



## NAVAL SUPPORT ACTIVITY BAHRAIN (NSA II, NSA III, BANZ) 2022 DRINKING WATER CONSUMER CONFIDENCE REPORT



### Is our water safe to drink?

Yes. Bahrain's NSA II, NSA III, BANZ drinking water system provides water that is safe and Fit for Human Consumption (FFHC, or potable) as determined by the Installation Commanding Officer's Record of Decision and as routinely confirmed by laboratory sampling results (received monthly, quarterly, and yearly). We are proud to support the Navy's commitment to provide safe and reliable drinking water to our service members and their families. This annual Consumer Confidence Report includes general and mandatory information to educate everyone about our water source(s), treatment processes, standard requirements, and other details to help assure you that our water is safe to drink.

Our drinking water fully complies with the Department of Defense's (DoD) Bahrain Final Governing Standards (FGS), which are derived from the U.S. DoD Overseas Environmental Baseline Guidance Document (OEBGD), U.S. Environmental Protection Agency (EPA) and Bahrain drinking water standards. When Bahrain and U.S. standards differ, the *most protective* requirement is adopted into the FGS. A detailed list of constituents found in our drinking water is included in this report, along with a comparison to the maximum levels considered safe for the general public by these standards.

### Where does our water come from and how is it treated?

Bahrain NSA II purchases treated water from the Kingdom of Bahrain Electricity & Water Authority (EWA). This water comes from the ocean and is treated at the Al Hidd Water Plant, a multi-stage flash distillation plant. Water received from the City of Manama Al Hidd Plant is further treated by Naval Facilities Engineering Command (NAVFAC) Bahrain Public Works Department at Bahrain NSA II facility using 3-stage Reverse Osmosis (RO) units, to render the water potable. Disinfection of the water is achieved by chlorination. Potable water is stored in secured and controlled access tanks at each facility for direct distribution to various outlets throughout NSA II water distribution network. Also NSA II water is trucked to BANZ above ground water tank (AST) since Apr 2022 and NSA III above water tank (AST) since May 2022.

### Why are there contaminants in drinking water?

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. Bahrain NSA II drinking water source is distilled; however, distillation is not 100% effective in removing all contaminants because: 1) droplets of un-vaporized liquid can be carried with the steam prior to distillation, and 2) some contaminants have boiling points similar to water and will be vaporized and condensed with the distilled water. In order to ensure that tap water is safe to drink, regulations limit the amount of certain contaminants in water provided by public water systems.

Consequently, some contaminants may be present in drinking water, such as:

- **Microbial contaminants**, such as viruses and bacteria, that may come from wildlife, sewage treatment plants, septic systems, and livestock;
- **Disinfection by-products**, such as chlorine and chloramine used to remove pathogens from the water;
- **Pesticides and herbicides**, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses;
- **Inorganic contaminants**, such as salts and metals, which can be naturally occurring or result from urban storm water runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, or farming;

- **Organic chemical contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems; and
- **Radioactive contaminants**, which can be naturally occurring or be the result of oil and gas production and mining activities.

The presence of contaminants does not necessarily indicate that water poses a health risk. In order to ensure that tap water is safe to drink, regulations limit the amount of certain contaminants in water provided by public water systems. Regular sampling is conducted to detect the level of contaminants in the water system. If the results are above regulatory limits, you will be notified by Email and Public Notification. You can learn more about contaminants and any potential health effects by visiting the EPA's Drinking Water Standards web site: <http://permanent.access.gpo.gov/lps21800/www.epa.gov/safewater/standards.html>

### Source water assessment

In Jun 2022, NAVFAC together with the Navy and Marine Corps Public Health Center (NMCPHC) conducted a comprehensive sanitary survey of the NSA Bahrain drinking water system. This survey, conducted every three years, provides an evaluation of the adequacy of the drinking water source, facilities, equipment, operation and maintenance for producing and distributing safe drinking water. NAVFAC is continually improving the drinking water system based on the recommendations in the report.

### Some people must use special precautions

There are people who may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the EPA's Safe Drinking Water webpage: [www.epa.gov/safewater/sdwa](http://www.epa.gov/safewater/sdwa).

