TCE Vapor Intrusion Mitigation through Adaptive Design at a 174,300 Square Foot Aircraft Maintenance Hangar

Brian Hoye, PG; Diana Marquez (Burns & McDonnell); Lonnie Duke (AFCEC)

Battelle Bioremediation Symposium

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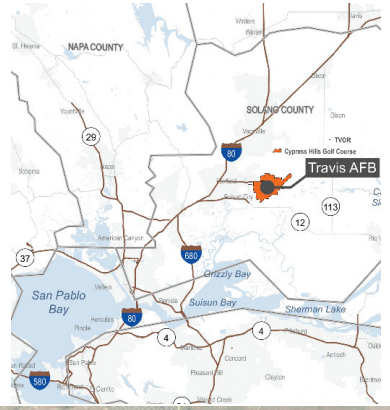
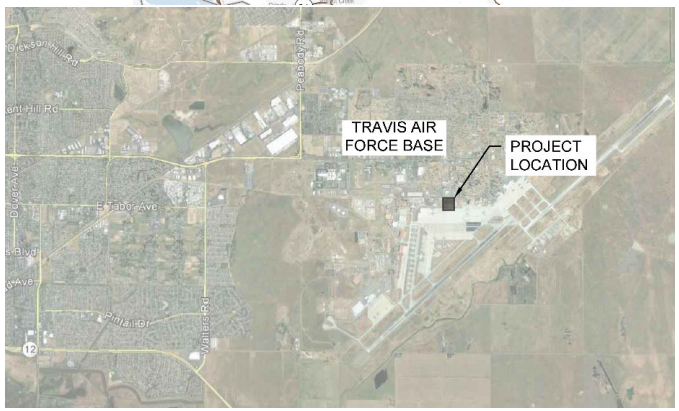
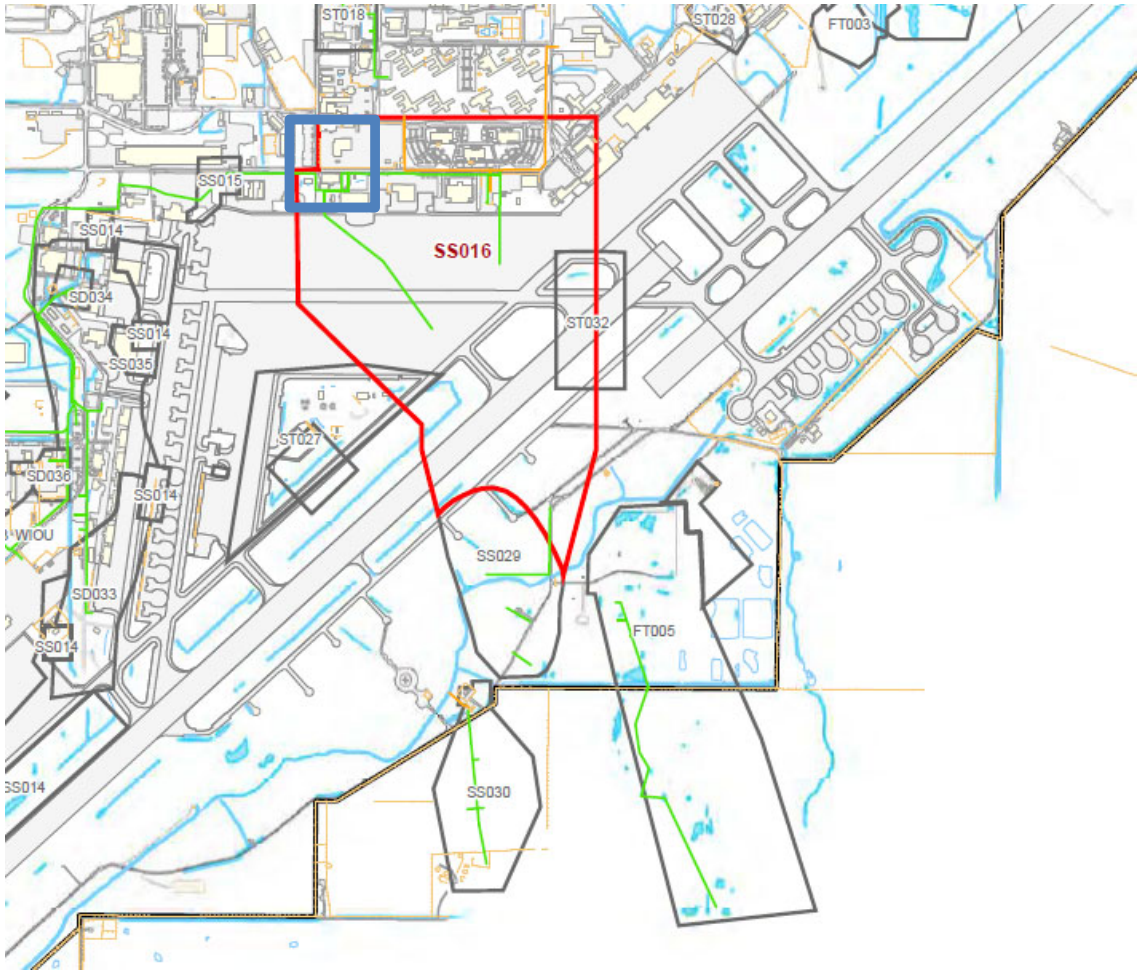
Presentation Outline

- Site History
- Overview of KC-46 Project
- Approach to Vapor Intrusion Mitigation
- Key Take Aways

