Health Consultation
Sapp Battery and Salvage Superfund Site
Jackson County, Florida
CERCLIS No. FLD980602882

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Prepared by

Environmental Toxicology
The Florida Department of Health and Rehabilitative Services

Under a Cooperative Agreement With

Agency for Toxic Substances and Disease Registry
U.S. Public Health Service
Department of Health and Human Services

Background and Statement of Issues

The purpose of this health consultation is to complete the recommendations made in the 1993 site review and update for the Sapp Battery Superfund Site prepared by Florida Department of Health and Rehabilitative Services and determine if this site is still a public health threat [1]. Recommendations made by the 1993 site review and update included determining the extent of lead contamination on and off-site, conducting a health assessment and sampling of drinking water wells [1].

In this health consultation, we evaluate the potential for illness from exposure to contaminants that are off-site. Off-site exposure includes drinking from residential wells, eating fish from area streams and rivers, and exposure to sediment and surface water near the Sapp Battery Site.

The Sapp Battery Superfund Site is in Jackson County, Florida. The site is about five miles south of Cottondale and two miles north of Alford (Figure 1). Jackson County Road 280 borders the site on the south side. The Atlanta and St. Andrews Bay Railroad track and U.S. Highway 321 borders the site on the east side (Figure 2). The site encompasses 45 acres: two swamps connected by a small channel cover fifteen of these acres. Currently a chain-link fence topped with barbed wire surrounds the site. The fence is posted with signs warning of hazardous materials [2].

The land use directly adjacent to the site is agricultural and rurally residential. Horse pastures, stables, and residences are north and west of the site. About one-half mile east of the site is Steel City, a community of about 200. This community consists of small and mobile homes, a grocery store, a church, a cemetery, and the Alford Woodyard. About sixty private wells are within one mile of the site. South of the site is the Steel City Bay, a 29-acre cypress-tupelo swamp [3]. This swamp has no recreational uses [4]. In the past, other small battery reclaiming businesses existed within a mile of the site [4]. The population of Jackson County is primarily White and the median age is 30-34. The median family income is around $20,000. Fourteen percent of the population is under nine years of age and no schools or day care centers are near the Sapp Battery Site [5].

Site History

Before 1970, Sapp Battery Company, a small business, reconditioned used vehicle batteries at this site. In 1970, the business began reclaiming batteries. This involved cracking open old batteries to recover and resell the lead parts. In 1977, the business expanded again by increasing the building space, adding truck weighing scales, loading docks and chipping mills for breaking up battery cases. By 1978, the company employed eighty-five people, processed up to 50,000 batteries per week and operated 24-hours per day [2].

Sapp Battery disposed of the used battery acid by pouring it on the ground outside the plant. The battery acid, along with lead and cadmium residues, ran down a hill to the south and drained into the adjacent cypress swamp, then into the Steel City Bay Marsh. This caused vegetation damage along its path [2]. The company crushed or chipped the used battery casings. The broken battery casings were primarily disposed of in a manmade fishing pond that was north of the plant and alongside the Northwest Swamp [2].

By 1977, citizens complained to the Florida Department of Environmental Protection (DEP) about dying cypress trees in Steel City Bay. DEP issued a warning to Sapp Battery. To alleviate the direct discharge of battery acid, the company dug a holding pond for the waste and constructed a berm, a dike type structure, south of the West Swamp. This attempt to prevent acid run-off was unsuccessful since runoff overflowed the berm and continued to flow into the Steele City Bay. DEP continued to cite Sapp Battery for a variety of violations. In January 1981, Mr. Sapp, the owner of Sapp Battery, abruptly ceased operations. All equipment and buildings were removed from the site. Mr. Sapp sold the land to his in-laws, Mr. and Mrs. Ivey [2].

Since run-off from the site adversely affected Steel City Bay, the Environmental Protection Agency (EPA) took emergency actions in 1980 to prevent contaminants from moving off site. The EPA built up and extended the existing berms and built additional berms. They disked hydrated lime into the areas of exposed soil. They sprayed a lime slurry onto on-site holding ponds and swamps to neutralize the acid water. These measures, however, were not effective and acidic run-off continued to affect surface water. Since the contaminated surface waters from the site were also seeping into the Floridian aquifer, the EPA placed Sapp Battery Salvage Site on the Superfund National Priorities List in October, 1981 [3,6].

DEP sued Mr. Sapp in January 1982 and a judge ordered Mr. Sapp to pay the agency $11 million and begin site cleanup. Mr. Sapp claimed he was heavily in debt and DEP only collected $10,000 from the sale of Mr. Sapp's truck [2]. The court found that Mr. Sapp had no visible means to fund the assessed judgment and released him from further financial liability [7].

The EPA and DEP entered into a cooperative agreement in September 1982. As a result, the EPA allocated Superfund monies for the study of contamination at the Sapp Battery site. DEP conducted a remedial investigation (RI) and an outside consultant, Environmental Science and Engineering (ES&E) conducted the feasibility study (FS). DEP and ES&E conducted these studies to determine the extent of the contamination and identify preliminary cleanup alternatives. Simultaneously, the EPA tasked its contractor, NUS, to conduct limited sampling and produce a focused feasibility study (FFS). When the EPA and DEP received the draft FFS document, they decided that NUS did not collect enough data and they terminated the effort [6].

