

HEALTH CONSULTATION

REEVES SOUTHEAST GALVANIZING CORP.

TAMPA, HILLSBOROUGH, FLORIDA

CERCLIS NO. FLD000824896

September 8, 1994

Prepared by

Florida Department of Health and Rehabilitative Services
Under Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

Background and Statement of Issues

This health consultation was prepared to examine the public health aspects of a draft Record of Decision (ROD) issued by the U.S. Environmental Protection Agency (EPA) regarding proposed remediation methods for the North Wetland area adjacent to the Reeves Southeast Galvanizing Corporation site near Tampa, Hillsborough County, Florida. On May 11, 1994, EPA held a public meeting to present their proposal, and receive comments and community concerns about cleanup alternatives for the wetland. EPA has provided the Florida Department of Health and Rehabilitative Services (Florida HRS) with sampling data of the soil, surface water, sediment, groundwater, and biota from the North Wetland and adjacent areas. EPA believes the preferred cleanup alternative--no action with ecological monitoring of the wetlands--will be protective of public health. Florida HRS has reviewed the environmental sampling data and the proposed remediation alternatives for the site to comment on the public health impact of the activities outlined in the plan.

The Reeves Southeast Galvanizing Corp. site (Reeves) is about one-quarter mile west of Faulkenburg Road along Broadway Avenue about four miles east of Tampa, Florida. The site consists of the 17.4-acre Reeves Southeastern Galvanizing Division (RSEG) to the north of Broadway Avenue and the 11.6-acre Reeves Southeastern Wire Division (RSEW) to the south of Broadway Avenue (Figs. 1 and 2). RSEG is bordered on the north by an industrial park, on the east by several office buildings, on the south by Broadway Avenue, and on the west by a Tampa Electric Company utility easement and the 1.75-acre North Wetland. RSEW is bordered on the north by Broadway Avenue, on the east by a light manufacturing facility, on the south by a large undeveloped tract of land owned by Hillsborough County, and on the west by the Peak Oil Co./Bay Drum Co. superfund sites (1).

Reeves was established in 1955 as Florida Wholesale Fence, Inc., a subsidiary of Reeves Fences, Inc. to manufacture chain-link fence and distribute chain-link fence accessories. In 1957, Southeastern Galvanizing Corp. was established as another subsidiary of Reeves Fences, Inc. to galvanize chain-link fence and provide custom galvanizing services. In 1962, Florida Wholesale Fence, Inc. began producing its own chain-link fence wire and changed its name to Southeastern Wire Manufacturing Corp. In 1970, Metal Coatings, Inc., a new subsidiary of Reeves Fences, Inc., acquired the physical assets of Acme Plating and Galvanizing Co. which included facilities for hot dip galvanizing, anodizing and bright and barrel plating. Metal Coatings, Inc., located on the north side of Broadway Avenue, subsequently merged into Southeastern Galvanizing Corp. in 1971. In September, 1973, Reeves Fences, Inc. and Reeves Investment Co. merged to become Reeves Southeastern Corporation. In November, 1974, Southeastern Wire Manufacturing Corp. and Southeastern Galvanizing Corp. also merged into Reeves Southeastern Corp. and are currently divisions of the parent company (2).

Both RSEG and RSEW are still active. The company manufactures galvanized chain-link fencing and accessories, and provides customized galvanizing services. RSEG originally disposed of its wastewater in two unlined percolation/evaporation ponds. The ponds were later enlarged and used for wastewater disposal until 1982 when the current wastewater

pretreatment system was installed. This pretreated wastewater is now discharged to the local publicly owned treatment works (2). Both facilities are enclosed by barbed wire-topped chain-link fence and have security guards. The North Wetland is adjacent to the western border of the RSEG facility along the electric utility power line right-of-way.

Fewer than 2,500 people live within one mile of the site and the nearest residences are about one-half mile east of the site. The population within one mile of the site is middle income and about 89.5% white, 4.5% black and 6% hispanic (3). There is one daycare center and a community college within one mile of the site.

