UNITED STATES MARINE CORPS
MARINE CORPS INSTALLATIONS EAST-MARINE CORPS BASE
PSC BOX 20005
CAMP LEJEUNE NC 28542-0005

MCIEAST-MCB CAMLEJO 5090.16B
G-F/BEMD
15 MAY 2020

MARINE CORPS INSTALLATIONS EAST-MARINE CORPS BASE CAMP LEJEUNE ORDER 5090.16B

From: Commanding General
To: Distribution List

Subj: DRINKING WATER SYSTEMS AND WATER CONSERVATION ABOARD MARINE CORPS BASE CAMP LEJEUNE AND MARINE CORPS AIR STATION NEW RIVER

Ref: (a) 15A NCAC 18C, Water Supplies (Drinking Water Quality Standards)
(b) 40 CFR 141, National Primary Drinking Water Regulations
(c) 42 U.S.C. §300f-300j-9 Title XIV of the Public Health Service Act (Safe Drinking Water Act)
(d) Public Health Security and Bioterrorism Preparedness Response Act of 2002 (Bioterrorism Act)
(e) MCO 5090.2
(f) 15A NCAC 02E .0501, Declaration and Delineation of Central Coastal Plain Capacity Use Area
(g) E.O. 13693, Planning for Federal Sustainability in the Next Decade
(h) UG-2029-ENV, "Cross Connection Control and Backflow Prevention Program Implementation at Navy Shore Facilities," May 1998
(i) COMMCICOM Policy Letter 6-19 of 24 Jun 19, Sampling and Testing for Lead in Drinking Water in Priority Areas
(j) 15A NCAC 02C .0107, Standards of Construction: Water Supply Wells
(k) 40 CFR 143, National Secondary Drinking Water Regulations
(l) Memorandum of Record Subj: Recommend Reactivation of Public Water Supply Wells 650, 699 and 708, MCB CAMLEJ, G-F, EMD, of 30 Jan 15
(m) Perchlorate Release Management Policy of 22 Apr 2009

Encl: (1) Environmental Standard Operating Procedures (ESOP)
(2) Drinking Water Sampling/Monitoring
(3) List of Contaminants
(4) Distribution System Water Line Break Notifications Flow Chart
(5) Reports Required

Reports Required: See enclosure (5)

1. Situation. In order to protect and maintain drinking water quality, this Order establishes and implements requirements outlined in the references for drinking water supply wells, treatment/distribution systems, and water conservation objectives. Construction, operation, maintenance, and repair of the aforementioned areas have the potential to significantly impact the drinking water quality and availability at Marine Corps Base Camp Lejeune (MCB CAMLEJ). MCB CAMLEJ is also responsible for the production and/or distribution of drinking water to Marine Corps Air Station (MCAS) New River, the Rifle Range, Verona Loop, Greater Sandy Run training areas, and other outlying Installation locations. It will often be referred to as the "Installation" throughout the Order.

a. MCB CAMLEJ currently uses approximately 1.94 billion gallons of drinking water annually. The sole drinking water source is the Castle Hayne Aquifer. Approximately 72 million gallons of potable water is procured annually from the Onslow Water and Sewer Authority (ONWASA) for the Rifle Range, Verona Loop/Greater Sandy Run training areas, and other outlying locations Installation-wide.

b. MCB CAMLEJ's drinking water program is comprised of the following:

(1) Four water treatment plants with 57 online drinking water supply wells;

(2) Seven permitted distribution systems totaling approximately 2,000 miles of combined raw and finished water lines; and

(3) A robust water sampling program.

(a) To ensure the water that is supplied to the Installation population is safe and reliable, MCB CAMLEJ continues to sample its raw and finished drinking water more frequently than what is required by state and Federal regulations.

(b) Drinking Water Sampling Program Environmental Standard Operating Procedures (ESOP). The Drinking Water Sampling ESOP, enclosure (1), establishes procedures and guidelines for the drinking water sampling program at MCB CAMLEJ and MCAS New River, in accordance with references (a) and (b). Enclosure (2) provides all mandatory and voluntary sampling for the raw and finished water aboard the Installation. In addition, enclosure (3) is a comprehensive list of constituents that are analyzed at MCB CAMLEJ.

(4) Drinking Water Quality and Conservation Program. In addition to ensuring drinking water quality complies with the requirements of Federal, state, and local environmental regulations, the following plans and programs apply to the management of the

Installation's drinking water systems and copies can be provided by the MCB CAMLEJs Environmental Management Division (EMD), Environmental Quality Branch (EQB):

(a) Wellhead Protection Plan (WHPP). The purpose of the WHPP is to identify specific management actions, procedures and plans that will protect both individual drinking water supply wells and recharge areas for groundwater sources. This plan shall be reviewed annually, and comprehensively updated every five years, at a minimum.

1. Master Planning Processes. Master planning processes and resulting land use plans shall carefully consider the requirements of the most current Installation WHPP and shall give high priority to protection of drinking water quality.

2. Plan Content. The WHPP shall identify land areas aboard the Installation utilized as well fields/recharge areas for groundwater sources and outline specific land use controls, environmental quality monitoring, and water pollution prevention and abatement measures which shall be taken to improve water quality and to minimize the risk of contamination by pollutants.

(b) Water System Management Plan (WSMP). The purpose of a WSMP is to prove and document that the utility has the management and financial capacity to operate its system and meet references (a) and (c) requirements. This plan shall be updated when water systems receive major modifications.

(c) Operation and Maintenance (O&M) Plan. The purpose of the O&M Plan is to ensure the utility has the technical capacity required to operate the system and meet references (a) and (c) requirements. "Technical capacity" refers to the ability of the utility personnel to operate and maintain the physical components of the system; this includes the treatment and storage facilities and the distribution infrastructure. This plan shall be updated when water systems receive major modifications or treatment processes change.

(d) Emergency Management Plan (EMP). The purpose of the EMP in meeting references (a) and (c) requirements provides:

1. Identification and phone numbers of utility system personnel as well as other local, state and Federal contacts responsible for emergency management;

2. Identification of foreseeable natural and human-caused emergencies;

3. Description of the emergency response plan for each identified event; and

4. Description of the notification process. This plan must be available to the water system operators at all times and made available to the North Carolina Department of Environmental Quality (NCDEQ), Public Water Supply Section for inspection at any time. The EMP shall be updated when water systems receive major modifications or treatment processes change.

(e) Emergency Response Plan (ERP). All public water systems serving a population of 3,300 or more are required to prepare an ERP, in accordance with reference (d). Additionally, all Navy and Marine Corps water systems serving 26 to 3,300 Department of Defense (DoD) consumers are to develop an ERP for internal use only in accordance with reference (e). The ERP includes threat evaluation, site characterization and response, recovery and remediation actions that MCB CAMLEJ and MCAS New River shall take as a result of terrorist threats and other acts against the water system.

