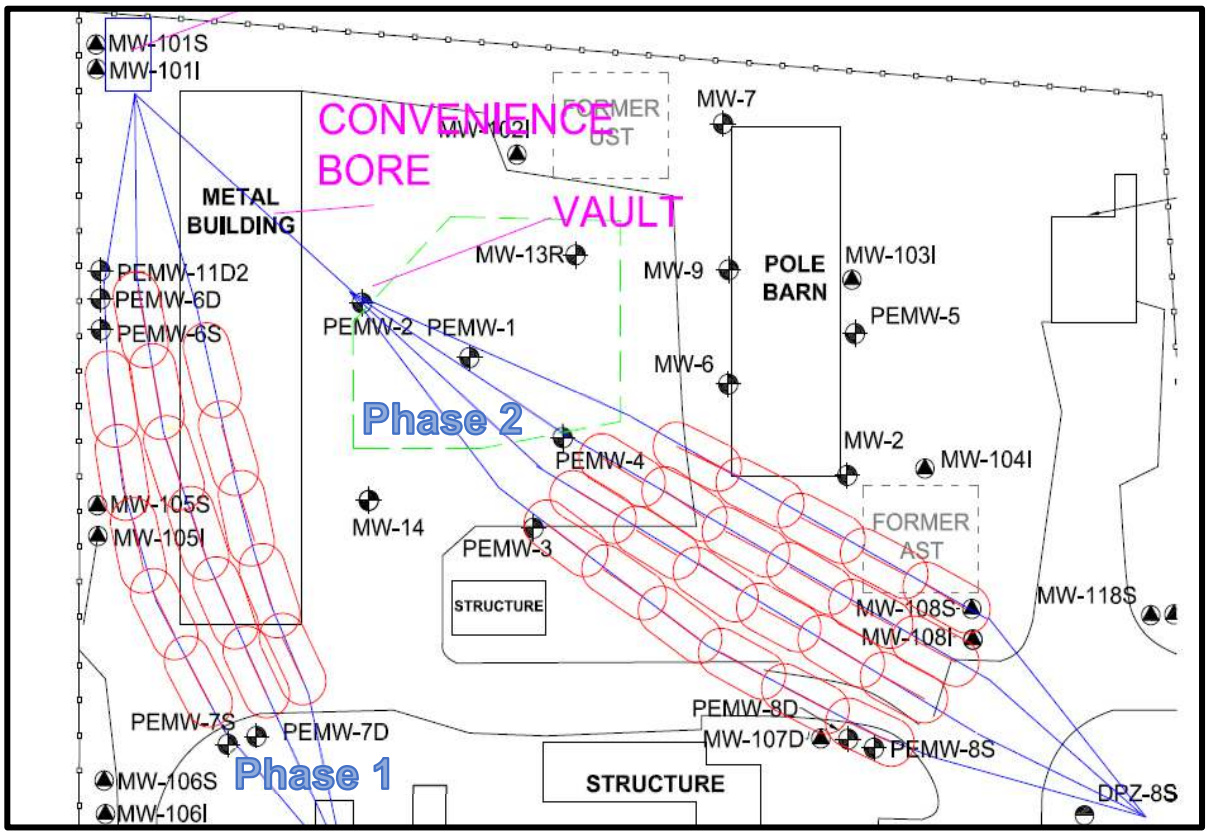
Case Study: VC19

Quadruple the Influence with Vertebrae at a Farm

SITE
Putnam County Road Camp
Florida FAC.ID-8521000

SITE INFORMATION
The Putnam County Road Camp site contained both AST's and UST's. A petroleum discharge was discovered at the site in 1985. During the assessment phase a vertical biosparging pilot test was performed which concluded that it would be an effective treatment technology and demonstrated a 10-foot radius of influence (ROI). A full-scale system implementing the Vertebrae Well System was designed to address two source areas on site.

