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2005 Annual Drinking Water Quality Report

Collier County Water Department

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## The Source

We are pleased to present to you this year's Annual Drinking Water Quality Report. This report is designed to inform you about the quality water and services we deliver to you every day. 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. The Collier County Water Department has an extensive and continuous testing program to analyze the quality of the drinking water provided to you, our customer. This testing program ensures that your drinking water never has a violation of any Federal or State regulatory requirement. Except where indicated otherwise, this report is based on the results of our monitoring for the period of January 1 to December 31, 2005.

# of Water for Collier County

The source of water for the Collier County Water System is groundwater pumped from three wellfields located in the Golden Gate Estates. The North Hawthorn Wellfield has 21 wells that provide water to the North County Regional Water Treatment Plant. The South Hawthorn Wellfield has 15 wells that provide water to the South County Regional Water Treatment Plant. The Golden Gate Tamiami Wellfield has 34 wells that provide water to both treatment plants.

The Department of Environmental Protection has performed a Source Water Assessment on our system. These assessments were conducted to provide information about any potential sources of contamination in the vicinity of our wells. Potential sources of contamination identified include underground petroleum storage tanks, injection well, and industrial wastewater treatment plants. The assessment results are available on the FDEP Source Water Assessment and Protection Program website at [www.dep.state.fl.us/swapp](http://www.dep.state.fl.us/swapp).

## Other Sources of Information

Florida Department of Environmental Protection:  
[www.dep.state.fl.us](http://www.dep.state.fl.us)

United States Environmental Protection Agency  
Safe Drinking Water Hotline: 1.800.426.4791

United States Environmental Protection Agency  
Office of Water: [www.epa.gov/OW](http://www.epa.gov/OW)

The American Water Works Association: [www.awwa.org](http://www.awwa.org)

## Phone Numbers

If you have any questions about this report or concerning your water utility, please contact us at the numbers below:

Collier County Utility Billing and Customer Service: 239.403.2380  
Collier County Water Department Laboratory: 239.352.7007  
Collier County Water Department Emergency Line: 239.732.2558

# As Our Demand Increases

Collier County's rapidly growing population has resulted in an aggressive increase in the county's demand for potable (drinking) water, from 14.8 million gallons per day (MGD) in 1995 to 24.6 MGD in 2005.

At the direction of the Board of County Commissioners, staff is implementing a plan that will not only meet the demands of the rapidly growing population, but will also accommodate future demand so the county stays ahead of the growth/demand curve. The County's comprehensive plan addresses multiple needs from both a short-term and long-term perspective. The ultimate goal is to have the right mixture of surficial water (i.e., fresh water), brackish water, seawater, and reclaimed (irrigation quality) water to meet demands.

County staff is pursuing alternative supplies whenever reasonable. This approach is consistent with regional water management district objectives and provides innovative approaches to stretch traditional supplies. The county has already picked the "low fruit" in terms of water supply and must now seek innovative strategies to ensure a safe and sustainable raw water supply. For example, Collier County has one of the most extensive reclaimed water systems in the State. The use of reclaimed water for irrigation has reduced the demand on the potable water system by some 14 million gallons per day.

To meet compliance at best value of all state and federal regulations, many of the county's facilities have had to be retrofitted to produce higher quality potable and reclaimed water. The need for securing the "cleanness" of raw water available is important to minimize treatment costs and controlling water rates. Advanced wastewater treatment is even more important to ensure that reclaimed water meets or betters regulatory requirements for irrigation use since the reuse facilities are essential to off set and replace potable irrigation demands.

## Existing Infrastructure

There are two water treatment facilities presently providing potable water to the residents of Collier County. The oldest system, the South County Regional Water Treatment Plant, is a lime softening treatment plant capable of producing up to 12-MGD of finished water. Raw water to feed this plant is supplied by the Tamiami Wellfield, a surficial and relatively shallow wellfield comprised of 34 production wells that withdraw water from depths generally less than 150 feet.