(f) Local Water Supply Plan (LWSP). A LWSP is an assessment of a water system's current and future water needs and its ability to meet those needs. By understanding current and future needs, MCB CAMLEJ shall be better able to manage water supplies, be better prepared to plan for water supply system improvements and able to assist with identifying future water shortage situations. This information is provided to the NCDEQ on an annual basis via online submittal.

(g) Distribution System Material Survey Evaluation/Lead and Copper Rule Site Selection. The primary purpose of the lead and copper rule is to protect the public water supply users from contaminants which result from corrosion in potable water piping systems. The rule establishes action levels for lead and copper as measured at the consumer water taps. The rule requires that water systems either meet the specified lead and copper action levels or provide optimum corrosion control treatment to minimize the lead and copper contaminant level in the drinking water at consumer taps. Individual sampling sites are classified and designated in priority as Tier One, Two and Three. All Tier One sites must be designated as sampling sites prior to the selection of Tier Two sampling sites. All Tier Two sites must also be designated as sampling sites prior to the designation of Tier Three sampling sites. The three sampling site Tiers are determined by the building use, plumbing materials, water service line materials, type of solder used to join copper piping, and the construction date of the building's plumbing system.

(h) Water System Vulnerability Assessment (WSVA). All public water systems serving a population of 3,300 or more are required to prepare a Drinking WSVA. This document contains a list of all Antiterrorism/Force Protection projects/action items and how past

issues have been addressed. Additionally, all Navy and Marine Corps water systems serving 26 to 3,300 DoD consumers are required to develop an initial WSVA for internal use only in accordance with reference (e).

(i) Water Shortage Response Plan (WSRP). The WSRP is intended to be a short-term solution for balancing water availability and demand in times of water shortage and provides MCB CAMLEJ with a systematic plan to assess and manage the Installation's water supplies during water shortage conditions.

(j) Stage 2 Disinfectant/Disinfection Byproduct Plan (DDBP). The main objective of the DDBP is to reduce incidents of disease associated with the disinfection byproducts that form when public water supply systems add disinfectants during the treatment process. The Stage Two Disinfectant By-product Rule supplements existing regulations by requiring water systems to meet disinfection byproduct maximum contaminant levels at each monitoring site in the distribution system. It also contains a risk-targeting approach to better identify monitoring sites where customers are exposed to high levels of disinfection byproducts.

(k) Central Coastal Plain Capacity Use Area (CCPCUA). The State of North Carolina has created the CCPCUA in response to lowering water table levels within the Black Creek Aquifer. Mandated by reference (f), as of 1 August 2002 community water systems within the 15 counties delineated as the CCPCUA are required to report water usage to the NCDEQ, Division of Water Resources (DWR). The intent of the CCPCUA is to protect the long-term productivity of aquifers within the designated area and to allow the use of groundwater for beneficial uses at rates which do not exceed the recharge rate of the aquifers. Monthly static and pumping levels, daily aquifer water withdrawal total amounts and annual chloride results (for all drinking water supply wells) are submitted to the DWR.

(l) Water Conservation Plan. Agencies are required to reduce potable water consumption intensity in accordance with reference (g). This plan provides recommendations for water conservation projects and opportunities based on the water consumption information collected during water audits at MCB CAMLEJ.

(m) Backflow Prevention Plan Program. The drinking water distribution system shall be protected against contamination by continuously implementing and enforcing a formal Backflow Prevention Plan/Program. Reference (h) provides guidance on cross-connection control and backflow prevention.

(n) Lead in Priority Areas (LIPA). Marine Corps Installations are required to sample, test and maintain resultant records for lead content from drinking water supply sources servicing designated priority areas in accordance with references (e) and (i). A three-step LIPA sampling program must be implemented at all Installations and is conducted in addition to, not in place of, sampling conducted under the Lead and Copper Rule.

2. Cancellation. MCIEAST-MCB CAMLEJO 5090.16A.

3. Mission

a. To ensure compliance with drinking water regulations, establish procedures, and assign responsibilities for the delivery of safe drinking water to personnel and residents of MCB CAMLEJ and MCAS New River.

b. Summary of Revision. This Order was revised to add: Perfluorinated Compounds (PFCs) to voluntary sampling in enclosures 1, 2, and 3; update language within reference (d); add reference (m) and update reference (i); remove the Greater Sandy Run system (no longer a regulated system) from the graphs in enclosure 2; clarify the language of reference (d); update required monitoring schedules listed in enclosure (3); add contaminants: Iron, Manganese and Sulfate to required list, and remove Nickel from required list; update contaminant references to enclosure (1); clarify enclosure (4); and update responsibility, policies, and procedures. This Order should be reviewed in its entirety.

4. Execution

a. Commander's Intent and Concept of Operations

(1) Commander's Intent. To effectively manage, monitor and maintain the drinking water systems aboard MCB CAMLEJ and MCAS New River in an effort to ensure complete compliance with state and Federal regulations, and protect human health.

(2) Concept of Operations. Specific responsibilities for ensuring safe drinking water quality are provided below.

b. Tasks

(1) Assistant Chief of Staff (AC/S), G-F shall: Oversee the design, operation, maintenance, and compliance of the drinking water systems aboard the Installation to ensure safe and reliable drinking water is provided to its personnel and residents.

(2) Director, EMD shall:

(a) Oversee the implementation of drinking water environmental compliance evaluation and planning programs and other internal controls required to ensure satisfactory compliance with state, Federal, and Marine Corps regulations.

(b) Oversee the development and implementation of drinking water quality monitoring and reporting program and provides associated in-house and contract laboratory services.

(c) Ensure all drinking water sampling is conducted as specified in enclosure (1).

(d) Release routine reports to and provide liaison and interface with Federal and state regulatory agencies on matters related to the reporting and resolution of environmental compliance deficiencies.

(e) Ensure timely initiation of public notification of problems with the drinking water supply system in accordance with state regulations and in coordination with the Commanding General, Marine Corps Installations East-MCB CAMLEJ, AC/S, G-F, Communication Strategy and Operations Office, Staff Judge Advocate, Eastern Area Counsel Office, Naval Medical Center Camp Lejeune, and other cognizant Installation staff offices.

(f) Ensure timely delivery of required drinking water reports to customers.

(g) Oversee funding/allocation of resources for conducting appropriate scientific investigations and meeting all drinking water regulatory requirements.

(h) Oversee the development and implementation of the drinking water database and ensure proper updates are provided periodically.