### Additional Information for Lead

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. NAVFAC NSA Bahrain Public Work Department is responsible for providing high-quality drinking water and has direct control over the materials used in plumbing components on the facility. This ensures that no lead service lines or components are used on the drinking water system. As a general safety practice, whenever - and wherever - you plan to use tap water for drinking or cooking, you can minimize the potential for lead exposure by flushing the tap for 30 seconds to 2 minutes prior to use. Information on lead in drinking water and steps you can take to minimize exposure is available from the EPA Safe Drinking Water website: [www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead)

### Water Quality Data Table

Table 1 below lists all of the drinking water contaminants and relevant sampling data collected during the 2022 calendar year. Unless otherwise included, the table below only lists the contaminants that were detected during calendar year 2022. The presence of contaminants in the water does not necessarily indicate that the water poses a health risk. All contaminants detected in NSA II Bahrain's drinking water are below the Maximum Contaminant Levels (MCLs) allowed by FGS, DoD, and EPA applicable requirements.

Table 1

| Contaminants   | MCLG or MRD LG | MCL, TT, or MRDL | Your Water | Units | Sample Date  | Violation | Typical Source                           |
|--|----------------|------------------|------------|-------|--------------|-----------|--|
| Inorganic Components   |                |                  |            |       |              |           |  |
| Sodium   | N/A            | N/A              | 7.6        | mg/L  | 30-Jan -2022 | NO        | Erosion of natural deposits; Leaching    |
| Zinc   | N/A            | 5                | 0.11       | mg/L  | 30-Jan-2022  | NO        | Erosion of natural deposits; Leaching    |
| Silica   | N/A            | N/A              | 0.03       | mg/L  | 26-Apr-2022  | NO        | Erosion of natural deposits; Leaching    |
| Calcium  | N/A            | N/A              | 1.2        | mg/L  | 25-Oct -2022 | NO        | Erosion of natural deposits; Leaching    |
| Chlorides  | N/A            | N/A              | 5.0        | mg/L  | 30-Jan -2022 | NO        | Erosion of natural deposits; Leaching    |
| Sulfate  | 250            | N/A              | N/D        | mg/L  | 25-Jul -2022 | NO        | Runoff/leaching from natural deposits    |
| Copper   | N/A            | 1.3              | N/D        | mg/L  | 25-Jul -2022 | NO        | Erosion of natural deposits; Leaching    |
| Nitrates   | N/A            | 10               | N/D        | mg/L  | 25-Oct -2022 | NO        | Byproduct of drinking water disinfection |
| Total Nitrite and Nitrate  | N/A            | 10               | N/D        | mg/L  | 25-Oct -2022 | NO        | Byproduct of drinking water disinfection |
| <b>Note: All other Inorganic Compounds, Organic Compounds, Pesticides, PCBs, Total Trihalomethanes and Radionuclides, Lead, Copper and Total Coliforms were not detected</b> |                |                  |            |       |              |           |  |

N/D= Not Detected, i.e below PQL

PQL= Practical Quantitation Limit of the best method

| Unit Descriptions |                      |
|-------------------|----------------------|
| Term              | Definition           |
| mg/L              | milligrams per liter |
| N/A               | Not Applicable       |
| N/D               | Not Detected         |

## **INFORMATION ON ADDITIONAL FACILITIES MANAGED BY NSA:**

### **NSA III (AV UNIT):**

The NSAIII (Aviation Unit), also formally referred to as “Air Logistics Department,” is located next to the Bahrain International Airport. The unit includes active duty military, military reservists, DOD civilians, and local national civilians. A project to haul water FFHC from NSAII treatment plant and stored in several new ASTs throughout the AV Unit was completed in May 2022. FFHC water was transported by a 17,000-liter (4,500-gallon) truck to the AV Unit and transferred into the following tanks, each accompanied by a new pump station:

- 20,000-liter (5,000-gallon) FRP AST serving Buildings 460, 466R, and 471R
- 20,000-liter (5,000-gallon) FRP AST serving Buildings 480 and 461R
- 20,000-liter (5,000-gallon) FRP AST serving the ablution units located near the main gate
- 12,000-liter (3,000-gallon) FRP AST serving Building 479
- 12,000-liter (3,000-gallon) FRP AST serving Building 475R
- 1,000-liter (250-gallon) AST serving the eyewash station near Building 483
- 3,000-liter (800-gallon) AST serving Buildings 469 and 472R

### **Water Quality Data Table – NSA III (AV Unit)**

Table 2 below lists all of the water contaminants and relevant sampling data collected during the 2022 calendar year. Unless otherwise noted, the table below only lists the contaminants that were detected during calendar year 2022. The presence of contaminants in the water does not necessarily indicate that the water poses a health risk. All contaminants detected in NSA III AV Unit Tank water are below the Maximum Contaminant Levels (MCLs) allowed by FGS, DoD, and EPA applicable requirements.

