



Abandoned Artesian Well Plugging Program

2004

St. Johns River Water Management District

Overview

An artesian well is a well that has been drilled into a rock formation that contains water confined under pressure (an artesian aquifer; Figure 1). An abandoned artesian well is one that has no present or future beneficial use. It also may:

- Not have a properly functioning valve or flow control
- Not meet current well construction standards
- Be discharging salt water into a drinking water aquifer

Free-flowing abandoned artesian wells can potentially waste many millions of gallons per day of our water resource. Non-flowing abandoned wells may also act as a conduit for sources of contaminants to enter the aquifer. The goal of the St. Johns River Water Management District's (SJRWMD) abandoned artesian well plugging program is to assure the continued availability of groundwater resources by detecting, evaluating, and controlling abandoned artesian wells. The program seeks, and is designed to actively encourage, public participation in detecting problem wells. Control and remediation of abandoned wells is achieved by sharing plugging costs with other governmental entities and well owners.

In general terms, the process of permanently plugging an abandoned well involves a site visit and well inventory, including installation of a temporary plug where possible, correspondence to formalize participation, geophysical logging of the well, and permanent well abandonment by a licensed well driller under contract to SJRWMD. All steps in this process are

This document was prepared to comply with the requirements of Section 373.207, Florida Statutes (1991). It is the twenty-second annual report on the inventory of abandoned artesian wells in the St. Johns River Water Management District and on the work plan for controlling or plugging inventoried wells. This report covers the fiscal year October 1, 2003, through September 30, 2004.

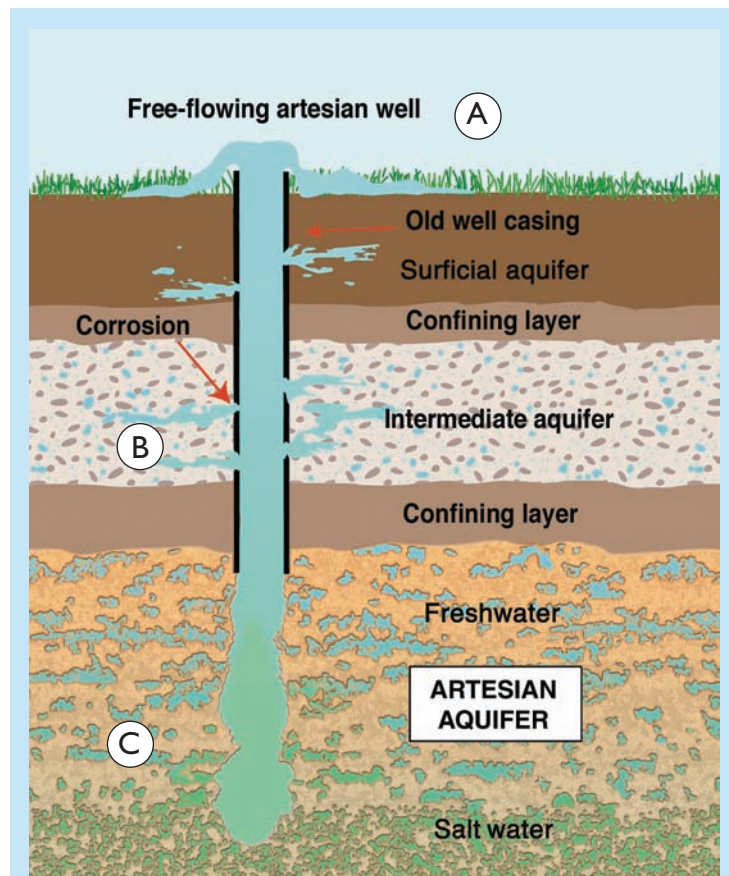


Figure 1. This well schematic illustrates several problems which may be associated with abandoned artesian wells, including (A) uncontrolled (continuous) flow at the surface, (B) leakage below the surface into the surficial and intermediate aquifers, and (C) intra-aquifer flow in the artesian aquifer where water of lesser quality moves upward and contaminates the freshwater in the upper portion of the same aquifer.



