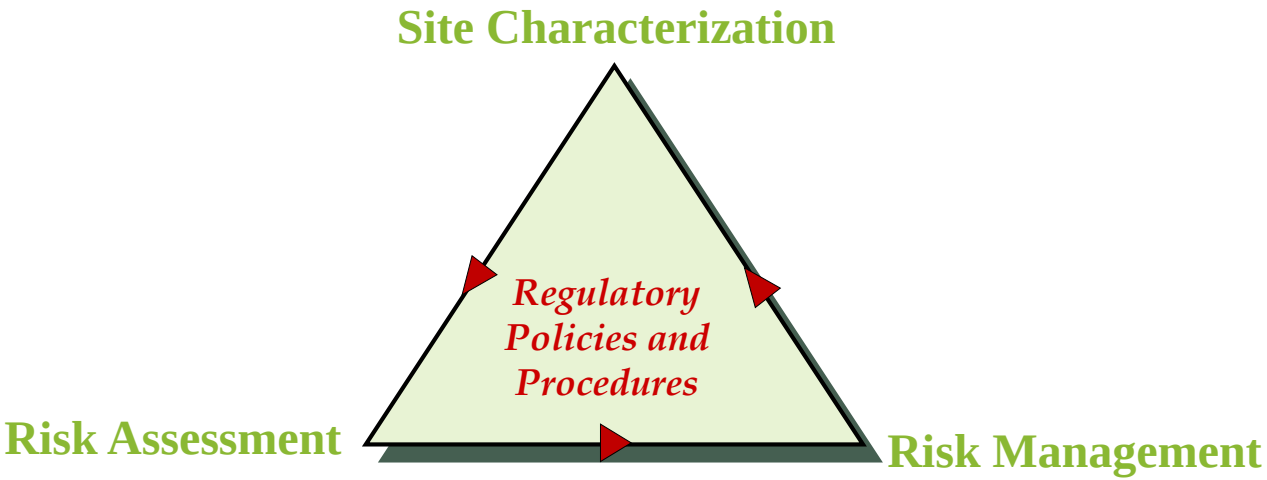
Proposed MRBCA Changes Sustainable Remediation



Atul Salhotra, Ph.D.
RAM Group, Inc.
5201 Evergreen St, Bellaire, TX
Tel: 713-784-5151
E-mail: asalhotra@ramgp.com

Part 1 of Presentation

MRBCA Changes

2006 MRBCA Guidance

The department expects that the MRBCA process and its associated policies, procedures and assumptions will evolve as environmental professionals (regulators, consultants, responsible parties, and others) and the public gain familiarity with the process. Thus the department anticipates revising and updating this document from time to time in accordance with Appendix A

1. **Update errors or omissions**
2. **Update substantial technical & policy Issues**
3. **Complete review based on changes in scientific knowledge**

Would be a public process!

Comment No.1: Word Change

Excessive use of the word contaminant

Suggest use the term chemical until we get to the risk management step

A chemical is a contaminant only if it poses unacceptable risk.

Comment No. 2: Background Concentrations

Establishing site-specific background concentrations can be fairly time consuming, expensive, and often not very useful

Two suggestions:

1. Establish default background concentrations for different parts of the state
2. Allow the RP to collect data to establish site-specific background concentrations
3. Specify the specific statistical technique to be used

Comment No. 3: Representative Concentrations

- Use of maximum concentration for residential land use. Unreasonable and overly conservative

(Duration of exposure, models are mass based)

Comment No. 4: Non-Detect Concentrations

- Neglect concentrations reported as non-detect (ND) within an exposure domain

- Just because use of ND data will reduce the representative concentration does not mean it is wrong

(Factor of 10 ratio to check for inadvertent dilution, only a portion of the exposure domain may be impacted)

Comment No. 5: Use of TPH Target Levels

- TPH levels are extremely inaccurate
  - TPH weathers
  - TPH concentrations are method dependent
  - TPH target concentrations depend on fractions and the method used to develop target levels (surrogates vs. indicator chemicals)

- Sufficient to focus on the individual constituents

ITRC document

Hawaii has lot more to offer than TPH concentrations!

