordance with the District’s guidelines on disconnection;

(d) Failure for any reason to reopen said closed water service connection within one month from the date of the discontinuance of water service shall give the District the right to close the WSC at the tapping point. The reopening thereof shall subject the concessionaire to a reconnection/ reopening fee in addition to payment of all accounts due to the District, and other incidental costs that might be incurred in the reopening. In addition, an advance deposit equivalent to the last amount billed shall also be required.

(e) If a water connection is to be transferred, a new application shall be filed at the MCWD office with the corresponding payment for the installation fee less the cost
Likewise, an inspection fee determined by Management and approved by the BOD, shall be collected in addition to other costs such as labor and concrete pavement restoration by the Water District. 50% of the transfer fee charges shall be paid upon application and the remaining half may be paid in three (3) equal monthly installments in addition to the subsequent monthly water bills of the concessionaire.

(f) Failure to receive a bill does not exempt a consumer from liability. Any amount due shall be deemed a debt to the MCWD. Any person, firm, or corporation failing, neglecting, or refusing to pay said indebtedness shall be liable to civil action in the name of the District, in any court of competent jurisdiction in the amount thereof.

**Process Flow:**

The following process flow depict in sum the different steps in applying for New Water Service Connection as laid out in the MCWD Citizens Charter:

*Figure 5 NWSC 5-Stage Process*

1. Pre-processing of Application
2. Site Inspection
3. Water Service Orientation-Seminar
4. Processing of Application
5. Installation of Water Service Connection
The various steps involved in each of the stage in the 5-Stage Process is presented below:

*Figure 6 Steps Under Stage 1 – Pre-processing of Application*

**1. Pre-Processing of Application**

<table>
<thead>
<tr>
<th>Steps</th>
<th>Client</th>
<th>MCWD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ask about how to apply for NWSC at the Public Assistance &amp; Complaints Desk (PACD).</td>
<td>Respond to queries; interview the applicant; provide WSA checklist.</td>
</tr>
<tr>
<td>2</td>
<td>Submit the required documents to the Customer Service Assistant (CSA) at the PACD.</td>
<td>Check the completeness and correctness of the documents submitted; provide WSA form.</td>
</tr>
<tr>
<td>3</td>
<td>Fill out the WSA Form and submit the same to the said CSA.</td>
<td>Review the WSA form and advise client to pay the inspection and orientation fees.</td>
</tr>
<tr>
<td>4</td>
<td>Pay the inspection &amp; orientation fees at the cashier.</td>
<td>Receive payment and issue OR to the client; post the payment accordingly.</td>
</tr>
<tr>
<td>5</td>
<td>Proceed to the Water Service Accounts Section and submit the WSA Form and present the Official Receipt.</td>
<td>Record the WSA Form and issue a WSA Slip indicating the schedule for the WS Orientation-Seminar; prepare the schedule of inspection.</td>
</tr>
<tr>
<td>6</td>
<td>Wait for SMS (text message) notification regarding the schedule of inspection.</td>
<td>Text the applicant about the schedule of inspection; forward WSA Form to the Engineering Division.</td>
</tr>
</tbody>
</table>

End of Stage 1.
**Figure 7 Steps Under Stage 2 – Site Inspection**

<table>
<thead>
<tr>
<th>Steps</th>
<th>Client</th>
<th>MCWD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Provide relevant information to the inspector.</td>
<td>Conduction investigation/ ocular inspection; verify WSA status; Prepare Inspection Report, Bill of Materials, WSA Status Report; Return WSA Form to WS Accounts Section.</td>
</tr>
<tr>
<td>2</td>
<td>Obtain Excavation Permit from the DPWH (if location is along the national highway) &amp; submit the same to the WS Accounts Section.</td>
<td>Receive and attach Excavation Permit to the WSA Form;</td>
</tr>
<tr>
<td>3</td>
<td>Wait for a call/text message about the costing.</td>
<td>Verify records; compute costing; call/text applicant about cost; post list of applicants with costing.</td>
</tr>
</tbody>
</table>

End of Stage 1.
Figure 8 Steps Under Stage 3 – WS Orientation-Seminar

3 • WS Orientation-Seminar

Steps

1

Client

Attend the WS Orientation-Seminar on the schedule provided.

End of Stage 1.

MCWD

Conduct WS Orientation-Seminar and issue Certificates of Attendance to participants.

End of Stage 1.
Figure 9  Steps Under Stage 4 – Processing of Application

4  • Processing of Application

<table>
<thead>
<tr>
<th>Steps</th>
<th>Client</th>
<th>MCWD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Proceed to the WS Accounts Section and sign the water service contract and other documents.</td>
<td>Assist client in signing the WS Contract and other documents; assign WSC Account Number.</td>
</tr>
<tr>
<td>2</td>
<td>Pay the Installation Charges and Bill of Materials at the Cashier.</td>
<td>Issue OR.</td>
</tr>
<tr>
<td>3</td>
<td>Return to the WS Accounts Section and submit the documents.</td>
<td>Record WS application documents duly signed by the Cashier.</td>
</tr>
<tr>
<td>4</td>
<td>End of Stage 4.</td>
<td>Review WSA documents and facilitate approval.</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Approval of WS Application.</td>
</tr>
</tbody>
</table>

End of Stage 4.
### Figure 10  Steps Under Stage 5 – Installation

#### 5  • Installation of WSC

<table>
<thead>
<tr>
<th>Steps</th>
<th>Client</th>
<th>MCWD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Affirm work completed by the plumbers.</td>
<td></td>
</tr>
</tbody>
</table>

**End of Stage 5.**

- **MCWD**: Prepare the Schedule of Installation and post the same; prepare field assignment & store requisition for the materials & gasoline.
- **Property Officer**: checks and issues materials as listed on the BOM.
- **Install the NWSC**.
- **Post-Inspection/ quality control**.
- **End of Stage 5.**
Service Request

Process Flow:

This workflow enumerates the various steps in requesting for different frontline services related to the maintenance of water service lines and other related activities as described in the MCWD Citizens Charter:

