



# Cattle Dip Vat Update

FDEP, Division of Waste Management

February 10, 2016

# Talk Outline

- Cattle Vat Dipping Program
- Vat Pictures
- Assessment
- Cleanup
- Land Development Issues
- FDEP Regulatory Framework

# 1906 Extent of Fever Tick

*Cattle Tick Fever*

575

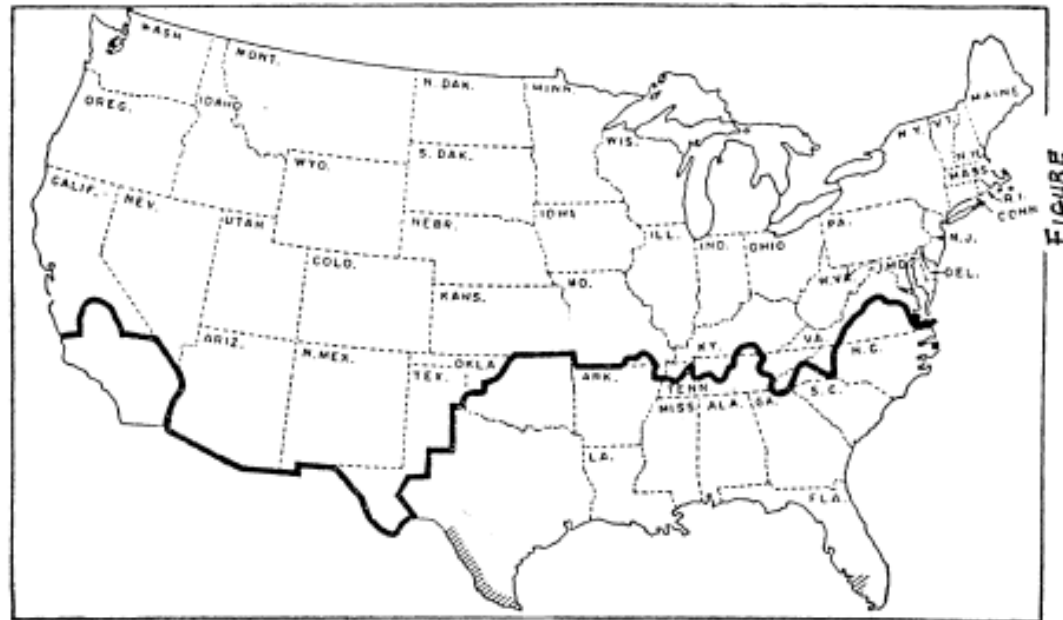


FIGURE 1.—The heavy black line shows the northern boundary of the tick-infested territory at the beginning of tick eradication in 1906. The shaded patches in Florida and Texas indicate the location of quarantined areas December 15, 1906.

