

PLANT DESIGN ISSUES: SHORT AND LONG TERM

Scott Ramsdell

J.C. Ramsdell Enviro Services, Inc.

Flandreau, South Dakota



HISTORY

- Ramsdell F&M, LTD
 - 1952 Mick Ramsdell
 - 1975 Full time SOB
 - retail locations
- J.C. Ramsdell Enviro Services, Inc.
 - Formed in 1992
 - Design solution for sister company



OVERVIEW

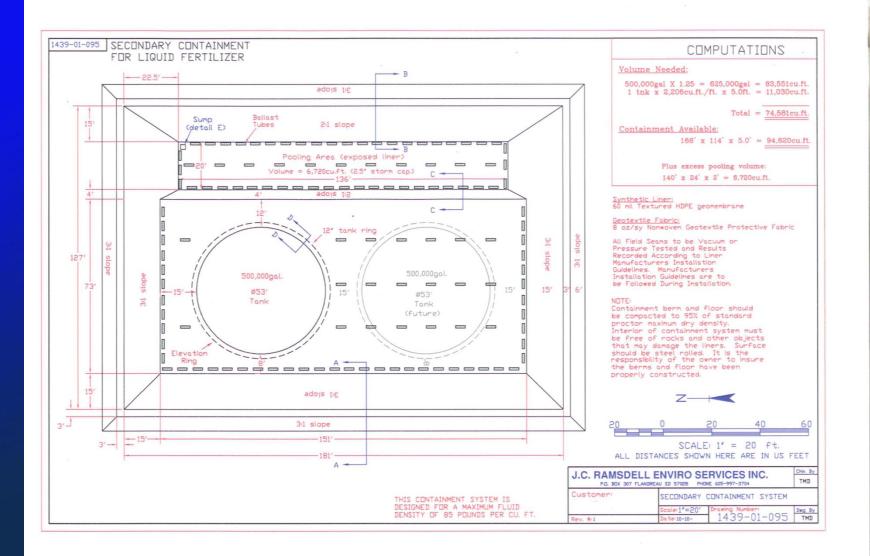
- Design Considerations
- Common-Sense Design
- Synthetic Liners
- Secondary Containment
 - Enviro-Guard Steel
 - Rail Containment
 - Wooden
 - Earthen Dike
 - Concrete



DESIGN CONSIDERATIONS

- Evaluate available land/space limitations
- NFPA 30 Requirements
- OSHA considerations
- Containment Calculations
 - Displacement volumes of smaller tanks
- Facility Operations







DESIGN



Before

After



DESIGN



Water Management



COMMON SENSE DESIGN





SYNTHETIC LINERS

TYPES - APPLICATIONS - THICKNESS

MATERIALS

- HDPE
 - Textured/Smooth
- Polypropylene
 - Reinforced
 - Non-Reinforced
- PVC

THICKNESS

- 30 Mil
- 40 Mil/45 Mil
- 60 Mil
- 80 Mil
- 100 Mil



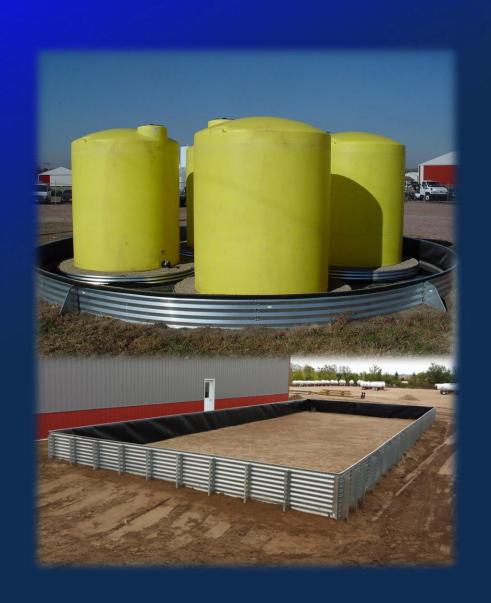
ENVIRO-GUARD

Pros

- •Economical Small Scale
- •Ease of Installation
- Durability
- Space Efficient

Cons

- Not approved for all applications
- Larger Application
 - Feasibility
 - •Water Management





RAIL CONTAINMENT







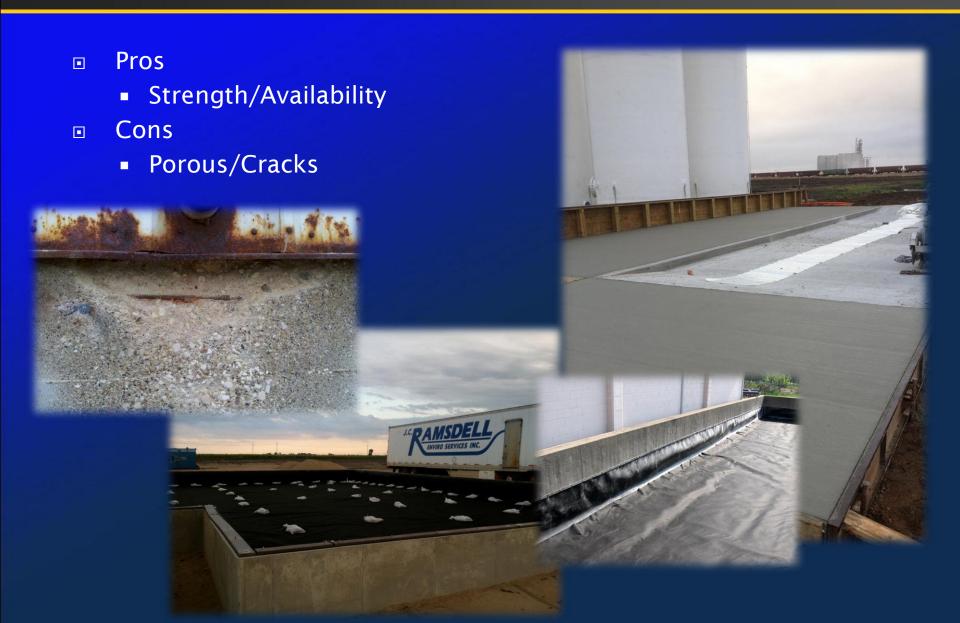
Installation Begins



Near Completion



CONCRETE





WOODEN

- Quickly Installed
- •Adequate Use of Land Space
- •Longevity
 - •Won't Crack
- •Expandable
- •Moveable





EARTHEN



Water Management - Liner Protection - Corrugated Tank Ring



THANK YOU

Questions?