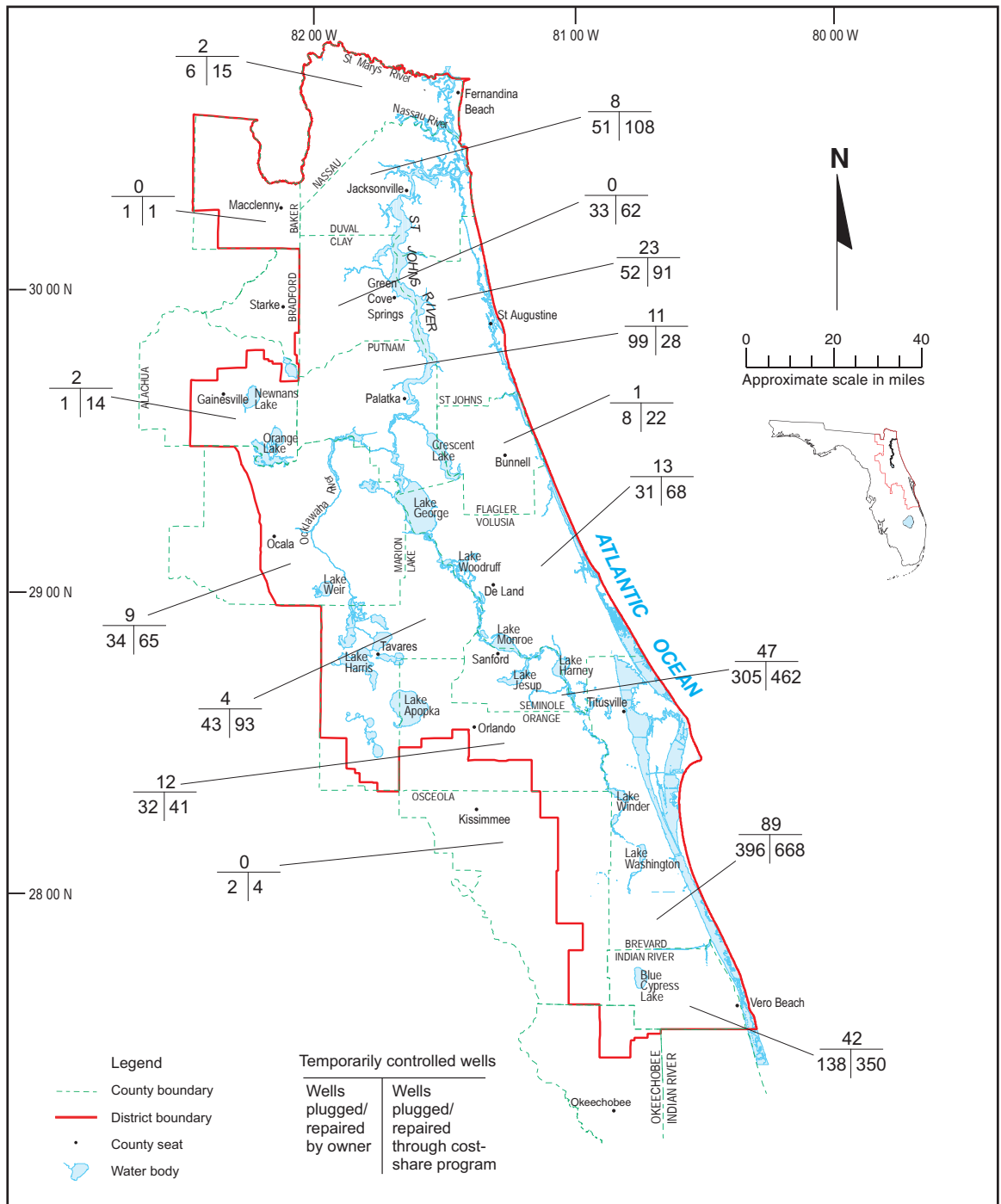


Figure 2. Distribution of temporarily controlled and plugged or repaired abandoned artesian wells in the St. Johns River Water Management District as of September 30, 2004

essentially ongoing, with new wells being inventoried as existing wells are being geophysically logged and other wells are being abandoned. The program seeks to halt and/or prevent the waste of groundwater resources.

