

N62269.AR.001008
NAWC WARMINSTER
5090.3a

PUBLIC WATER SUPPLY WELL WATER TREATMENT PLAN FOR ALTERNATIVE LONG-
TERM WATER SUPPLY FOR ADMINISTRATIVE ORDER SDWA-03-2014-0230-DS WITH
TRANSMITTAL LETTER NAWC WARMINSTER PA
8/11/2014
BRAC PMO EAST



DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE EAST
4911 SOUTH BROAD STREET
PHILADELPHIA, PA 19112-1303

5090
Ser BPMOE/14-200
August 11, 2014

Mr. Roger Reinhart
U.S. Environmental Protection Agency
Region III (3WP22)
1650 Arch Street
Philadelphia, PA 19103

Dear Mr. Reinhart:

SUBJECT: PUBLIC WATER SUPPLY WELL WATER TREATMENT PLAN
ADMINISTRATIVE ORDER DATED JULY 7, 2014, EFFECTIVE
JULY 13, 2014 DOCKET NO. SDWA-03-2014-0230-DS

In accordance with section VI of the subject Order, this Water Treatment Plan (WTP) describes the Navy's planned approach for provision of alternate water supply and/or treatment for Warminster Township Municipal Authority (WTMA) public water supply wells 10, 13, and 26.

As WTMA has not yet reached final decisions regarding the path they wish to pursue for replacing and/or treating water produced by Wells 13 and 26, this plan is subject to revision based on WTMA's ongoing evaluations, or ongoing negotiations between the Navy and WTMA, or results of ongoing residential well sampling activities, or the results of water supply well testing that is currently in the planning stages as described in this WTP.

If you have any questions regarding this submittal, please contact me at 215-897-4904.

Sincerely,

WILLINGTON LIN, P.E.
BRAC Environmental Coordinator
By direction of BRAC PMO

Enclosure: Water Treatment Plan, August 11, 2014

Copy to:
EPA Region III (S. Kloss)
BRAC PMO Files

WATER TREATMENT PLAN
ALTERNATE LONG-TERM WATER SUPPLY STRATEGY FOR WARMINSTER TOWNSHIP
MUNICIPAL AUTHORITY PUBLIC WATER SUPPLY WELLS 10, 13, AND 26
AUGUST 11, 2014

This Water Treatment Plan (WTP) describes the Navy's planned approach to addressing Warminster Township Municipal Authority (WTMA) water supply issues related to the identification of perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) in WTMA public water supply (PWS) wells 10, 13, and 26.

Per Section VI, paragraph 37, of the Administrative Order issued to the Navy by the U.S. Environmental Protection Agency (EPA) in July 2014, the Navy is required to provide permanent long-term treatment or an alternate water supply to WTMA as needed to make up for the loss in available water supply due to the presence of PFOA and/or PFOS at levels above EPA's provisional health advisory values (0.4 ug/l for PFOA, 0.2 ug/L for PFOS). The following describes the Navy's planned approach for addressing PFOA/PFOS in each of the PWS wells that are being addressed in this WTP.

WTMA 10

Provision of Permanent Treatment: The Navy intends to provide permanent, long-term treatment for this well to allow it to continue to operate as a Public Water Supply (PWS) well for WTMA. A liquid-phase granular activated carbon (LGAC) treatment system will be designed and installed at the well, and the produced water cycled through the treatment system prior to use in the township PWS system. The Navy has engaged with WTMA to reach an agreement/settlement for this long-term solution, which WTMA will implement upon reaching a final agreement regarding the design, operation, monitoring, and associated costs with the Navy. The Navy will pay for all costs associated with the installation, operation, monitoring, and maintenance of the treatment system, including periodic carbon replacement and treatment system monitoring. A finalized agreement between the Navy and WTMA, contingent upon WTMA cooperation, is anticipated by 11/30/2014, and WTMA is currently in the process of making modifications to Well 10 to allow for installation of the LGAC system while the well continues to be used for water supply.

Permits Required: No additional permitting is anticipated for the continued operation of WTMA 10. Any construction related permits or approvals required to construct permanent treatment will be accomplished by WTMA, and reimbursed by the Navy.