(3) Head, EQB, EMD shall:

(a) Oversee the day-to-day operation of the EMD Laboratory and the procurement/administration of laboratory services contracts required for performance of analysis, maintenance of records, submittal of reports, and use of certified laboratories in compliance with Federal, state, and Marine Corps regulations, and established standard procedures.

(b) Develop procedures which ensure proper collection, handling and storage of water samples until delivered to either the EMD or contract laboratory.

(c) Oversee environmental laboratory personnel performance and monitor contractor performance of analysis, in accordance with designated standard procedures.

(d) Review analytical results of drinking water and ensure the Command, designated representatives from Public Works Division (PWD), and the Naval Medical Center's Occupational Health and Preventive Medicine services are notified of testing results in an appropriate and timely manner.

(e) Ensure proper repeat monitoring is performed in accordance with applicable state regulations in instances of noncompliance with primary drinking water standards, variances, exemptions, or failures to comply with sampling and monitoring requirements.

(f) Oversee the preparation of required reports to the DWR, NCDEQ.

(g) Review drinking water quality monitoring data from all sources and inform the Director, EMD of public notification or other special reporting requirements.

(h) Implement environmental data management systems to support environmental planning requirements and compliance with regulatory agency reporting requirements.

(i) Ensure the drinking water database is updated as sampling results are received. Provide quality assurance and quality control analysis to ensure that all drinking water data uploaded into the database is complete and accurate.

(j) Ensure timely development and revisions, in coordination with PWD, of the following plans, studies and permits:

1. WHPP

2. WSMP

3. O&M Plan

4. EMP

5. ERP

6. LWSP

7. Distribution System Survey Evaluation and Lead and Copper Site Selection

8. WSVA

9. WSRP

10. Stage 2 DDBP

11. CCPCUA Permit

12. Water Conservation Plan

13. Backflow Prevention Plan/Inventory/Program

14. LIPA

15. Drinking Water Plant Permits

16. Miscellaneous plans, studies, and permits as required

(k) Provide the in-house environmental engineering and planning expertise to ensure timely identification and development of short-term and long-term plans and procedures for addressing emerging environmental/ regulatory requirements that pertain to Installation drinking water supply.

(l) Oversee the development and implementation of environmental studies and projects required to maintain complete compliance with drinking water regulations, and conduct appropriate scientific investigations. Resolve unexplained incidents of drinking water contamination, and assist with locating future drinking water well-fields.

(m) Ensure periodic updates to the Installation's WHPP are performed and coordinate implementation. Identify and provide procedures for protecting existing and designated future sources of groundwater suitable for the Installation.

(n) Develop Consumer Confidence Reports (Water Quality Reports) for all MCB CAMLEJ water distribution systems. The reports indicate any water quality constituents detected during the calendar year compiled from drinking water data collected from an extensive compliance and voluntary testing and sampling program. Subsequently, the report information is distributed by posting an article in "The Globe" Base newspaper (includes MCAS New River) and ensuring Installation-wide delivery to each resident primarily by electronic notification means including a direct Uniform Resource Locator link to a report website and Wide Area Network electronic mail distribution.

(o) Ensure water treatment plant permit applications are completed annually for the Installation and forwarded to the proper state regulatory agency for approval.

(p) Maintain water treatment plant permits for the Installation.

(q) Follow drinking water line break procedures when notified by Base Utilities as outlined in enclosure (4).

(r) Provide periodic updates to the Installation's Geographic Information Systems (GIS) drinking water data through in-house efforts and contracts.

(s) Provide support to the Installation National Environmental Policy Act (NEPA) Section on any existing and changing water quality issues and stipulations for project input for decisions regarding the appropriate level of NEPA documentation.

(t) Provide technical assistance in NEPA Section project reviews for Field Exercise Request(s) for Environmental Impact Project Reviews involving Tactical Water Purification System (TWPS) and Light Water Purification System operations. The ESOP, "Requirement for Utilization of TWPS During Field Exercises", is routinely utilized, available from the NEPA Section or EQB, Water Quality Section.

(4) Resident Officer-in-Charge of Construction (ROICC) shall:

(a) Ensure both ROICC personnel and contractor management personnel are fully informed of the environmental constraints on the connection of service lines to, or other alteration of, existing drinking water distribution lines.

(b) Ensure compliance with lead-free plumbing installation requirements by construction contractors working onboard the Installation.

(c) Ensure proper installation and certification of backflow prevention devices or measures, when appropriate.

(d) Ensure EMD is informed of incidents which are likely to result in violations of environmental or public health regulations or standards.

(e) Ensure all newly constructed drinking water supply wells are constructed, disinfected per NCDEQ disinfection requirements and properly sampled, in accordance with reference (j).

(5) Director, PWD Public Works Officer (PWO)/Deputy PWO shall:

(a) Act as principal staff officer for the implementation of, and assist EMD with the development of, the plans, studies, and permits as listed under 4b(4)(j) of this Order.

(b) Serve as the principal staff officer for the facilities planning, construction, operation, maintenance, and repair of utilities systems to include but not limited to, drinking water supply wells, raw water network lines, water treatment plants, and potable water distribution.

(c) Ensure contract services required to provide and distribute drinking water in the required quantities are available. Subject services shall comply with all applicable Federal, state, and Marine Corps regulations.

(d) Ensure sufficient resources to operate, maintain, and repair drinking water systems in compliance with applicable standards, sampling and/or monitoring, reporting, recordkeeping, and other regulations and requirements are provided.

(e) Ensure properly trained civilian and/or Marine Corps personnel are appointed to operate and maintain the Installation's drinking water supply wells and treatment and distribution systems. Personnel must be properly trained in accordance with state requirements for testing, inspecting, and certifying backflow prevention devices.

(f) Ensure drinking water supply wells and treatment/distribution systems are permitted/approved, constructed, operated, and maintained in accordance with applicable Federal, state, and Marine Corps regulations.

(g) Ensure permit applications, approvals, and notices required by the DWR are completed either in-house or via contract prior to altering any Installation water system.

(h) Ensure maintenance records of community water systems are retained for at least three years.

(i) Accompany DWR inspectors on periodic sanitary surveys of the water system and maintain survey records for 10 years.

(j) Conduct periodic evaluations of their operations in cooperation with Installation environmental and utilities managers in order to identify feasible alternatives for water conservation including, but not limited to:

1. Updating and maintaining the Installation's GIS drinking water data. Providing periodic updates to drinking water GIS data through in-house efforts and contracts.

2. Making changes in day-to-day operations as appropriate to promote water conservation based on results of these evaluations.

(k) Oversee and operate drinking water supply wells and treatment and distribution systems as required to ensure the raw and treated water is protected against contamination during pumping, treatment, storage, and distribution, and that treatment includes the proper processes. Follow up on drinking water line break procedures when notified by Base Utilities as outlined in enclosure (4).