Comment No. 6: Miscellaneous

- Several technical “conclusions/facts” are presented without providing specific references.
- Lot of repetition that makes the document clumsy and voluminous and scary!

Vapor Intrusion Pathway: General

Science underlying the pathway is simple.

Implementation is difficult due to:

- **Large spatial and temporal variability**
- **Our regulatory framework is deterministic**
- **Impractical to measure several important factors**
- **Bottled air is not a viable risk management option**
- **Significant vested interests**

Indoor Vapor Intrusion Pathway Document

- **Several technical comments**
- **RA portion of the VI pathway be included in the main document. The VI document focus on collecting the right quality and quantity of data.**
- **The VIP guidance is too wordy, lot of repetition, cumbersome.**

The variability in the various components and the associated complications can be readily explained and handled in a simple to use and understand document.

Vapor Intrusion Pathway: Technical Comments

- Require soil gas sampling at each and every site
- Quarterly sampling
- Point by point comparison as opposed to using representative concentration

Vapor Intrusion Pathway: Suggestion

- MDNR convene a focused group (max 6-8) and develop a simple, clear, realistic and reasonable draft guidance for this pathway for review by all.

- Set a time limit 2-3 months with the mantra that:

Everyone will be satisfied no one will be happy!

Part 2 of Presentation

Sustainable Remediation

Remediation industry uses energy, consumes raw materials, and otherwise contributes to humankind's carbon footprint.

Sustainable Remediation: Many tools

- USEPA
- ITRC
- SURF
- Various state agencies
- SURF

Many tools and frameworks available

Sustainable Remediation

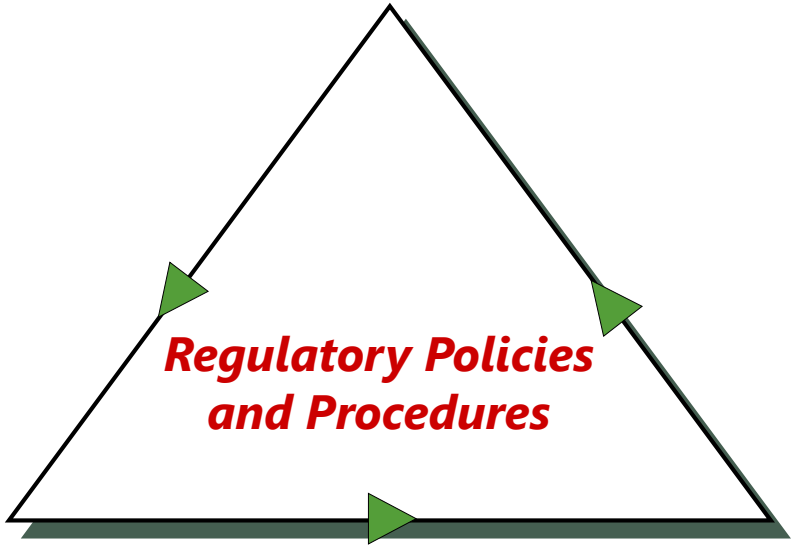
- Understand the environmental footprint of activities focused on impacted site activities
- Mitigate the environmental footprint
- Somehow factor lifecycle costs

At many sites we pollute more than we clean!

At many sites societal costs are a huge burden and unsustainable!

Site Activities Required at Contaminated Sites

Site Characterization



Risk Assessment
- Explosive Conditions
- Human Health
- Environment
- Nuisance conditions