_Figure 11. Request for Services and Maintenance of WSC_

<table>
<thead>
<tr>
<th>Steps</th>
<th>Client</th>
<th>MCWD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Proceed to the Public Assistance and Complaints Desk (PACD) and give complete account of the problem.</td>
<td>Receive and prepare Service Request</td>
</tr>
<tr>
<td>2</td>
<td>Affirm the work done.</td>
<td>Facilitate and process the SR and forward the same to the Engineering Division for implementation.</td>
</tr>
<tr>
<td>3</td>
<td>End of process.</td>
<td>Prepare the field assignment for the engineering repair &amp; maintenance personnel.</td>
</tr>
<tr>
<td>4</td>
<td>Implement SR and submit findings and recommendations to the ECD - Repair &amp; Maintenance Supervisor.</td>
<td>End of process.</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Restoration of Disconnected Water Service

#### Process Flow:

**Figure 12 Reconnection**

<table>
<thead>
<tr>
<th>Step</th>
<th>Client</th>
<th>MCWD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Proceed to Public Assistance and Complaints Desk (PACD) and request for restoration of WSC.</td>
<td>Interview applicant and provide list of reconnection requirements.</td>
</tr>
<tr>
<td>2</td>
<td>Submit required documents to the Public Assistance / Information Desk.</td>
<td>Check the documents submitted and provide SACO form.</td>
</tr>
<tr>
<td>3</td>
<td>Complete and submit the SACO form to the Public Assistance/ Information Desk.</td>
<td>Review the WSA form; require client to pay reconnection, orientation, and inspection fees, if client's service has been disconnected for more than 6 months.</td>
</tr>
<tr>
<td>4</td>
<td>Pay the required fees at the Cashier.</td>
<td>Receive payment and issue OR.</td>
</tr>
</tbody>
</table>

End of Process.
**FCD4 Transfer Tapping/Change Pipe**

**Process Flow:**

*Figure 13 Transfer Tapping & Change Pipe*

<table>
<thead>
<tr>
<th>Step</th>
<th>Client</th>
<th>MCWD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Proceed to the PACD and state request.</td>
<td>Receive request; verify record; issue WSA slip and checklist of requirements.</td>
</tr>
<tr>
<td>2</td>
<td>Submit the requirements; fill-out the SACO form.</td>
<td>Check the requirements; endorse to WS Accounts Section.</td>
</tr>
<tr>
<td>3</td>
<td>Proceed to the WS Accounts Section.</td>
<td>Review the SACO; advise client to pay inspection and orientation fees.</td>
</tr>
<tr>
<td>4</td>
<td>Pay the required fees at the Cashier.</td>
<td>Receive the payment; issue OR; post the payment.</td>
</tr>
<tr>
<td>5</td>
<td>Return to the WS Accounts Section; present the OR.</td>
<td>Record the payment; advise client to attend the Orientation-Seminar; forward the request to the ECD for inspection.</td>
</tr>
<tr>
<td>6</td>
<td>Wait for inspection.</td>
<td>Conduct investigation; submit inspection report with BOM; verify and submit WS Application Status Report to the OGM; return request to the WS Accounts section for costing.</td>
</tr>
<tr>
<td>7</td>
<td>Wait for notification (text/call) from the WS Accounts Section.</td>
<td>Determine the costing and notify the client.</td>
</tr>
<tr>
<td>8</td>
<td>Pay the amount due for installation charges at the Cashier.</td>
<td>Receive payment; issue OR.</td>
</tr>
<tr>
<td>9</td>
<td>Present the OR to the personnel in-charge at the WS Accounts Section.</td>
<td>Record the payment and process the request.</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>Implement transfer tapping/ change pipe.</td>
</tr>
<tr>
<td>12</td>
<td>Affirm work done–sign the SACO and post-inspection report.</td>
<td>Conduct quality control by post-inspection; submit report to the WS Accounts Section and the OGM.</td>
</tr>
</tbody>
</table>

End of Process.
Voluntary Disconnection

Process Flow:

*Figure 14 Voluntary Disconnection*

<table>
<thead>
<tr>
<th>Step</th>
<th>Client</th>
<th>MCWD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Proceed to the PACD and state your request.</td>
<td>Receive request; verify records &amp; note the same; advise client to pay water bill accounts, if there are outstanding balances.</td>
</tr>
<tr>
<td>2</td>
<td>Pay water bill accounts, if any, at the Teller.</td>
<td>Receive payment; issue OR; post payment.</td>
</tr>
<tr>
<td>3</td>
<td>Proceed to the WS Accounts Section and present the OR.</td>
<td>Interview client for other needed information; advise client to pay voluntary disconnection fee; prepare the SACO.</td>
</tr>
<tr>
<td>4</td>
<td>Pay the voluntary disconnection fee at the Cashier.</td>
<td>Receive payment and issue OR; post payment.</td>
</tr>
<tr>
<td>5</td>
<td>Return to the WS Accounts Section &amp; present the OR.</td>
<td>Record and facilitate approval of the request.</td>
</tr>
<tr>
<td>6</td>
<td>Affirm work done.</td>
<td>Implement disconnection order.</td>
</tr>
</tbody>
</table>
FCD6 Change of Account Name

Process Flow:

*Figure 15 Change of Account Name (Registration)*

<table>
<thead>
<tr>
<th>Step</th>
<th>Client</th>
<th>MCWD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Apply for change of account name/registration at the PACD.</td>
<td>Receive request, verify records and endorse to the WS Accounts Section.</td>
</tr>
<tr>
<td>2</td>
<td>Proceed to the WS Accounts Section &amp; present proof of ownership or waiver.</td>
<td>Validate the document presented; prepare SACO; require client to pay the necessary fees.</td>
</tr>
<tr>
<td>3</td>
<td>Pay the processing and orientation fees at the cashier.</td>
<td>Receive payment; issue OR.</td>
</tr>
<tr>
<td>4</td>
<td>Return to the WS Accounts Section, present the OR and sign the documents</td>
<td>Process the application and advise client to attend the orientation.</td>
</tr>
<tr>
<td>5</td>
<td>Attend the WS Orientation.</td>
<td>Conduct WS Orientation.</td>
</tr>
</tbody>
</table>
AGSD1  Issuance of Supplies and Materials

**Figure 16  Issuance of Supplies and Materials**

**STEP 1**
- *FILL OUT THE RIS FORM.*
  (a) For office supplies, proceed to Step 2;
  (b) For plumbing materials (not charged to maintenance/operations) attach bill of materials;
  (c) For fuel withdrawal, attach itinerary of travel & submit to R. Alvarado for computation of number of liters allowed.