Site investigations conducted in 1981 by the U.S. Environmental Protection Agency and the Florida Department of Environmental Protection indicated that surface water and groundwater at the RSEG facility were contaminated with various metals (4). As a result, the Reeves Southeast Galvanizing Corp. site was placed on the National Priorities List of superfund sites on September 8, 1983. Cleanup at the site is being conducted in three separate actions. The first two are intended to reduce or eliminate soil contamination at the two facilities and the associated groundwater contamination. The third addresses cleanup of the North Wetland that is off-site adjacent to the Reeves Southeastern Galvanizing site. EPA and contractors for the Potentially Responsible Parties have conducted Remedial Investigations and Feasibility Studies of the sites and the wetland. These have included off-site sampling of the soil, surface water, sediments, and biota in the wetland, and on-site groundwater (Fig. 3) (1, 2, 5, 6).

Sediment in the wetland contains arsenic at a maximum concentration of 46 milligrams per kilogram (mg/kg) and lead at 3070 mg/kg (Table 1). The maximum manganese concentration (993 mg/kg) was in a drainage ditch south of the wetland. In off-site surface water, the maximum concentrations of arsenic, cadmium, lead, manganese, nickel and zinc were found in the drainage ditch at the northwest corner of the RSEG site (Table 2). According to EPA (5), this drainage ditch was dredged by an unknown party, thus removing the majority of the contaminated sediments. We do not know what impact this removal action may have had on the contaminant concentrations in the surface water in this ditch. In surface water in the wetland, only manganese (49.7 mg/kg) and zinc (48.7 mg/kg) were detected. Surface soil and biota off of the site do not contain any contaminants at levels above their comparison values (Tables 3 and 4). However, no samples of biota from the wetland have been analyzed for arsenic, cadmium, lead, or zinc. Shallow groundwater on the site contains all contaminants except lead at levels exceeding their comparison values (Table 5), while in deep groundwater on the site, only arsenic exceeds its comparison value (Table 6).

Discussion

Sediment off-site and in the wetland contains arsenic and manganese at levels above their comparison values. The estimated daily dose of arsenic is less than ATSDR's chronic oral Minimal Risk Level (MRL) (7). Therefore, we do not expect any adverse non-carcinogenic health effects from exposure to arsenic. Arsenic is a known human carcinogen. However,

there would be no apparent increased cancer risk from exposure to arsenic in off-site sediments. Although no ATSDR chronic oral MRL is available (8), the estimated daily dose of manganese is less than EPA's chronic oral RfD. Therefore, we do not expect any adverse health effects from exposure to manganese. Lead concentrations in off-site sediments are also elevated. However, we do not have enough information about what lead levels in sediments may be safe for humans (9). Therefore, we do not know if exposure to lead in off-site sediments could have any adverse health effects.

Surface water in off-site drainage ditches and the wetland contains all contaminants of concern. Only manganese and zinc were detected in surface water in the wetland, and the levels of both these contaminants were below the corresponding comparison values. Therefore, we do not expect any adverse health effects from exposure to these contaminants in the wetland.

The estimated daily dose of arsenic from incidental ingestion of surface water in the drainage ditch at the northwest corner of the RSEG site exceeds ATSDR's chronic oral MRL (7). Exposure to arsenic by incidental ingestion of drainage ditch water could result in changes to the skin. Skin contact with contaminated surface water could cause irritation, redness or swelling of the skin. Arsenic is a known human carcinogen and lifetime exposure to arsenic in this surface water could result in a "moderate" increase in the risk of skin cancer.

The estimated daily dose of cadmium from incidental ingestion of surface water in the drainage ditch at the northwest corner of the RSEG site is less than ATSDR's chronic oral MRL (10). Therefore, we do not expect any adverse health effects from this exposure. Cadmium is a probable human carcinogen. However, there is insufficient information available for us to estimate the likely cancer risk from incidental ingestion of cadmium.