The water is typically fresh with some iron and organics present. In the northern portion of the county, the North County Regional Water Treatment Plant has a capacity of 12 MGD low pressure membrane treatment and 8 MGD Reverse Osmosis (RO) treatment. Raw water to feed this plant is supplied by both the surficial Tamiami Wellfield and the brackish North County RO wellfield, an intermediate source found at depths up to 1,000 feet below land surface. This intermediate source has several productive zones with production wells generally in the Hawthorn Zone 1 (430 to 500 feet below land surface) and the Lower Hawthorn (750 to 950 feet below land surface).

Demand for potable water has mandated the county to construct a 20-MGD reverse osmosis water treatment facility at the existing South County Regional Water Treatment Plant site. The first phase, an 8-MGD component, became operational in 2004. Phase two of the expansion, an additional 12-MGD, is under construction with completion planned for February 2007. Water supply for the first phase is provided by a new wellfield called the South County RO Wellfield. Similar to the North County RO Wellfield, the South County RO Wellfield withdraws water from the brackish Hawthorn Formation using both Hawthorn Zone 1 and Lower Hawthorn production horizons. The South County RO Wellfield is being expanded to provide raw water for phase two of the expansion.

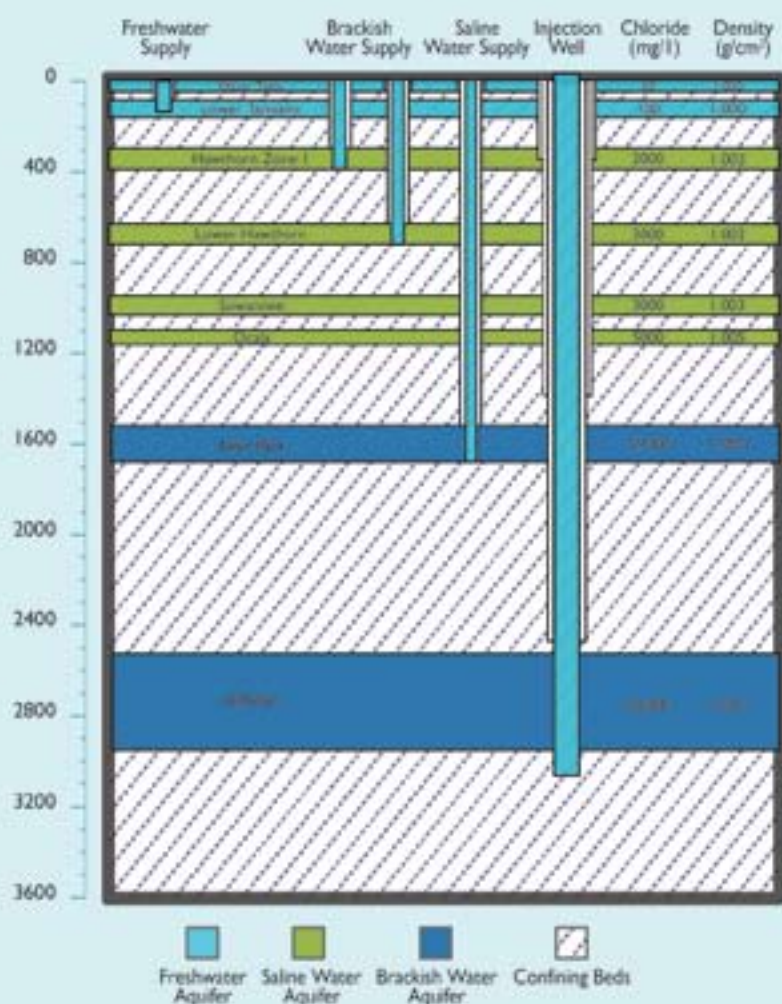
### Future Infrastructure

In addition to the existing facilities, the county has recently initiated a program to construct a northeast regional water treatment and wastewater reclamation facility to handle anticipated water supply demands. These facilities will have a new wellfield, a concentrate disposal system, and a reclaimed water system for the designated service area. Interconnection with other existing facilities is planned. The online date is currently no later than the year 2012.