Project Location

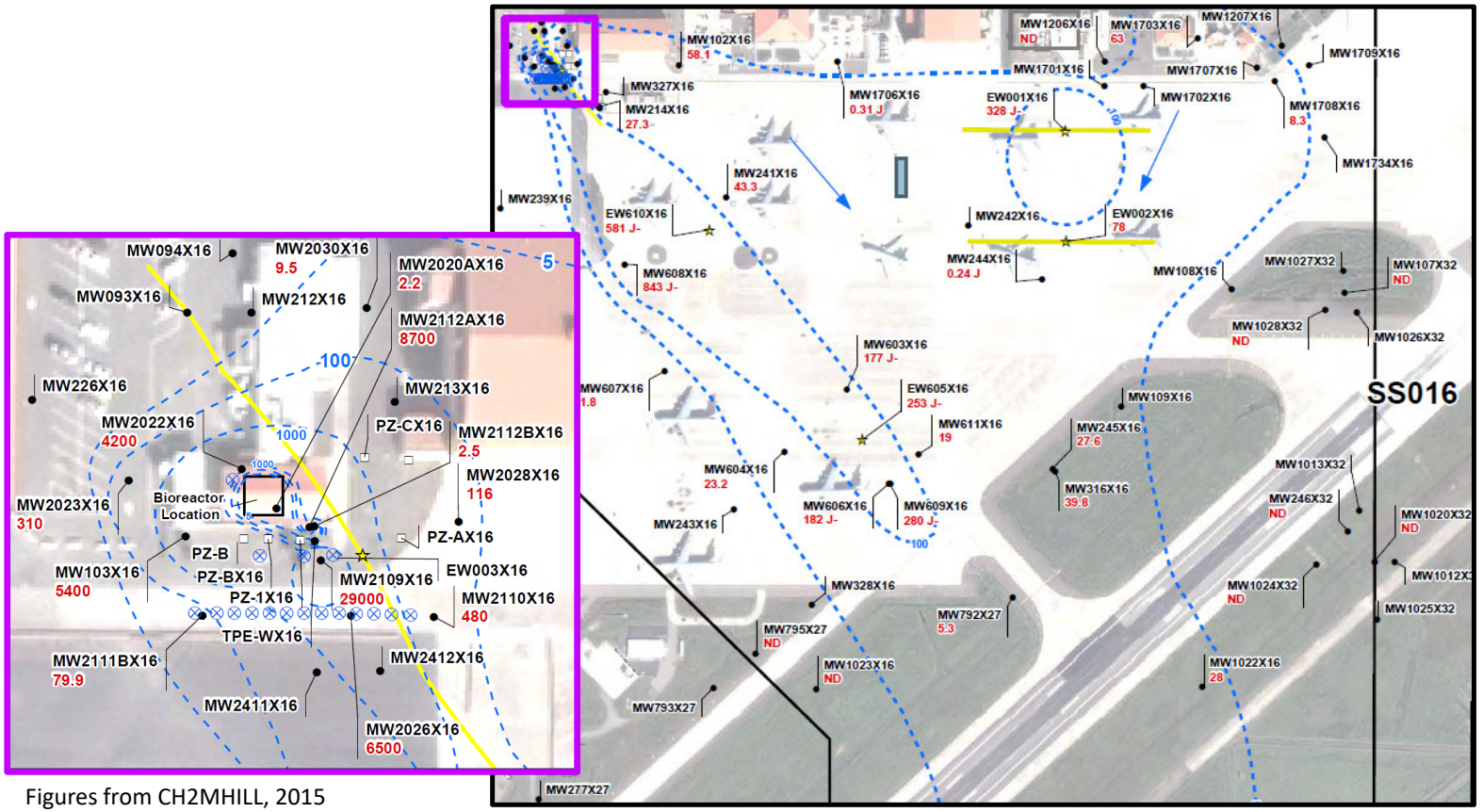






Figures from CH2MHILL, 2015

Site History / Environmental Activities



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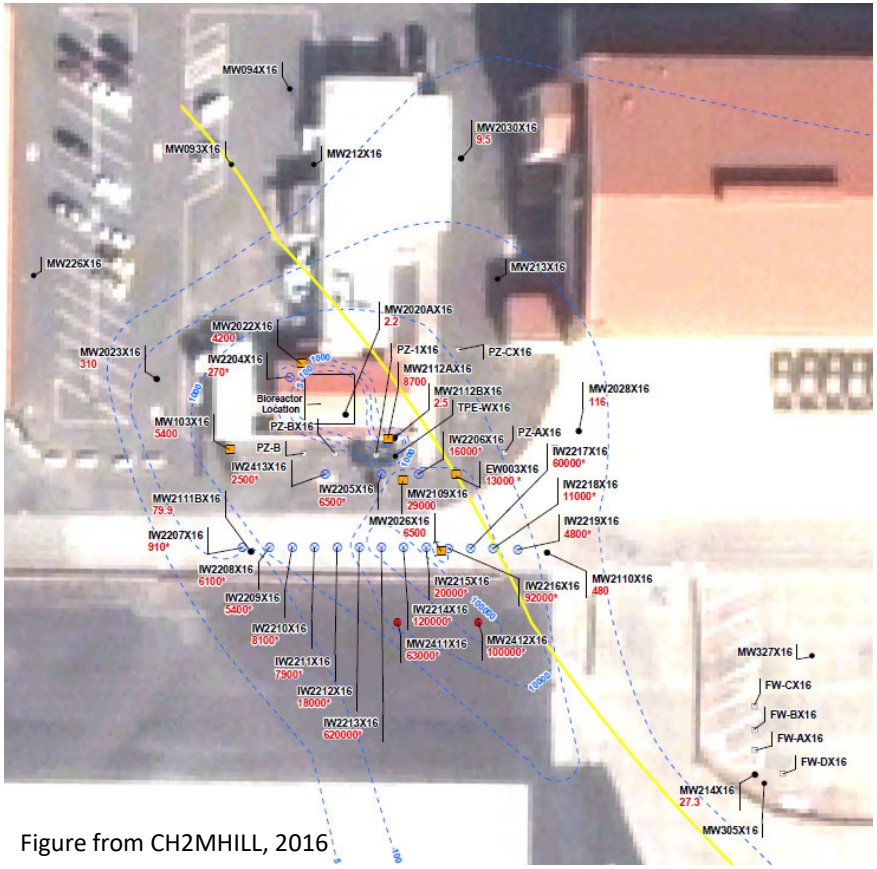

