ATTACHMENT J54

Environmental Compliance Activities

Potable Water and Wastewater Utility Privatization
Outline of Current Compliance Activities

This document has been prepared to outline the current environmental compliance requirements managed by the Directorate of Public Works and Logistics (DPWL), Environmental and Natural Resource Division's (ENRD's) Water Quality Program regarding potable water and wastewater. The main purpose of the ENRD's program is to ensure legal compliance requirements are satisfied. A number of contractors are currently employed to meet these requirements and ENRD's program acts as the focal point for coordination and management of these contractors. The program therefore includes budgeting and contracting functions, in addition to public affairs, project, and data management functions.

Each program area has unique requirements and regulations, but general overall duties apply to each program area. These general areas of responsibility include:

- Legal Compliance - understanding current and tracking changes to applicable Army, federal, and state laws and regulations to ensure the installation's actions meet minimum requirements.
- Program Spokesperson - acting as the Water Quality Program liaison to include interaction with regulatory agencies for incident reporting and permitting issues; preparing routine correspondence and reports; compiling a variety of program data for various command briefings and major installation projects; providing technical support, guidance, and oversight of tenant activities; leading public affairs activities such as participation in public meeting. Most significant activities follow potable water issues.
- Financial and Contractual - managing most aspects of the program budget cycle to include the identification and legal justification of projects and requirements; cost estimation, tracking, and out-year projection; and contract document preparation, negotiation, and management support.
- Project Management - oversight and coordination of contractor activities and evaluation of deliverables and invoices.
- Data Management - maintaining the water quality database that tracks various program aspects; coordinate updates to the hydraulic model; tracking updates to the backflow prevention database; manage the Supervisory Control and Data Acquisition (SCADA) system; and identifying areas of the GIS that require revision and new projects that should be incorporated.

Potable Water
General Program Requirements:

- Vulnerability assessment
- Emergency response plan
- Monthly sampling for coliform

- Quarterly disinfection by-product sampling (TTHM and HAA5)
- Triennial lead and copper sampling
- Annual consumer confidence report preparation and distribution
- Annual waterline flushing
- Public relations
- Operation of the chlorination booster station
- Backflow prevention: new work, annual inspection, annual training, on-going maintenance, repair, and replacement
- Construction review and permitting
- Distribution system operation and maintenance tracking
- VDH Inspection oversight
- Database and GIS management

Description of Program Requirements:
The most significant area of responsibility within the Water Quality Program is potable water. Fort Belvoir is the owner and operator of a community (consecutive) waterworks system with a distribution network storage capacity of over four million gallons. As a distributor of potable water to the more than 23,000 people living and working at Fort Belvoir, the Post is required to maintain compliance with the requirements of a waterworks permit with the Virginia Department of Health (VDH). This permit includes numerous requirements to ensure that the water purchased from the Fairfax County Water Authority (FCWA) and distributed on Post does not present a health hazard and meets criteria set by the EPA and the Safe Drinking Water Act. To help ensure quality drinking water, Fort Belvoir operates a chlorination unit booster station that is used as needed (typically during warmer weather months) to increase the level of chemicals used for water disinfection. Maintenance of the distribution system that includes approximately 78 miles of buried water main to ensure adequate pressure and quality is also an ongoing requirement. The existing distribution system, which includes ground level and elevated storage tanks, two pumping stations, 68 sample ports, and over 600 fire hydrants, is complex and extensive. It is relied upon for fire suppression as well as drinking water and is supplied through three main connections with the FCWA who produces water at nearby treatment plants in Lorton. As Fort Belvoir continues to grow and new construction occurs, the distribution system must also grow and modifications are continually required in order to ensure an adequate water supply is available. When older pipes fail or water quality problems arise, immediate action is taken to make repairs or flush problem areas to minimize any disruption in service, heath issue, or damage to infrastructure. The installation also operates a backflow prevention program in order to avoid any cross-connection between the potable and wastewater distribution systems.

Serving as the main point of contact for public affairs technical support regarding water quality issues, the project includes a great deal of interaction with water customers. For example in 2003, an exceedance of the maximum contaminant level set by the EPA for disinfection by-products (HAA5) occurred. Consequently, a public notice was issued and before compliance was restored a month later, nearly 100 inquires, varying from telephone calls and emailed questions to newspaper interviews and public meetings, were responded to.

Routine project requirements include management of sampling specified by the waterworks permit. This includes monthly sampling of at least 27 locations for total coliform (potentially

harmful bacteria such as *E. coli* and fecal coliform) analysis, quarterly sampling for disinfection by-products, and triennial sampling for lead and copper. A consumer confidence report is prepared and distributed annually to all water customers summarizing relevant water quality information for the previous year. As water quality questions arise, responses are researched, prepared, and presented as needed to the command, customers, tenant activities, and regulatory authorities. The Water Quality Program also manages inquires from customers and tenant activities for general water quality issues and requests for the government to purchase bottled water.