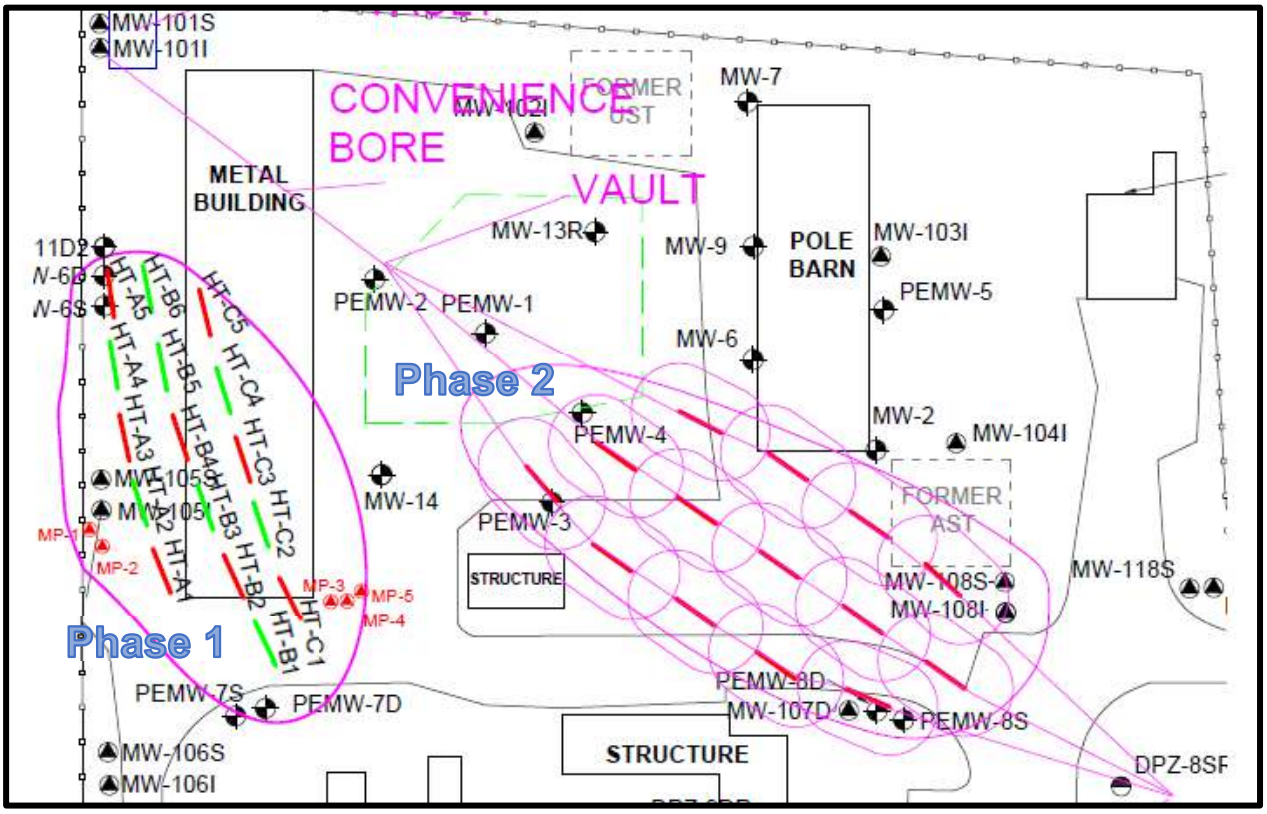
DESIGN AND INSTALLATION
The full-scale design includes 7 Vertebrae systems, with 39 independent wells. In order to save on installation cost and to evaluate system performance, a phased approach was used. The installation of Phase I consisted of 3 Vertebrae Well Systems with a total of 16 independent Vertebrae wells to address the source area on the west side of the property. Drilling and installation took place behind the site building where the remediation equipment compound would be located.



SYSTEM OPERATION RESULTS
The system became fully operational in February 2021 and was monitored for 2 quarters to measure positive effects on the aquifer before the application of microbial enhancement compounds, as well as measuring the zone of influence. The field data collected showed that the 10-foot ROI gathered from the vertical pilot test was very conservative when compared to how the Vertebrae Well System was performing. The updated zone of influence was 20-feet (which is four times the coverage), which allowed for a redesign of Phase II to eliminate one of the proposed Vertebrae Well Systems entirely.

CONCLUSIONS

The update to the Phase 2 design, resulted in a reduction from 23 to 14 Vertebrae wells, both optimizing performance and reducing the overall project costs. **Field measurements have proven what the science has always shown - influence from the horizontal plane is greater than from the vertical.* At this site, the Vertebrae Well Systems **performed four times better** than their vertical counterpart.



As more sites utilize Vertebrae™ Well Systems for remediation, and experience the added control and improved efficiency, more sites choose Vertebrae™ Well Systems as the preferred "tool" to implement the selected remedial approach. However, this site shows direct evidence for yet another reason for choosing Vertebrae; significantly more influence resulting in excellent costs savings!

*Ask about or Horizontal to Vertical Ratio Model (H_2V^R). This model allows evaluation of any site using hydrogeologic equations and locals costs with statistical tools.

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