Figure from CH2MHILL, 2016

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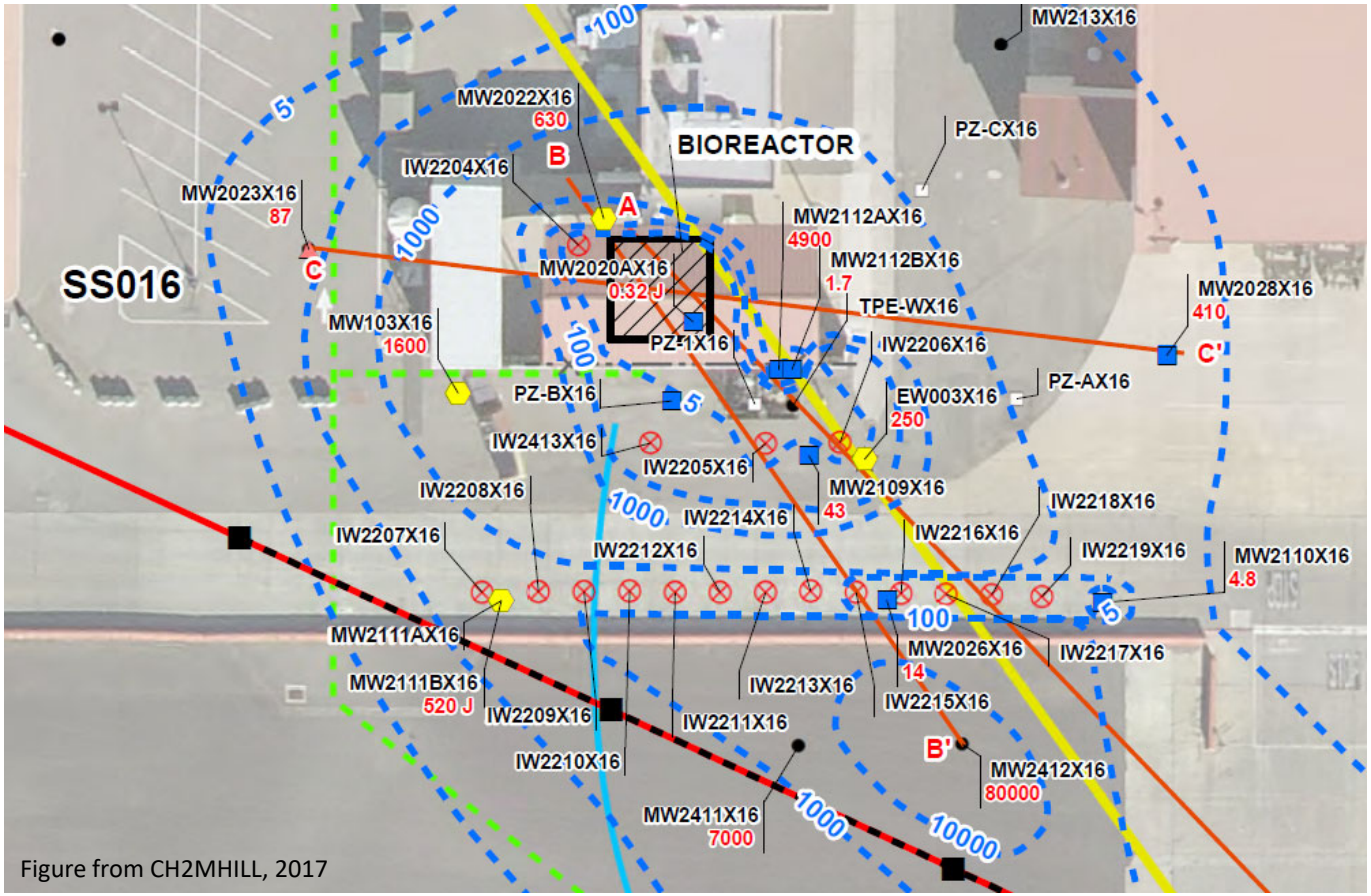
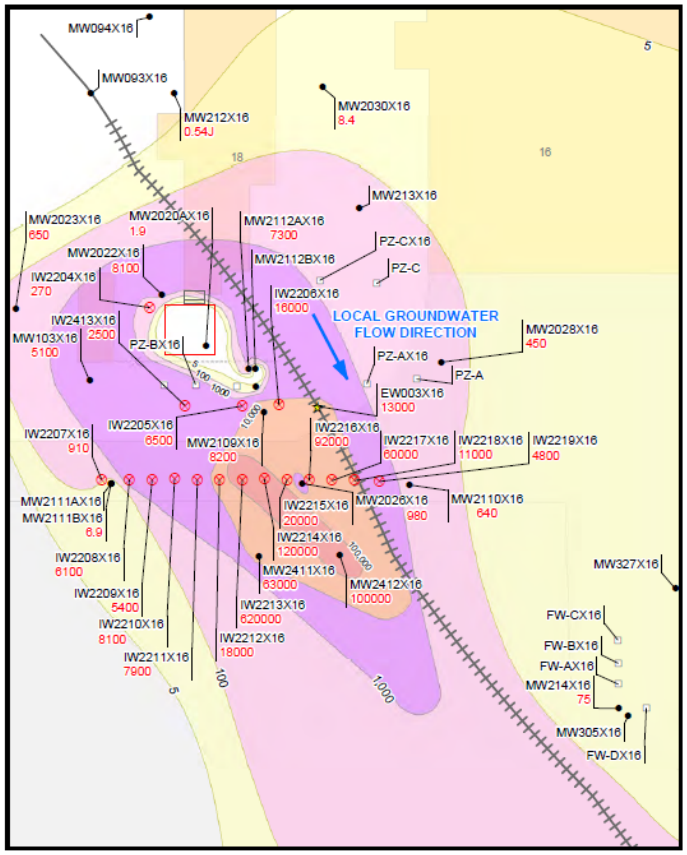