(l) Maintain and update the drinking water backflow prevention database for the Installation. Schedule/conduct testing, inspecting, and certifying backflow prevention devices, in accordance with DWR requirements.

(6) Head, Design Branch, PWD shall:

(a) Ensure designs, plans, and specifications for in-house or contractor performed repair and/or construction are submitted to the DWR when required for appropriate review and approval.

(b) Ensure all designs, plans, and specifications for in-house or contractor performed repair and/or construction of drinking water supply wells and treatment and distribution systems contain adequate provisions requiring the following:

1. Backflow prevention and measures;

2. Proper disinfection of water mains, wells, and storage tanks during repair and construction prior to placing these systems in service; and

3. Proper procedures and forms for drinking water extension permits and elevated tank repair work.

(c) Ensure all designs, plans, and specifications include the use of lead-free pipes, solder, and flux. The Safe Drinking Water Act establishes the definition for lead-free as not more than a weighted average of 0.25 percent lead calculated across the wetted surfaces of pipes, pipe fittings, plumbing fittings and fixtures, and not containing more than 0.2 percent lead when used with respect to solder and flux.

(d) Provide professional engineering services required for the development and update of an Installation Backflow Prevention Program and associated maintenance and repair projects to eliminate cross-connections, open or potential, between drinking water systems, and non-potable water sources.

(7) Director, Utilities Branch, PWD shall:

(a) Ensure personnel responsible for the operation of the Installation's drinking water systems are properly trained, licensed, and certified, in accordance with state guidelines.

(b) Oversee the operation of drinking water supply wells and treatment and distribution systems as required to ensure the raw and treated water is protected against contamination during pumping, treatment, storage, and distribution.

(c) Ensure that drinking water treatment, distribution, and related maintenance and repair activities are performed in compliance with applicable DWR requirements, Navy health regulations, and related recordkeeping and reporting requirements.

(d) Ensure routine drinking water testing and flushing within the distribution system is performed to ensure adequate residual chlorine and pH is maintained.

(e) Maintain operational recordkeeping and reporting required by DWR.

(f) Implement procedures which ensure proper collection and handling of water samples until delivered to either the EMD laboratory or contractor.

(g) Ensure preventative maintenance and repairs on the Installation water treatment and distribution systems are conducted. Ensure spare parts are available.

(h) Ensure proper fluoridation and appropriate fluoride levels are maintained.

(i) Ensure proper notification procedures are in place in the event of an emergency and when required, institute the drinking water line break notification procedures as outlined in enclosure (4).

(j) Ensure proper disinfection of water mains, wells, and storage tanks during repair and construction prior to placing these systems in service is performed. Ensure NCDEQ is properly notified on all repairs and construction.

(k) In coordination with PWO, EQB, and EMD, initiate projects required to repair and upgrade existing facilities as required to ensure adequate quantities and quality of drinking water in compliance with Federal, state, and Marine Corps regulations.

(l) Oversee the routine inspections of drinking water distribution systems required to ensure effective implementation of the Installation Backflow Prevention Program and timely initiation of maintenance and repair projects required to eliminate cross-connections, open or potential, between a system furnishing potable water and a system furnishing non-potable water.

(8) Commanding Officer, Naval Medical Center Camp Lejeune:

(a) Provide personnel to assist in implementing public notification of deficiencies in the Installation drinking water supply, and in handling the related public health concerns upon request.

(b) Provide comprehensive environmental and occupational health surveillance and related technical assistance and training support required to identify, prevent and evaluate incidents of suspected contamination of Installation water supplies by backflows into the distribution system or poor O&M practices involving service lines.

(c) Ensure backflow prevention inspections of Naval Medical Center-associated facilities are performed and certification records and inventory updates are provided to the Installation's backflow operator-in-responsible charge.

(d) Conduct monthly testing and sampling of potable water and ice for bacterial contamination as required by Federal, state, and Marine Corps regulations.

(9) All Organizations and Individuals served by the Installation's Drinking Water Systems:

(a) Remain informed and support the requirements of the WHPP.

(b) Submit all proposed actions with the potential to impact the environment to the NEPA Process Automation & Management Support (PAMS) website at https://nepapams.usmc.mil/NEPA/default.aspx for the appropriate level of review/approval, in accordance with the NEPA Program. All projects submitted to the Installation NEPA Section shall be reviewed for impacts to wellhead protection areas.

(c) Deliver all required drinking water reports and bulletins in accordance with guidance provided by the EMD, MCB CAMLEJ.

(d) Report water line breaks and other concerns with drinking water to the Installation's utilities staff in accordance with enclosure (4).

(e) Take measures to reduce potable water usage in a combined effort to improve agency water use efficiency.

5. Administration and Logistics. Not applicable.

6. Command and Signal

a. Command. This Order is applicable to MCB CAMLEJ, MCAS New River, its tenant and subordinate commands, and staff sections.

b. Signal. This Order is effective the date signed.

N. E. DAVIS
Chief of Staff

DISTRIBUTION: A/C (plus MCAS NR, H&S Bn, and WTBn)

Environmental Standard Operating Procedures (ESOP)

Title: 5090.16.3 PROCEDURES FOR DRINKING WATER SAMPLING PROGRAM FOR MCB CAMLEJ AND MCAS NEW RIVER

Purpose: This ESOP establishes procedures and guidelines for the drinking water sampling program at MCB CAMLEJ and MCAS New River, in accordance with references (a) through (l).

Applicability: This ESOP applies to the G-F, EMD, PWD Utilities Branch, Atlantic Marine Corps Communities and Lincoln Military Housing.

Responsibility: All personnel who engage in sampling/monitoring drinking water at MCB CAMLEJ and MCAS New River.

