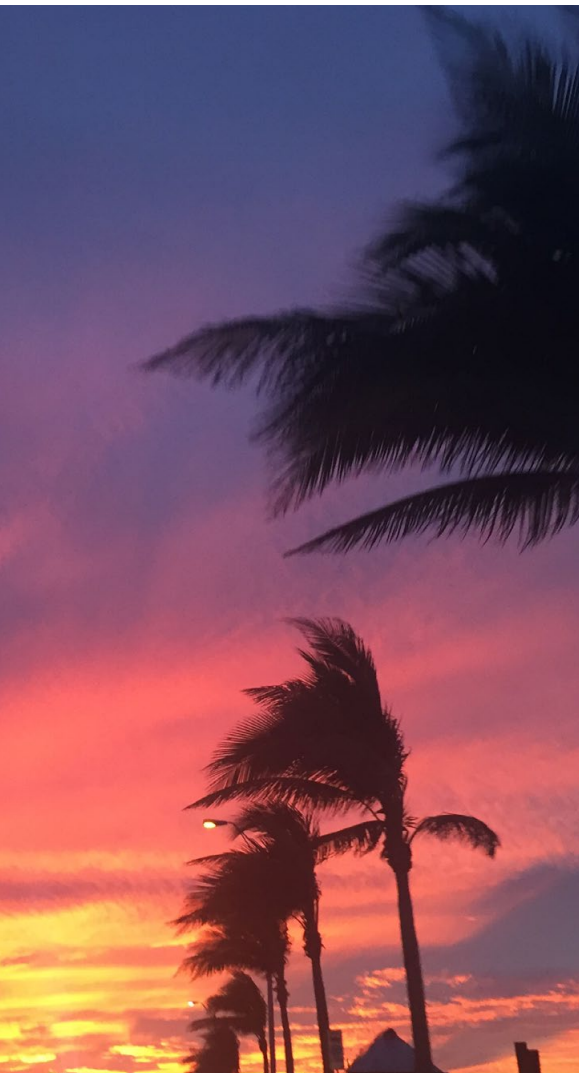
ANNUAL WATER QUALITY REPORT

Reporting Year 2024



Presented By

Florida Keys Aqueduct Authority

PWS ID#: 4134357, 5444047

Our Commitment

We are pleased to present to you this year's annual water quality report. This report is a snapshot of last year's water quality covering all testing performed between January 1 and December 31, 2024. Included are details about your sources of water, what it contains, and how it compares to standards set by regulatory agencies. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water and providing you with this information because informed customers are our best allies.

Where Does My Water Come From?

J. Robert Dean Water Treatment Facility (PWS ID FL4134357)

The FKAA's primary drinking water supply originates from the Biscayne Aquifer, a belowground limestone geological formation that produces high-quality freshwater. Our wellfield is located within an environmentally protected pine rockland forest west of Florida City on the mainland. The location of the wellfield near Everglades National Park, along with restrictions enforced by state and local regulatory agencies, contributes to the remarkably high quality of our source water. The FKAA wells contain some of the highest-quality groundwater in the state, meeting all regulatory standards prior to treatment.

Included in the regulations mentioned above are restrictions which limit the amount of water that can be extracted from the Biscayne Aquifer. To meet these regulations, the FKAA uses the Floridan Aquifer, a brackish groundwater source located approximately 880 to 1,270 feet below the surface, to supplement and protect our primary Biscayne supply. The FKAA constructed a low-pressure reverse osmosis water treatment plant at our Florida City Wellfield in 2009 to use Floridan Aquifer water and contribute up to an additional six million gallons per day to our supply.

Kermit H. Lewin Reverse Osmosis and Marathon Reverse Osmosis Facilities (PWS ID FL5444047)

During an emergency situation, the FKAA may use the emergency reverse osmosis water treatment plants located in Stock Island (Kermit Lewin) and Marathon to supplement the water supply and increase emergency storage capacity. These plants withdraw from seawater wells to produce potable water from saltwater.

How Is My Water Treated and Purified?

J. Robert Dean Water Treatment Facility

The water treatment plant is an integrated-source facility staffed by state-licensed personnel. Groundwater extracted from the Biscayne Aquifer is the primary source water for this facility. A secondary groundwater source, the Floridan Aquifer, is used to a much lesser extent. The Biscayne source water is classified as very hard due to the high concentration of calcium in the water. A process called lime softening is used to reduce calcium hardness. Lime softening is achieved by the addition of excess calcium under high pH conditions. This allows the water to become supersaturated with calcium, causing the calcium to sink to the bottom of the lime softening treatment unit, leaving softened water for use by FKAA. The FKAA finished water is considered moderately hard.