Figure from CH2MHILL, 2017

Baseline for Bioreactor Optimization (2015)



Performance Monitoring Results (2016)

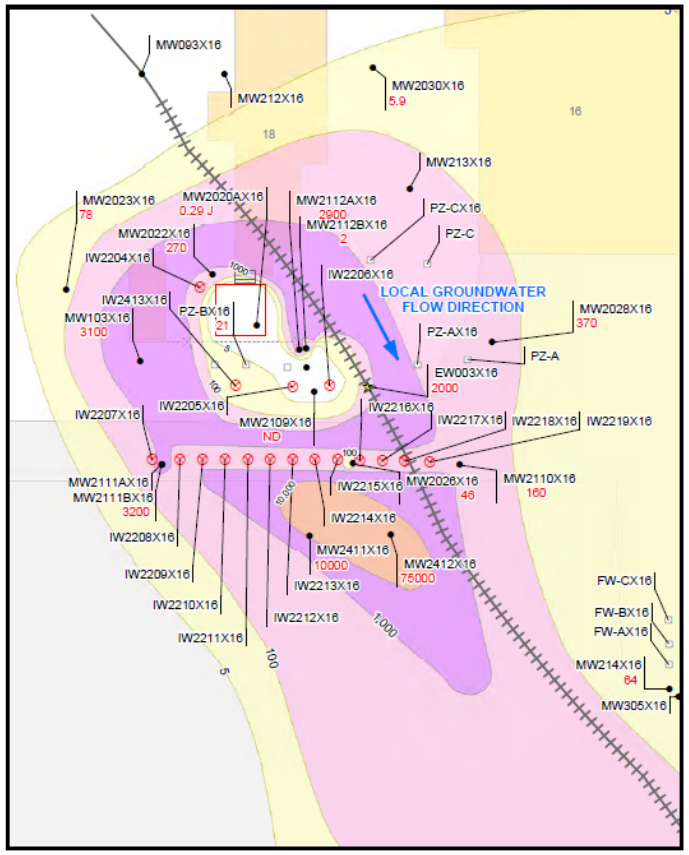


Figure from CH2MHILL, 2017

KC-46 Hangar Project Overview

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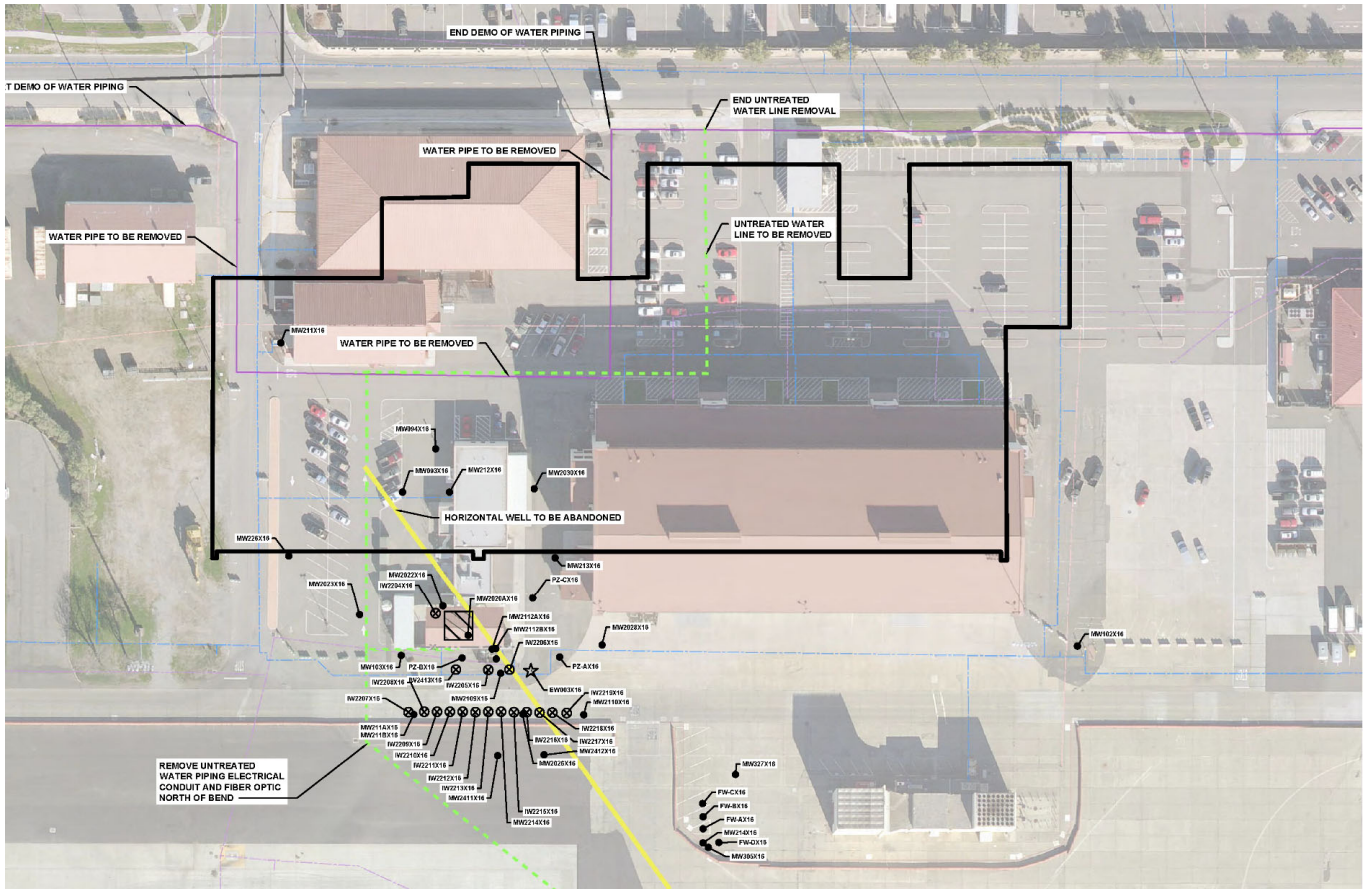