Risk Management
- Cleanup
- Institutional controls

Sustainable Activities

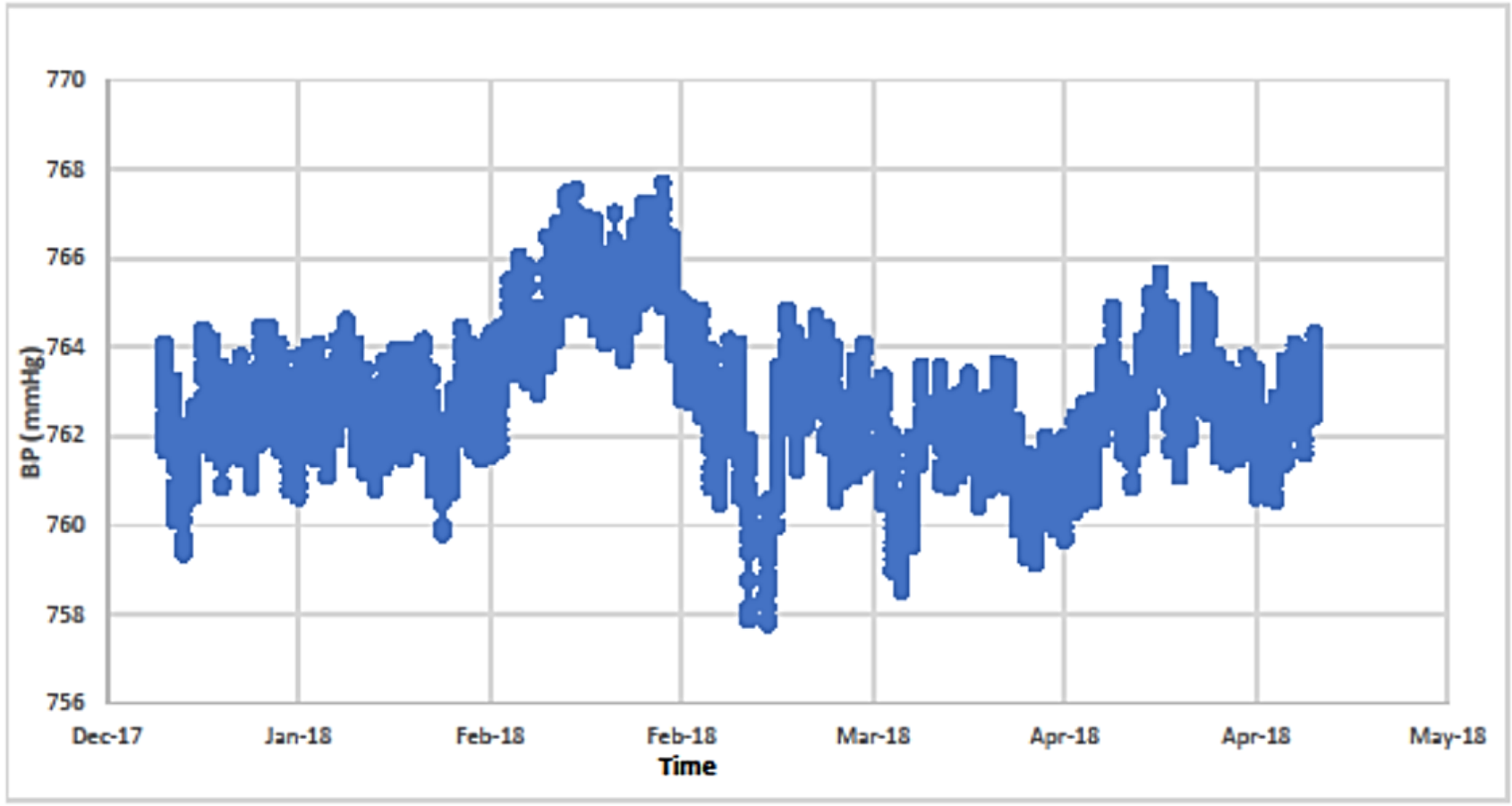
- Reduce the number of mobilizations
- Delineation is not absolutely necessary
- Reduce the excavations and off-site transport of soil
- Close sites with LNAPL
- Reduce monitoring number and frequency
- Use institutional controls
- Periodically evaluate effectiveness of remediation systems
- Educate the public to reduce/manage the outrage

As long as reasonable risks are acceptable.