### Wellfield Expansion Challenges

The most difficult challenge facing the county associated with water supply is that there are no unused underground water supply aquifers. Secondly, the aquifer systems available are not highly productive, meaning more wells and well sites are required. Thirdly, the efficiency of water treatment processes is typically in the 70 to 90 percent range, creating an additional raw water demand and a concentrate disposal issue.

# Geologic Column Of The Aquifer System In Collier County



Collier County has acknowledged that identifying, securing and purchasing property for additional wells is an extremely complex process. Cost of land alone has become a huge issue as every square foot of developable property is in high demand.

## Plan of Action

The plan of action utilizes utility staff and outside consulting engineering teams to perform multiple tasks ranging from planning, design, permitting, construction oversight, and value engineering.

Beyond the usual fast-tracking of projects, the county has also proceeded with several creative concepts to ensure reliability. One such concept is the use of existing space at the North County Regional Water Treatment Plant to install a high-pressure reverse osmosis skid capable of treating

high saline water. This step will provide an additional 2-MGD of finished water production that is vital for meeting seasonal demands. Source water will be from four existing raw water production wells identified as having increased salinity.

Another concept employed is the construction of an interconnect between the Tamiami Wellfield and the North County RO Wellfield. The Tamiami Wellfield is pumped to both the North and South County water treatment plants by a single booster pump station. The capacity of the wellfield is 35 MGD, while a bottleneck occurs at the booster pump station allowing only 27 MGD of raw water to be pumped to the treatment plants. To alleviate this bottleneck cost effectively, the county constructed a raw water transmission line that connects a portion of the Tamiami Wellfield to the North County RO Wellfield. This transmission line includes a booster pump station to blend up to 5.9-MGD of fresh water into the brackish raw water main for treatment. This additional supply enables the full use of existing treatment capacity and assists with reliability should brackish wells need maintenance.

## Conclusions

Collier County entered the 21st century as one of the most desirable places to live in Florida and with a utility system that needed rapid expansion. Recognizing the urgency, the county retained numerous outside services and re-grouped internal staff to develop a project delivery team concept with common goals. Immediate efforts, such as construction of new water supply wells into a new source, interconnects between fresh and brackish water systems, and installation of seawater membrane skids to allow treatment of saline wells are just some of the initiatives being employed to address immediate concerns. Some elements of the long-term solution include start-up and expansion of a new 20-MGD reverse osmosis facility, a new wellfield and treatment facility in the northeast portion of the county, and continued expansion of the reclaimed water system.

Be assured, your Collier County Water Department is committed to ensuring a safe and sustainable water supply for all of Collier County as we strive to be the best community in America to live, work and play.

# Defintions

In the following tables, you may find unfamiliar terms and abbreviations. To help you better understand these terms, we've provided the following definitions:

**Maximum Contaminant Level or MCL:** 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.

**Maximum Contaminant Level Goal or MCLG:** 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.

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

"ND" means not detected and indicates that the substance was not found by laboratory analysis.

**Parts per million (ppm) or Milligrams per liter (mg/l)** – one part by weight of analyte to 1 million parts by weight of the water sample.

**Parts per billion (ppb) or Micrograms per liter (µg/l)** – one part by weight of analyte to 1 billion parts by weight of the water sample.

**Picocurie per liter (pCi/L)** - measure of the radioactivity in water.

**Maximum residual disinfectant level or MRDL:** 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.

**Maximum residual disinfectant level goal or MRDLG:** The level of a drinking water disinfectant below which there is no known or expected risk to health.

**Contaminant:** Any physical, chemical, biological or radiological substance in the water.

**Violation-**Violation occur when detected limits are greater than Maximum Contaminant Levels or Action Levels set by the EPA 90th Percentile- The analytical result that is greater than or equal to 90% of the results

**THMs-** Trihalomethanes; a group of chlorinated organic chemicals that include Chloroform, Bromoform, Bromodichloromethane.