Project Objectives

- Support mission of Travis AFB
- Protect future workers
- Obtain regulatory approval of design
- Optimize existing remedial system
- Support needs of project stakeholders
- Provide a cost effective solution that balances protection and O&M obligations

Project Challenges

- Limited data available to assess vapor intrusion
  - Change in conditions since historical data was generated
  - Changing site conditions
- Schedule
- Multiple stakeholders with various considerations/needs

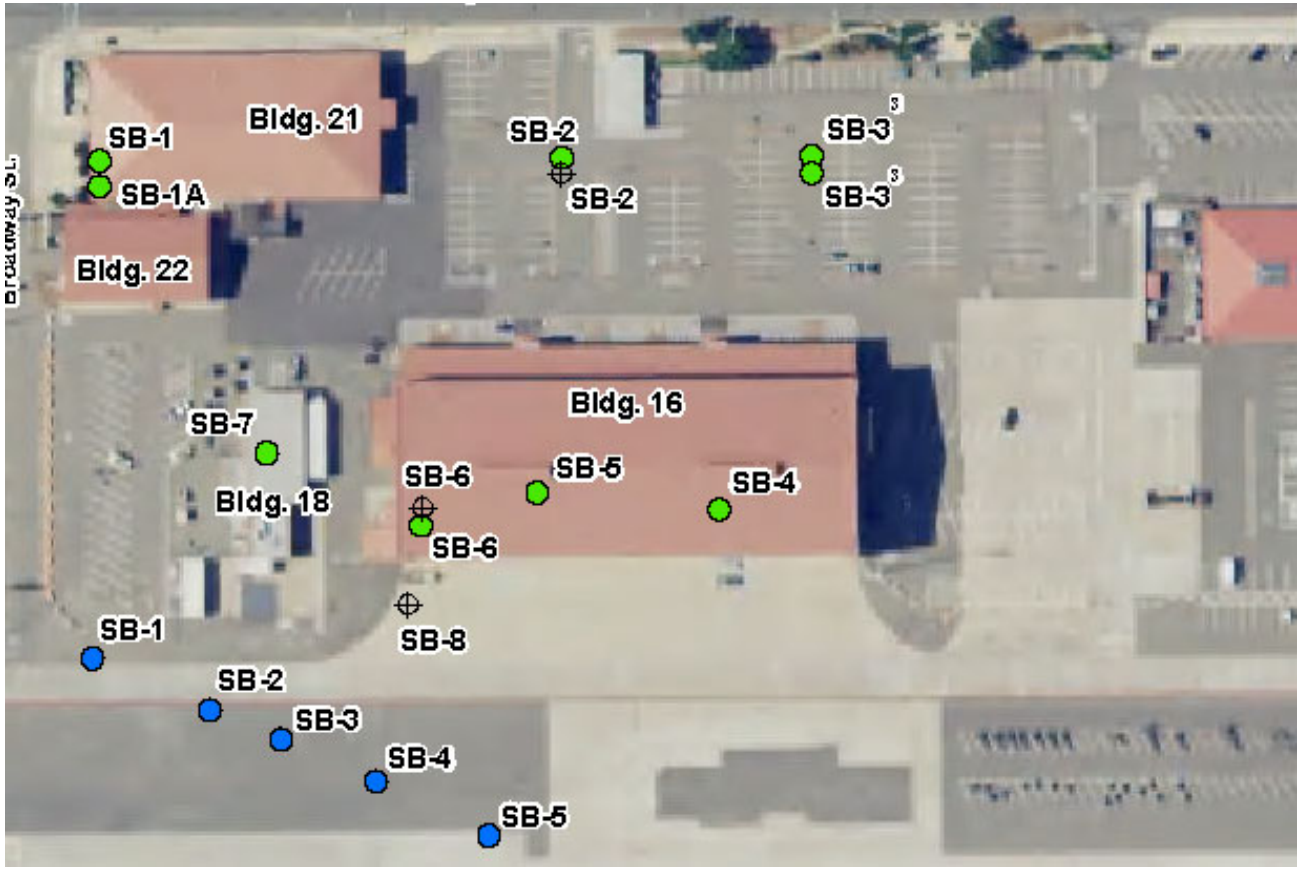
Project Stakeholders

- Air Force
- NAVFAC
- EPA
- Water Board
- California Department of Toxic Substances Control
- O&M Contractor
- Design Team
- Construction Contractor