**STEP 2**
- *SUBMIT FILLED-OUT RIS FORM TO THE STOREKEEPER FOR NUMBERING.*
  (for fuel withdrawal submit numbered RIS to E. Alvarado for recording)

**STEP 3**
- *SUBMIT NUMBERED RIS TO THE OGM FOR GM’S APPROVAL.*

**STEP 4**
- *PRESENT APPROVED RIS TO THE STOREKEEPER AND RECEIVE THE ISSUED SUPPLIES/ MATERIALS/ FUEL.*

**STEP 5**
- *RECORD THE APPROVED RIS IN THE INDIVIDUAL STOCK CARDS.*

**STEP 6**
- *PREPARE THE REPORT ON SUPPLIES & MATERIALS ISSUED (WEEKLY).*

**STEP 7**
- *PREPARE THE FOLLOWING MONTHLY REPORTS:*
  (a) Stock Status Report;
  (b) Fuel Withdrawal Summary;
  (c) Report of Accountability for Accountable Forms.

**STEP 8**
- *CONDUCT PHYSICAL INVENTORY AND PREPARE THE REPORT ON THE PHYSICAL COUNT OF INVENTORIES (EVERY END OF THE YEAR).*
Issuance and Recording of Property, Plant & Equipment

**Step 1**
UPDATE LIST OF PROPERTIES & THEIR CORRESPONDING PROPERTY NUMBERS.

**Step 2**
PREPARE PROPERTY CARD AND PROPERTY STICKER.

**Step 3**
ISSUE PROPERTY ACKNOWLEDGMENT RECEIPT AND INVENTORY CUSTODIAN SLIP TO ACCOUNTABLE EMPLOYEE.

**Step 4**
CONDUCT PHYSICAL INVENTORY AND PREPARE REPORT ON THE PHYSICAL COUNT OF PROPERTY, PLANT AND EQUIPMENT (EVERY END OF THE YEAR).
Figure 18 Receiving and Recording of Purchased Supplies and Materials, Property, Plant and Equipment

AGSD3 Receiving and Recording of Purchased Supplies and Materials, Property, Plant and Equipment

**Step 1**

**INSPECT, ACCEPT PURCHASED SUPPLIES, MATERIALS, PROPERTY, PLANT & EQUIPMENT.**

**Step 2**

**PREPARE INSPECTION AND ACCEPTANCE REPORT.**

**Step 3**

**RECORD INSPECTION & ACCEPTANCE REPORT**

(a) For supplies & materials – record the inspection & acceptance report in the stock card;

(b) For property, plant & equipment – follow the steps on issuance & recording of PPE.
### Procurement of Goods (Above 1K and Below 50K)

*Figure 19 Procurement of Goods (Above PhP1,000.00 – Below PhP50,000.00)*

<table>
<thead>
<tr>
<th>Step</th>
<th>Process</th>
<th>Person(s) Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Prepare the Pre-Procurement Request (PPR) and Purchase Request (PR), containing the following:</td>
<td>Requesting Employee</td>
</tr>
<tr>
<td></td>
<td>1.1 Purpose of Request</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.2 Technical Support, if any</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.3 Serviceability Inspection</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.4 Stock Availability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.5 Budget Availability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.6 Approval of PR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.7 PR Number</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Prepare BAC Resolution re: mode of procurement.</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td></td>
<td>2.1 Approval of Resolution</td>
<td>BAC Members</td>
</tr>
<tr>
<td>3</td>
<td>Prepare the Agency Procurement Request (APR).</td>
<td>Property Officer</td>
</tr>
<tr>
<td>4</td>
<td>Send the APR to PS-DBM (Tacloban Depot).</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td>5</td>
<td>Receive the APR from PS-DBM.</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td>6</td>
<td>Prepare Request for Quotation (RFQ).</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td>7</td>
<td>Conduct local canvass</td>
<td>Canvasser</td>
</tr>
<tr>
<td>8</td>
<td>Evaluate the canvass/bid.</td>
<td>BAC Members</td>
</tr>
<tr>
<td>9</td>
<td>Prepare the Abstract of Quotations (AQ), facilitate its signing by BAC Members and approval by the GM.</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td>10</td>
<td>Prepare the Notice of Award (NOA) and monitor the following:</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td></td>
<td>10.1 NOA Approval (by the GM)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10.2 NOA for Conforme (End-user/Canvasser)</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Prepare the Purchase Order (PO).</td>
<td>A. A. Alcober</td>
</tr>
<tr>
<td>12</td>
<td>Facilitate the approval of the PO.</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td>13</td>
<td>Facilitate the approved PO for conforme by the supplier.</td>
<td>End-user/Canvasser</td>
</tr>
<tr>
<td>14</td>
<td>Receive duly conformed PO (date/time supplied)</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td>15</td>
<td>Receive duly Conformed PO (date/time supplied) from the BAC Secretariat.</td>
<td>A. A. Alcober</td>
</tr>
<tr>
<td>16</td>
<td>Prepare the BUR and facilitate its approval.</td>
<td>M. E. R. Canuda</td>
</tr>
<tr>
<td>17</td>
<td>Prepare the Disbursement Voucher and facilitate its approval.</td>
<td>M. E. R. Canuda</td>
</tr>
<tr>
<td>18</td>
<td>Prepare and facilitate the signing of the check (for payment).</td>
<td>L. A. Parena</td>
</tr>
<tr>
<td>19</td>
<td>Pay the supplier.</td>
<td>L. A. Parena</td>
</tr>
<tr>
<td></td>
<td>(a) If contract says “payment upon pick-up,” payment to the supplier shall be made “upon pick-up” of the goods purchased.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(b) If contract says “payment upon delivery,” preparation of check and payment to the supplier shall be made</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Prepare Inspection and Acceptance Report.</td>
<td>A. A. Alcober</td>
</tr>
<tr>
<td></td>
<td>(a) Upon receipt of items purchased, if term of payment is “upon pickup.”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(b) Upon complete delivery of all items listed in the PO, if term of payment is “upon complete delivery” for items delivered on staggered basis.</td>
<td></td>
</tr>
</tbody>
</table>
### Procurement of Goods (Above 50K and Below 500K)