The remedial investigation (RI) was completed in January 1984. The study showed that surface soil contained high levels of lead. Surface water in the on-site swamps also

contained high levels of lead, manganese and aluminum. The study also showed groundwater beneath the site was contaminated with lead, aluminum, and other metals. The study concluded the water quality of Steel City Bay had improved since 1980. Little Dry Creek contained normal levels of metals for the area. Simultaneously, Dr. Robert Livingston of Florida State University began biological work in the affected drainage basin [8,9].

To eliminate immediate threats to public health and safety near the site, ES&E submitted the initial remedial measures (IRMs) proposed in the FS to the EPA. This cleanup would provide site security and prevent contaminants from moving off the site. However, the EPA disagreed with the extent of the IRMs and would only fund some IRMs. Since DEP was unable to get federal funds needed for the cleanup, DEP spent $1.6 million from its Water Quality Assurance fund to start the cleanup. During the cleanup in 1984, they removed contaminated soil from the acid holding pond from the site and trucked it to a toxic waste landfill in Emelle, Alabama. DEP backfilled the excavated area with clean soil and covered it with poly vinyl chloride (PVC) sheeting. The PVC cover prevents lead from getting into the air and prevents rain from pushing contaminants deeper into the soil and aquifer. DEP treated the contaminated water until the quality was acceptable then released it back on the site. They constructed soil berms to prevent contaminants from leaving the site in water runoff. Finally, they installed a fence and warning signs to prevent site access [8].

The acids and metals that Sapp employees drained from the batteries onto the soil reached the groundwater under the site. In 1984, private wells near the dump site had low levels of contamination but these levels were below drinking water standards. In December 1984, the Jackson County Public Health Unit tested more than 1500 area residents to determine if the wastes from this site were causing lead poisoning. Although four residents showed signs of lead poisoning, county health officials did not link the poisonings to the site but to lead in paint at their residence [10,11].

DEP contracted Ecology and Environment, Inc. (E&E) as their new consultant to complete the FS. E&E completed the FS by August of 1986 and E&E and DEP conducted a public meeting to receive comments on the RI/FS reports. Concerns voiced at the public meeting included questions about the Superfund process, concerns that the remediation process will increase contaminant levels downstream and in runoff, concerns about keeping the contaminated soils on site instead of disposing of them elsewhere, concerns about the levels of contaminants in fish, concerns about the cattle and horses around the site, and concerns about contamination of the Floridian Aquifer [8].

The EPA signed the Record of Decision explaining the suggested cleanup alternative for the site in September of 1986. The selected remedial alternative for water was on-site treatment of surface and groundwater. Contractors would solidify the heavy metals in the soil by treating the soils and sediments through a chemical process using a special type of cement or lime and fly ash. They would then bury the byproduct in a PVC-lined on-site disposal cell. Contractors would backfill the area with clean soil and revegitate the area. In addition, the area would require long-term monitoring and maintenance [6].

The EPA and Potentially Responsible Parties (PRPs) are presently negotiating a consent order for groundwater design and cleanup, along with completion of the investigation and cleanup of the Steel City Bay Marsh, which the EPA is addressing as a separate entity [9]. Mr. Williams, a nearby resident, now owns the site [4]. He is using the area north of the site as a car junkyard. During 1993-94, Jackson County Public Health Unit (CPHU) tested several residential wells and found one well east of the site contaminated with a maximum of 75 ug/l lead and one well south of the site contaminated with a maximum of 40 ug/l. DEP equipped these wells with filters to remove the lead.

Site Visits

On August 16, 1995, Ms. Julie Smith and Mr. Bruce Trivola, Office of Environmental Toxicology, Florida, HRS, accompanied by Mr. Bill Dean of the Jackson County Public Health Unit, visited the site. They observed a tall fence topped with razor wire surrounding the site. The fence on the south side of the site is intact and no signs of trespassing exist. A warning sign is posted at the front gate and at large intervals along the fence.

On-site activities appear to be limited to remediation work. The only buildings on site are trailers used for remediation workers and a truck washing area. Battery chips have migrated under the fence surrounding the site. There were no other visible releases from the site.

Discussion

As stated above, in this health consultation we evaluated the potential for exposure to contaminants which are offsite. We included drinking from residential wells, eating fish from area streams and rivers, and exposure to sediment and surface water near the Sapp Battery Site. In the next three sections, we discuss the public health threat from each of these routes of exposure.

1. Residential Well Contamination

The primary public health hazard at this site is lead-contaminated groundwater. Ground water is the primary source of drinking water in this area. Groundwater can become contaminated with lead from this site in three ways. First, lead in the on-site soil can run off into the surrounding cypress swamps. This lead can then leach into the underlying aquifer. Second, several sinkholes allow migration of lead to the deeper Flordian aquifer[2]. Third, improperly abandoned on-site monitor wells have likely allowed migration of lead from the surface of the site down to the intermediate and Flordian aquifers [1].

Between 1980 and 1994, various parties sampled between 2-18 off-site private wells to determine the extent of groundwater contamination and the threat to public health. In our analysis, we used data from Environment & Ecology (E&E), 1985 and 1986; Florida Department of Environmental Regulation (FDER) 1983, 1985, and 1986; Jackson County

Public Health Unit (CPHU), 1994; and Environmental Science and Engineering (ESE), 1984 and 1985, and Woodward Clyde 1990. See Figure 3 for locations of wells.