No ATSDR chronic oral MRL or EPA chronic oral RfD is available for us to estimate the likely health effects from exposure to lead in the drainage ditch water. However, the daily dose of lead from incidental ingestion of this water is less than the dose of lead that would result from drinking water at the Florida MCL. Therefore, we do not expect any adverse health effects from exposure to lead in this surface water.

The estimated daily dose of manganese from incidental ingestion of surface water in the drainage ditch at the northwest corner of the RSEG site exceeds EPA's chronic oral RfD. No ATSDR chronic oral MRL is available (8). Although manganese is an important dietary trace ingredient, chronic exposure to higher levels may produce neurological changes, including impaired mental capacity.

The estimated daily dose of nickel from incidental ingestion of surface water in the drainage ditch at the northwest corner of the RSEG site is less than EPA's chronic oral RfD. No ATSDR chronic oral MRL is available (11). Therefore, we do not expect any adverse health effects from this exposure.

The estimated daily dose of zinc from incidental ingestion of surface water in the drainage ditch at the northwest corner of the RSEG site exceeds EPA's chronic oral RfD. No ATSDR chronic oral MRL is available (12). Although zinc is an essential food element, exposure to higher levels may affect cholesterol metabolism, cause anemia, and damage the pancreas.

As noted above, the sediments in this drainage ditch were removed by an unknown party in the early 1990's. If these sediments were the source of contaminants found in the surface water in this ditch, these levels may no longer be high enough to constitute a public health hazard. In addition, this drainage ditch is located in a relatively inaccessible area near an industrial site. Although recurring exposure to the contaminants in the water in this ditch could present a health hazard, this area is not likely to be trespassed on a regular basis. Consequently, we consider the actual health risk to the public from this source of contamination to be very low.

Shallow and deep groundwater on-site are contaminated at levels that could cause adverse health effects. Shallow groundwater within one mile of the site is not used as a source of drinking water. Deep groundwater flow from the site is to the northwest, away from known drinking water wells. Although groundwater is not currently a likely exposure pathway, it could become a pathway if a well to supply drinking water is installed in the area of contamination in the future.

Off-site surface soil contains cadmium, lead, manganese, nickel and zinc. Lead concentrations in off-site surface soil are low (Table 3). However, we do not have enough information about what lead levels in soil may be safe for humans (9). Therefore, we do not know if exposure to lead in off-site surface soil could have any adverse health effects. The levels of the other contaminants are below the corresponding comparison values and are not likely to cause adverse health effects.

Fish and crayfish samples taken from the wetland contained manganese. However, the levels detected are below the corresponding comparison value and consumption of contaminated fish is not likely to cause adverse health effects.

Conclusions

Based upon the information reviewed, we conclude that EPA's preferred alternative for addressing contamination in the North Wetland associated with the Reeves Southeast Galvanizing Corp. site is protective of public health. Exposures to contaminants in off-site surface soil and the sediments and surface water of the wetland are currently below levels of health concern. Groundwater is not a current likely exposure pathway, although it could become so in the future. Exposure to contaminants in surface water in the drainage ditch at the northwest corner of the RSEG site could result in adverse health effects. Contaminated sediments in this ditch have apparently been removed. However, we do not know what impact this removal action has had on the current contaminant levels in the drainage ditch water.

Recommendations

Florida HRS recommends that EPA:

1. Implement site cleanup measures as soon as possible to prevent off-site migration of contaminants into the wetland area.
2. Conduct periodic monitoring of the wetland as proposed in the preferred cleanup alternative to ensure discovery of any future contamination.
3. Analyze surface water samples from the drainage ditch at the northwest corner of the RSEG site for all contaminants of concern to determine if these levels still pose a potential public health hazard.
4. Restrict use of groundwater as a source of drinking water until remediation of groundwater has been completed.