*Figure 20 Procurement of Goods (Above PhP50,000.00 – Below PhP500,000.00)*

<table>
<thead>
<tr>
<th>Step</th>
<th>Process</th>
<th>Person(s) Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Prepare the PPR &amp; PR, containing the following:</td>
<td>Requesting Employee</td>
</tr>
<tr>
<td></td>
<td>1.1 Purpose of Request</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.2 Technical Support, if any</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.3 Serviceability Inspection</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.4 Stock Availability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.5 Budget Availability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.6 Approval of PR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.7 PR Number</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.8 For project-related PR, attach the Approved POW.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Prepare BAC Resolution re: mode of procurement.</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td></td>
<td>2.1 Approval of Resolution</td>
<td>BAC Members</td>
</tr>
<tr>
<td>3</td>
<td>Prepare the request for approval of ABC</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td></td>
<td>3.1 Approval of ABC</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Prepare the Agency Procurement Request (APR).</td>
<td>Property Officer</td>
</tr>
<tr>
<td>5</td>
<td>Send the APR to PS-DBM (Tacloban Depot).</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td>6</td>
<td>Receive the APR from PS-DBM.</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td>7</td>
<td>Prepare Request for Quotation (RFQ).</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td></td>
<td>(a) Posting @ Philgeps &amp; Bulletin Board;</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td></td>
<td>(b) Local canvass</td>
<td>Canvasser</td>
</tr>
<tr>
<td>8</td>
<td>Evaluate bids/ RFQs.</td>
<td>BAC Members</td>
</tr>
<tr>
<td>9</td>
<td>Prepare the Abstract of Quotations (AQ), facilitate its signing by BAC Members and approval by the GM.</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td>10</td>
<td>Prepare BAC Resolution recommending Award of Contract.</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td>11</td>
<td>Prepare the Notice of Award (NOA) and monitor the following:</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td></td>
<td>10.1 NOA Approval (by the Board)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10.2 NOA for Conforme</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Prepare the Purchase Order (PO).</td>
<td>A. A. Alcober</td>
</tr>
<tr>
<td>13</td>
<td>Facilitate the approval of the PO.</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td>14</td>
<td>Receive duly conformed PO (date/time supplied)</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td>15</td>
<td>Receive duly Conformed PO (date/time supplied) from the BAC Secretariat.</td>
<td>A. A. Alcober</td>
</tr>
<tr>
<td>16</td>
<td>Prepare the BUR and facilitate its approval.</td>
<td>M. E. R. Canuda</td>
</tr>
<tr>
<td>17</td>
<td>Prepare the Disbursement Voucher and facilitate its approval.</td>
<td>M. E. R. Canuda</td>
</tr>
<tr>
<td>18</td>
<td>Prepare and facilitate the signing of the check (for payment).</td>
<td>L. A. Parena</td>
</tr>
<tr>
<td>19</td>
<td>Pay the supplier.</td>
<td>L. A. Parena</td>
</tr>
<tr>
<td></td>
<td>(a) Payment to the supplier shall be made upon complete delivery of all items purchased.</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Prepare Inspection and Acceptance Report:</td>
<td>A. A. Alcober</td>
</tr>
<tr>
<td></td>
<td>(a) Upon delivery of items listed in the PO until complete delivery is made.</td>
<td></td>
</tr>
</tbody>
</table>
**Procurement of Services (Above 1K and Below 50K)**

*Figure 21 Procurement of Services (Above PhP1,000.00 – Below PhP50,000.00)*

<table>
<thead>
<tr>
<th>Step</th>
<th>Process</th>
<th>Person(s) Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Prepare the Pre-Procurement Request (PPR) and Purchase Request (PR), containing the following:</td>
<td>Requesting Employee</td>
</tr>
<tr>
<td></td>
<td>1.1 Purpose of Request</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.2 Technical Support, if any</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.3 Serviceability Inspection</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.4 Stock Availability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.5 Budget Availability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.6 Approval of PR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.7 PR Number</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.8 For project-related PR, attach the Approved POW.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Prepare Request for Quotation (RFQ).</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td>3</td>
<td>Conduct local canvass</td>
<td>Canvasser</td>
</tr>
<tr>
<td>4</td>
<td>Evaluate the canvass/bid.</td>
<td>BAC Members</td>
</tr>
<tr>
<td>5</td>
<td>Prepare the Abstract of Quotations (AQ), facilitate its signing by BAC Members and approval by the GM.</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td>6</td>
<td>Prepare the Notice of Award (NOA) and monitor the following:</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td></td>
<td>10.1 NOA Approval (by the GM)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10.2 NOA for Conforme (End-user/Canvasser)</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Prepare the Work Order (WO).</td>
<td>A. A. Alcober</td>
</tr>
<tr>
<td>8</td>
<td>Facilitate the approval of the WO.</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td>9</td>
<td>Facilitate the approved WO for conforme by the supplier.</td>
<td>End-user/Canvasser</td>
</tr>
<tr>
<td>10</td>
<td>Receive duly conformed WO (date/time supplied)</td>
<td>BAC Secretariat</td>
</tr>
<tr>
<td>11</td>
<td>Receive duly Conformed WO (date/time supplied) from the BAC Secretariat.</td>
<td>A. A. Alcober</td>
</tr>
<tr>
<td>12</td>
<td>Prepare the BUR and facilitate its approval.</td>
<td>M. E. R. Canuda</td>
</tr>
<tr>
<td>13</td>
<td>Prepare the Disbursement Voucher and facilitate its approval.</td>
<td>M. E. R. Canuda</td>
</tr>
<tr>
<td>14</td>
<td>Prepare and facilitate the signing of the check (for payment).</td>
<td>L. A. Parena</td>
</tr>
<tr>
<td>15</td>
<td>Pay the supplier.</td>
<td>L. A. Parena</td>
</tr>
</tbody>
</table>
AGSD Recruitment of Personnel

**Figure 22 Recruitment of Personnel (Job Order)**

1. **Publication/Posting of Vacant Positions**
   - The AGSD, through J. Piangco, shall prepare the corresponding JO contract based on the notations and shall facilitate the signing of said contract with the concerned Division Heads and approval of the GM.