Procedure:

1. Treated (Finished) Water – Regulatory Required Monitoring

a. The groups of contaminants listed below, broken down by regulatory contaminant group or sampling rule, are sampled at the frequency required by Federal, state, and Marine Corps regulatory requirements:

(1) Revised Total Coliform Rule (RTCR)

(2) Inorganic Contaminants (IOCs)

(a) Metals

(b) Asbestos

(c) Nitrates

(d) Nitrites

(3) Organic Contaminants

(a) Volatile Organic Compounds (VOCs)

(b) Synthetic Organic Compounds (SOCs)

(4) Radionuclides

(5) Stage 2 Disinfection Byproducts (DBPs)

(6) Lead and Copper Rule (LCR)

(7) Perchlorates

(8) Unregulated Contaminant Monitoring Rule (UCMR)

(9) LIPA

b. Sampling for the above listed contaminants is performed either at locations within the water distribution systems or at the entry points to the distribution systems as specified in regulatory guidance.

c. In most instances, samples are collected by in-house EMD Laboratory personnel and sent to an EMD approved laboratory for analysis.

d. The Installation shall comply with state, Federal and Marine Corps regulatory requirements (with regards to follow-up sampling, reporting, and notifications) for all detections.

e. In accordance with state and Federal regulations, any detections of VOCs or SOCs as well as detections of IOCs greater than the Maximum Contaminant Level (MCL) or detections of radionuclides greater than 50 percent of the MCL may trigger an increase in regulatory monitoring frequency. In addition, any positive detections of RTCR contaminants will require immediate follow-up sampling. The Installation will voluntarily conduct immediate follow-up sampling, as deemed appropriate, for detections of contaminants monitored for during Federal, state and Marine Corps regulatory monitoring as shown in the groups above. A list of contaminants for each group is located in enclosure (3).

f. Though not required by regulation, if the result of a sample collected per the LCR exceeds the action level (AL), as shown in reference (b), the Installation has decided to voluntarily conduct a follow-up sampling event.

g. In the event of a second detection, drinking water wells serving the affected system shall be sampled and analyzed for the detected constituent; depending on the circumstances this may be done on the next regularly scheduled biannual voluntary sampling of supply wells and distribution system entry points.

h. If follow-up sampling at any drinking water supply well shows the presence of any of the detected contaminants, action shall be taken depending on the circumstance of the detection; to include shutting the well down, limiting well usage or continued monitoring.

2. Treated (Finished) Water - Voluntary Monitoring

a. The groups below also appear in the Required Monitoring Section, but MCB CAMLEJ voluntarily samples on a more frequent basis than what is required by regulation. The following groups are broken down further in enclosures (2) and (3):

(1) Metals (semi-annually)

(2) Organic Contaminants

(a) VOCs (monthly and semi-annually)

(b) SOCs (monthly and semi-annually)

(c) Total Organic Carbon (TOC) (semi-annually)

(3) Explosive Constituents including perchlorate (monthly and semi-annually)

(4) Stage 2 DBPs (quarterly)

(5) Chlorate (semi-annually)

(6) Chloride (annually)

(7) PFCs (semi-annually)

b. Sampling for the above listed constituents is performed at the stated frequency at the entry points to the distribution systems as shown in enclosure (2).

c. In most instances, samples are collected by in-house EMD Laboratory personnel and sent to an EMD approved laboratory for analysis.

d. Any detections of contaminants monitored for in the groups shown above shall trigger further action to include possible resampling as appropriate. A list of contaminants for each group is located in enclosure (3). Detections of hexavalent chromium at 3 µg/L or below are treated as “routine”, i.e., not requiring additional follow up sampling in accordance with reference (l).

e. In the event of a second detection in follow-up sampling, drinking water wells serving the affected system shall be sampled and analyzed for the detected constituent. Depending on the circumstances, this may be done on the next regularly scheduled biannual voluntary sampling of supply wells.

f. If follow-up sampling at any drinking water supply well shows the presence of any of the detected constituents, action shall be taken depending on the circumstance of the detection; to include shutting the well down, limiting well usage or continued monitoring.

3. Raw (Well) Water – Required Monitoring

a. Sampling shall be performed in accordance with reference (j) on all newly constructed drinking water supply wells prior to putting them into service.

b. Chloride. Annual chloride sampling of all drinking water wells is performed as a requirement of the Installation's Central Coastal Plain Capacity Use Permit. Results are submitted directly into the NCDEQ, DWR website.

c. Bacteriological. Bacteriological sampling shall be conducted at all new wells and wells that have been repaired or reconditioned. Additionally, annual sampling for total coliform is performed at Well BA-164 as a requirement of the Wellhead Management Plan.

4. Raw (Well) Water - Voluntary Monitoring

a. Sampling for the groups below are not required; however, MCB CAMLEJ voluntarily samples on a more regular basis as shown in enclosure (2).

(1) Metals

(2) Organic Contaminants

(a) VOCs

(b) SOCs

(c) TOC

(3) Explosive Constituents including perchlorate

(4) Chlorate

(5) PFCs

b. Sampling for the above listed constituents is performed semi-annually at drinking water supply wells serving the Hadnot Point, MCAS New River, Holcomb Boulevard, and the Onslow Beach water treatment plants. In addition, all newly constructed drinking water supply wells shall be sampled for constituents (1) through (4) prior to

putting the well into service. If a well is unable to be sampled during a sampling event (due to being "offline" for repairs), every effort shall be made to make sure it is sampled the subsequent round of sampling.

c. Sampling and analysis is performed utilizing a contractor obtained through Facility Support Contracts (FSC), PWD. EMD provides FSC with required parameters annually.

d. Any detection will trigger further action to include possible re-sampling as appropriate. Detections of hexavalent chromium at 3 µg/L or below are treated as "routine" (i.e., not requiring additional follow up sampling) in accordance with reference (l).

5. Drinking Water Database. All drinking water sampling data (required and voluntary) shall be stored in EMD's Drinking Water Database. This information shall be populated by each respective program manager periodically as data is received.

6. Reporting/Notifications

a. For regulatory compliance sampling, all reporting/notification requirements outlined in references (a) and (e) shall be followed.

b. For LIPA sampling, all reporting/notification requirements outlined in reference (i) shall be followed.

c. The EMD Director shall be notified immediately of any detection in the raw or finished water supply.

d. All detections shall be reported in MCB CAMLEJ's Annual Consumer Confidence Report.

e. For second detections in the Rifle Range water distribution system, EMD shall notify the ONWASA and Marine Corps Installation Command (MCICOM).

f. EMD shall develop a report that contains all detections from voluntary sampling. A courtesy copy of this report shall be forwarded to the NCDEQ Wilmington Regional Office on a semiannual basis.

g. EMD shall report all Maximum Contaminant Level exceedances immediately to the NCDEQ Wilmington Regional Office.

7. Regulatory Citation: The requirements for implementation of this ESOP are found in reference (a), (b), (c), (e), and (i).