Very large increases in lead concentrations compared with those found in earlier studies indicates leaching of lead and other contaminants into the aquifer [7]. Groundwater under the Sapp Battery Site flows east toward the Chipola River at one foot per year. Surface water flows south from the site [4]. As recommended by HRS, the Jackson CPHU began a program of regular sampling of nearby residential wells. Lead levels in residential wells downgradient from Sapp Battery seem to be increasing [7]. See table #1.

Table 1

Trend of Increasing Lead Levels in Residential Wells Around the Sapp Battery Site

Study & Date	Number of Wells with lead above the MCL	Location of wells with contamination	Maximum Contamination ug/L
FDER 1983[8]	0	East and South	14
ESE 1984[8]	0	All around site	11.6
ESE 1985[8]	5	East, South*	39
E&E 1985[8]	3	East	22
DER 1985[8]	5	East	35
E&E 1986[12]	3	South	24
	MCL reduced		
Woodward Clyde 1990[13]	2	East and South	37
Jackson CPHU 1993-94[14]	2	East and South	75

*ESE also detected 42 ug/l in a well west of the site but did not attribute this to Sapp Battery.
MCL = EPA Drinking Water Maximum Contaminant Level
ug/L = micrograms per liter

1. Selection of Contaminants of Concern

To select contaminants of concern, we identified the maximum concentration for each contaminant and compared this value with the Agency for Toxic Substances and Disease Registry's (ATSDR's) screening values. If the maximum concentration was greater than the screening value or if no values were available for screening the data, we identified the contaminant as a contaminant of concern. Note that screening values do not represent health threat levels; they are simply used to select contaminants for further evaluation [15]. We also compared the maximum value of these contaminants to site specific background concentrations. As a result of these comparisons, we selected lead, manganese, cadmium and bis(2-ethylhexyl) phthalate as contaminants of concern.

In the next three sections, we evaluated these contaminants against additional criteria and discuss possible health effects for residential well contamination, fish consumption and sediment and surface water exposure.

2.0 Health Effects Evaluation: Residential Well Contamination

2.1 Residential Well Contamination: Lead

Non-cancer. To select lead as a contaminant of concern in residential well water, we used the EPA drinking water Maximum Contaminant Level (MCL) since ATSDR has not developed a screening value for lead. The EPA and DEP reduced the MCL for lead from 50 micrograms per liter (ug/L) to 15 ug/L in 1986. Lead levels in nearby residential wells have exceeded the current MCL for approximately ten years. Several wells which were not above the MCL (50 ug/L) at the time of testing were not retested. This resulted in data gaps for the residential wells.

To evaluate possible health effects, we estimated a dose from the concentrations of contamination in residential wells. To estimate the daily dose of each contaminant, we used standard assumptions about body weight, ingestion rates, exposure time, and other factors. We assumed adults drink 2 liters of water per day (L/d) and weigh 70 kilograms (kg). We also assumed the children drink 1 liter of water per day and weigh 10 kilograms[15].

We compared the dose with ATSDR's non-cancer health-based Minimal Risk Levels (MRLs) and to the EPA's Reference Doses (RfDs) for ingestion. MRLs and RfDs are estimates of the daily human exposure to, or doses of, a chemical that not likely to cause an appreciable risk of illness (non cancerous) over a specified duration of exposure. ATSDR develops MRLs from scientific studies found in the toxicological literature and publishes them in a series of chemical specific documents called toxicological profiles[15,16].

Since ATSDR has not derived an MRL and the EPA has not derived a RfD, we compared the maximum concentration of lead in residential well water to the Maximum Contaminant Level (MCL). The maximum concentration of lead found in residential wells over the past fifteen years was 75 ug/L. This concentration is five times the current MCL for lead. DEP, however, eliminated this exposure by placing filters on this and other wells with violations of the MCL.

Since EPA reduced the MCL for lead in 1986 (from 50 ug/L to 15 ug/L), only two sampling events have occurred: Woodward Clyde in 1990 and the Jackson CPHU in 1993-94. Before 1986, no wells had more than 50 ug/l; therefore, DEP took no action to reduce exposure to the well water. However, since investigators sampled in 1985, the levels in some of the resident's wells have been between 15 ug/L and 50 ug/L. Therefore, even though no residents are being exposed to levels above 15 ug/l presently, residents could have been exposed to levels between 15 ug/L and 50 ug/L during the past ten years. These

concentrations will not necessarily cause health effects but we evaluate them in more detail below.

Lead levels greater than 60 ug/L in drinking water can result in blood levels in children as high as 10 ug/dL (microgram per deciliter of blood) [17]. Blood lead concentrations reflect the absorbed dose of lead. Since lead can remain in the body for a long time, blood lead levels can reflect either recent or past exposure to lead [18].

Blood levels of 10 ug/dL in children can result in subtle adverse effects that a physician may not recognize or be able to measure in the individual child [19]. Studies have shown that blood lead levels as low as 10 ug/dL are associated with decreased intelligence and impaired neurobehavioral development, decreased stature or growth, decreased hearing acuity and a decreased ability to maintain a steady posture [19]. Other studies in children reveal a decrease in enzymes involved in blood cell syntheses and electrocardiogram (record of electrical impulses given off by the heart) abnormalities [18].