2. **Copy of the Comparative Assessment Report**
   - The newly hired JO shall be accompanied by C. F. Ong and endorsed to the concerned Division Head requiring additional manpower.

3. **Preparation of the JO Contract**
   - The newly hired personnel shall start his/her first day in service with the MCWD.

4. **Review and Approval**
   - The Division Head concerned shall brief the newly hired personnel about his/her assigned tasks.

5. **Selection of Applicants**
   - The GM shall make notations on the application paper of the chosen applicants the contract period showing in details the effectivity and expiration date including the rate per day for the corresponding wage.

6. **Approval and Signing**
   - The GM will return the application papers to the AGSD, through C. B. Rocha, for the preparation of the competency assessment and interview with the Personnel Selection Board (PSB).

7. **Preparation of the Comparative Assessment Report**
   - The PSB shall prepare the comparative assessment report and submit the same to the GM for review and approval. Afterwards, the GM shall select from among the top five applicants who shall fill the vacancy(ies).

8. **Review and Approval**
   - The Division Head concerned shall brief the newly hired personnel about his/her assigned tasks.

9. **Preparation of the JO Contract**
   - The newly hired personnel shall start his/her first day in service with the MCWD.

10. **Review and Approval**
    - The GM shall make notations on the application paper of the chosen applicants the contract period showing in details the effectivity and expiration date including the rate per day for the corresponding wage.

11. **Approval and Signing**
    - The GM will return the application papers to the AGSD, through C. B. Rocha, for the preparation of the competency assessment and interview with the Personnel Selection Board (PSB).

12. **Preparation of the Comparative Assessment Report**
    - The PSB shall prepare the comparative assessment report and submit the same to the GM for review and approval. Afterwards, the GM shall select from among the top five applicants who shall fill the vacancy(ies).

13. **Preparation of the JO Contract**
    - The newly hired personnel shall start his/her first day in service with the MCWD.
The Division Head shall submit justifications to the GM for the need of additional manpower and ensure that the same is included in the Division Budget, if not in the budget, seek appropriate solution if such hiring is necessary.

The GM shall evaluate the justifications and once approved, it shall be returned to the requesting Division Head with the notations to submit the required documents.

The Division Head shall require the applicants to submit an application letter with his/her Personal Data Sheet, barangay clearance and other required documents.

The applicant shall submit application letter with the required documents such as barangay clearance to the AGSD, through C. F. Ong, for verification and forwards the same to the GM.

C. Ong shall accompanied the newly hired employee to the GM for briefing. Then to the Division Head, AGSD for briefing on the office rules and guidelines.

After contract signing, the newly hired employee/s shall report to J. Piangco for biometrix enrollment and afterwards shall report back to C. Ong.

J. Piangco shall prepare the JO contract, facilitate the signing of the contract with the respective division heads and the GM for approval of the documents. Then the said documents shall be forwarded to C. Ong to contact the newly hired personnel for JO contract signing.

The GM shall note down the contract period and the wage rate per day on the attached letter-request of the Division Head. Afterwards, all the application letter with the documents shall be returned to the AGSD (C/o C. Rocha) for verification. Then forward all documents to J. Piangco for contract preparation.

Then C. Ong shall introduce the newly hired personnel to the different divisions. Thereafter, C. Ong shall endorse this newly hired employee/s the Division Head concerned requesting the additional manpower.

The Division Head requesting this additional manpower shall give instructions on his/her assigned job.

The newly hired personnel shall start his/ her new job.
Appointment of Personnel

Figure 24 Appointments (Regular Positions)

1. Publication in the CSC Bulletin of Vacant Positions in the Government
2. Posting of Vacant Position Minimum of 10 Days
3. Preparation of List of Qualified Applicants
4. Notification of Qualified Applicants
5. Submission of Qualified Applicants to the PSB
6. Deliberation, Screening, Coalition of the PSB
7. Submission of the PSB Comprehensive Evaluation Report of the Candidates Screened to the GM
8. Issuance of Appointment with the Position Description Form
9. Submission of Appointment to the CSC for Attestation/Approval
COMMUNICATIONS & INFORMATION PROTOCOL

GM1 Communications Flow During Sudden Water Interruptions & Other Incidents Affecting Water Quality & Quantity

Figure 25 Transmission of Information During Sudden Water Interruptions & Other Similar Incidents

- Authorized Emergency Field Investigator transmits message via radio/phone call/SMS to the Head of the ECD, immediately upon discovery of problem.

- ECD Head transmits message via radio/phone call/SMS to the GM or OIC (in case of GM’s authorized absence from work), immediately after receiving said message or immediately upon discovery of problem.

- The Personnel authorized to release information, via phone call/SMS, implements the said protocol by notifying the following:
  1) Municipal Administrators;
  2) BFP stations; and
  3) MCWD employees.

- The GM or OIC, through radio message/phone call/SMS:
  1) Directs the personnel authorized to release information to implement the information protocol during emergencies; and
  2) Notifies the BOD about the situation.

- Theretofore, said personnel provides to the GM (or OIC) after disseminating the information.

- The GM (or OIC) informs the BOD, via phone call/SMS, after being notified that information has already been disseminated.

- Concurrently, ECD Head informs the GM about the status of the problem and immediately upon completion of the action taken to solve the problem.

- The GM (or OIC) informs the BOD, via phone call/SMS, after being notified that information has already been disseminated.