8. Training: Applicable personnel should be trained on all provisions of this ESOP.

Drinking Water Sampling/Monitoring

Required Monitoring for MCB CAMLEJ's Drinking Water Systems						
	HADNOT POINT 04-67-041	**MCAS NEW RIVER 04-67-042**	**HOLCOMB BLVD 04-67-043**	**ONSLOW BEACH 04-67-048**	**RIFLE RANGE 04-67-046**	**VERONA LOOP 04-67-556**
RTCR[1] (Coliform)	Monthly	Monthly	Monthly	Quarterly	Monthly	Quarterly
Asbestos[1,2]	Every 3 years	Every 3 years	Every 3 years	Not Required	Every 3 years	Not Required
Metals[1]	Every 3 years	Every 3 years	Every 3 years	Not Required	Not Required	Not Required
Nitrates[1]	Annually	Annually	Annually	Annually	Not Required	Not Required
Nitrites[1]	As requested by DEQ	As requested by DEQ	As requested by DEQ	As requested by DEQ	As requested by DEQ	As requested by DEQ
VOCs[1]	Every 3 years	Every 3 years	Every 3 years	Not Required	Not Required	Not Required
SOCs, Pesticides, PCBs[1]	Every 3 years	Every 3 years	Every 3 years	Not Required	Not Required	Not Required
DBPs (THMs and HAAs)[1]	Quarterly	Quarterly	Quarterly	Not Required	Quarterly	Not Required
LCR[1]	Every 3 years	Every 3 years	Every 3 years	Not Required	Every 3 years	Not Required
Radiologicals (Gross Alpha)[1]	Every 9 years	Every 9 years	Every 9 years	Not Required	Not Required	Not Required
Radiologicals (Uranium & Radium)[1]	Every 6 years	Every 6 years	Every 6 years	Not Required	Not Required	Not Required
Perchlorate[3]	Every 3 years	Every 3 years	Every 3 years	Not Required	Not Required	Not Required
UCMR[4]	When required by USEPA	When required by USEPA	When required by USEPA	When required by USEPA	Not Required	Not Required
LIPA[5]	Every 5 years	Every 5 years	Every 5 years	No priority areas	No priority areas	No priority areas

[1] See reference (b) for monitoring requirements.
[2] Reference (e) requires monitoring every three years.
[3] See reference (m) for monitoring requirements.
[4] United States Environmental Protection Agency determines monitoring requirements.
[5] See reference (i) for monitoring requirements.

Voluntary Monitoring for Marine Corps Base, Camp Lejeune's Drinking Water Systems						
	HADNOT POINT 04-67-041	**MCAS NEW RIVER 04-67-042**	**HOLCOMB BLVD 04-67-043**	**ONSLOW BEACH 04-67-048**	**RIFLE RANGE 04-67-046**	**VERONA LOOP 04-67-556**
VOCs	Monthly*	Monthly*	Monthly*	Monthly*	Monthly	
SOCs	Monthly*	Monthly*	Monthly*	Monthly*	Monthly	
DBPs	Quarterly	Quarterly	Quarterly		Quarterly	
Explosives	Monthly*	Monthly*	Monthly*	Monthly*	Monthly	
Perchlorate	Monthly*	Monthly*	Monthly*	Monthly*	Monthly	
Metals	Semi-annually	Semi-annually	Semi-annually	Semi-annually		
Hexavalent Chromium	Semi-annually	Semi-annually	Semi-annually	Semi-annually		
Chloride	Annually	Annually	Annually	Annually		
Chlorate	Semi-annually	Semi-annually	Semi-annually	Semi-annually		
TOC	Semi-annually	Semi-annually	Semi-annually	Semi-annually		
PFCs	Semi-annually	Semi-annually	Semi-annually	Semi-annually		

* In addition to monthly sampling, drinking water system is monitored semi-annually.

Required Monitoring for MCB CAMLEJ's Drinking Water Supply Wells						
	HADNOT POINT 04-67-041	**MCAS NEW RIVER 04-67-042**	**HOLCOMB BLVD 04-67-043**	**ONSLOW BEACH 04-67-048**	**RIFLE RANGE 04-67-046**	**VERONA LOOP 04-67-556**
Chloride	Annually	Annually	Annually	Annually		
BACT				Annual Sampling at BA-164		
BACT	**All new drinking water supply wells will be sampled per 15A NCAC 18C .0402 guidelines prior to putting any well into service.**					
VOCs						
SOCs						
Metals						
Explosives						
Radiologicals						

Voluntary Monitoring for MCB CAMLEJ's Drinking Water Supply Wells						
	HADNOT POINT 04-67-041	**MCAS NEW RIVER 04-67-042**	**HOLCOMB BLVD 04-67-043**	**ONSLOW BEACH 04-67-048**	**RIFLE RANGE 04-67-046**	**VERONA LOOP 04-67-556**
VOCs	Semi-annually	Semi-annually	Semi-annually	Semi-annually		
SOCs	Semi-annually	Semi-annually	Semi-annually	Semi-annually		
Explosives	Semi-annually	Semi-annually	Semi-annually	Semi-annually		
Metals	Semi-annually	Semi-annually	Semi-annually	Semi-annually		
Hexavalent Chromium	Semi-annually	Semi-annually	Semi-annually	Semi-annually		
Chlorate	Semi-annually	Semi-annually	Semi-annually	Semi-annually		
TOC	Semi-annually	Semi-annually	Semi-annually	Semi-annually		
PFCs	Semi-annually	Semi-annually	Semi-annually	Semi-annually		

Required Monitoring Contaminants List (Finished Water)

RTCR Contaminants [Enclosure (1): 1a(1)]

Total Coliforms
E. Coli

Inorganic Contaminants [Enclosure (1): 1a(2)]

Metal Contaminants
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Iron
Manganese
Mercury
Selenium
Sulfate
Thallium

Asbestos Contaminants
Chrysotile
Amphibole
Total Asbestos

Nitrate/Nitrite Contaminants

Nitrate Nitrogen

Nitrite Nitrogen

Other Non-Metal Contaminants

Cyanide
Fluoride

Radiological Contaminants [Enclosure (1): 1a(4)]

Combined Radium
Radium 226
Radium 228

Gross Alpha
Uranium

Stage 2 Disinfection Byproducts [Enclosure (1): 1a(5)]

Total Haloacetic Acids
Dibromoacetic Acid
Monobromoacetic Acid
Trichloroacetic Acid
Dichloroacetic Acid
Monochloroacetic Acid

Total Trihalomethanes
Dibromochloromethane
Bromodichloromethane
Bromoform
Chloroform

Lead and Copper Rule Contaminants [Enclosure (1): 1a(6)]

Lead
Copper

Perchlorate [Enclosure (1): 1a(7)]

Perchlorate

UCMR [Enclosure (1): 1a(8)]

Every five years USEPA selects 30 unregulated contaminants to be monitored.

