

Abandoned Artesian Well Plugging Program

1998

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 present a threat to the resource by providing a conduit for migration of contaminated runoff directly into sources of drinking water. The goal of the St. Johns River Water Management District's (SJRWMD) abandoned artesian well plugging program is to assure the continued availability and quality 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

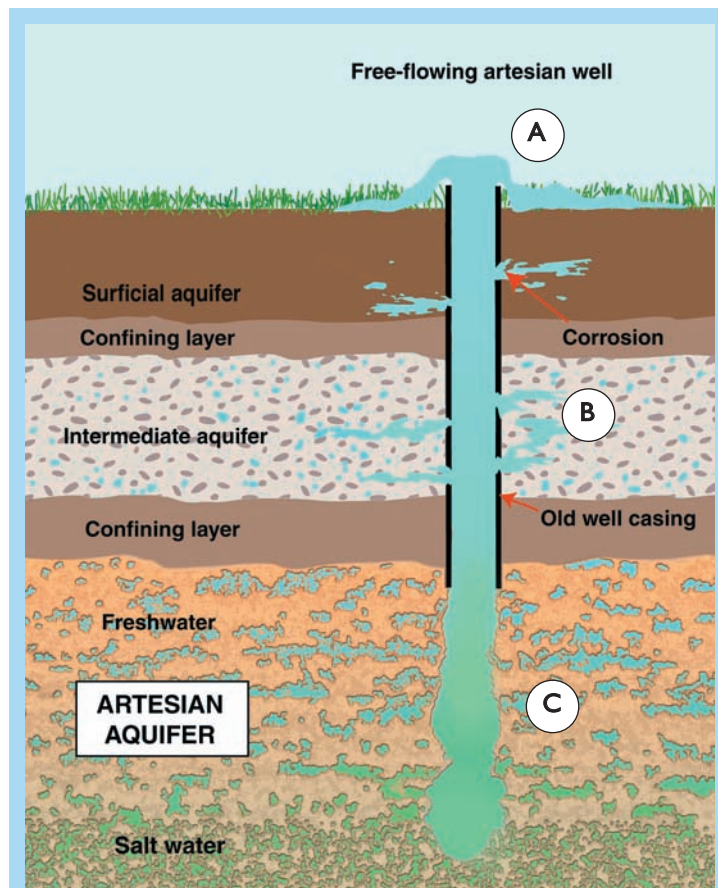


Figure 1. This well schematic illustrates several problems which may be associated with abandoned artesian wells, including (A) uncontrolled (continuous) flow at the surface, (B) leakage below the surface into the surficial and intermediate aquifers, and (C) intra-aquifer flow in the artesian aquifer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

This document was prepared to comply with the requirements of Section 373.207, Florida Statutes (1991). It is the fifteenth 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, 1997, through September 30, 1998.