- ECD Head transmits message via radio/phone call/SMS to the GM or OIC (in case of GM’s authorized absence from work), immediately after receiving said message or immediately upon discovery of problem.
Communications Flow for Scheduled Water Interruptions

**Figure 26 Transmission of Information During Scheduled Water Interruptions**

**PWQD**
- At the start of every calendar year, submit the Regular Schedule for Water Interruption due to General Maintenance of Production Facilities (Basin), Barugo Reservoir and Daraupay Spring Box

**GM**
- Decide on the submitted schedule.

**Secretary**
- If the schedule is approved:
  - Prepare the letter for the municipal mayors and send them to respective LGU offices; and
  - Make constant follow-up to obtain their feedback regarding the schedule.

**Secretary**
- Prepare the reply for the municipal mayors and send them to respective LGU offices.

**GM**
- Decide on the request and give instructions accordingly.

**Did the LGU mayors give feedback & ask for changes (in writing)? if yes, NOTIFY THE GM.**

If no, prepare the following:
1) OM directing the PWQD to implement the activity; and
2) OM directing the Information Officer to facilitate the public announcement.

If the GM’s decision is to proceed with the activity, PREPARE THE NECESSARY MEMORANDA.
Protocol for Emergency Responses (@Emergency Response Plan)

Figure 27 Process Flow: ERP Communications Protocol

GM issues an order implementing the applicable provisions of the Emergency Response Plan (ERP)

Respective Division Head:
To carry out respective tasks in the ERP

Authorized Personnel:
To undertake information-dissemination.

Assigned Employees:
To carry out respective roles in the ERP

Assigned Employees:
To carry out respective roles in the information-dissemination
Use of Hotline Number

General Rules:

- The assigned hotline number(s) shall be used solely for official communications addressing received complaints, requests, inquiries and in disseminating official information to the concessionaires and the public.
- Said hotline number(s) shall be used only by the designated employee and his/her authorized alternative.
- The unit shall be maintained by concerned employees to ensure that it is always functional.
- The hotline number shall be available during regular office hours but it can be used by authorized personnel to address official concerns during emergencies and incidents.
- The unit (including the accessories and backup memory card) shall be turned over to the alternative in case of absence of the designated employee, and similarly, it shall be returned to him/her upon resumption to work.
- The unit (including the accessories and backup memory card) shall be turned over to the designated employee (OGM) every after closing of work and retrieved before opening of office.
- The borrowing and returning of said unit shall be documented properly in a logbook designated for this purpose.
- Received complaints, requests, inquiries and disseminated information shall only be deleted after making a backup copy in a memory card kept for this purpose. Thus, the default storage of the messages shall be the sim card, and backup shall be made by transferring said messages to a designated memory card. Similarly, all incoming and outgoing calls from this hotline number shall be logged properly in a record book intended for this purpose.
- A report showing in summary relevant information about received complaints, requests, inquiries and disseminated information shall be submitted by the designated employee to the OGM every week.
- Said report shall be encoded in the database at the OGM and a monthly report shall be generated and submitted to the GM.

**Process Flow – Addressing Complaints, Requests, and Inquiries**

Figure 28 Process Flow: Complaints, Requests and Inquiries Received via Hotline

**Step 1**
- Receive complaints, requests, inquiries via phone call or SMS and elicits necessary information;

**Step 2**
- Record said complaint, request, inquiry in the form designated for the particular purpose.

**Step 3**
- Act on the received complaint, request and inquiry in accordance with standard operating procedures.

**Step 4**
- Provide feedback to the client.

**Step 5**
- At the end of office hours, make a backup copy of all the incoming and outgoing messages using the designated memory card.

**Step 6**
- Likewise, log all incoming and outgoing calls in the Record Book intended for this purpose.

**Step 7**
- Submit the Weekly Report to the OGM.

**Step 8**
- Using the information in said report, encode all relevant data in the database in the OGM.

**Step 9**
- Submit a Monthly Report to the GM.

**Step 10**
- Data is made available for analysis and decision-making to improve services.
Process Flow – Public Announcement via SMS

Figure 29 Public Announcement via SMS (Hotline Number)

GM issues an order for disseminating information to the public

Designated employee drafts the message and presents it to the GM for approval

GM (or authorized personnel) approves the draft

Designated employee releases the announcement (or information)

Log and store messages in accordance with standard operating procedures as laid out in the Process Flow for Addressing Complaints, Requests and Inquiries
Process Flow – Daily Operation and Maintenance of the Hotline System

Figure 30 Process Flow: Borrowing, Using and Returning the Hotline System Set

1. Take the hotline system (which consists of the cordless phone, sim card, charger and memory card,) from the designated employee at the OGM after logging in the Borrower's Record Book before the start of office hours.

2. Use the hotline system in accordance with standard operating procedures as mentioned in this Manual.

3. Return the system to the designated employee at the OGM after closing of office hours, log the same and sign in the Borrower’s Record Book.

4. Check and receive the returned set and ensure that the battery of the unit is not depleted.

5. If returning the set falls on the last office day of the week, the designated employee at the OGM shall take the same with him/her after logging in the Borrower’s Book. Emergency calls and messages received during the non-working days shall be addressed and reported in accordance with procedures in this Manual.
E-mail Accounts Management

General Rules:

1. No email account using the official “@metrocarigarawd.gov.ph” shall be created without approval from the GM or his authorized representative. The use of the “@metrocarigarawd.gov.ph” shall only be for official matters of the MCWD, such that no office nor employee shall be allowed to set up an e-mail account without the necessary approval as aforementioned.