Cancer. To assess possible carcinogenic effects, we compared the maximum contaminant value of lead and manganese with ATSDR's cancer screening values. If an ATSDR cancer screening value was not available for a particular contaminant, we next considered the contaminant's EPA or NTP (National Toxicology Program) cancer classification. A contaminant was selected for further evaluation if it was a known or suspected cancer-causing agent and the predicted maximum concentration was greater than zero [20].

To evaluate the increased cancer risks, we used a formula based on the EPA's cancer slope factor; a number derived from experiments examining the potential for cancer based on exposure to different concentrations of a chemical [21]. The estimated increased cancer risk is the number of excess cancer cases that could develop per unit of population if the population meets the exposure assumptions.

When evaluating cancer risk, there are three things to consider: First, it is important to recognize the background cancer rate is about 25 percent [16]. In other words, out of a group of 100,000 people, we can expect 2,500 people to develop cancer in their lifetime without exposure to contaminants at a particular site. If there is a low (1 in 10,000) increase in cancer risk, about 2,501 people in this group might develop cancer in their lifetime if they are exposed to that contaminant at the specified dose and exposure period. Second, we calculate the cancer risk for a lifetime of exposure and since some cancers do not develop until many years after exposure, we did not calculate a separate cancer risk for children. Third, when interpreting the associated cancer information, it is important to note whether investigators have looked for and found the associated cancers in humans. A given test animal species can be more or less likely to develop cancer than humans. When only animal studies are available, we present the suggestive evidence from the animal studies, but we do not necessarily conclude that the cancer is linked to human exposure.

ATSDR does not have a screening value for lead in drinking water. The EPA has assigned lead a cancer classification of B2 which indicates that lead is a probable human carcinogen [20]. Qualifying lead's cancer risk involves many uncertainties. Age, health, nutritional state, body burden and exposure duration all influence how lead affects the body. Animal studies indicate that some forms of ingested lead cause kidney tumors; however, these studies used very large doses which may not be applicable to the low-levels of lead that humans would be exposed to. The kidney tumors in animals caused by the high doses given to the animals may be a result of the high doses causing tissue damage which induces the tumors instead of the lead causing the tumors. Furthermore, these animal studies are old and used small numbers of animals and had poor reporting results [18].

2.2 Residential Well Contamination: Manganese

Non-Cancer. High levels of manganese were found in private drinking water wells. These high levels are found all around the site with no trend of increasing concentrations. We assume the high manganese concentrations are due to naturally occurring dolomite formations in the area [6].

ATSDR has not derived an MRL for manganese; however, the EPA derived a chronic oral reference dose of 0.1 mg/kg/day [22]. We estimate the maximum dose a resident living near the Sapp Battery Site might receive is 0.0081 mg/kg/day. This is much smaller than the chronic oral reference dose. Therefore, we do not expect any adverse health effects from the manganese in the drinking water.

Cancer. The EPA cancer classification for manganese is D, not classifiable as to human carcinogenicity [20]. We do not expect any cancer health effect from drinking residential well water contaminated with manganese.

2.3 Residential Well Contamination: Cadmium

Non-Cancer. Cadmium was not as consistently analyzed as lead. Investigators only detected cadmium in five out of 150 samples and only once above the comparison value. The detection above the comparison value was in a well southwest of the site. Since groundwater and surface water do not flow in this direction, it is not likely that this contamination is from the Sapp Battery site.

Cancer. The EPA cancer classification for cadmium is B1, a probable human carcinogen by inhalation [20]. However, neither human nor animal studies provide sufficient evidence to determine whether cadmium is a carcinogen by the oral route. We do not have enough evidence to assess the cancer health effects from drinking residential well water contaminated with cadmium.

2.4 Residential Well Contamination: Bis (2-ethylhexyl) phthalate

In 1985, DEP found bis (2-ethylhexyl) phthalate in one residential well. The concentration did not violate drinking water standards established at that time [23]. Since no violation of the drinking water existed, investigators did not retest this well. In 1985, the EPA made the drinking water standard for bis (2-ethylhexyl) phthalate more stringent. As a result, the level found in 1985 exceeds current standards. Phthalate esters, such as bis (2-ethylhexyl) phthalate, are some of the most ubiquitous of environmental contaminants. Leaching of phthalate esters can occur from many products including polyvinyl chloride (PVC) pipes, vinyl flooring, adhesives, food wrap film and packaging, and laboratory equipment [24]. Since bis(2-ethylhexyl) phthalate was detected only once, and since its occurance is ubiquitous, we eliminated it as a contaminant of concern. We, however, recommend that further testing of private wells includes screening for phthalate esters.

3. Health Effects Evaluation: Fish Consumption

Nearby residents are concerned about the levels of contaminants in fish [8]. We obtained information from the Remedial Investigation [2] (FGFWC 1981, FGFWC/DHRS 1982) and from the Feasibility Study by Ecology and Environment in 1987 [8]. We used only data from the fish fillets because that is the only part of the fish that humans consume.

Lead and cadmium were the only contaminants in the fish samples that investigators looked for. We therefore eliminated manganese and bis (2-ethylhexyl) phthalate as contaminants of concern for consumption of fish. The highest concentrations of lead and cadmium were found at locations more than a mile from the site and may not be site related. Investigators found the highest concentration of lead in fish samples from Chipola River near Interstate 10. Investigators found the highest concentration of cadmium in fish from the Apalachicola River near Interstate 10[2].