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## Microbiological Contaminants

Contaminant and Unit of Measurement	Total Coliform Bacteria
Dates of Sampling (mo./yr)	01/05 - 12/05
MCL Violation Y/N	N
Highest Monthly No. Of Positive Samples	3.5% during (10/05)
MCLG	0
MCL	For systems collecting at least 40 samples per month; presence of coliform bacteria in 5% or more of monthly samples.
Likely Source of Contamination	Naturally present in the environment.

## Volatile Organic Contaminants

Contaminant and Unit of Measurement	Dichloromethane (ppb)
Dates of Sampling (mo./yr)	3, 6, 9, 12, - 2005
MCL Violation Y/N	N
Level Detected	0.71
Range of Results	ND - 1.7
MCLG	0
MCL	2
Likely Source of Contamination	Discharge from pharmaceutical and chemical factories

## Inorganic Contaminants

Contaminant & Unit of Measurement	Arsenic (ppb)	Barium (ppm)	Sodium (ppm)
Dates of Sampling (mo./yr)	4/05	4/05	4/05
MCL Violation Y/N	N	N	N
Level Detected	0.22	0.0016	53
Range of Results	ND - 0.22	0.0001-0.0016	32-53
MCLG	N/A	2	NA
MCL	10	2	160
Likely Source of Contamination	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes	Discharge of drilling wastes; discharge from metal refineries; erosions of natural deposits	Salt water intrusion, leaching from soil

## Radiological Contaminants

Contaminant & Unit of Measurement	Alpha emitters (pCi/L)	Radium 226+228 or combined radium (pCi/L)	Uranium (ug/L)
Dates of Sampling (mo./yr)	3, 6, 9, 12-2005	3, 6, 9, 12-2005	3, 6, 9, 12-2005
MCL Violation Y/N	N	N	N
Level Detected	1.7	1.1	4.6
Range of Results	ND-1.7	ND-1.1	ND-4.6
MCLG	0	0	0
MCL	15	5	30
Likely Source of Contamination	Erosion of natural deposits	Erosion of natural deposits	Erosion of natural deposits

## Lead and Copper (Tap Water)

Contaminant & Unit of Measurement	Copper (ppm) tap water	Lead (ppb) (tap water)
Dates of Sampling (mo./yr)	11/2005	11/2005
AL Violation Y/N	N	N
90th Percentile Results	0.0521	1.1
No. of Sampling Sites Exceeding the AL	0	0
MCLG	1.3	0
AL (Action Level)	1.3	15
Likely Source of Contamination	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives	Corrosion of household plumbing systems, erosion of natural deposits

Selenium (ppb)	Fluoride (ppm)	Thallium (ppb)
4/05	4/05	4/05
N	N	N
0.50	0.75	0.4
ND-0.50	0.61-.75	0.3-0.4
50	5	0.5
50	5	2
Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines.	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories.	Leaching from ore processing sites; discharge from electronics, glass, and drug factories

### Stage I Disinfectant/Disinfection By-Product (D/DBP) Parameters

Contaminant & Unit of Measurement	77. Chloramines (ppm)	Haloacetic Acids (five) (HAA5) (ppb)	TTHM (Total trihalomethanes) (ppb)
Dates of Sampling (mo./yr)	Monthly 2005	1, 4, 7, 12-2005	1, 4, 7, 12-2005
MCL Violation Y/N	N	N	N
Level Detected	3.36	11.86	22.93
Range of Results	0.6-6.0	5.07-30.63	7.96-44.95
MCLG or MRDLG	MRDLG=4	NA	NA
MCL or MRDL	MRDL=4	MCL=60	MCL=80/100
Likely Source of Contamination	Water additive used to control microbes	By-product of drinking water disinfection	By-product of drinking water disinfection

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.