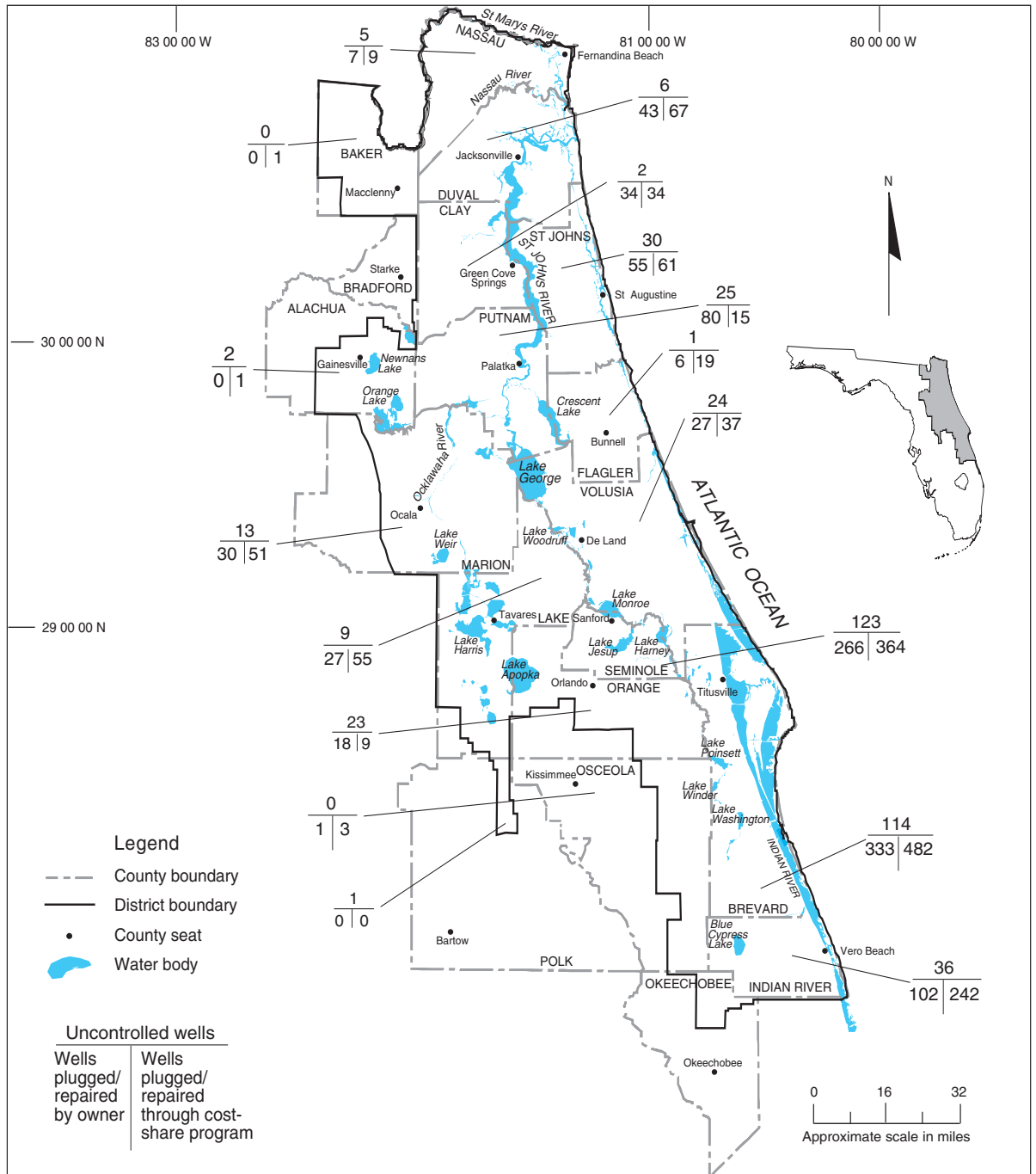


Figure 2. Distribution of uncontrolled and unplugged or repaired abandoned artesian wells in the St. Johns River Water Management District as of September 30, 1998

licensed well driller under contract to SJRWMD. All steps in this process are essentially ongoing, with new wells being inventoried as existing wells are being geophysically logged and other wells are being plugged by pumping cement into the entire well bore. The program provides direct intervention to halt and/or prevent the waste of water resources.

In addition to water conservation, other benefits derived from the program include



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	27		9.26
Clay	13	1	2.22
Duval	10	1	5.71
Flagler	0		0
Indian River	16		9.54
Lake	0		0
Marion	1		0.19
Nassau	0		0
Okeechobee	0		0
Orange	5		0.24
Osceola	0		0
Polk	0		0
Putnam	0		0.18
St. Johns	3		2.10
Seminole	47	1	5.46
Volusia	2	1	0
Total	124	4	34.91

Note: Blank cells indicate zero. Any mathematical inaccuracy is due to rounding down.

Table 1. Wells plugged or repaired by the St. Johns River Water Management District during fiscal year 1997–98

public outreach, hydrogeologic data collected as part of our well inventory process, and the public health and welfare perspective of not allowing these wells to go unnoticed and unattended. 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 they can be partially concealed and forgotten.

COOPERATOR (reimbursement percentage)	TOTAL COST	COOPERATOR COST
Clay County (50)	\$ 7,884	\$ 3,942
Indian River County (50)	32,459	16,229
Brevard County (50)	16,586	8,293
JEA (Jacksonville Electric Authority) (75)	49,966	37,474
Seminole County (50)	67,095	32,547
Individual (various)	24,732	14,417
SJRWMD (100)	67,781	NA
Total	\$ 266,503	\$ 112,902

Table 2. Cost-share funding during fiscal year 1997–98, by cooperator

1998 Results

In fiscal year 1997–98, a total of 128 wells were plugged or repaired, saving an estimated maximum potential flow of 34.91 million gallons per day (mgd) of water (Table 1). Plugging or repairing wells through the SJRWMD program has saved an estimated maximum potential flow of 368 mgd of water from 1976 through September 1998.

Total contractual costs for the well plugging program in fiscal year 1997–98 were \$266,503, or \$2,082 per well (based on 128 wells). Reimbursement revenue from county and individual cost-share cooperators accounted for \$112,902 of the total contractual costs of well plugging (Table 2).

As of September 30, 1998, the cumulative number of artesian wells identified under the abandoned artesian well plugging program was 2,893 (Figure 2). Of this total, 414 need to be permanently controlled, 1,450 have been permanently plugged or repaired through the SJRWMD cost-share program, and 1,029 have been plugged or repaired by the well owners. A summary of the wells which are on the District inventory of wells under investigation to be permanently abandoned is presented in Table 3. These wells have been temporarily controlled whenever possible.



County	Number of Wells in Inventory
Alachua	2
Baker	0
Bradford	0
Brevard	114
Clay	2
Duval	6
Flagler	1
Indian River	36
Lake	9
Marion	13
Nassau	5
Okeechobee	0
Orange	23
Osceola	0
Polk	1
Putnam	25
St. Johns	30
Seminole	123
Volusia	24
Total	414

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

Table 3. Inventory of wells under investigation to be permanently abandoned as of September 30, 1998



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. Changes in land use, specifically the large-scale conversion of agricultural lands to other uses, are often accompanied by the improper abandonment of water wells. 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 it will be necessary for SJRWMD to continue programs to control abandoned wells.

End 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.

For additional information or specific data, contact the following:

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