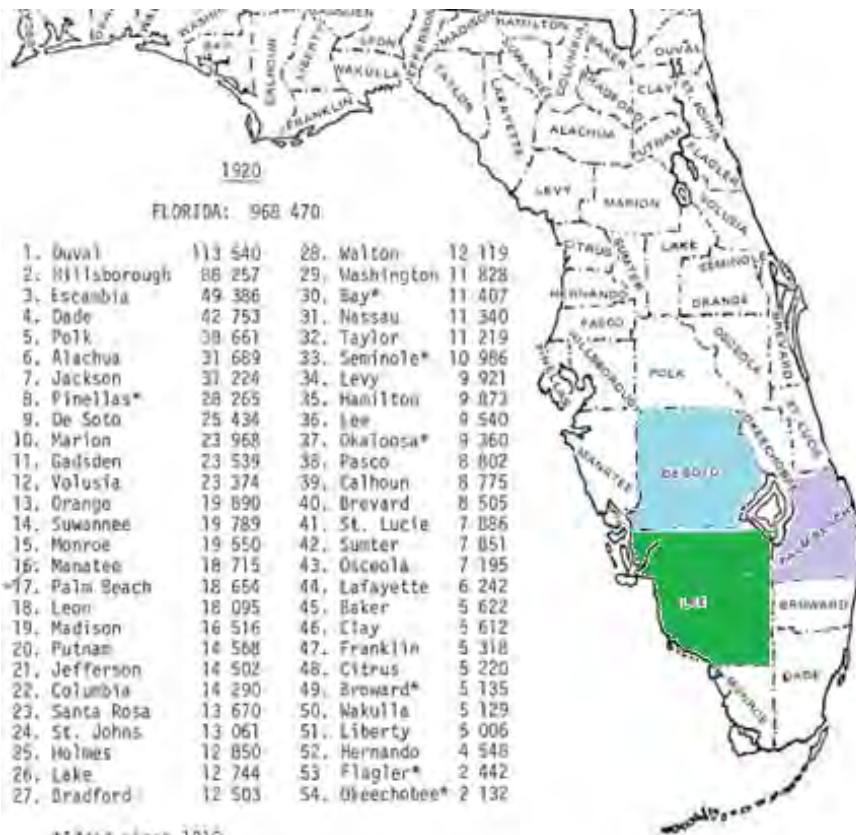
# Known Details

- Vat Dipping program was run by the Livestock Sanitary Board (now FDACS)
- Over 3200 vats constructed at livestock markets, shipping ports, rail depots, state lines, and private properties
- More than 175 vat locations are known
- Federal requirement of 0.18% (1,800,000 ug/L) arsenic in dipping solution
- Livestock Sanitary Board approved the use of other chemicals in later years

# Challenges with Locating Vats

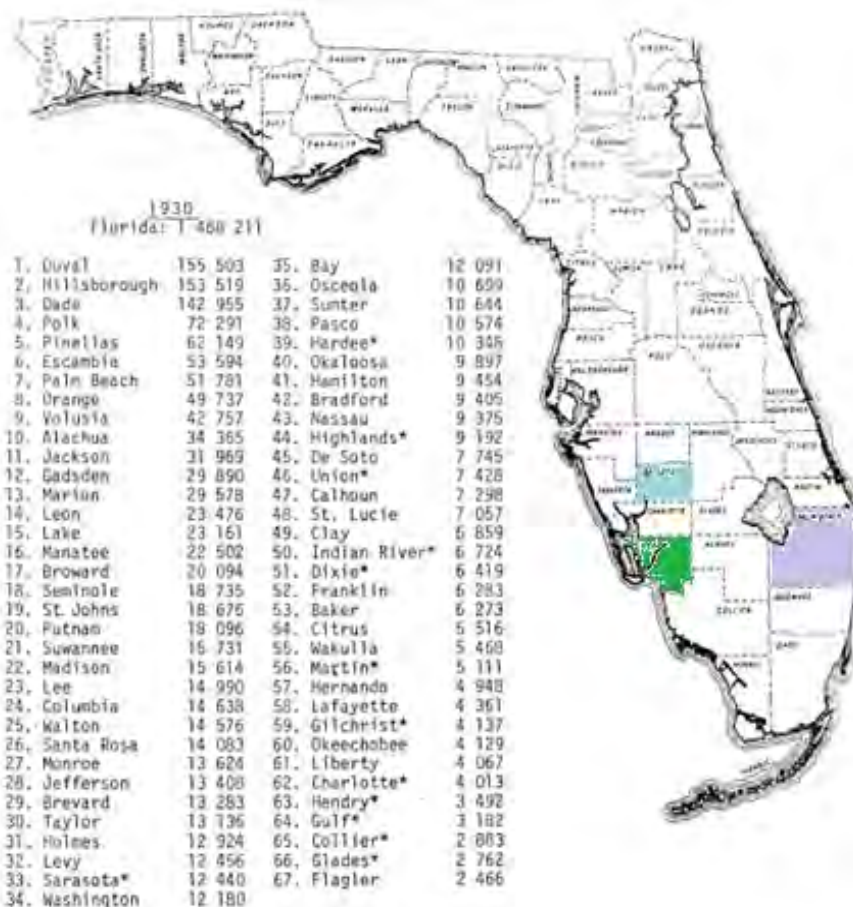
- Vat Locations were not recorded.
- Local landmarks used for naming (“Peach Orchard” or “Sink Hole” or “Log Camp”)
- Vats named after the property owner may be difficult to locate (“Alford” in Leon County owned more than 14,000 acres)
- Vats may have been buried, dynamited, or removed (without the contaminated soil)
- County Boundaries have been revised