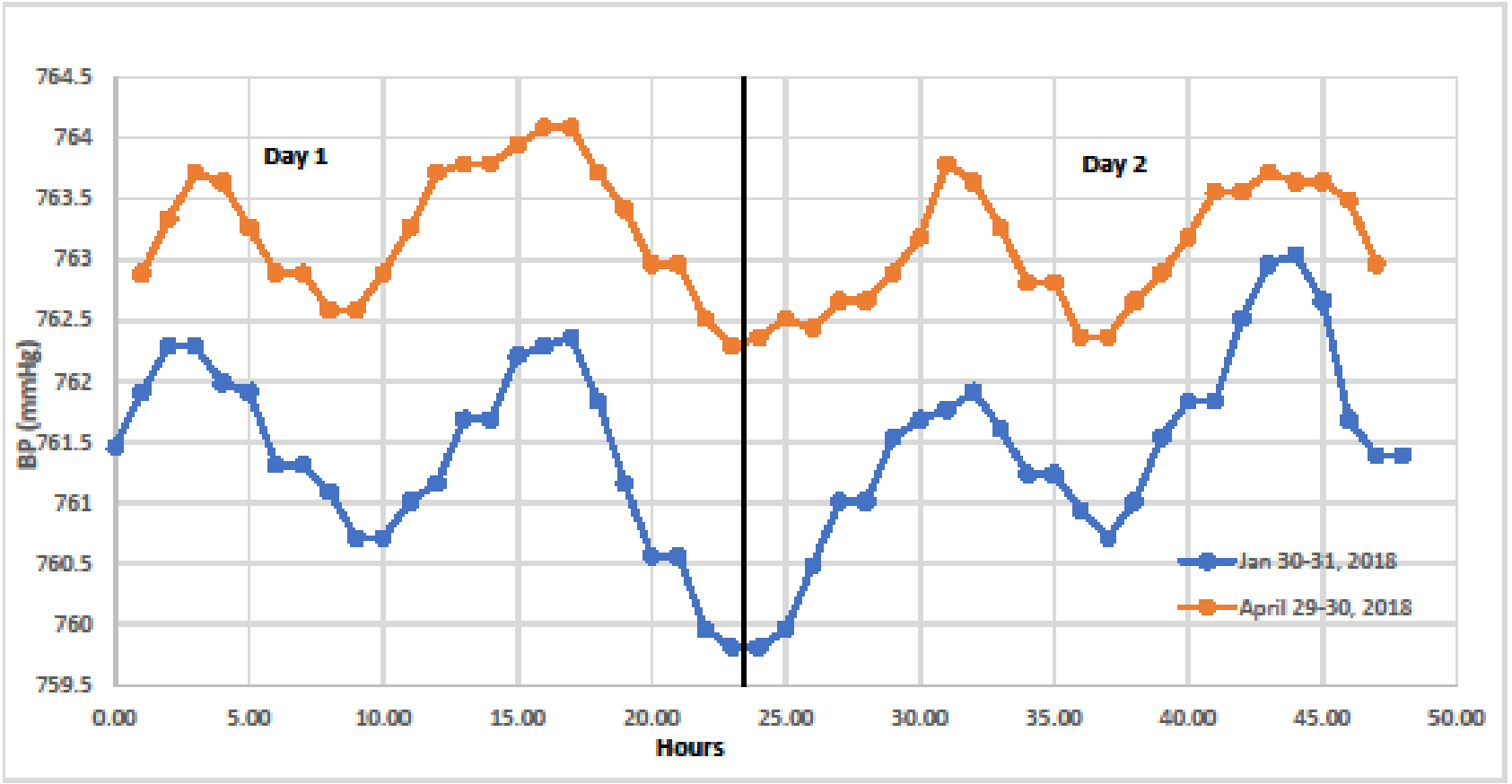
MRBCA Suggestion

- Incorporate discussion of sustainable remediation concepts and examples
- Identify a few pilot projects
- Build success stories
- Perhaps have a 1 day practical seminar on the application of available tools