References

1. SECDonohue. Reeves Southeastern Corporation, Site Source Characterization, Remedial Investigation Report. February 1992.
2. Canonie Environmental. Area-Wide Hydrologic Remedial Investigation and Baseline Risk Assessment: Bay Drums, Peak Oil, and Reeves Southeastern Superfund Sites, Final Report. April 1992.
3. Bureau of the Census. 1990 Census Data Files, U.S. Department of Commerce, Washington, DC.
4. U.S. Environmental Protection Agency. Hazardous Waste Site Investigation, Reeves Southeast Galvanizing Plant, Tampa, Florida. February 22, 1982.
5. U.S. Environmental Protection Agency. North Wetland Feasibility Study, Reeves Southeastern Superfund Site, Hillsborough County, Florida. March 1994.
6. U.S. Environmental Protection Agency. Bay Drums, Peak Oil and Reeves Southeastern Areawide Wetland Impact Study. August 18, 1990.
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8. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Manganese and Compounds. Atlanta: ATSDR, July 1992.
9. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Lead. Atlanta: ATSDR, June 1990.
10. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Cadmium. Atlanta: ATSDR, April 1993.
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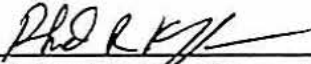
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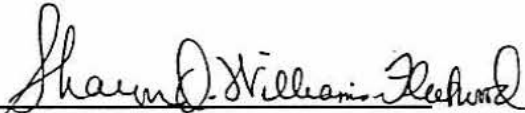
This Reeves Southeast Galvanizing Corporation Health Consultation was prepared by the Florida Department of Health and Rehabilitative Services under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures 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.



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Table 1. Maximum Concentrations in Off-Site Sediment

| Contaminants of Concern | Maximum Concentration (mg/kg) | Total # Exceeding Comparison Value/ Total # samples | Back-ground Concentration (mg/kg) | Comparison Value | |
|-------------------------|-------------------------------|---|-----------------------------------|------------------|--------|
| | | | | (mg/kg) | Source |
| Arsenic | 46 | 4/9 | NA | 0.4 | CREG |
| Cadmium | 2 | 0/11 | NA | 30 | RMEG |
| Lead | 3070 | -/12 | NA | NONE | CARCIN |
| Manganese | 993 | 1/11 | NA | 300 | RMEG |
| Nickel | 71.9 | 0/11 | NA | 1000 | RMEG |
| Zinc | 11200 | 0/12 | NA | 20000 | RMEG |

Table 2. Maximum Concentrations in Off-Site Surface Water

| Contaminants of Concern | Maximum Concentration (µg/L) | Total # Exceeding Comparison Value/ Total # samples | Back-ground Concentration (µg/L) | Comparison Value | |
|-------------------------|------------------------------|---|----------------------------------|------------------|--------|
| | | | | (µg/L) | Source |
| Arsenic | 41.2 | 1/8 | NA | 0.02 | CREG |
| Cadmium | 9.8 | 1/9 | NA | 5 | RMEG |
| Lead | 352 | 3/9 | NA | 15 | FLMCL |
| Manganese | 10200 | 6/11 | NA | 50 | RMEG |
| Nickel | 155 | 1/8 | NA | 100 | LTHA |
| Zinc | 774800 | 4/11 | NA | 2000 | RMEG |

NA - not analyzed

ND - not detected

SDWS - Florida Secondary Drinking Water Standard

FLMCL - Florida Maximum Contaminant Level

CREG - Cancer Risk Evaluation Guide

RMEG - Reference Dose Media Evaluation Guide

CARCIN - Carcinogen

LTHA - Lifetime Health Advisory for Drinking Water

mg/kg- milligrams per kilogram

µg/L- micrograms per liter

Source: (2), (4), (6).