The softened water is then piped to dual-media filters, which are made up of layers of anthracite and fine sand for additional removal of calcium hardness and further purification. Chlorine and ammonia are injected into the water to form chloramines, which provide long-lasting disinfectant protection without the objectionable taste and odor of regular chlorine. Fluoride, which is recommended for drinking water by the American Dental Association to prevent cavities, is also added.

To comply with Biscayne Aquifer withdrawal limitations, a Floridan wellfield and low-pressure reverse osmosis water treatment plant were constructed. Operational since the summer of 2009, the water treatment plant treats the brackish water of the Floridan Aquifer. The Floridan raw water contains approximately 4,000 to 5,000 parts per million (ppm) of salt. This concentration is significantly lower than the 35,000 ppm typically found in seawater but higher than the 200 ppm found in the Biscayne Aquifer. This system utilizes very fine membrane elements. The water is pressurized to approximately 250 pounds per square inch (psi) to reject the salt while allowing the passage of the pure finished water. The water is disinfected in the same manner as the Biscayne lime-softened water. Finished water from the low-pressure reverse osmosis water treatment plant is blended with treated water from the Biscayne Aquifer.

The FKAA treated water is pumped 130 miles from Florida City to Key West, supplying water to the entire Florida Keys. The water provided to customers in the Florida Keys is continuously monitored and tested to ensure the quality is consistent, safe, and meets all federal and state drinking water standards. The FKAA operates two state-certified laboratories, located in Florida City and Stock Island, to perform many daily water quality analyses.

Kermit H. Lewin Reverse Osmosis and Marathon Reverse Osmosis Water Treatment Facilities

Through reverse osmosis, the Kermit H. Lewin and Marathon water treatment facilities desalinate saltwater to produce potable water. The saltwater from seawater wells first enters a cartridge filter to remove particulate matter. The water is then pressurized up to 900 psi. These pressures are significantly higher than those required at the Florida City treatment plant due to the significantly higher salt content of the seawater. The high pressure forces some of the water in through the reverse osmosis membranes; this is commonly referred to as permeate. The remainder is rejected as brine and disposed of in an underground injection well. The permeate flows into a degasifier and clearwell, where hydrogen sulfide and carbon dioxide are removed. Next, sodium hydroxide is added to raise the pH, and a corrosion inhibitor may be added. In the final treatment stage, the permeate is disinfected with chloramines and the finished product is transferred to the storage tank for distribution.

Substances That Could Be in Water

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

Microbial Contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

Pesticides and Herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

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 stormwater runoff, and septic systems.

Radioactive Contaminants, which can be naturally occurring or the result of oil and gas production and mining activities.

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Safe Drinking Water Hotline at (800) 426-4791.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised 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. U.S. Environmental Protection Agency (U.S. EPA)/Centers for Disease Control and Protection (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791) or epa.gov/safewater.

What Are PFAS?

Per- and polyfluoroalkyl substances (PFAS) are a group of manufactured chemicals used worldwide since the 1950s to make fluoropolymer coatings and products that resist heat, oil, stains, grease, and water. During production and use, PFAS can migrate into the soil, water, and air. Most PFAS do not break down; they remain in the environment, ultimately finding their way into drinking water. Because of their widespread use and their persistence in the environment, PFAS are found all over the world at low levels. Some PFAS can build up in people and animals with repeated exposure over time.

The most commonly studied PFAS are perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). PFOA and PFOS have been phased out of production and use in the United States, but other countries may still manufacture and use them.

Some products that may contain PFAS include:

- Some grease-resistant paper, fast food containers/wrappers, microwave popcorn bags, pizza boxes
- Nonstick cookware
- Stain-resistant coatings used on carpets, upholstery, and other fabrics
- Water-resistant clothing
- Personal care products (shampoo, dental floss) and cosmetics (nail polish, eye makeup)
- Cleaning products
- Paints, varnishes, and sealants

Even though recent efforts to remove PFAS have reduced the likelihood of exposure, some products may still contain them. If you have questions or concerns about products you use in your home, contact the Consumer Product Safety Commission at (800) 638-2772. For a more detailed discussion on PFAS, please visit bit.ly/3Z5AMm8.

Community Participation

You are invited to participate in regularly scheduled board meetings and voice your concerns about your drinking water. Call the executive office at (305) 296-2454, or visit fkaa.com for more information on these meetings. To receive up-to-date safety alerts and information about your water system, sign up on our website for Florida Keys Aqueduct Authority's (FKAA) CodeRED Priority Alert System or find us on Facebook.