# 1920 and 1930 County Lines



\*Added since 1910

Source: OUTLINE MAP OF THE UNITED STATES, March 1920 by the U.S. Department of Agriculture

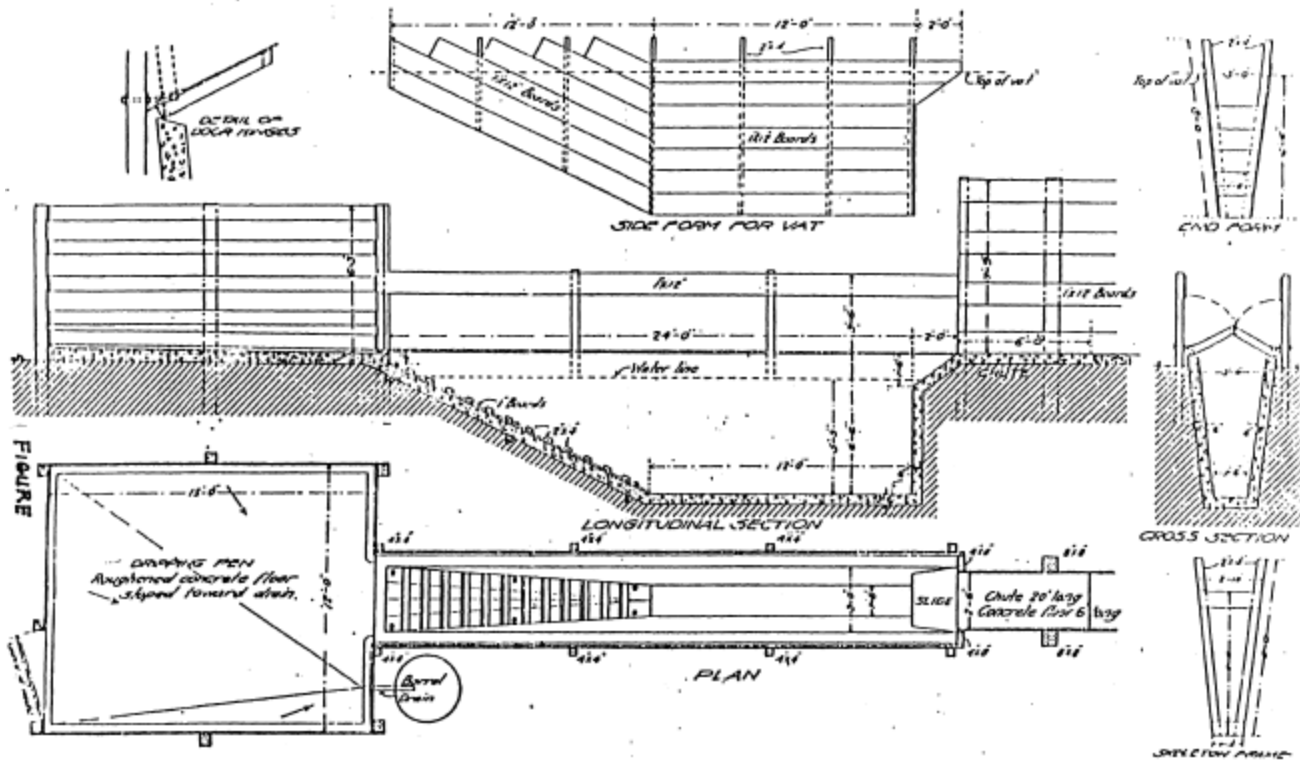


\*Added since 1920; none added after 1925.