Table 3. Maximum Concentrations in Off-Site Surface Soil

| Contaminants of Concern | Maximum Concentration (mg/kg) | Total # Exceeding Comparison Value/ Total # samples | Back-ground Concentration (mg/kg) | Comparison Value | |
|-------------------------|-------------------------------|---|-----------------------------------|------------------|--------|
| | | | | (mg/kg) | Source |
| Arsenic | ND | 0/6 | NA | 0.4 | CREG |
| Cadmium | .464 | 0/6 | NA | 30 | RMEG |
| Lead | 9.49 | -/6 | NA | NONE | CARCIN |
| Manganese | 11.2 | 0/6 | NA | 300 | RMEG |
| Nickel | 6.05 | 0/6 | NA | 1000 | RMEG |
| Zinc | 713 | 0/6 | NA | 20000 | RMEG |

Table 4. Maximum Concentrations in Off-Site Biota

| Contaminants of Concern | Maximum Concentration (mg/kg) | Total # Exceeding Comparison Value/ Total # samples | Back-ground Concentration (mg/kg) | Comparison Value | |
|-------------------------|-------------------------------|---|-----------------------------------|------------------|--------|
| | | | | (mg/kg) | Source |
| Arsenic | NA | -- | NA | 0.4 | CREG |
| Cadmium | NA | -- | NA | 30 | RMEG |
| Lead | NA | --- | NA | NONE | CARCIN |
| Manganese | 20 | 0/5 | NA | 300 | RMEG |
| Nickel | ND | 0/2 | NA | 1000 | RMEG |
| Zinc | NA | --- | NA | 20000 | RMEG |

NA - not analyzed

ND - not detected

SDWS - Florida Secondary Drinking Water Standard

FLMCL - Florida Maximum Contaminant Level

CREG - Cancer Risk Evaluation Guide

RMEG - Reference Dose Media Evaluation Guide

CARCIN - Carcinogen

µg/L - micrograms per liter

Source: (1), (6).

Table 5. Maximum Concentrations in On-Site Shallow Groundwater

| Contaminants of Concern | Maximum Concentration (µg/L) | Total # Exceeding Comparison Value/ Total # samples | Back-ground Concentration (µg/L) | Comparison Value | |
|-------------------------|------------------------------|---|----------------------------------|------------------|--------|
| | | | | (µg/L) | Source |
| Arsenic | 1040 | 1/14 | NA | 0.02 | CREG |
| Cadmium | 38.2 | 2/14 | NA | 5 | RMEG |
| Lead | 4.1 | 0/14 | NA | 15 | FLMCL |
| Manganese | 5000 | 7/15 | NA | 50 | RMEG |
| Nickel | 480 | 3/15 | NA | 100 | LTHA |
| Zinc | 390000 | 5/15 | NA | 2000 | RMEG |

Table 6. Maximum Concentrations in On-Site Deep Groundwater

| Contaminants of Concern | Maximum Concentration (µg/L) | Total # Exceeding Comparison Value/ Total # samples | Back-ground Concentration (µg/L) | Comparison Value | |
|-------------------------|------------------------------|---|----------------------------------|------------------|--------|
| | | | | (µg/L) | Source |
| Arsenic | 20 | 3/5 | NA | 0.02 | CREG |
| Cadmium | ND | 0/5 | NA | 5 | RMEG |
| Lead | ND | 0/5 | NA | 15 | FLMCL |
| Manganese | ND | 0/5 | NA | 50 | RMEG |
| Nickel | ND | 0/5 | NA | 100 | LTHA |
| Zinc | 54 | 0/5 | NA | 2000 | RMEG |

NA - not analyzed

ND - not detected

CREG - Cancer Risk Evaluation Guide

RMEG - Reference Dose Media Evaluation Guide

FLMCL - Florida Maximum Contaminant Level

LTHA - Lifetime Health Advisory for Drink Water

mg/kg- milligrams per kilogram

Source: (2).