AUGUST 11, 2014

Long-Term Operation, Maintenance, and Monitoring: Under the agreement currently being negotiated between the Navy and WTMA, the municipal authority will continue to operate the well for water supply once the treatment system is installed, will monitor the raw water and entry point to the distribution system for PFCs to determine when treatment system maintenance is required, and will perform any required maintenance activities. The Navy will reimburse WTMA for treatment-related costs, including carbon replacement, management, and regeneration or disposal, treatment system-related sampling, and other treatment system-related maintenance activities required.

Schedule: The following schedule milestones are associated with the installation of a treatment system for WTMA Well No. 10:

- Formal agreement finalized between the Navy and WTMA: 11/3/14
- Submittal of treatment system design by WTMA for EPA approval: 12/3/14
- EPA review/approval of treatment system design: 12/15/14
- Treatment system installation/startup testing completion: 2/25/15
- WTMA Well No. 10 online with permanent treatment: 3/12/15
- Treatment system sampling (raw water and entry point to the distribution system): Monthly
- LGAC management: As needed based on sampling results

WTMA 13

Provision of Permanent Treatment: Well 13 is currently inactive due to the presence of PFOS in recent sampling. The Navy intends to compensate WTMA for the purchase of replacement water, and to conduct in-well geophysical logging, packer testing, and discrete zone sampling to refine the knowledge of contaminant (VOC and PFOA/PFOS) distribution in the Well 13 borehole.

This effort will be accomplished using the USGS and other Navy contractors, with contracts in place by 9/30/14 (scope of work included in Attachment A). The information obtained through this testing and through ongoing residential well, and remedial investigation activities, will be evaluated to determine whether the resumption of pumping Well 13 would be beneficial or not in terms of plume capture, and to determine whether the source(s) of the PFC contamination in Well 13 and nearby residential wells can be identified.

Three options are likely from the information gathering:

AUGUST 11, 2014

- 1) If the Navy, WMA, and EPA agree to resumption of pumping with discharge to waste, this WTP will be amended to address the startup and operation of Well 13, which would require installation of a permanent LGAC treatment unit and reconfiguration of the discharge piping to pump to waste. NPDES permit equivalency would be obtained by the Navy.
- 2) If the Navy, WMA, and EPA agree to resumption of pumping for consumptive use, this WTP will be amended to address the startup and operation of Well 13, which would require design and installation of a permanent LGAC treatment system and reconfiguration of the discharge piping to the water PWS system.
- 3) If the Navy, WMA, and EPA agree to discontinuation of use of Well 13, this WTP will be amended to address permanent replacement of the well or continued compensation for replacement water.

Permits Required: No permitting is anticipated to be necessary for the shutdown and testing of Well 13. Should the Navy, with EPA concurrence, decide to resume pumping Well 13, the associated permits required will be identified as part of an amended submittal of the WTP. Any construction related permits or approvals required to construct permanent treatment will be assumed by WTMA and reimbursed by the Navy under option 1. AN NPDES permit equivalency would be obtained under option 2.

Long-Term Operation, Maintenance, and Monitoring: Under the agreement currently being negotiated between the Navy and WTMA, the municipal authority will cease to operate the well for water supply, thus no long term O&M is currently anticipated. If the Navy determines through the planned testing that the resumption of pumping of Well 13 is beneficial in terms of plume containment and EPA concurs, it is anticipated that the Navy will operate the well, will monitor the raw water and treatment system discharge for PFCs to determine when treatment system maintenance is required, and will perform any required maintenance activities (however WTMA will be afforded the opportunity to retain the operation and associated maintenance/monitoring, with the Navy reimbursing WTMA for the associated treatment system-related costs).

Schedule: The following schedule milestones are associated with providing WTMA with an alternate water supply to replace Well No. 13:

- Formal agreement finalized between the Navy and WTMA: 11/3/2014
- Submittal of plan for purchase of replacement water by WTMA for Navy approval: 12/3/14
- Navy review/approval: 12/15/14

AUGUST 11, 2014

- Replacement water source online: TBD based on approved WTMA plan.