In addition to water conservation, other benefits derived from the program include the hydrogeologic data collected as part of our well inventory process and the public awareness perspective of understanding the groundwater resources of a local area.



2004 Results

In fiscal year 2003–2004, a total of 87 wells were plugged or repaired, conserving an estimated maximum potential flow of 55 million gallons per day (mgd) of water (Table 1). Plugging or repairing wells through the SJRWMD program has conserved an estimated maximum potential flow of 595 mgd of water from 1976 through September 2004.

Total contractual costs for the well plugging program in fiscal year 2003–2004 were \$465,681, or \$5,353 per well (based on 87 wells). Reimbursement revenue from county and individual cost-share cooperators accounted for \$71,008 of the total contractual costs of well plugging (Table 2).

County	Number of Wells Plugged	Number of Wells Repaired	Total Estimated Maximum Potential Flow (mgd)
Alachua	0		0
Baker	0		0
Bradford	0		0
Brevard	14	1	4.0
Clay	1		0.2
Duval	0		0
Flagler	0		0
Indian River	33		47.0
Lake	9		1.0
Marion	2		0
Nassau	0		0
Okeechobee	0		0
Orange	4	5	0.5
Osceola	0		0
Putnam	0		0
St. Johns	0		0
Seminole	14	1	2.0
Volusia	3		0.3
Total	80	7	55.0

Table 1. Wells plugged or repaired by the St. Johns River Water Management District during fiscal year 2003–2004

The program provides a direct economic incentive for reporting and plugging these wells. Without this program, a great many abandoned wells would not be properly addressed.



As of September 30, 2004, the cumulative number of artesian wells identified under the abandoned artesian well plugging program was 3,586 (Figure 2). Of this total, 263 are undergoing investigation to be permanently plugged, 2,092 have been permanently plugged or repaired through the SJRWMD cost-share program, and 1,231 have been plugged or repaired by the well owners. A summary is presented in Table 3 of the wells which are on the SJRWMD inventory of wells under investigation to be permanently abandoned. These wells have been temporarily controlled whenever possible.

Cooperator (reimbursement percentage)	Total Cost	Cooperator Cost
Brevard County (50)	\$29,986	\$14,993
Clay County (50)	\$1,776	\$888
Indian River County (50)	\$39,168	\$19,584
Lake County (50)	\$1,098	\$549
Seminole County (50)	\$69,988	\$34,994
SJRWMD/state sources/Florida Forever (100)	\$323,665	N/A
Total	\$465,681	\$71,008

Table 2. Cost-share funding during fiscal year 2003–2004, by cooperator

County	Number of Wells in Inventory
Alachua	2
Baker	0
Bradford	0
Brevard	89
Clay	0
Duval	8
Flagler	1
Indian River	42
Lake	4
Marion	9
Nassau	2
Okeechobee	0
Orange	12
Osceola	0
Putnam	11
St. Johns	23
Seminole	47
Volusia	13
Total	263

Note: Total actual flow from these wells is estimated at approximately 4 mgd.

Table 3. Inventory of wells temporarily controlled and under investigation to be permanently abandoned, as of September 30, 2004



SUMMARY The program is responsible for plugging a substantial number of wells each year. At the same time, significant numbers of new abandoned artesian wells continue to be reported. Two factors contribute to the increase in abandoned wells: Florida's pattern of rapidly changing land use and water well obsolescence. Water well obsolescence typically results from the corrosion of metallic well casings. Both factors can be expected to continue in the foreseeable future, making it likely that SJRWMD will continue programs to control abandoned wells.

Note: The number of wells and the flow calculations presented in these annual reports may not correlate between years. Any discrepancies are related to (1) improvements in estimating flow rates (more wells have been measured) or (2) minor corrections to the database.



The primary goal of Florida's water management districts is the protection of water resources. Their mission is to manage water resources to ensure the continued availability of those resources while maximizing environmental and economic benefits. This is accomplished through regulation of consumptive uses; providing assistance to federal, state and local governments; operation and maintenance of control works; land acquisition and management; and applied research.

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