Figure 1. State Map Showing Location of Hillsborough County

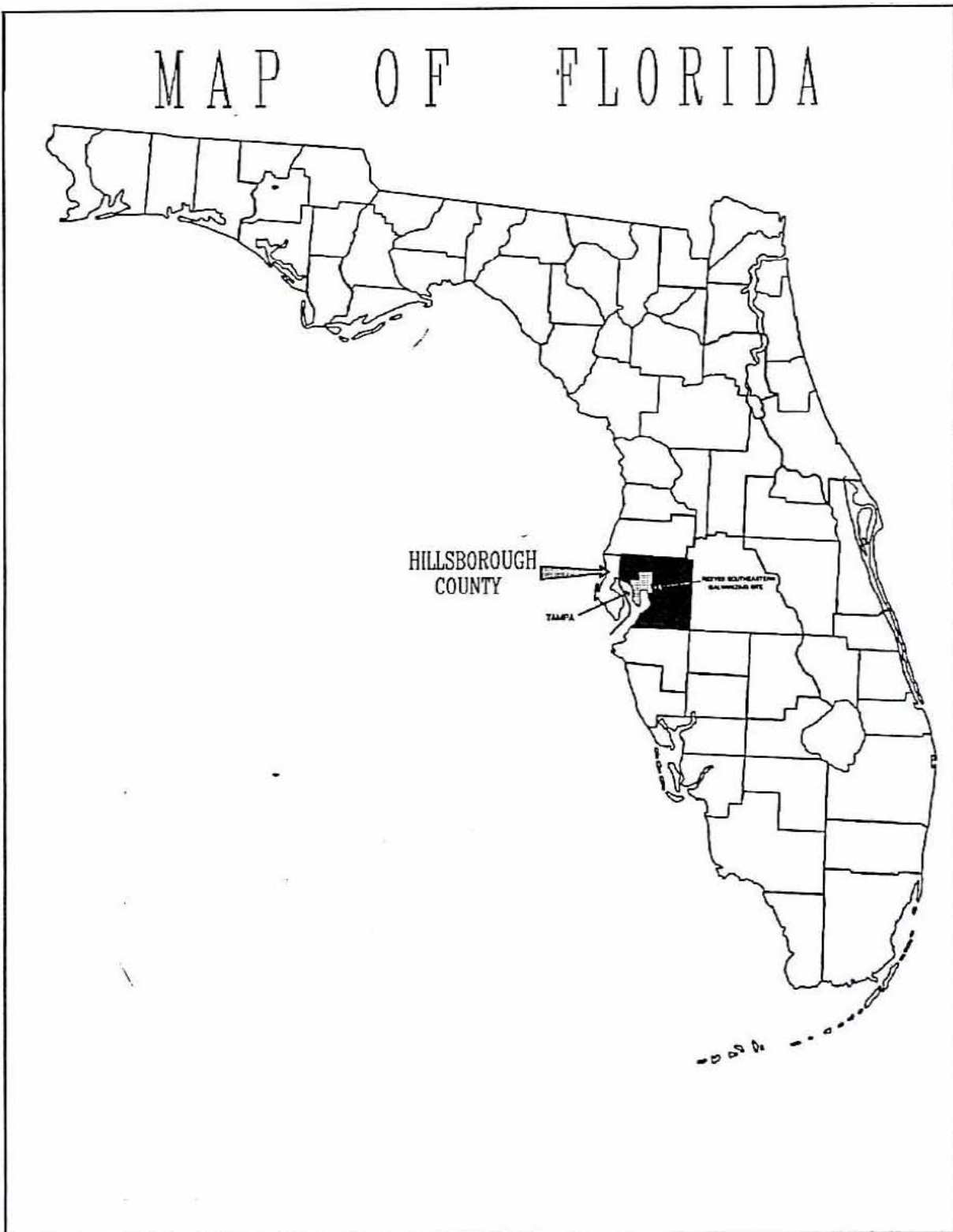


Figure 2. General Location