WTMA 26

Provision of Alternate Water Supply: WTMA has not at this point provided the Navy with a final decision regarding their preferred path forward regarding the continued use of Well 26 and the path forward they wish to take for replacement water source (if necessary), thus the WTP for this well is subject to revision.

In addition, the Navy plans to conduct in-well geophysical logging, packer testing, and sampling to refine the knowledge of contaminant (VOC and PFOA/PFOS) distributions in the borehole. This effort will be accomplished using the USGS and other Navy contractors, with contracts in place by 9/30/14 (scope of work included in Attachment A). The schedule for this work will be developed in concert with reaching an agreement with WTMA regarding the future operation of the well, and will be presented in an amended WTP.

Potential Permanent Shutdown of Well #26. The Navy has been verbally notified by WTMA that they may decide to terminate the use of Well 26 for PWS. Per paragraph V(E) of the 1997 settlement agreement between the Navy and WTMA, this is allowable and if WTMA decides to terminate operation of Well 26 the Navy will engage with WTMA to reach an agreement for the Navy to take over its operation. Should WTMA confirm that they wish to terminate the use of Well 26, the Navy intends to assume responsibility for the operation of the well as part of the ongoing CERCLA remedial action associated with Area A at the former base, as it is important for capture of the residual portion of the groundwater contaminant plume associated with Area A. Initially, the well will be continue to be operated by WTMA using the existing groundwater extraction and treatment (air stripping with temporary LGAC polishing) equipment, and pumped to waste.

Assuming that WTMA does finalize their decision to stop operating Well 26, the Navy will procure a contractor for long-term operation of the well by 12/30/14, including installation of a permanent LGAC treatment unit, and will work with WTMA to provide them with a long-term alternate source of water via the provisions of the settlement agreement, either the purchase of water from neighboring water districts or the development of a replacement PWS well for use by WTMA (per WTMA's preference). All WTMA costs related to the potential long-term continued operation of the treatment system for Well 26, including the new temporary LGAC treatment system, will be reimbursed by the Navy. All costs related to provision of an alternate water

AUGUST 11, 2014

supply based on either of the options listed above will be reimbursed under provisions of the 1997 Settlement Agreement.

Permits Required: No additional permitting is anticipated for the continued operation of WTMA Well #26 by WTMA as a PWS. Any construction related permits or approvals required to construct permanent treatment will be accomplished by WTMA, and reimbursed by the Navy.

Should WTMA shutdown well #26 as a PWS, the operation of this well by the Navy will be part of a CERCLA action and the plume is considered "onsite", this activity is exempted by law from the requirement to obtain Federal, State, or local permits, however the substantive provisions of the action's related permits must still be met.

Compliance with the intent of the following permits is anticipated:

- An NPDES permit equivalency for discharge of the treated water to a nearby surface water body
- A DRBC permit or docket notification for groundwater withdrawal
- A Warminster Township permit for groundwater withdrawal (to be obtained as part of the negotiations for Navy takeover of the operation of Well 26)
- An air permit request for determination for VOC emissions from the air stripper

Should WTMA decide that they would prefer to develop a new water supply well to replace Well 26, the permit requirements that would apply to the new well include:

- A DRBC permit for groundwater withdrawal
- A Warminster Township permit for groundwater withdrawal

Long-Term Operation, Maintenance, and Monitoring: Should WTMA elect to continue operating Well 26, under the agreement currently being negotiated between the Navy and WTMA the municipal authority will monitor the raw water and entry point to the distribution system for PFCs to determine when treatment system maintenance is required, and will perform any required maintenance activities. The Navy will reimburse WTMA for treatment-related costs, including carbon replacement, management, and regeneration or disposal, treatment system-related sampling, and other treatment system-related maintenance activities required.

If WTMA elects to turn operation of the well over to the Navy, the Navy will perform the same monitoring activities, as well as operate the well under contract. If WTMA elects to install a new water supply

AUGUST 11, 2014

well there will be no PFOA/PFOS-associated associated operation, maintenance, and/or monitoring required except those required by the Safe Drinking Water Act. If WTMA elects to purchase water from another source, SDWA monitoring requirements for PFOA/PFOS would be borne by the supplier of the purchased water.