# Information Sources

- Local libraries (archives and old maps)
- Area old timers may remember locations
- Historical aerial photographs in stereo pairs may record the pen fencing
- Local citizens, hunters, consultants, etc. periodically find a vat and report its location to the State

# Vat Construction













# Arsenical Recipe

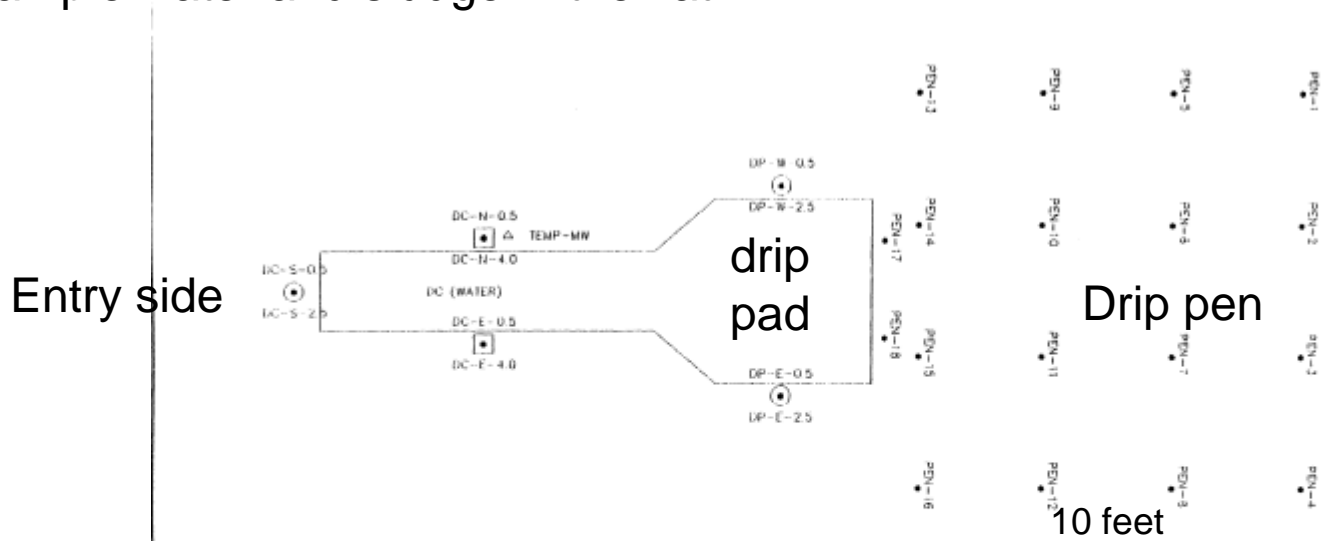
- Heat 30-40 gallons of water to boiling
- Add 24 lbs of sodium carbonate
- When dissolved, Add 8 lbs arsenic trioxide
- When dissolved, allow to cool to 140 F
- Add 1 gallon pine tar and dilute to 500 gallons
- Dipping prior to Interstate Travel required a stronger solution ratio of 25 to 10 lbs As

# Disposal Recipe

- Add 6 lbs of slacked lime for each 100 gallons of vat solution
- Mix thoroughly and allow to stand for a couple hours
- For each 100 gallons of vat solution, dissolve 6 lbs sulfate of iron in hot water
- Add to the vat solution, mix well and allow to stand 10-12 hours
- Release the water and bury the solids

# Initial Phase Sampling Plan

Sample water and sludge in the vat



## LEGEND

- TEMP-MW = TEMPORARY MONITORING WELL
- DP = DRIP PAD
- DC = DRIP CHAMBER
- PEN = DRIP PEN
- E = DIRECTION
- 2.5 = DEPTH OF SAMPLE
- = SOIL SAMPLE LOCATION
- △ = TEMPORARY MONITORING WELL
- = SOIL SAMPLE COLLECTED AT 0.5 FT. BLS AND 2.5 FT. BLS
- = SOIL SAMPLE COLLECTED AT 0.5 FT. BLS AND 4.0 FT. BLS