First, we estimated a dose that a resident of the area might receive from eating the fish from the level of contamination in the fish. We assumed that an adult eats four and a half-4 oz. fish meals per week. This is the average fish intake for all individuals in the 1977-1978 USDA Nationwide Food Consumption Survey [15]. We also assumed an adult weighs 70 kilograms and a child weighs 10 kilograms (average weight for a one-year-old child) [25]. Second, we computed a dose that a person would receive from ingesting the contaminant at an acceptable standard and compared it with the dose from eating fish.

3.1 Fish Consumption: Lead

For lead, we assumed an adult consumes 2 liters of water per day (L/d) containing the maximum contaminant level (MCL) of lead and that a child consumes one 1 L/d of water containing the MCL of lead. The results of this comparison revealed that residents eating the maximum value of lead detected in fish near the Sapp Battery Site would ingest a smaller dose of these contaminants than they would if they ingested the contaminant at an acceptable

standard. Therefore, ingestion of lead in fish from the Chipola and Apalachicola Rivers are unlikely to cause any illnesses. We eliminated lead as a contaminant of concern from eating fish.

3.1 Fish Consumption: Cadmium

For cadmium, we assumed adults and children consumed the chronic EMEG, Environmental Media Evaluation Guide level. We assumed children incidentally consume 200 mg/d of soil and adults consume 50 mg/d of soil [15]. We also assumed adults consumed this amount of soil containing the EMEG value of cadmium every day for thirty years and children for six years. The results of this comparison revealed that residents eating the maximum value of cadmium detected in fish near the Sapp Battery Site would ingest a smaller dose of these contaminants than they would if they ingested the contaminant at an acceptable standard. Therefore, ingestion of cadmium in fish from the Chipola and Apalachicola Rivers are unlikely to cause any illnesses. We eliminated cadmium as a contaminant of concern from eating fish.

4. Health Effects Evaluation: Sediment and Surface Water

Stormwater runoff from the site has transported contaminants to the cypress swamp. Since this swamp is not used for hunting or fishing, residents have not come in contact with contaminates in the sediment or water. We, therefore, eliminated lead, cadmium, manganese, and bis (2-ethylhexyl) phthalate as contaminants of concern for sediment and surface water. We do not expect exposure to sediment or surface water to cause any adverse health effects.

Conclusions

We classify this site as a past public health hazard due to the possible past exposure to lead in residential well water.

1. Based on non-cancer screening values and frequency of detection, we selected lead and manganese as contaminants of concern for non-cancer health effects for the residential wells. There is no apparent increased risk of from drinking well water containing manganese. The increased risk from drinking well water containing lead in the past is unknown because there are no appropriate human or animal cancer studies available for review. There are no known current health threats from drinking well water.

2. The increased cancer risk from drinking well water containing lead is unknown because there are no appropriate human or animal cancer studies available for review. There is no apparent increased risk of cancer from drinking well water containing bis (2-ethylhexyl) phthalate at a worst-case dose.

3. The concentrations of lead and cadmium in the fish in the Chipola River near the site are unlikely to cause any illness in people who eat these fish.

4. We do not expect residents near this site to come in contact with contaminants in off-site cypress swamp sediment or surface water.

5. Children (0-6 years old) who drink water with 75 ug/L lead more than once a week could suffer neurological damage resulting in subtle behavioral damage such as decreased I.Q.

6. The concentrations of bis (2-ethylhexyl) phthalate found in nearby private wells before 1985 violate current drinking water standards.

7. We based this health consultation on the maximum concentrations detected in residential well water and fish samples. If contaminant concentrations in future samples exceed these concentrations or if contamination spreads to different locations than those evaluated in studies conducted thus far, the public health threat should be reevaluated. The interpretation, advice, and recommendations provided in this health consultation are based on the data and information referenced. Additional data could alter the conclusions and recommendations of this health consultation. ATSDR and/or HRS will review additional data as it becomes available or respond to additional requests as necessary. The conclusions of this consultation are site-specific and should not be considered applicable to any other site.

Recommendations

1. Continue to analyze private wells south and east of the site. In order to detect the movement of contaminated groundwater and prevent exposure, the Jackson CPHU should continue to monitor these wells at least annually. Monitor residential wells south and east of the current radius of houses because the plume could be moving migrating in this direction. The population of Steel City (approximately 200 people) and people living farther east and south of the site could be affected by the contamination.

2. Residents whose wells are contaminated should continue to use an alternative source of drinking water.

3. Test blood lead levels for any children (age 0-6 years) who drank water from the well with 75 ug/l more than once a week.

4. Future testing of private wells should include phthalates.

CERTIFICATION

This Sapp Battery and Salvage Health Consultation was prepared by the Florida Department of Health and Rehabilitative Services under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was begun.

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The Division of Health Assessment and Consultation, ATSDR, has reviewed this health consultation, and concurs with its findings.

for Sharon Williams-Fleetwood, Ph.D.
Chief, SSAB, DHAC, ATSDR

References

[1] Florida Department of Health and Rehabilitative Services. Site Review and Update Sapp Battery Salvage, Alford, Jackson County, Florida. U.S. Department of Health and Human Services. Public Health Service. September, 1993.