2. Requests for creation of email accounts, stating the purpose or relevance, shall be made in writing to the OGM.

3. The initial official email accounts are as follows:

<table>
<thead>
<tr>
<th>Department/Division</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>General information and queries; Public assistance</td>
<td><a href="mailto:info@metrocarigarawd.gov.ph">info@metrocarigarawd.gov.ph</a></td>
</tr>
<tr>
<td>and complaints</td>
<td><a href="mailto:pio@metrocarigarawd.gov.ph">pio@metrocarigarawd.gov.ph</a></td>
</tr>
<tr>
<td></td>
<td><a href="mailto:publicassistancecomplaints@metrocarigarawd.gov.ph">publicassistancecomplaints@metrocarigarawd.gov.ph</a></td>
</tr>
<tr>
<td>Office of the Board of Directors</td>
<td><a href="mailto:bod@metrocarigarawd.gov.ph">bod@metrocarigarawd.gov.ph</a></td>
</tr>
<tr>
<td>Office of the General Manager</td>
<td><a href="mailto:ogm@metrocarigarawd.gov.ph">ogm@metrocarigarawd.gov.ph</a></td>
</tr>
<tr>
<td></td>
<td><a href="mailto:gmredg@metrocarigarawd.gov.ph">gmredg@metrocarigarawd.gov.ph</a></td>
</tr>
<tr>
<td>Administrative and General Services Division</td>
<td><a href="mailto:agsd@metrocarigarawd.gov.ph">agsd@metrocarigarawd.gov.ph</a></td>
</tr>
<tr>
<td></td>
<td><a href="mailto:hr@metrocarigarawd.gov.ph">hr@metrocarigarawd.gov.ph</a></td>
</tr>
<tr>
<td>Finance and Commercial Division</td>
<td><a href="mailto:fcd@metrocarigarawd.gov.ph">fcd@metrocarigarawd.gov.ph</a></td>
</tr>
<tr>
<td>Production and Water Quality Division</td>
<td><a href="mailto:pwqd@metrocarigarawd.gov.ph">pwqd@metrocarigarawd.gov.ph</a></td>
</tr>
<tr>
<td>Engineering and Construction Division</td>
<td><a href="mailto:ecd@metrocarigarawd.gov.ph">ecd@metrocarigarawd.gov.ph</a></td>
</tr>
<tr>
<td>Procurement queries and BAC matters</td>
<td><a href="mailto:bac@metrocarigarawd.gov.ph">bac@metrocarigarawd.gov.ph</a></td>
</tr>
</tbody>
</table>

4. As part of security protocol in using the official email accounts, the following should be complied:
4.1 Access to passwords can only be granted to authorized personnel occupying a regular or casual position who, in return, shall be held accountable for the management of the email, including all incoming and outgoing messages.

4.2 Regular change of passwords should be made to ensure security of accounts from unauthorized intrusion.

4.3 Alternate personnel (also having a regular or casual status) shall be designated in order not to delay operations arising from the incoming or outgoing communications in the email, in the absence of the authorized principal.

5. By default, all incoming email messages are automatically sent to both the email of the intended office recipient(s) and the GM.

6. Emails should be checked frequently so that communications shall be responded to immediately and promptly in accordance with existing laws under RA 6713 (Code of Conduct and Ethical Standards for Public Officials and Employees).

7. Messages that need to be relayed or forwarded to other concerned offices/division should be forwarded outright so that the latter can act on them in accordance with the law.

**Process Flow – Creation of Email Account**

**Figure 31 Creation of Email Account**

- **Requesting Office/ Employee**
  - Submits a written request to the OGM, stating the purpose and relevance of said request.

- **OGM**
  - Receives the request and forwards the same to the GM.

- **GM**
  - Approves or denies the request;
  - Directs the authorized employee to relay the answer to the requesting office/ employee.

- **Web Developer**
  - Creates the email account and relays the details to the requesting office/ employee.

- **Authorized Employee**
  - Relays the GM's answer to the requesting office/employee in writing & directs the creation of the email account if request was approved.
Email Log in – Using the Webmail Application

Figure 32 How to Log In Your Email Account

2. Enter the login credentials
3. (Optional) You may set your default webmail application
4. Use the Webmail Application to use
5. You will be redirected to the webmail application
6. You are now logged in.
Process Flow – Management of Email Messages

Figure 33 Managing the Email Messages

Incoming email

Received by the GM & the recipient office in their respective email accounts.

Open the email daily (during work) to check for received messages.

If yes...

Email needs to be forwarded?

If, yes...

Forward the email to the concerned office.

If, no...

Act on the message in accordance with existing laws and operating procedures.
Website Management

General Rules - Web Server Login, Website Improvement and Maintenance

1. Access to the web server shall only be carried out through instruction and authority from the Information Officer. As such, the web developer shall turn over all login credentials and other related security and access information to the Information Officer. Said access may be granted by the Information Officer to other authorized IT personnel for website improvement and maintenance.

2. Improvements on the design, layout, content and the like may be introduced and should conform with the standards for government website template.

3. The design, layout, content should reflect the core purpose and core values of the MCWD. The web developer shall only make inputs on the website upon instruction from the Information Officer. Thus, all recommendations for its design, layout, content and others shall be channeled to said officer and discussed with the content writer(s), editor and developer before appearing on the website.

4. All communications pertaining to the website, whether internal or external, shall be coursed through the Information Officer. The web developer or his/her alternate IT personnel shall notify the Information Officer for any communication addressed to him/her, should there be any, and seek authority to respond before doing so.
GM7 Use of Internet Connection

General Rules:

1. Access to the internet connection shall only be carried out by the designated IT personnel through instruction from the following:

<table>
<thead>
<tr>
<th>Source of Internet Connection</th>
<th>Persons Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>OGM</td>
<td>L. P. Quebec</td>
</tr>
<tr>
<td>OGM – Information Section</td>
<td>S. A. L. Machete</td>
</tr>
</tbody>
</table>
2. As such, no IT personnel or any other employee shall be allowed to grant internet connections, make any changes on the server, and change or divulge login credentials and passwords without prior authority from the personnel responsible for the respective internet connections.

3. Requests for internet connection shall be coursed through the said employees. It shall be done in writing and should state the purpose. All requests received shall be evaluated and forwarded to the GM for decision.

4. Feedback shall be given to the requesting employee about the GM’s decision and connection shall be made by the designated IT personnel if the request was granted.

5. The internet connection must be used only for official business or activities. Official viewing, downloading of videos and other similar activities which require a large usage of internet data shall not be allowed during peak hours of usage by the OGM and/or BAC.

6. The use of the internet connection for personal viewing, downloading of videos and other related activities is strictly prohibited.