LIPA [Enclosure (1): 1a(9)]

Lead

Organic Contaminants [Enclosure (1): 1a(3)]

Volatile Organic Compounds	Synthetic Organic Compounds
1,2-Dichlorobenzene (o)	1,2-Dibromo-3-chloropropane
1,4-Dichlorobenzene (p)	2,4-D
1,2-Dichloroethane	2,4,5-TP
1,1-Dichloroethylene	Alachlor (Lasso)
cis-1,2-Dichloroethylene	Atrazine
trans-1,2-Dichloroethylene	Benzo(a)pyrene
1,2-Dichloropropane	Carbofuran
1,1,1-Trichloroethane	Chlordane
1,1,2-Trichloroethane	Dalapon
1,2,4-Trichlorobenzene	Di(2-ethylhexyl)adipate
Benzene	Di(2-ethylhexyl)phthalate
Carbon Tetrachloride	Dinoseb
Chlorobenzene	Endrin
Dichloromethane	Ethylene Dibromide (EDB)
EthylBenzene	Heptachlor
Styrene	Heptachlor Epoxide
Tetrachloroethylene	Hexachlorobenzene
Toluene	Hexachlorocyclopentadiene
Trichloroethylene	Lindane (BHC-Gamma)
Vinyl Chloride	Methoxychlor
Xylenes, Total	Oxamyl
	Pentachlorophenol
	Picloram
	Simazine
	Total Polychlorinated Biphenyls (PCBs)
	Toxaphene

Metal Contaminants [Enclosure (1): 2a(1)]

Antimony	Magnesium
Arsenic	Manganese
Barium	Mercury
Beryllium	Nickel
Cadmium	Potassium
Calcium	Selenium
Chromium	Sodium
Cobalt	Strontium
Copper	Thallium
Hexavalent Chromium	Vanadium
Iron	Zinc
Lead	

Other Compounds [Enclosure (1): 2a(2c) – 2a(7)]

TOC
Chlorate
Chloride
PFCs

Explosive Constituents [Enclosure (1): 2a(3)]

2-Amino-4,6-Dinitrotoluene
4-Amino-2,6-Dinitrotoluene
1,3-Dinitrobenzene
2,4-Dinitrotoluene
2,6-Dinitrotoluene
HMX
Nitrobenzene
Nitroglycerin
2-Nitrotoluene
3-Nitrotoluene (m-Nitrotoluene)
4-Nitrotoluene
Perchlorate
PETN
RDX
Tetryl
1,3,5-Trinitrobenzene
2,4,6-Trinitrotoluene (TNT)

Stage 2 Disinfection Byproducts [Enclosure (1): 2a(4)]

Total Haloacetic Acids
Dibromoacetic Acid
Monobromoacetic Acid
Trichloroacetic Acid
Dichloroacetic Acid
Monochloroacetic Acid
Total Trihalomethanes
Chlorodibromomethane
Bromodichloromethane
Bromoform
Chloroform

Volatile Organic Compounds [Enclosure (1): 2a(2)(a)]

Benzene	1,2-Dichloropropane
Bromobenzene	1,3-Dichloropropane
Bromochloromethane	2,2-Dichloropropane
Bromodichloromethane	1,1-Dichloropropene
Bromoform	cis-1,3-Dichloropropene
Bromomethane	trans-1,3-Dichloropropene
n-Butylbenzene	Ethylbenzene*
sec-Butylbenzene	Hexachlorobutadiene
tert-Butylbenzene	4-Isopropyltoluene (p-Isopropyltoluene)
Carbon tetrachloride	Methyl-tert-butylether (MTBE)
Chlorobenzene*	Methylene Chloride
Chloroethane	Naphthalene
Chloroform	N-Propylbenzene
Chloromethane	Styrene*
2-Chlorotoluene	1,1,1,2-Tetrachloroethane
4-Chlorotoluene	1,1,2,2-Tetrochloroethane
Dibromochloromethane	Tetrachloroethene*
1,2-Dibromo-3-chloropropane	Toluene*
1,2-Dibromoethane	1,2,3-Trichlorobenzene
Dibromomethane	1,2,4-Trichlorobenzene*
1,2-Dichlorobenzene*	1,1,1-Trichloroethane*
1,3-Dichlorobenzene	1,1,2-Trichloroethane
1,4-Dichlorobenzene*	Trichloroethene
Dichlorodifluoromethane	Trichlorofluoromethane
1,1-Dichloroethane	1,2,3-Trichloropropane
1,2-Dichloroethane*	1,2,4-Trimethylbenzene
1,1-Dichloroethene*	1,3,5-Trimethylbenzene
cis-1,2-Dichloroethene*	Vinyl Chloride*
trans-1,2-Dichloroethene*	Xylenes (total)*

* Constituents are monitored at the entry points to the distribution systems monthly in addition to being monitored semi-annually.

Volatile Organic Compounds [Enclosure (1): 2a(2)(a)]

Benzene	1,2-Dichloropropane
Bromobenzene	1,3-Dichloropropane
Bromochloromethane	2,2-Dichloropropane
Bromodichloromethane	1,1-Dichloropropene
Bromoform	cis-1,3-Dichloropropene
Bromomethane	trans-1,3-Dichloropropene
n-Butylbenzene	Ethylbenzene*
sec-Butylbenzene	Hexachlorobutadiene
tert-Butylbenzene	4-Isopropyltoluene (p-Isopropyltoluene)
Carbon tetrachloride	Methyl-tert-butylether (MTBE)
Chlorobenzene*	Methylene Chloride
Chloroethane	Naphthalene
Chloroform	N-Propylbenzene
Chloromethane	Styrene*
2-Chlorotoluene	1,1,1,2-Tetrachloroethane
4-Chlorotoluene	1,1,2,2-Tetrochloroethane
Dibromochloromethane	Tetrachloroethene*
1,2-Dibromo-3-chloropropane	Toluene*
1,2-Dibromoethane	1,2,3-Trichlorobenzene
Dibromomethane	1,2,4-Trichlorobenzene*
1,2-Dichlorobenzene*	1,1,1-Trichloroethane*
1,3-Dichlorobenzene	1,1,2-Trichloroethane
1,4-Dichlorobenzene*	Trichloroethene
Dichlorodifluoromethane	Trichlorofluoromethane
1,1-Dichloroethane	1,2,3-Trichloropropane
1,2-Dichloroethane*	1,2,4-Trimethylbenzene
1,1-Dichloroethene*	1,3,5-Trimethylbenzene
cis-1,2-Dichloroethene*	Vinyl Chloride*
trans-1,2-Dichloroethene*	Xylenes (total)*