[2] Watts, G., Groundwater Section, Florida Department of Environmental Protection. The Sapp Battery Site, Jackson County, Florida, Remedial Investigation. Tallahassee, Florida. November 1983.

[3] Reynolds, B., Betchel Environmental, Inc. Community Relations Plan for the Sapp Battery Superfund Site, Jackson County, Florida. November 1991.

[4] Bill Dean, Personal Communication during Site Visit, August 16, 1995.

[5] Bureau of the Census. 1990 Census Data File. U.S. Department of Commerce, Washington, D.C. 1990.

[6] OHM Remediation Services Corp. Treatability Study Report for the Sapp Battery Site. November, 1994.

[7] USEPA. U.S. Environmental Protection Agency. Record of Decision. September, 1986.

[8] Ecology and Environment, Inc. Summary Report on the Field Investigation for the Sapp Battery Salvage Site. November, 1986.

[9] Florida Department of Environmental Regulation. Sapp Battery Salvage Update. July 1995.

[10] Department of Health and Rehabilitative Services. Jackson Public Health Unit Lead Screening Report. December 1985.

[11] Buckhalter, D. Tests. Water not lead contaminated. Jackson County Flordian. January 15, 1985.

[12] Florida Department of Regulation. Letter (June 3) from Brent Hartsfield of DER to Mr. Bill Dean regarding second round of sampling from residential wells by Ecology and Environment. Tallahassee, Florida. 1986.

[13] Woodward-Clyde Consultants. Letter (August 17) from Gregory Brown to Charles Logan of DEP regarding residential well sampling. Tallahassee, Florida. 1990.

[14] Department of Health and Rehabilitative Services. Environmental Chemistry Analyses Request Data Sheets. Jackson County Public Health Unit. 1993-94.

[15] Agency for Toxic Substances and Disease Registry. Public Health Assessment Guidance Manual. Public Health Service Atlanta, GA. 1992.

[16] Agency for Toxic Substances and Disease Registry. Public Health Assessment Training Manual. U.S. Public Health Service. Atlanta, GA. 1993.

[17] Centers for Disease Control. Preventing Lead Poisoning in Young Children. U.S. Department of Health and Human Services. Public Health Service. October 1991.

[18] Agency for Toxic Substances and Disease Registry. Toxicological Profile for Lead Update. Atlanta: ATSDR, April 1993.

[19] Sekerke, H.J., and R.C. Inman. Pediatric Health-Care Provider and Childhood Lead Poisoning. Office of Toxicology and Hazard Assessment. Florida Department of Health and Rehabilitative Services.

[20] IRIS. Integrated Risk Information System (IRIS) Software. U.S. Environmental Protection Agency, Washington, D.C. 1995.

[21] USEPA. Hazardous Substances in Our Environment, A Citizens Guide to Understanding Health Risks and Reducing Exposure. Office of Policy, Planning, and Evaluation. 1990.

[22] Agency for Toxic Substances and Disease Registry. Toxicological Profile for Manganese. Atlanta: ATSDR, July 1992.

[23] Florida Department of Regulation. Letter (December 27) from Brent Hartsfield of DER to Mr. Emmett G. Roark regarding collection of water sample from his residential well. Tallahassee, Florida. 1985.

[24] Schneider, B.N. (Ed.). Recent Advances in Phthalate Esters Research. Princeton, New Jersey: Princeton Scientific Publishing Co. Inc., 1987.

[25] Environmental Protection Agency. Exposure Factors Handbook. Atlanta, GA. May 1989.