Project Approach

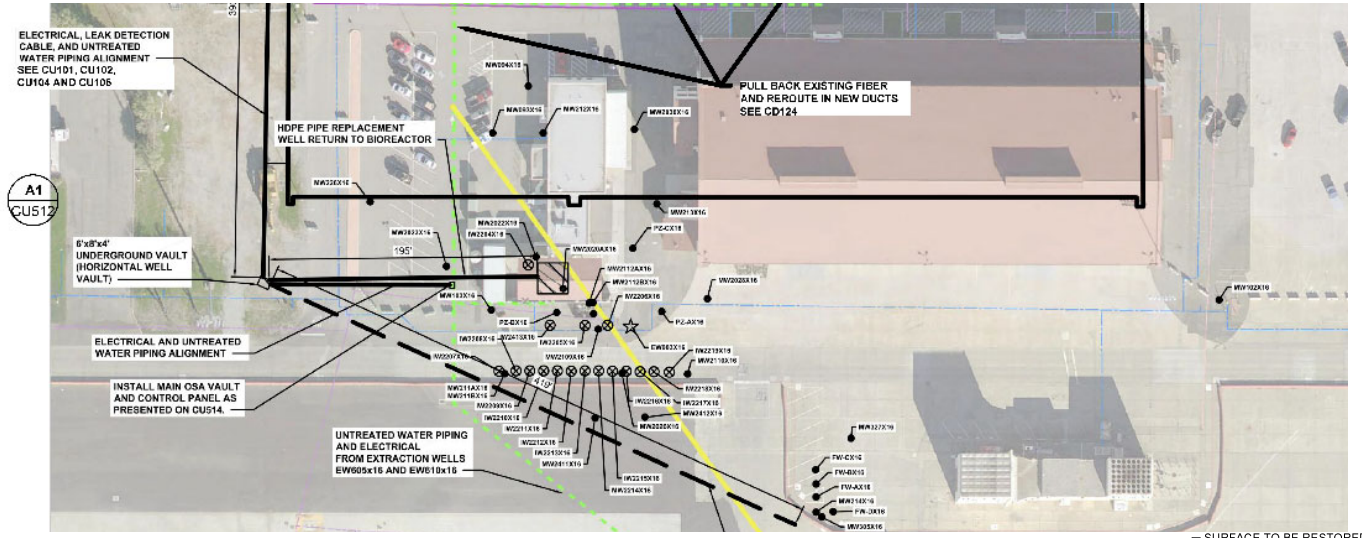
- Modify design to support active regulatory negotiations
- Include regulatory “must have” VI mitigation elements as they become known
- Generate data to assess VI risks and support informed decision making
- Contemplate additional needs and provide flexibility for upgrades
- Limit impacts to future site operations