An annual unidirectional flushing program and valve exercising accomplish routine "spring cleaning" of the distribution network. A backflow prevention program is managed and annual inspections and repairs are prioritized. Requirements for routine tank inspection, cleaning, and repair are identified and documented and water main breaks and repairs are tracked. The Army also employs a licensed operator to manage a chlorination booster station. The operator reports directly to the Water Quality Program manager who tracks daily operational reports, repairs, and overall function. Construction specifications are reviewed to ensure conformance with the waterworks permit and projects are permitted through the VDH as required. A waterworks inspection is performed every 18-24 months by the VDH and the Water Quality Program manager leads the Fort Belvoir effort. A hydraulic model is managed to understand the existing condition and how water moves around the installation. The model also plays a key role in planning for additional construction and managing water quality issues such as those exacerbated by dead-end water mains. The model is supported by a detailed GIS data layer, which documents spatial and attribute data regarding the distribution system.

Projects related to system infrastructure repair, maintenance, and upgrade typically fall within the scope of the Water Quality Program. A sophisticated supervisory control and data acquisition (SCADA) system is also in use at Fort Belvoir that allows access to real-time data about the major components of the potable water distribution system. The SCADA monitors key elements of the distribution network such as the water pressure and level of chlorine in the main supply from the FCWA, current levels in storage tanks, and allows remote operation of certain pumps and valves. The SCADA and hydraulic model will be important in the execution of a system vulnerability assessment that will be initiated in the fall 2003. This assessment is required by Public Law 107-188 (Title IV), also known as H.R. 3448, Public Health Security and Bioterrorism Response Act of 2002, signed by President Bush in June 2002. This law amended the Safe Drinking Water Act to require Community Water Systems to conduct antiterrorism Water System Vulnerability Assessments and develop a water system response plans.

Wastewater
General Program Requirements:

- Construction review and permitting
- Release/overflow reporting and documentation
- Cross-connection investigation and correction
- Database and GIS management

Description of Program Requirements:

Fort Belvoir formerly operated two wastewater treatment facilities that would process all sewage generated on Post. A network of gravity-fed pipes, supplemented by 34 "lift stations" where sewage could be pumped to a higher elevation, served these facilities. When these facilities were closed, Fort Belvoir's infrastructure was upgraded to send the sewage to Fairfax County for treatment. Currently, the focus of the wastewater program is to maintain operation of the existing system (which includes over 70 miles of pipe) as designed, correct any identified problems, and evaluate proposed new construction plans. Certain construction and renovation projects require review to ensure conformance with installation policy and regulatory requirements. Program requirements include identification of eligible projects, review of construction drawings and specifications, preparation and submission of permit applications, and tracking and documenting on-going permitted activities. Long-term combined sewer (stormwater infiltration) studies continue to work to identify problem areas and recommend solutions. Data from lift (pump) stations are collected to monitor volume trends.

Problems such as sewage line blockage and overflow (particularly during heavy rains and saturated ground conditions) arise during routine system operation and require immediate corrective action. The Water Quality Program manager coordinates all aspects of sewage spills, illicit discharges, and overflows including planning, response, abatement, repair, and reporting. Multiple oil/water separators are positioned around Post where operations such as a vehicle wash rack may generate wastewater that requires pre-treatment before introducing into the wastewater system. Projects related to system infrastructure repair, maintenance, and upgrade typically fall within the scope of the Water Quality Program.

Applicable and Relevant Regulations:

- Safe Drinking Water Act
- Clean Water Act
- Waterworks Regulations, Virginia Department of Health, 12 VAC 5-590-10 et. seq.
- Sewage Regulations, Virginia Department of Health, 12 VAC 5-581-10 et. seq.
- Fairfax County Code, Chapter 67
- Public Health, Security, and Bioterrorism Preparedness and Response Act of 2002

Applicable and Relevant Documents:

- *Management Action Plan*, AH Environmental Consultants, June 1998
- *Waterworks Total Coliform Rule Permit Revision*, AH Environmental Consultants, June 1998
- *North Post Water/Wastewater Utility Evaluation*, Malcolm Pirnie, Inc., April 2003
- *Potential Problem Discharge Notification Procedure*, Fairfax County Trouble Response Center, March 2001
- Unidirectional Flushing Program
- Hydraulic Model for Fort Belvoir's Potable Water Distribution System
- Backflow Prevention Annual Inventory and Inspection
- Fort Belvoir's Waterworks Permit 6059450
- SCADA Operation and Maintenance
- Chlorination Booster Station SOP