QUESTIONS? For more information about this report, or for any questions relating to your drinking water, please call Joshua Peele, Water Quality and Environmental Manager, at (305) 809-2636.

Test Results

Our water is monitored for many different kinds of substances on a very strict sampling schedule, and the water we deliver must meet specific health standards. Here, we only show those substances that were detected in our water (a complete list of all our analytical results is available upon request). Remember that detecting a substance does not mean the water is unsafe to drink; our goal is to keep all detects below their respective maximum allowed levels.

The state recommends monitoring for certain substances less than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data is included, along with the year in which the sample was taken.

We have been monitoring for unregulated contaminants (UCs) as part of a study to help the U.S. EPA determine the occurrence in drinking water of UCs and whether these contaminants need to be regulated. For example, we participated in the fifth stage of the U.S. EPA's Unregulated Contaminant Monitoring Rule (UCMR5) program by performing additional tests on our drinking water. At present, no health standards (e.g., maximum contaminant levels) have been established for UCs; however, we are required to publish the analytical results of our UC monitoring in our annual water quality report. If you would like more information on the U.S. EPA's Unregulated Contaminant Monitoring Rule, please call the Safe Drinking Water Hotline at (800) 426-4791.

INORGANIC CONTAMINANTS

CONTAMINANT AND UNIT OF MEASUREMENT	DATES OF SAMPLING (MO./YR.)	MCL VIOLATION (YES/NO)	LEVEL DETECTED	RANGE OF RESULTS	MCLG	MCL	LIKELY SOURCE OF CONTAMINATION
Fluoride (ppm)	10/30/2023	No	0.51	NA	4	4.0	Erosion of natural deposits; discharge from fertilizer and aluminum factories; water additive which promotes strong teeth when at the optimum level of 0.7 ppm
Nitrate [as nitrogen] (ppm)	10/15/2024	No	3.5	NA	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Sodium (ppm)	10/24/2024	No	22.2	NA	NA	160	Saltwater intrusion; leaching from soil

Lead and Copper (Tap water samples were collected from sites throughout the community) [1]

CONTAMINANT AND UNIT OF MEASUREMENT	DATES OF SAMPLING (MO./YR.)	AL EXCEEDANCE (YES/NO)	90TH PERCENTILE RESULT	RANGE LOW-HIGH	NO. OF SAMPLING SITES EXCEEDING THE AL	MCLG	AL (ACTION LEVEL)	LIKELY SOURCE OF CONTAMINATION
Copper [tap water] (ppm)	08/2023	No	0.0383	NA	0	1.3	1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead [tap water] (ppb)	08/2023	No	3.99	NA	3	0	15	Corrosion of household plumbing systems, erosion of natural deposits

RADIOACTIVE CONTAMINANTS

CONTAMINANT AND UNIT OF MEASUREMENT	DATES OF SAMPLING (MO./YR.)	MCL VIOLATION (YES/NO)	LEVEL DETECTED	RANGE OF RESULTS	MCLG	MCL	LIKELY SOURCE OF CONTAMINATION
Alpha Emitters (pCi/L)	10/30/2023	No	3.27	NA	0	15	Erosion of natural deposits
Radium 226 + 228 [combined radium] (pCi/L)	10/30/2023	No	1.881	NA	0	5	Erosion of natural deposits
Uranium (ppb)	10/17/2024	No	1.3	NA	0	30	Erosion of natural deposits

Definitions

90th %ile: The levels reported for lead and copper represent the 90th percentile of the total number of sites tested. The 90th percentile is equal to or greater than 90% of our lead and copper detections.

AL (Action Level): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

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.

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.

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.

MRDLG (Maximum Residual Disinfectant 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.

NA: Not applicable.

pCi/L (picocuries per liter): A measure of radioactivity.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

SMCL (Secondary Maximum Contaminant Level): These standards are developed to protect aesthetic qualities of drinking water and are not health based.

TON (Threshold Odor Number): A measure of odor in water.

STAGE 1 DISINFECTANTS AND DISINFECTION BY-PRODUCTS

CONTAMINANT AND UNIT OF MEASUREMENT	DATES OF SAMPLING (MO./YR.)	MCL VIOLATION (YES/NO)	LEVEL DETECTED	RANGE OF RESULTS	MCLG OR [MRDLG]	MCL OR [MRDL]	LIKELY SOURCE OF CONTAMINATION
Chloramines (ppm)	01/2024-12/2024	No	3.2	2.7–3.4	[4]	[4.0]	Water additive used to control microbes