Table 2

| Contaminants                | MCLG or MRDLG | MCL, TT, or MRDL | Your Water | Units | Sample Date | Violation | Typical Source                        |
|-----------------------------|---------------|------------------|------------|-------|-------------|-----------|---------------------------------------|
| <b>Inorganic Components</b> |               |                  |            |       |             |           |                                       |
| Sodium                      | N/A           | N/A              | 6.5        | mg/L  | 28-Jul-2022 | NO        | Erosion of natural deposits; Leaching |
| Chlorides                   | N/A           | N/A              | 3.5        | mg/L  | 28-Jul-2022 | NO        | Erosion of natural deposits; Leaching |
| Silica                      | N/A           | N/A              | N/D        | mg/L  | 28-Jul-2022 | NO        | Erosion of natural deposits; Leaching |
| Calcium                     | N/A           | N/A              | 1.2        | mg/L  | 28-Jul-2022 | NO        | Erosion of natural deposits; Leaching |
| Magnesium                   | N/A           | N/A              | N/D        | mg/L  | 14-Nov-2022 | NO        | Erosion of natural deposits; Leaching |
| Sulfate                     | 250           | N/A              | 1.2        | mg/L  | 14-Nov-2022 | NO        | Runoff/leaching from natural deposits |

| Contaminants  | MCLG or MRDLG | MCL, TT, or MRDL | Your Water | Units | Sample Date | Violation | Typical Source  |
|---|---------------|------------------|------------|-------|-------------|-----------|---|
| <b>Inorganic Components</b>   |               |                  |            |       |             |           |   |
| Potassium   | N/A           | N/A              | 0.27       | mg/L  | 28-Jul-2022 | NO        | Erosion of natural deposits; Leaching                                   |
| Iron  | N/A           | 0.3              | N/D        | mg/L  | 14-Nov-2022 | NO        | Occurs naturally in the soil, sediments and ground water and some rocks |
| Copper  | 1.3           | 1.3              | 0.053      | mg/L  | 14-Nov-2022 | NO        | Corrosion of household plumbing systems; erosion of natural deposits    |
| Nitrates  | N/A           | 10.0             | N/D        | mg/L  | 14-Nov-2022 | NO        | Runoff/leaching from natural deposits                                   |
| Total Nitrite and Nitrates  | N/A           | 10.0             | N/D        | mg/L  | 14-Nov-2022 | NO        | Byproduct of drinking water disinfection                                |
| Note: All other Inorganic Compounds, Organic Compounds, Pesticides, PCBs, Radionuclides, and Total Coliforms were not detected. |               |                  |            |       |             |           |   |

N/D= Not Detected, i.e. below PQL

PQL= Practical Quantitation Limit of the best method

| <b>Unit Descriptions</b> |  |
|--------------------------|--|
| Term                     | Definition   |
| mg/L                     | ppm: parts per million, or milligrams per liter (mg/L) |
| N/A                      | not applicable   |
| N/D                      | Not detected   |

## BANZ WAREHOUSES

The BANZ warehouse is the Navy leased facility owned and operated by BANZ Group B.S.C. It is located just southwest of NSA I. A project to haul FFHC water from the NSA II water treatment to the BANZ Warehouse area was completed in Apr 2022. FFHC water was transported by a 17,000-liter (4,500-gallon) truck to the BANZ Ware-house area and transferred into the following tanks, each accompanied by a new pump station:

- Ten (10) small (1000-liter (250-gallon] or less) FRP ASTs serving Building 420
- 2,000-liter (500-gallon) FRP AST serving ablution units located on the north-east side of Building 420
- 2,000-liter (500-gallon) FRP AST serving Building 421
- Two 2,000-liter (500-gallon) FRP ASTs serving Building 422
- 2,000-liter (500-gallon) FRP AST serving Warehouse 3

- Two 2,000-liter (500-gallon) FRP ASTs serving Warehouse 4
- 2,000-liter (500-gallon) FRP AST serving Warehouse 5
- One 10,000-liter (2,500-gallon) FRP AST and one 2,000-liter (500-gallon) FRP AST serving Warehouse 6
- 2,000-liter (500-gallon) FRP AST serving Warehouse 7
- 2,000-liter (500-gallon) FRP AST serving Warehouse 8
- One 12,000-liter (3,000-gallon) FRP AST and three 2,000-liter (500-gallon) FRP ASTs serving Warehouse 12

### Water Quality Data Table – BANZ Area

Table 3 below lists all of the water contaminants and relevant sampling data collected during the 2022 calendar year. Unless otherwise noted, the table below only lists the contaminants that were detected during calendar year 2022. The presence of contaminants in the water does not necessarily indicate that the water poses a health risk. All contaminants detected in BANZ Area Tank water are below the Maximum Contaminant Levels (MCLs) allowed by FGS, DoD, and EPA applicable requirements.