<b>Woodward-Clyde Consultants</b> Engineering & sciences applied to the world & its environment Tallahassee, Florida			
<b>FLORIDA DEPARTMENT OF          ENVIRONMENTAL PROTECTION</b>			
SCALE: 1"=10'-0"	DRAWN BY: JH	DATE: 11/5/94	FILE NO: 94025
CHECKED BY: JAH		FIGURE <b>3</b>	
<b>TYPICAL PHASE I SAMPLING PLAN</b>			







# Contaminants of Concern

- Historic analyses: EPA 8260/8270, EPA 8080, and As, Pb, Cr, Cd, Fe, and Cu
- Found As, organochlorine pesticides, Fe, aromatics, and cPAHs
- Present analyses : As and organochlorine pesticides as both drive cleanup with regard to extent and CTLs

# FDEP funds DOH Sampling

- Contact FDOH to sample all private wells located near a vat
- FDEP-Drinking Water program provides bottled water if concentrations exceed GCTLs.

# Assessment Findings

- Vat soil/groundwater concentrations reflect steady state conditions
  - Official Vat program ended in mid 1960's
  - In many cases extent of groundwater impacts coincides with extent of contaminated soil
  - Sites with long plumes: Walker Ranch, Okeechobee
- Some sediment impacts
  - Use TECs/PECs for delineation/removals

# Past and Present Cleanup Levels

- January 1995
  - Cattle Dip Vat Report, Woodward-Clyde Consultants
  - Soil Cleanup Levels for Residential, Commercial/Industrial, Restricted I, and Restricted II
- Present
  - Exposure scenarios Restricted I and II are no longer used
  - Chapter 62-777 CTLs apply
  - Special cases are reviewed by UF

# Cleanup

- Addressed through Voluntary cleanup
- Chapter 62-780, FAC applies
- Any of the Risk Management Options can be used
- If an SRCO is desired, must satisfy the Public Notice and IC/EC provisions, as applicable

# Examples of Vat Sites

- Individual parcels to tracts of land proposed for development – Lake Weeks Subdivision
- Citizens with a vat on or next to their property
- Government ownership of land containing a vat – 9 Vats Within the Kissimmee River Restoration Project
- Annual limited funding has been available to remediate the vats on State Properties

# Regulatory Framework

- DEP enforcement stopped in 1993
- Chapter 376.306 F.S., Release of Liability
- Chapter 403.161 F.S. Pollution Prevention
- Education Statute 1013.365 F.S.
- EPA retains full CERCLA Liability
- RCRA farmers exemption applies as long as no sludge/soils exceed TCLP



# Chapter 376.306

Any private owner of property in this state upon which cattle-dipping vats are located shall not be liable to the state under any state law, or to any other person seeking to enforce state law, for any costs, damages, or penalties associated with the discharge, evaluation, contamination, assessment, or remediation of any substances or derivatives thereof that were used in the vat for the eradication of the cattle fever tick. This provision shall be broadly construed to the benefit of said private owner.

# The Contrasting Views of Chapter 376.306

- Is an all encompassing Total Exemption - no exceptions
- Total exemption as long as undisturbed - Chapter 403 applies to any spreading of soil or groundwater contamination
- Is no different from any other contaminant source (EPA)
- Applies exclusively to private landowners, not to publicly owned lands

# Who's Responsible?

- DEP does not regulate land development
- Local government land development regulations generally do not cover contaminated media
- Lending Institutions want their liability defined
- FDOH concerned with immediate threats and  $10E-04$  cancer risk

# Summary

- Vats are exempt from enforcement
- Encourage Voluntary cleanup before development
- Area of contaminated media cannot be enlarged
- Seek cooperative solutions to eliminate human exposure and environmental impacts