Transforming an Oil Field Waste Disposal Facility into Residences and Habitat
Outline

• Background
• History of Regulatory and Remedial Orientations
  – FS/RAP
    o Soil
    o Groundwater
    o Vapor
  – Preliminary Remedial Action Completion Report (PRACR)
  – California Land Reuse Revitalization Act (CLRRA)
• Long-Term Stewardship and Financial Assurance
Project setting indicates valuable property

- Valuable property ¼ mile from ocean
- Infill property surrounded by greenspace agricultural, parks, and residential
• 1950s, 60s, and 70s – oil field waste disposal facility
• 1980s – improper “closure” with non-TPH drilling muds
• 1990s-2004 – Site Characterization/RWQCB lead and 1996 RAP
• 1999 – Project EIR Certified with RWQCB RAP
• 2004 – Milk-Vetch litigation resolution
• 2004 – VCP, change to DTSC lead
Site Use for Oil Field Waste Disposal and Other Non-permitted Releases
Remedial Activities Completed

- **2005** – RAP in accordance with 1996 RWQCB Approved RAP
- **2006-2007** – RAP Implementation
  - Affected soil consolidation- 2M cu yds., 0.7M cu yds affected
  - Haz PBC waste to landfill - 10K cu yd.
  - Dewater pump and treat, DNAPL excavation
  - Substrate placement
  - DNAPL soil treatment
  - Monitored natural attenuation
  - Evolution of soil gas as a concern - during FS/RAP
  - Soil gas risk *unexpected* in post-remedial testing
- **2008** – Comfort Letter – included active vapor mitigation to address soil vapor and meet HHRA RAO
FS/RAP Implementation (pre-2007 cleanup)
Post-2007 Soil Consolidation

FUTURE RESIDENTIAL AREA (CLEAN SOILS)

SOIL CONSOLIDATION AREA CONTAINING TREATED MATERIALS

MILK VETCH PROTECTION AREA

SOIL CONSOLIDATION AREA CONTAINING TREATED MATERIALS

TREATED GROUNDWATER

Final Location of Treated Materials
2007 Membrane Placed between SCA and Residential Areas
Estimated 2,042 pounds of total VOCs in groundwater
DNAPL Excavation
2008 – Post-Excavation
DNAPL Source Soils Placed in a Treatment Pile
Estimated 142 pounds of total VOCs in groundwater
Site Conditions Update and Property Sale

- 2007 – Remediation “completed”
- 2008 – DTSC Comfort letter
- 2008 – Great Recession Foreclosure by Bank Lender
- 2008 – 2013 – Site Groundwater Monitoring- site maintenance
- 2012 – Site Conditions Update - due diligence process with Bank seeking buyer
- 2013 – Partial Remedial Action Completion Report defined remaining obligations
- December 2013 – Developer purchased based on PRACR
2012 – Site Conditions Update - J&E Potential Risk
Soil Gas Risks Driven by VC at Depth
Developer completes the PRACR obligations and enters into CLRRA Agreement with DTSC

- **2014** – Developer initiates obligations outlined in PRACR
  - Soil Vapor Monitoring (2015 and 2019)
  - SVE Construction and Operation (2016-present)
  - Enhanced Attenuation Substrate Application (2016)
  - Groundwater Monitoring (2014-present)
  - O&M Plan

- **2016** – Work to finalize long term stewardship structure

- **2018** – California Land Reuse and Revitalization Act (CLRRA)
  - AAI
  - Response Plan
  - EIR Addendum
  - VIM Design
  - Public Meeting
  - FA and Cost Report
Source Soil Disposition to Cap and Landfill (2015)

7,000 cy – off-site landfill

12,000 cy – cap material

Oxygen vs. Vinyl Chloride Concentration

Vinyl Chloride Concentration (μg/L)

Oxygen (percent)
Constructed a 41-Well SVE System
SVE System Construction (2016)
In 18 Months of Operation, Steady State, Diffusion Limited, Removal Attained
Estimated 61 pounds of total VOCs in groundwater (>96% reduction)
2016 - Enhanced Attenuation Substrate Application
2018 – Groundwater Concentrations

“Left Eye”

“Mouth”

“Right Eye”
2018 California Land Reuse Revitalization Act Finalized

- Response Plan- Response Actions for CLRRA Indemnities
  - SVE – O&M
  - Active and Passive Soil-Vapor Mitigation for all Residences
    - Real-Time Operation Monitoring
  - SCA Monitoring and Maintenance
  - Groundwater Monitoring of MNA
  - Land-Use Covenants
  - Environmental Covenants, Conditions, and Restrictions (ECCRs)
  - Financial Assurance Structure
- Broad Developer Indemnities
Developer Options for Sub-Slab Depressurization
Vapor Mitigation on All Homes

LIVING AREA
Checkpoint IIR Mitigation System Monitor with Remote Alarm
Ongoing Obligation Summary

• Site Groundwater Monitoring – Long-term
  – Unlikely Contingency Enhanced Attenuation
• SCA Monitoring
  – Groundwater Monitoring, Cap Efficacy – Access Controls
• Potential Indoor Air Risk
  – Sub-slab and Vadose Zone Monitoring
  – SVE operation – 2-5-year Operation
  – Long-Term Foundation SSD Administration
• Site Representation and Environmental Obligation Administration
• Contingencies
Environmental Stewardship Structure

• Long-Term Responsible Party
  – Mutual Benefit Corporation (MBC)
    o All Liability- the sole enforceable entity
    o All Environmental Obligations- responsible charge
    o Adaptive Management
    o Covenant Enforcement
    o Centralized Communications for all Environmental Issues

• Long-Term Adjustable Funding
  – Community Facilities District (CFD)- Mello-Roos

• Reserve Fund- managed by MBC
• Insurance
• Bonding of CFD Payments
Obligations Holding and Stewardship Structure in progress
### Detailed Cost Projection of Obligations and O&M Administration Costs

<table>
<thead>
<tr>
<th>Year</th>
<th>Groundwater Monitoring (Table 1)</th>
<th>Soil-Gas Monitoring (Table 2), TDR-OMM Budget</th>
<th>VLT OMM Budget (Table 3)</th>
<th>GCA OMM Budget (Table 4)</th>
<th>Annual Regulatory Oversight</th>
<th>NEC Budget (Table 5)</th>
<th>NEC and DTSC 5-Year Review Costs</th>
<th>Decommissioning NEC and DTSC Costs (Table 5)</th>
<th>Total Annual Expenditure</th>
<th>Reserve Fund Contribution</th>
<th>Total Reserve Fund Balance</th>
<th>Contingency Reserve Fund</th>
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**Initial Contingency Reserve Fund: $240,000**
Brownfield Productive Use
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Thank you!