In order to ensure that tap water is safe to drink, the EPA prescribes regulations, which limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) 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 Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

Some people 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/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

## 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 be the result of oil and gas production and mining activities.

# Using Water Efficiently

Efficient water use can have major environmental, public health, and economic benefits by helping to improve water quality, maintain aquatic ecosystems, and protect drinking water resources. Efficient use of water, through behavioral, operational, or equipment changes, if practiced broadly can help mitigate the effects of drought. Efficiency measures can also save money on water and energy bills. This list of measures is not meant to be comprehensive, but rather a starting point. Other sources of information on water efficiency are available through the EPA's web site ([www.epa.gov/owm/water-efficiency/index.htm](http://www.epa.gov/owm/water-efficiency/index.htm)), and innumerable other sources, some of which may be accessed through the EPA web site, or through Water/Wiser, The Water Efficiency Clearinghouse ([www.waterwiser.org](http://www.waterwiser.org)).

## Bathroom

- Do not let the water run while shaving or brushing teeth.
- Take short showers instead of tub baths. Turn off water while soaping or shampooing.
- If you must use a tub, close the drain before turning on the water and fill the tub only half full. Bathe small children together.
- Never use your toilet as a waste basket.

## Kitchen and Laundry

- Keep drinking water in the refrigerator instead of letting the faucet run until the water is cool.
- Wash fruits and vegetables in a basin. Use a vegetable brush.
- Do not use water to defrost frozen foods; thaw in the refrigerator overnight.
- Scrape, rather than rinse dishes before loading into the dishwasher; wash only full loads.
- Add food wastes to your compost pile instead of using the garbage disposal.
- Wash only full loads of laundry or use the appropriate water level or load size selection on the washing machine.

## Fixtures and Appliances

- Purchase high-efficiency toilets, or place a plastic container filled with water in the tank of your conventional toilet. Be sure it does not interfere with operation of the toilet's flush mechanism.
- Install low-flow faucet aerators and showerheads.
- Purchase high-efficiency washing machines which can save over 50% in laundry water and energy use.

# Collier County's Irrigation Ordinance

The Collier County Irrigation Ordinance (Ordinance 2002-17), enacted in April 2002, limits the use of certain water sources for irrigation. Waters limited by the ordinance include water from the Collier County Public Water Supply System; water from lakes, ponds and natural or artificial watercourses; and, water from public or private wells.

## Irrigation Schedule

- **Odd Numbered Addresses:** Water between midnight and 8:00 a.m. on Monday, Wednesday and/or Saturday. Low volume hand watering is allowed between 5:00 p.m. and 7:00 p.m.
- **Even Numbered Addresses:** Water between midnight and 8:00 a.m. on Tuesday, Thursday and/or Sunday. Low volume hand watering is allowed between 5:00 p.m. and 7:00 p.m.
- **All Other Outdoor Water Uses:** Car, truck, boat and other vehicle washing, and exterior home surfaces: allowed anytime with the use of low volume pressure cleaning equipment, low volume mobile washing equipment, or a single hose with an automatic shut-off nozzle. Water used for car, truck, boat and other vehicle washing must run to a grassy, permeable surface.
- **New Landscaping:** Landscaping in place less than 60 days may be watered 5 days per week, Monday through Friday, from 12:01 a.m. to 8:00 a.m. Low volume hand watering is allowed anytime.
- **Irrigation System Maintenance:** Existing irrigation systems may be operated for maintenance a total of 10 minutes per zone per week. New irrigation systems may be operated 30 minutes per zone one time only. In any case, during operation for maintenance, a person must be present and working on the system during such operation.
- **Rain Sensor Requirement:** All irrigation systems shall be equipped with a properly installed rain sensor switch. Rain sensor switches prevent irrigation systems from running when it is raining, or when it has recently rained. Rain sensor switches are required to be installed on all new irrigation systems, and shall be retrofitted on existing systems by April 2003. The rain sensor switch shall be maintained in fully operational condition at all times by the owner/operator of the system.
- **Fridays are Dry Days!** With Few Exceptions, Outdoor Watering is Prohibited on Fridays.

Collier County Public Utilities Division  
Water Department

Annual Drinking Water Quality Report

If you have questions regarding this report or your drinking  
water, please call 239.352.7007

Assistance in Spanish is available.

La ayuda en el español está disponible

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