Appendix A
Site Maps

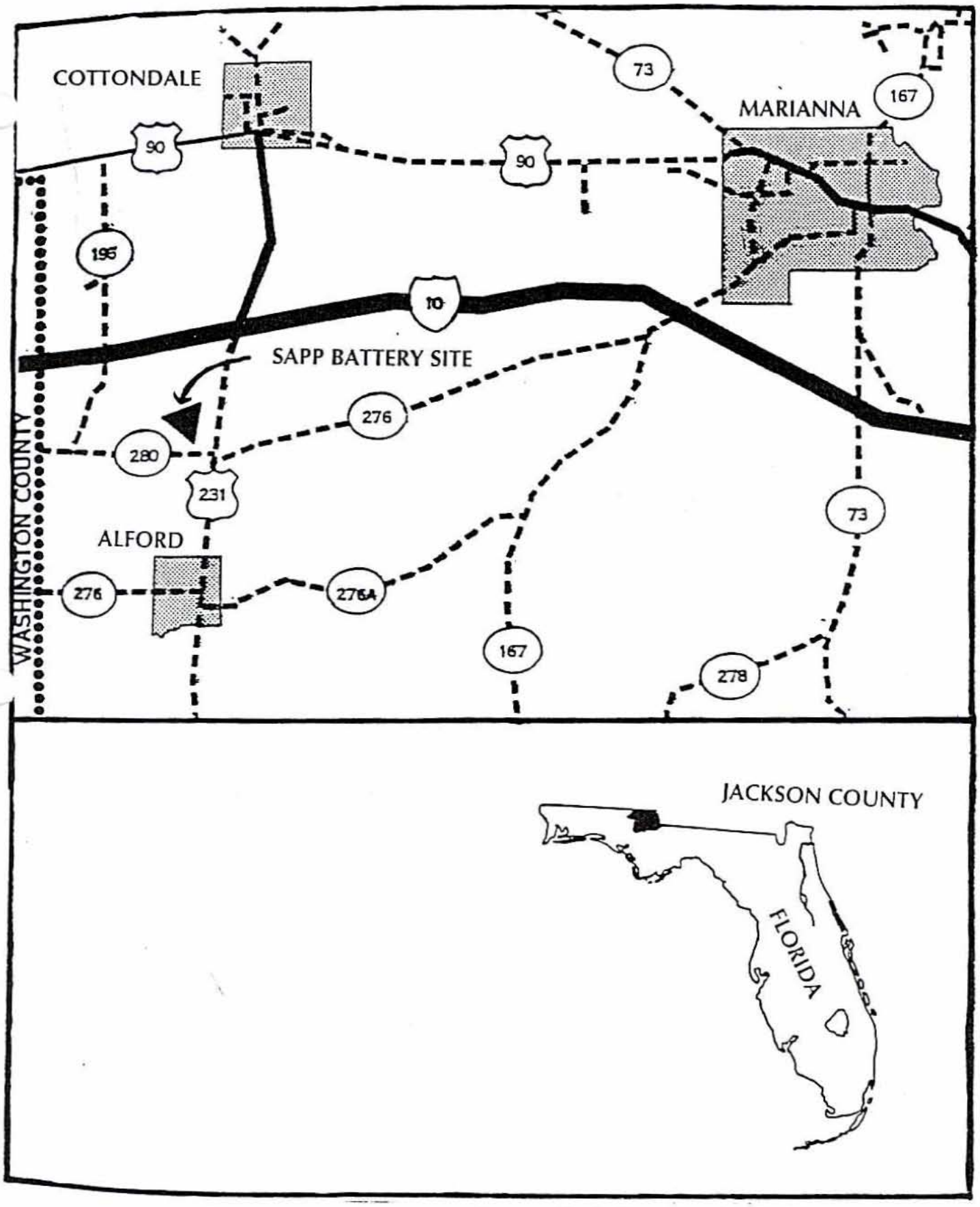

Figure 1 Location Map Sapp Battery Site Jackson County, Florida
Scale: 1"=2 miles