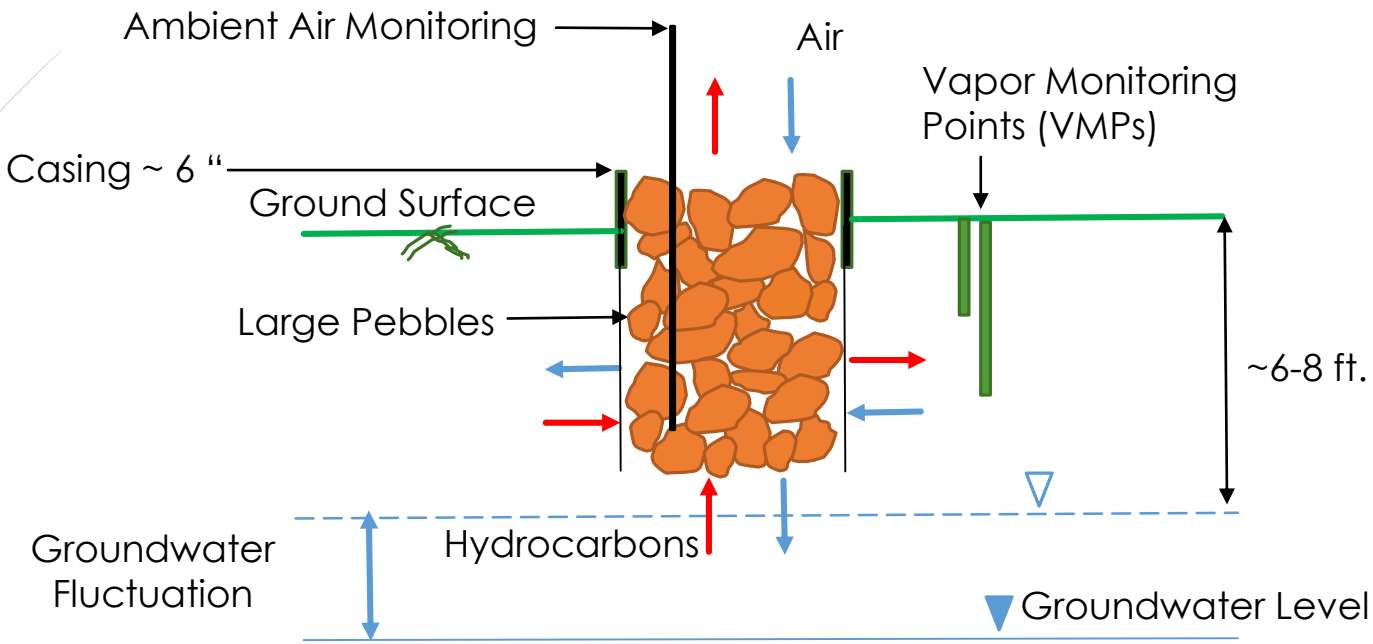
Long Term Barometric Pressure Data (Jan to May 2018)



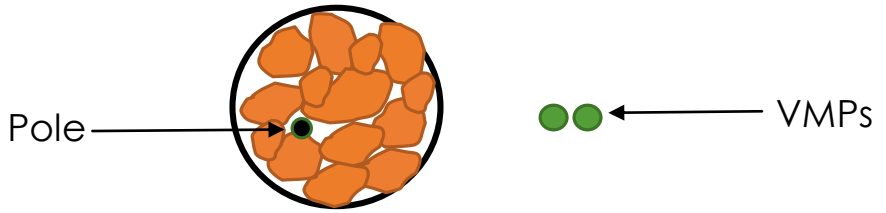
Short Term Barometric Pressure Data (Jan 30-31 and April 29-30, 2018)



Sustainable Remediation & Removal of Subsurface Residual Hydrocarbons



Vertical Section View



Plan Section View

Technology Benefits

- Low capital cost
- Low O&M cost
- Environmentally sustainable.
- Enhance aerobic biodegradation
- No disruption of site operations
- No health risk or adverse impacts
- Continuous operation
- No permit should be required

Land, Water, Air ….Our Earth

Treat the earth well
It was not given to you by your parents,
it was loaned to you by your children.
We do not inherit the Earth from our ancestors,
We borrow it from our Children.

~ Ancient American Indian Proverb ~