STAGE 2 DISINFECTANTS AND DISINFECTION BY-PRODUCTS

CONTAMINANT AND UNIT OF MEASUREMENT	DATES OF SAMPLING (MO./YR.)	MCL VIOLATION (YES/NO)	LEVEL DETECTED	RANGE OF RESULTS	MCLG	MCL	LIKELY SOURCE OF CONTAMINATION
Haloacetic Acids (five) [HAA5] (ppb)	4/2024 & 10/2024	No	14.0	13.1–15.6	NA	60	By-product of drinking water disinfection
TTHM [total trihalomethanes] (ppb)	4/2024 & 10/2024	No	24.7	21.8–27.0	NA	80	By-product of drinking water disinfection

SECONDARY CONTAMINANTS

CONTAMINANT AND UNIT OF MEASUREMENT	DATES OF SAMPLING (MO./YR.)	MCL EXCEEDANCE (YES/NO)	HIGHEST RESULT	RANGE OF RESULTS	MCLG	SMCL	LIKELY SOURCE OF CONTAMINATION
Chloride (ppm)	10/30/2023	No	44.8	NA	NA	250	Naturally occurring organics
Color (units)	10/30/2023	No	5	NA	NA	15	Naturally occurring organics
Copper (ppm)	10/17/2024	No	0.0032	NA	NA	1	Corrosion by-product; natural occurrence from soil leaching
Odor (TON)	10/18/2024	Yes	8.0	NA	NA	3	Naturally occurring organics
Sulfate (ppm)	10/30/2023	No	34.8	NA	NA	250	Naturally occurring organics
Total Dissolved Solids (ppm)	10/14/2024	No	211	NA	NA	500	Naturally occurring organics

[1] This table summarizes our most recent lead and copper tap sampling data. If you would like to review the complete lead tap sampling data, please contact Joshua Peele, FKAA Water Quality and Environmental Manager, at (305) 809-2636.

Lead in Home Plumbing

Lead can cause serious health effects in people of all ages, especially pregnant people, infants (both formula-fed and breastfed), and young children. Lead in drinking water is primarily from materials and parts used in service lines and in home plumbing. The FKAA is responsible for providing high-quality drinking water and removing lead pipes but cannot control the variety of materials used in the plumbing in your home. Because lead levels may vary over time, lead exposure is possible even when your tap sampling results do not detect lead at one point in time. You can help protect yourself and your family by identifying and removing lead materials within your home plumbing and taking steps to reduce your family's risk. Using a filter certified by an American National Standards Institute-accredited certifier to reduce lead is effective in reducing lead exposures. Follow the instructions provided with the filter to ensure it is used properly. Use only cold water for drinking, cooking, and making baby formula. Boiling does not remove lead from water.

Before using tap water for drinking, cooking, or making baby formula, flush your pipes for several minutes. You can do this by running your tap, taking a shower, or doing laundry or a load of dishes. If you have a lead or galvanized service line requiring replacement, you may need to flush your pipes for a longer period. If you are concerned about lead and wish to have your water tested, contact Joshua Peele, FKAA Water Quality and Environmental Manager, at (305) 809-2636. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available at epa.gov/safewater/lead.

To address lead in drinking water, public water systems were required to develop and maintain an inventory of service line materials by October 16, 2024. Developing an inventory and identifying the location of lead service lines (LSL) is the first step for beginning LSL replacement and protecting public health. The lead service inventory may be accessed at fkaa.com/393/Lead-and-Copper-Rule-Revision--Service-L. Please contact us if you would like more information about the inventory or any lead sampling that has been done.

Source Water Assessment Plan

In 2024 the Florida Department of Environmental Protection (FDEP) performed a source water assessment on our system as part of its statewide source water assessment project. Source water assessment reports identify and assess any potential sources of contamination in the vicinity of each water supply in the state. This inventory only identifies potential sources of contamination. It does not mean that these sites are actively causing contamination of the drinking water source. The FDEP performed a source water assessment on our shallow aquifer system in Florida City, and a search of the data sources indicated two potential sources of contamination near our wells (injection well and petroleum storage tanks). Both are categorized by the FDEP as of low concern.

FKAA's injection well, used to dispose of concentrate from the reverse osmosis water treatment plant, is encased in steel to 2,674 feet, passing through multiple clay layers that serve as confining units. The potential contaminant is chloride from the Floridan Aquifer.

Petroleum storage tanks on the property at FKAA's water treatment plant are all state-registered tanks with no history of reported spills or compliance concerns. They are steel, single-wall tanks mounted on a raised concrete slab within a concrete secondary containment structure and housed under a steel roof.

The source water assessment report for our system is available at the FDEP Source Water Assessment and Protection Program website at https://prodapps.dep.state.fl.us/swapp.