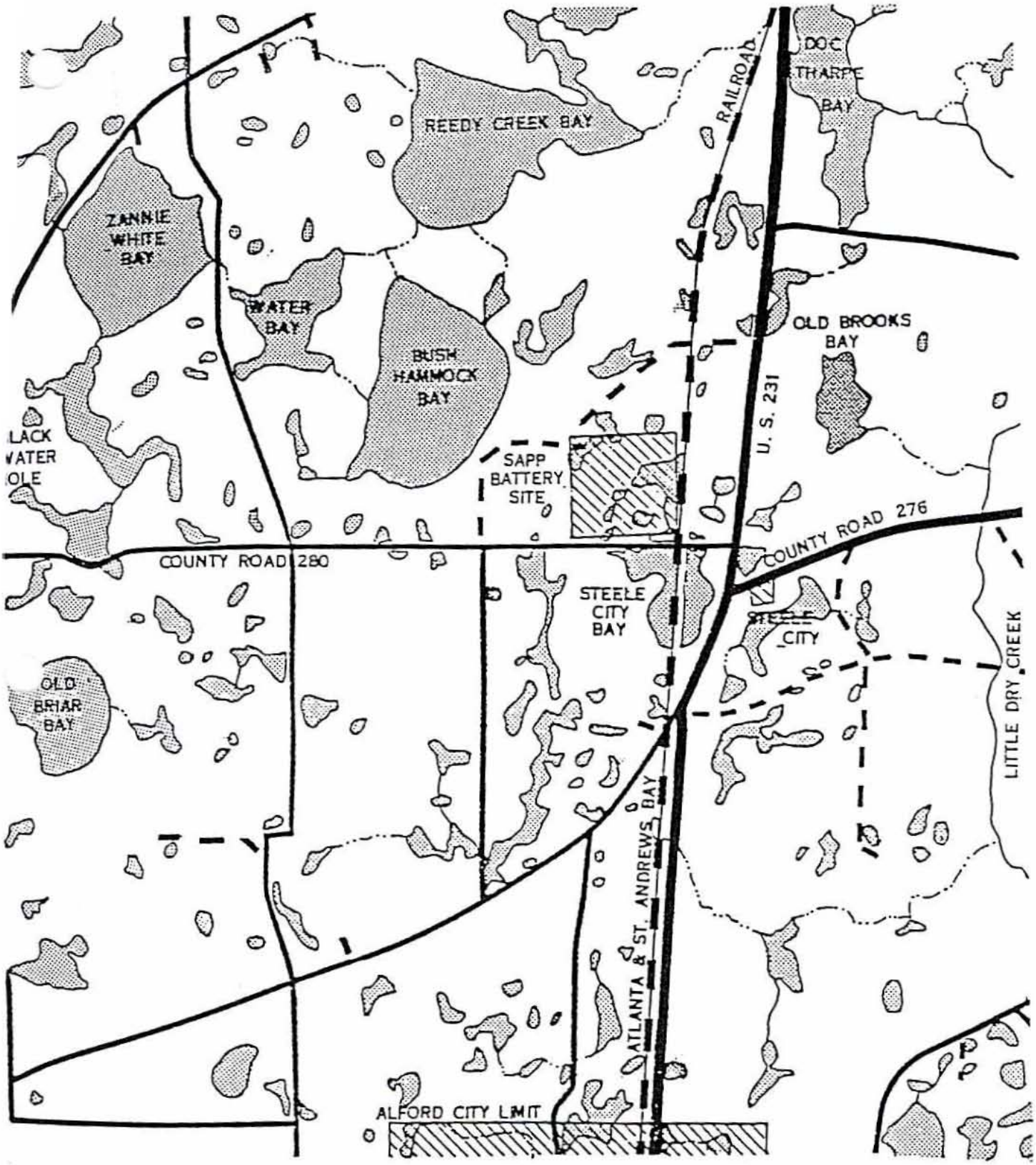

Figure 2
Location Map Sapp Battery Site
Jackson County, Florida

Scale 1" = 2000'

KEY

Dirt Roads
aved Roads
Swamp

Adapted from: Watts, 1983

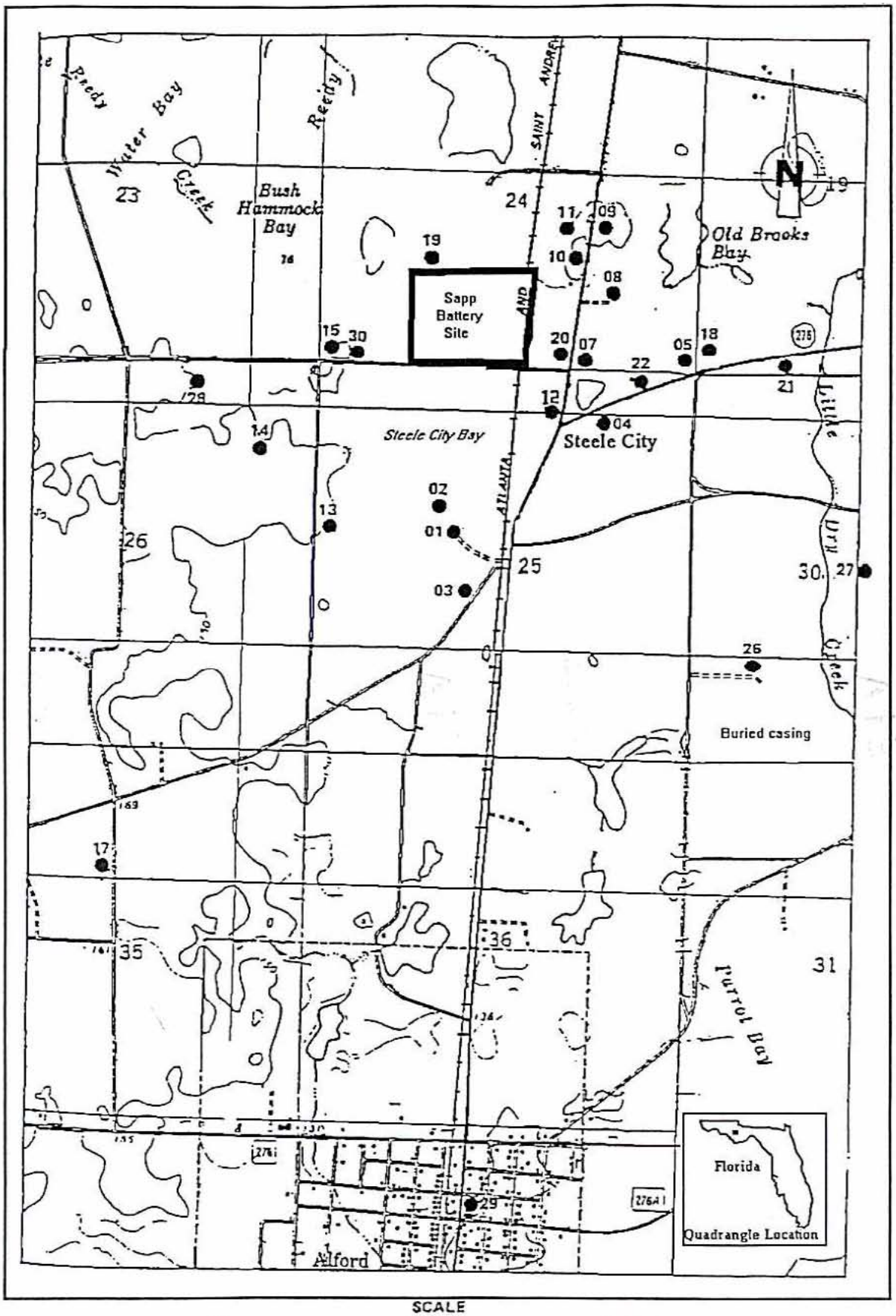
Reedy Water Bay
Reedy Creek
Bush Hammock Bay
Saint Andrew Bay
Old Brooks Bay
Sapp Battery Site
Steele City Bay
Steele City
Atlanta
Little Lynn Creek
Buried casing
Parrot Bay
Alford
Florida
Quadrangle Location
SCALE
0 ½ 1 MILE
0 5 1 KILOMETER

Figure 3