**Process Flow:**

*Figure 35 Process Flow: Obtaining Internet Connection*

- Requesting employee submits written request (stating the purpose) to the OGM
- OGM forwards the request either to L. Quebec or S. Machete, respectively.
- L. Quebec or S. Machete evaluates the request and submits recommendation to the GM
- L. Quebec or S. Machete provides feedback to the requesting employee and directs IT personnel to allow connection if the said request was granted.
- GM decides about the request.
GM8 Basic Radio Operation

Rules in Using the Radio:

1. Log all messages in the Radio Receiver’s Logbook.
2. (Possession of radio transmitters/ transceivers)
3. Use the standard command of language.
4. No shouting.
5. Adjust the volume tuner.
6. Charge radio batteries regularly.
7. Return radio transmitters/ transceivers.

Channeling of Communication:

Figure 36 How to Channel Radio Messages

Caller transmits radio message to Base 2

Receiver receives and/or responds to message

Base 2 transmits to Receiver the message received from Caller
**Standard Radio Language:**

1. How to Make a Call

   BASE 2 (2x), this is *(your name)*, please come in, over.

   For 3<sup>rd</sup> attempt: Final call, BASE 2(2x), this is *(your name)*, please come in, over.

2. How to Receive a Call

   *(Name of person being called) (2x), this is BASE 2, *(your name)* speaking, go ahead, over.*

3. For 3 Maximum Unanswered Calls

   Final call, BASE 2 (2x), this is *(your name)*, please come in, over. CLEAR, OVER and OUT.

4. How to End a Call

   COPY, OVER and OUT.

**NATO or Radiotelephony Alphabet:**

<table>
<thead>
<tr>
<th>A</th>
<th>Alpha</th>
<th>N</th>
<th>November</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Bravo</td>
<td>O</td>
<td>Oscar</td>
</tr>
<tr>
<td>C</td>
<td>Charlie</td>
<td>P</td>
<td>Papa</td>
</tr>
<tr>
<td>D</td>
<td>Delta</td>
<td>Q</td>
<td>Quebec</td>
</tr>
<tr>
<td>E</td>
<td>Echo</td>
<td>R</td>
<td>Romeo</td>
</tr>
<tr>
<td>F</td>
<td>Foxtrot</td>
<td>S</td>
<td>Sierra</td>
</tr>
<tr>
<td>G</td>
<td>Golf</td>
<td>T</td>
<td>Tango</td>
</tr>
<tr>
<td>H</td>
<td>Hotel</td>
<td>U</td>
<td>Uniform</td>
</tr>
<tr>
<td>I</td>
<td>India</td>
<td>V</td>
<td>Victor</td>
</tr>
<tr>
<td>J</td>
<td>Juliet</td>
<td>W</td>
<td>Whiskey</td>
</tr>
<tr>
<td>K</td>
<td>Kilo</td>
<td>X</td>
<td>X-ray</td>
</tr>
<tr>
<td>L</td>
<td>Lima</td>
<td>Y</td>
<td>Yankee</td>
</tr>
<tr>
<td>M</td>
<td>Mike</td>
<td>Z</td>
<td>Zulu</td>
</tr>
</tbody>
</table>
Process Flow: Daily Radio Operation/Transaction

Figure 37 Issuance, Use and Return of Radio Sets

1. **R. Alvarado prepares the Field Assignment and identifies personnel who shall handle the radio for each team**

2. **Issuance of Field Assignment**

3. **Property Officer (or Authorized Personnel) logs and releases the radio**

4. **Field Personnel submits request for the radio unit**

5. **Field Personnel proceeds to area of assignment and calls Base 2 to notify the office that they have arrived**

6. **Field Personnel calls Base 2 upon completion of assignments**

7. **Property Officer logs, checks and charges the radio (battery)**

8. **Return the radio to the Property Officer**
Management and Use of Activity, Project and Incident Photos

General Rules:

1. All photos of events, projects, incidents and others involving operations activities shall be managed by the OGM - Information Office. Files should not be shared without following standard procedures.

2. No photos of these character shall be posted or released for publication or uploading in any social media sites by unauthorized personnel.

3. Offices or employees needing the photos for their official functions, such as for reports, investigation, publication and the like may request for soft (electronic) copies from the OGM - Information Office.

Process Flow

Figure 38 Submission, Storing and Utilizing Official Photos

- Designated photographer(s) take relevant photos of activities, projects, incidents, maintenance/repair activities and the like.
- Photographer(s) submit e-file to the Information Office.
- Information Office receives, organizes and stores files.
- Process request and provides copy to the requesting employee.
- Web Content writer(s) and Activity/Annual Report writer sorts, selects and use the photos for the website and/or the reports.

For copies of photos needed by respective office(s) reports, etc.:
Requesting office (employee) fills out "file access request" form and submits the same to the Information Office.
Management of Correspondences

Process Flow: Outgoing Internal Communication from the OGM

Figure 39 Outgoing Internal Communication from the OGM

1. The Secretary prepares the draft letter or memorandum.
2. GM reviews, edits or approves the draft.
3. Secretary prepares final version of the letter or memorandum.
4. Receiving office or employee affixes signature on the logbook or on the document.
5. Secretary logs the letter or memorandum, forwards the same to the intended office (employee).
6. GM signs the letter or memorandum.
7. Secretary files the letter or memorandum in respective folder.

Process Flow: Incoming Internal Communication for the OGM

Figure 40 Incoming Internal Communication for the OGM

1. The Secretary receives, logs and forwards the letter/report/document.
Process Flow: Outgoing External Communication

Figure 41 Outgoing External Communication

GM
- Directs preparation of the letter.

Secretary
- Prepares draft and submits to GM for review.
- Logs the letter and directs messenger to send it.
- Prepares the final version of the letter.

GM
- Reviews, edits or approves the draft.
- Signs the letter.

Messenger
- Sends the letter and returns the receiving copy to the Secretary.

Secretary
- Files the returned copy.
- Logs the letter and directs messenger to send it.
- Prepares the final version of the letter.

Process Flow: Incoming External Communication

Figure 42 Incoming External Communication

PACD receives letters/mails, etc. and forwards them to the OGM.

The Secretary receives, logs and forwards the letter/document to the GM.

GM reads and acts on the letter/document.

Secretary files a copy and acts on GM's instruction regarding the letter/document.

The Secretary receives, logs and forwards the letter/document to the GM.

GM reads and acts on the letter/document.