Schedule: The following schedule milestones are associated with the installation of a treatment system for WTMA Well No. 26, assuming WTMA decides to maintain operation of the well:

- Formal agreement finalized between the Navy and WTMA: 11/3/14
- Submittal of treatment system design by WTMA for Navy approval: 12/3/14
- Navy review/approval of treatment system design: 12/15/14
- Treatment system installation/startup testing completion: 2/25/14
- Well 26 online with permanent treatment: 3/12/14 Treatment system sampling (raw water and entry point to the distribution system): Monthly
- LGAC management: As needed based on sampling results

Should WTMA decide to pursue development of a new water supply well to replace Well 26 or to replace the water supply by purchasing water from a neighboring water district, this plan will be amended with a revised schedule that reflects the alternate approach, to be prepared and submitted to EPA within 14 days of formal notification by WTMA to the Navy of their preferred approach and schedule for implementation.

AUGUST 11, 2014

ATTACHMENT A
PROPOSAL FOR GEOPHYSICAL LOGGING, PACKER TESTING, AND SAMPLING
OF WTMA WELLS 13 AND 26

AUGUST 11, 2014

CONCEPTUAL PROPOSAL

Borehole Geophysical Logging, Packer testing, and Sampling of WTMA Wells 13 and 26, Warminster Township, Bucks County, Pennsylvania

A proposal prepared by the
U.S. Geological Survey

in partnership with the
U.S. Navy

June 25, 2014

Contact:

Ronald A. Sloto
U.S. Geological Survey
770 Pennsylvania Drive, Suite 116
Exton, Pennsylvania 19341
Phone: (610) 321-6072
FAX: (610) 321-2509
E-mail: rasloto@usgs.gov

Borehole Geophysical Logging, Packer testing, and Sampling of WTMA Wells 13 and 26, Warminster Township, Bucks County, Pennsylvania

Problem

Perfluorooctane Sulfonic Acid (PFOS) has been detected in Warminster Township Municipal Authority (WTMA) Wells 13 and 26. The wells have been removed from service as a precaution. The USEPA has established a Health Advisory Level (HAL) for PFOS 0.2 micrograms per liter (ug/L). The concentrations of PFOS reported by the WMTA for well 26 is 0.791 ug/L.

Approach

The use of straddle packers in WTMA wells 13 and 26 will provide depth-discrete water samples for laboratory analysis for PFOS. Well WTMA-13 is 601 feet deep, cased to 80 feet, and has a 10 inch diameter. Well WTMA-26 is 250 feet deep, cased to 75 feet, and has a 10 inch diameter.

WTMA Well 26

Borehole geophysical logs for WTMA well 26 should be available from the WTMA. The well was logged by Earth Data, Inc. in 1995 (Earth Data, Inc., 1995). If a high-quality copy of the borehole geophysical logs are not available, the well will be logged by USGS. A borehole video survey will be completed in WTMA well 26 by USGS.

Five zones will be isolated in WTMA well 26 by use of straddle packers. A water sample will be furnished from each zone to a Navy contractor for laboratory analysis. The WMTA or a Navy contractor will be responsible for removing and re-installing the pump from WTMA well 26.

WTMA Well 13

WTMA well 13 is 601 feet. It was drilled in June 1960 by William Stotoff, Inc. of Flemington, NJ. No borehole logs or information on number or depth of water-bearing zones is available. The well will be logged by USGS and a borehole television survey will be completed. After completion of these tasks and analysis of the logs, the number of zones to be isolated, packer depth settings, and isolated interval length(s) will be determined. During packer testing, a water sample will be furnished from each zone to a Navy contractor for laboratory analysis. The WMTA or a Navy contractor will be responsible for removing and re-installing the pump from WTMA well 13.

Products

Results of borehole geophysical logging and packer testing will be informally shared with the Navy and its contractors in the field as work progresses or as soon as data analysis has been completed.

Because of the nature of this water-quality problem, all USGS work will be documented in a peer-reviewed report. After peer review and approval for release by the Director of the USGS, the report will be made available on the Internet in PDF format.

Reference Cited

Earth Data, Inc., 1995, Downhole testing of production well 26 August 15, 1995: Technical Memorandum , unpaginated.