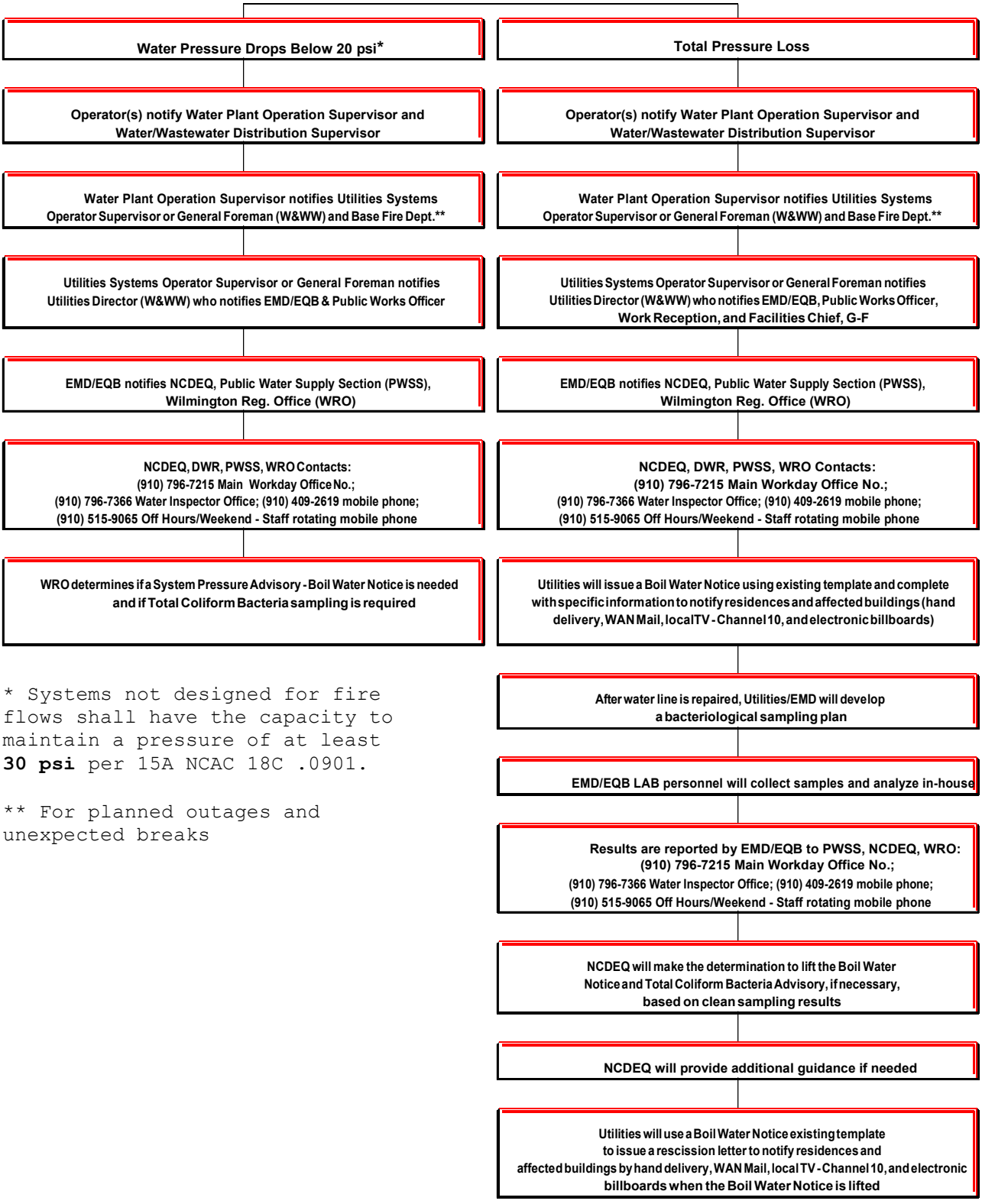
* Constituents are monitored at the entry points to the distribution systems monthly in addition to being monitored semi-annually.

Synthetic Organic Compounds [Enclosure (1): 2a(2)(b)]

Alachlor
Aldicarb
Aldicarb Sulfone
Aldicarb Sulfoxide
Aldrin
Atrazine*
Benzo(a)pyrene*
Butachlor
Carbaryl
Carbofuran*
Chlordane*
2,4-D*
Dalapon*
DBCP*
4,4-DDD
Di(2-ethylhexyl)adipate*
Di(2-ethylhexyl)phthalate*
Dicamba
Dieldrin
Dinoseb*
Endrin*
Ethylene Dibromide (EDB)*
Heptachlor*
Heptachlor Epoxide*
Hexachlorobenzene*
Hexachlorocyclopentadiene*
3-Hydroxycarbofuran
Lindane*
Methomyl
Methoxychlor*
Metolachlor
Metrabuzin
Oxamyl (Vydate®)*
PCBs*
Pentachlorophenol*
Picloram*
Propachlor
Simazine*
Toxaphene*
2,4,5-TP (Silvex)*

* Constituents are monitored at the entry points to the distribution systems monthly in addition to being monitored semi-annually.

Distribution System Water Line Break Notifications Flow Chart



* Systems not designed for fire flows shall have the capacity to maintain a pressure of at least **30 psi** per 15A NCAC 18C .0901.

** For planned outages and unexpected breaks

Reports Required

	REPORT TITLE	REPORT CONTROL SYMBOL	PARAGRAPH
I.	Monthly Static and Pumping Levels Usage Report	MCIEAST-MCB CAMLEJ-5090.16B-01	1b(4)(k)
II.	Water Line Break Report	MCIEAST-MCB CAMLEJ-5090.16B-02	4b(1)(d)
III.	Routine Inspection of Drinking Water Distribution Systems	MCIEAST-MCB CAMLEJ-5090.16B-03	4b(8)(c)
IV.	Monthly BAC-T Report-Drinking Water Report	MCIEAST-MCB CAMLEJ-5090.16B-04	4b(1)(c) 4b(4)(f)
V.	Monthly BAC-T Report-Quality Monitoring	MCIEAST-MCB CAMLEJ-5090.16B-04	4b(4)(b)
VI.	Monthly BAC-T Report-Routine Reports	MCIEAST-MCB CAMLEJ-5090.16B-04	4b(4)(d)
VII.	Monthly BAC-T Report-DWR and NCDEQ Reports	MCIEAST-MCB CAMLEJ-5090.16B-04	4b(4)(f,o)
VIII.	Monthly BAC-T Report-Regulatory Reports	MCIEAST-MCB CAMLEJ-5090.16B-04	4b(4)(h)
IX.	Monthly BAC-T Report-DWR Report	MCIEAST-MCB CAMLEJ-5090.16B-04	4b(8)(e)
X.	Monthly BAC-T Report-State and Federal Report on Detection	MCIEAST-MCB CAMLEJ-5090.16B-04	Encl (1) pages 1-13 6a
XI.	NCDEQ Notification-Repairs and Construction	MCIEAST-MCB CAMLEJ-5090.16B-05	4b(8)(j)
XII.	Annual Consumer Confidence Report	MCIEAST-MCB CAMLEJ-5090.16B-06	4b(4)(n)