of Reeves Southeast Galvanizing Site

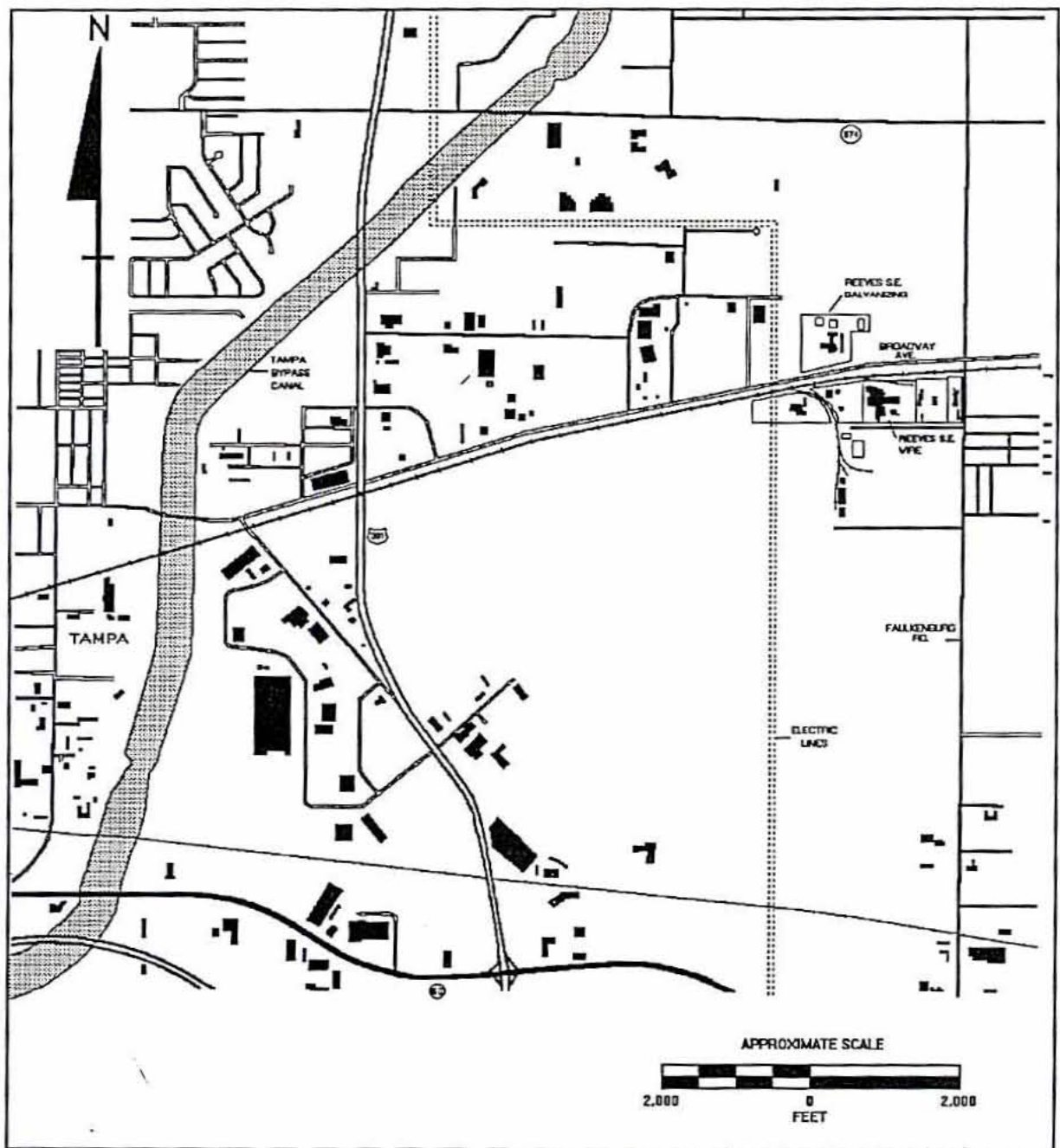


Figure 3. Location of Wetland and Sample Stations