Table 3

| Contaminants                | MCLG or MRDLG | MCL, TT, or MRDL | Your Water | Units | Sample Date  | Violation | Typical Source  |
|-----------------------------|---------------|------------------|------------|-------|--------------|-----------|---|
| <b>Inorganic Components</b> |               |                  |            |       |              |           |   |
| Sodium                      | N/A           | N/A              | 6.5        | mg/L  | 28-Jul-2022  | NO        | Erosion of natural deposits; Leaching                                   |
| Chlorides                   | N/A           | N/A              | 3.5        | mg/L  | 28-Jul-2022  | NO        | Erosion of natural deposits; Leaching                                   |
| Silica                      | N/A           | N/A              | N/D        | mg/L  | 28-Jul-2022  | NO        | Erosion of natural deposits; Leaching                                   |
| Calcium                     | N/A           | N/A              | 1.6        | mg/L  | 28-Jul-2022  | NO        | Erosion of natural deposits; Leaching                                   |
| Magnesium                   | N/A           | N/A              | N/D        | mg/L  | 26-Oct-2022  | NO        | Erosion of natural deposits; Leaching                                   |
| Sulfate                     | 250           | N/A              | N/D        | mg/L  | 26-Oct-2022  | NO        | Runoff/leaching from natural deposits                                   |
| Potassium                   | N/A           | N/A              | N/D        | mg/L  | 26-Oct -2022 | NO        | Erosion of natural deposits; Leaching                                   |
| Iron                        | N/A           | 0.3              | N/D        | mg/L  | 26-Oct-2022  | NO        | Occurs naturally in the soil, sediments and ground water and some rocks |
| Copper                      | 1.3           | 1.3              | N/D        | mg/L  | 26-Oct-2022  | NO        | Corrosion of household plumbing systems;                                |

| Contaminants  | MCLG or MRDLG | MCL, TT, or MRDL | Your Water | Units | Sample Date | Violation | Typical Source                           |
|---|---------------|------------------|------------|-------|-------------|-----------|--|
| <b>Inorganic Components</b>   |               |                  |            |       |             |           |  |
|   |               |                  |            |       |             |           | erosion of natural deposits              |
| Nitrates  | N/A           | 10               | N/D        | mg/L  | 26-Oct-2022 | NO        | Runoff/leaching from natural deposits    |
| Total Nitrite and Nitrate   | N/A           | 10               | N/D        | mg/L  | 26-Oct-2022 | NO        | Byproduct of drinking water disinfection |
| Note: All other Inorganic Compounds, Organic Compounds, Pesticides, PCBs, Radionuclides, and Total Coliforms were not detected. |               |                  |            |       |             |           |  |

N/D= Not Detected, *e.g.*, below PQL

PQL= Practical Quantitation Limit of the best method

| <b>Important Drinking Water Definitions</b> |  |
|---|--|
| Term  | Definition   |
| MCLG  | Maximum Contaminant Level Goal. The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.   |
| MCL   | Maximum Contaminant Level. The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.   |
| TT  | Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.   |
| Variances and Exemptions                    | Variances and Exemptions. EPA permission not to meet an MCL or a treatment technique under certain conditions.   |
| MRDLG                                       | Maximum residual disinfection level goal. The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants. |
| MRDL  | Maximum residual disinfectant level. The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.                             |

#### **Violation(s) or Exceedance(s)/MISSED SAMPLING EVENTS:**

There were no violations, exceedances, or missed sampling events during the year 2022 for any test parameters for Bahrain NSA II, NSA III, BANZ.

However, this section also provides the Tier 3 notification requirements in accordance with Navy policy and EPA procedures. Tier 3 notifications do not have an impact on human health but are required to be reported. When water systems violate a drinking water standard that does not have a direct impact on human health (in this case failing to take a required sample on time) the water supplier has up to a year to provide a notice of this situation to its customers. For Bahrain NSA II, NSA III, BANZ, there were no missed sampling events or any test exceedances during year 2022.

## **Points of Contact**

If you have any questions regarding this report or about the drinking water processes, please contact:

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