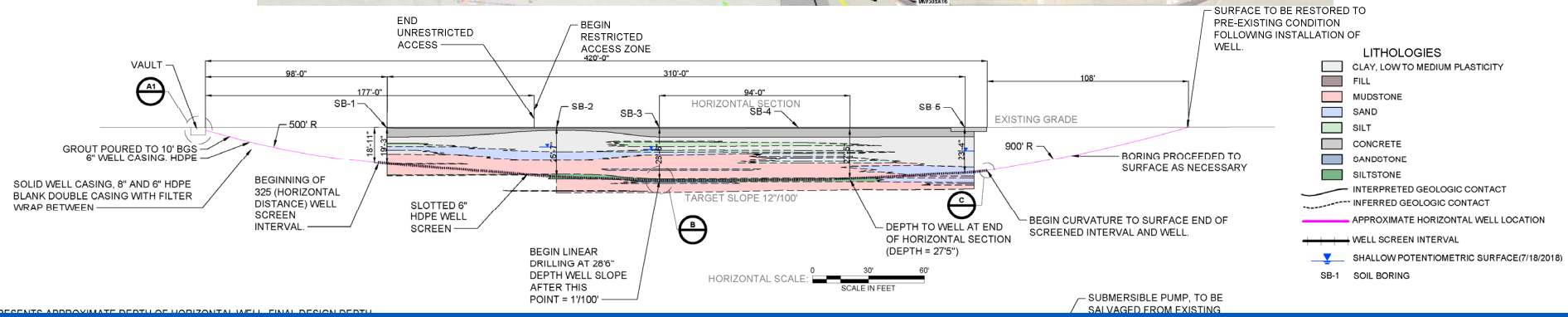
Investigation to Assess VI Potential



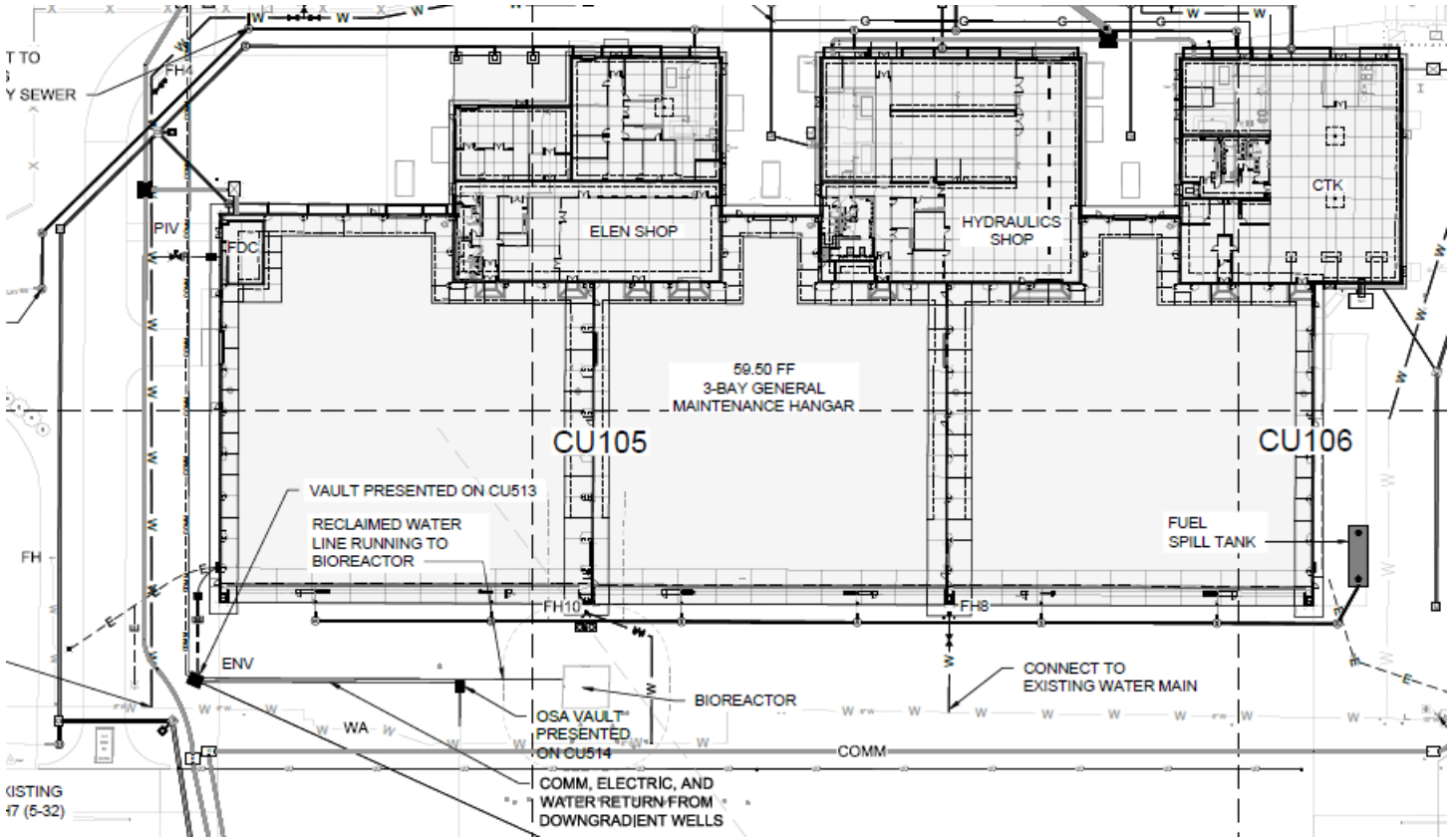
VI Design Elements

Utility Penetrations

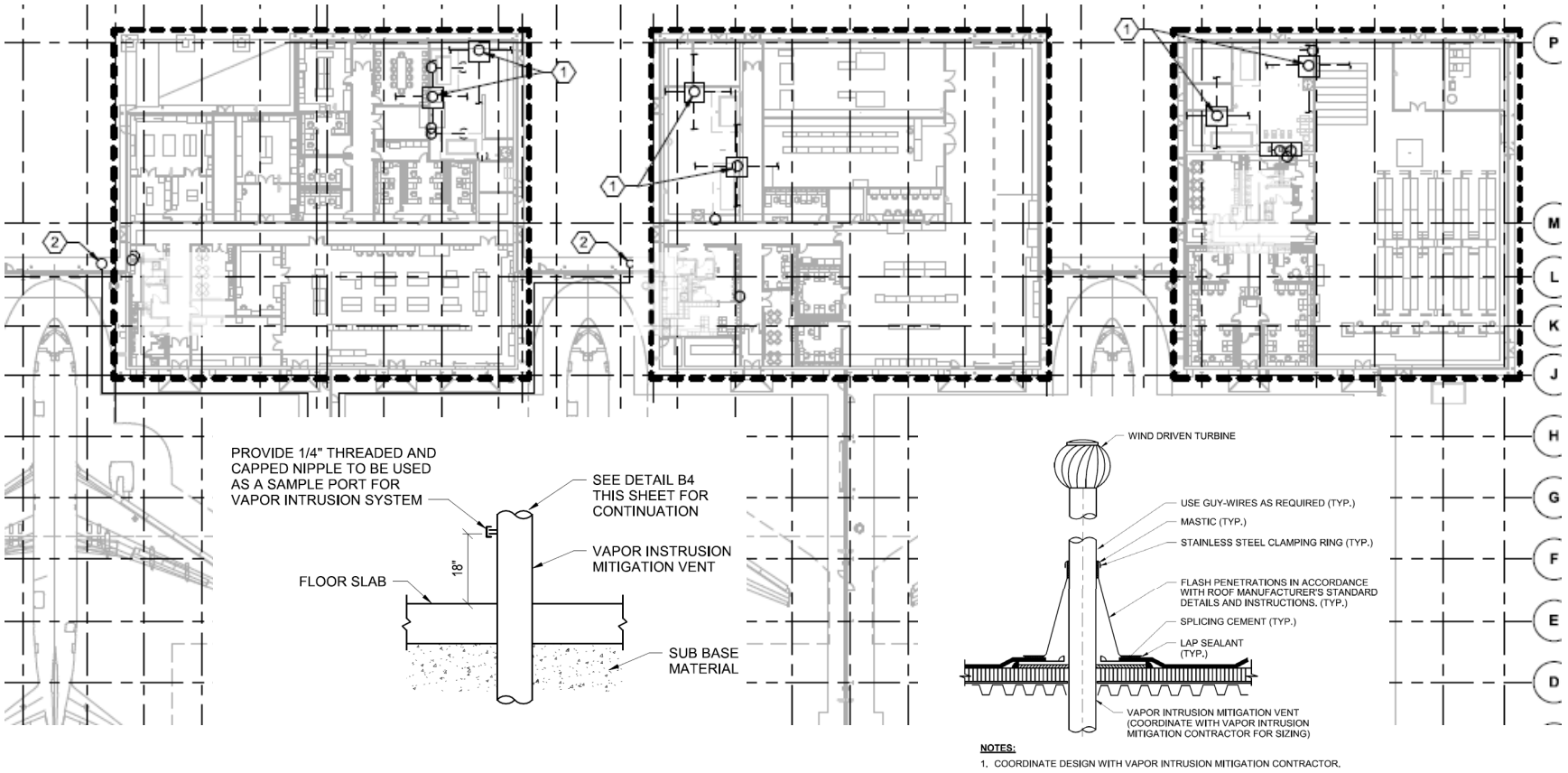




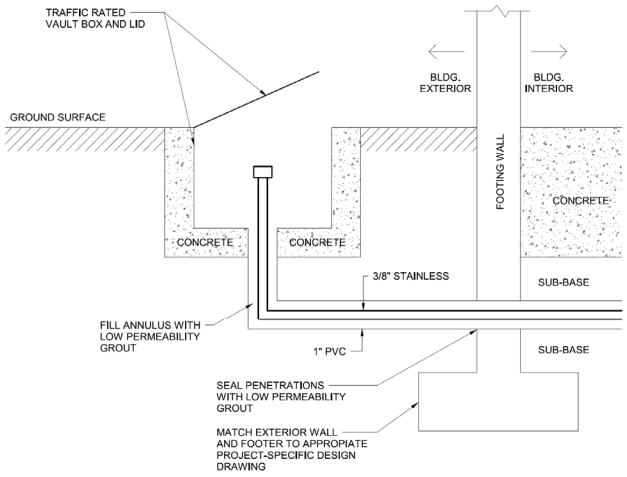
Geomembrane / Vapor Barrier

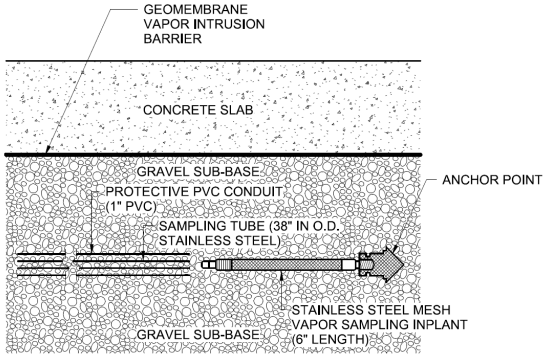


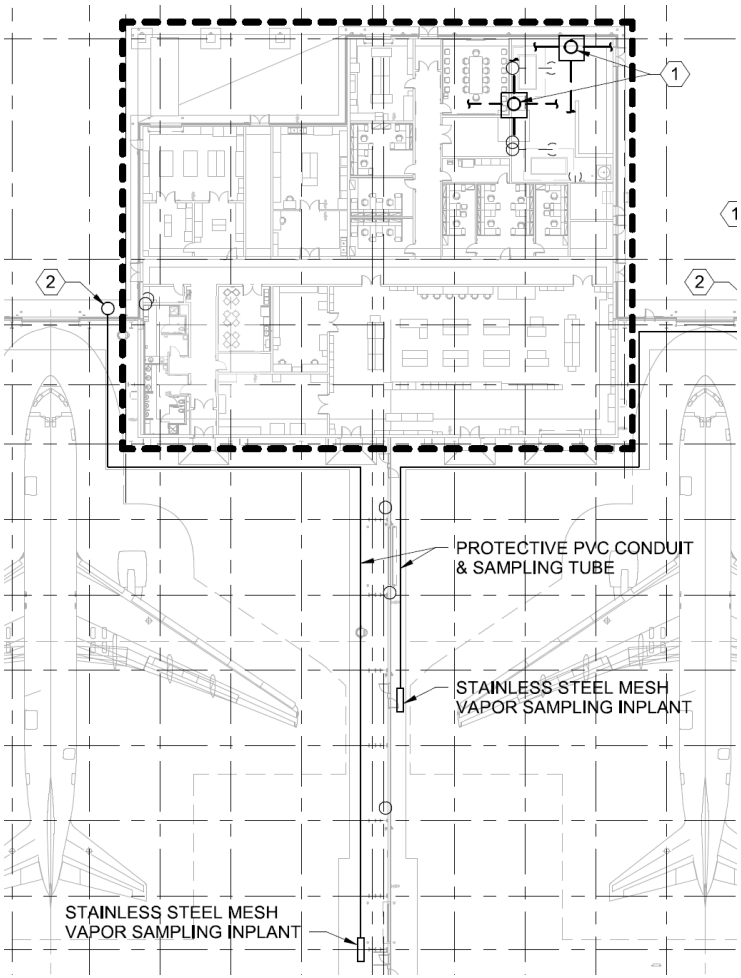
Upgradable Passive Sub Slab Depressurization



Sub-Slab Sampling Ports

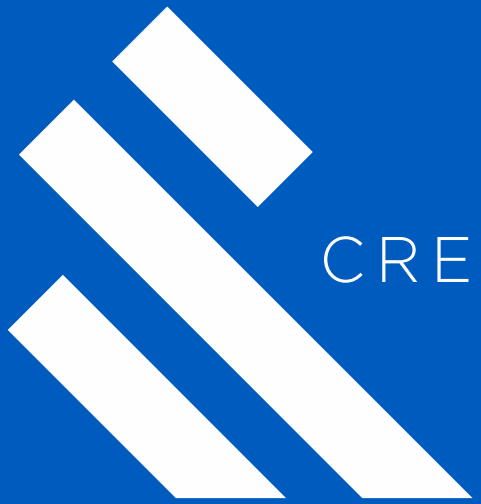






Outcome / Conclusions

- Protection of future site workers
- Coordination of design with Base environmental supported the following:
  - Preparation of regulatory submittals
  - Negotiations related to the SS016 Environmental LUC
  - Demonstrating to regulatory agencies that the design was protective
- Approach to VI mitigation balanced the cost of O&M with worker protection
- Sample ports allow continued monitoring of sub-slab soil gas without disrupting operations
- LUCs are not a panacea - remediating to residential standards should be considered where feasible



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