

Technical Impracticability (TI) Panel

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NJDEP's Technical Impracticability Guidance for Ground Water, December 3, 2013

TI is a condition where remediation of ground water to applicable standards is not feasible from an engineering perspective because of available remediation system's limitations.

* A TI determination is not a permanent remedy and remedial alternatives are required to be re-evaluated.

When To Consider TI

When Remedial Actions attempted are unsuccessful:

- Hydrogeologic Conditions
 - Complex
 - Low Permeability
 - Fractured Bedrock
- Contaminants
 - Free and Residual Product
 - High Levels of Recalcitrant Organic Compounds
- Limitations of Remedial Technologies

What is Not Considered TI

Sometimes a TI determination is checked off for a submittal, but there is no actual TI determination to review.

- Delineation issues are not considered TI and should be addressed as a variance to N.J.A.C. 7:26E-4.
- It is appropriate to address EPH soil contamination that is not practicable to treat or remove as a variance to N.J.A.C. 7:26E-5.1(e).

Free and Residual Product and Containment

N.J.A.C. 7:26E-5.1(e):

The person responsible for conducting the remediation shall treat or remove free product and residual product to the extent practicable, **or contain free product and residual product when treatment or removal is not practicable.**

Monitored natural attenuation of free product and residual product is prohibited.

TI Determinations and Remedial Action Permits (RAPs)

- A TI determination should be contained within a Remedial Action Report (RAR) that is submitted through the on-line service; a Ground Water RAP application should be sent at that time. A TI determination can be submitted in an earlier phase document if remedial actions were attempted, but a technical consult prior its submittal is recommended.
- TI determinations are reviewed by BGWPA and BRAP since ultimately a Ground Water RAP will be issued.
- RAPs issued are usually Active Ground Water RAPs since product recovery may be performed when appropriate and because an engineering control may be required for containment.

Technical Consultations for TI

Technical Consultations are strongly recommended prior to submitting a TI determination.

- Timing of the Technical Consult is recommended after the RI/RAW, after remedial actions have been performed. If remedial actions were performed during the RI, it may be appropriate to have a technical consult for TI earlier than the submittal of the RI/RAW.
- A summary of the remedial action types attempted should be presented.
- Post-remedial data should be presented that shows the degree of success for each remedial action.

Other Considerations Prior to TI Technical Consultation

The following items should be addressed:

- Point of compliance delineation for all impacted media
- Complete Receptor Evaluation
- Demonstrate All Receptors Protected
- Geology/hydrology investigated; fully characterized and understood
- Robust Conceptual Site Model (CSM) developed
- Free and Residual Product removal/treatment to the extent practicable
- Remediation options attempted/exhausted (full scale and/or pilot)

Common Deficiencies associated with TI Determinations

Ground water contamination has not been adequately delineated.

- For TI, delineation should be conservative since contamination will likely be left in place and the final remedy needs to be protective – many of the monitoring wells installed will be required for long-term ground water monitoring.

Only one remedial action type has been attempted.

- Several remedial action types should be selected and attempted to show that all possible remedies have been exhausted and unsuccessful.

Common Deficiencies associated with TI Determinations

Determination for TI does not address containment.

- It is recommended that an engineering control is utilized to contain contamination – N.J.A.C. 7:26E-5.1(e).

Many TI determinations focus on the costs to perform a remediation, usually when the contamination is accessible and/or treatable.

- Cost is a factor of TI but it is a supplemental consideration and should not be the primary reason for seeking a TI.

TI Metrics

67 TI determinations were submitted

25 Weren't actual TI determinations and were associated with delineation issues, etc.

42 Actual TI determinations were reviewed

21 - Were not acceptable

(RARs/Ground Water RAPs were withdrawn)

14 - Were acceptable

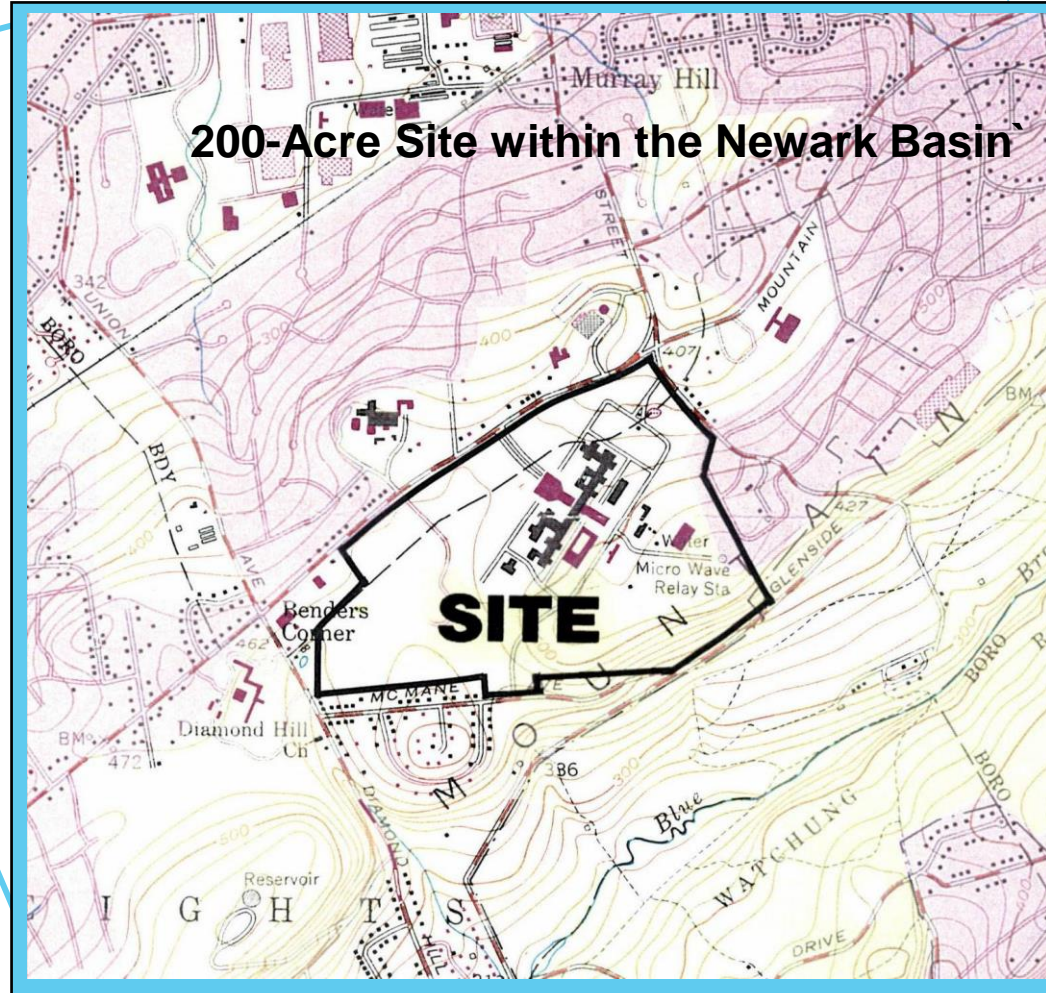
(Ground Water RAPs were issued)

7 - Are pending

Just because a TI was not acceptable, does not mean that a TI determination cannot be resubmitted after additional remedies are attempted and additional data collected.

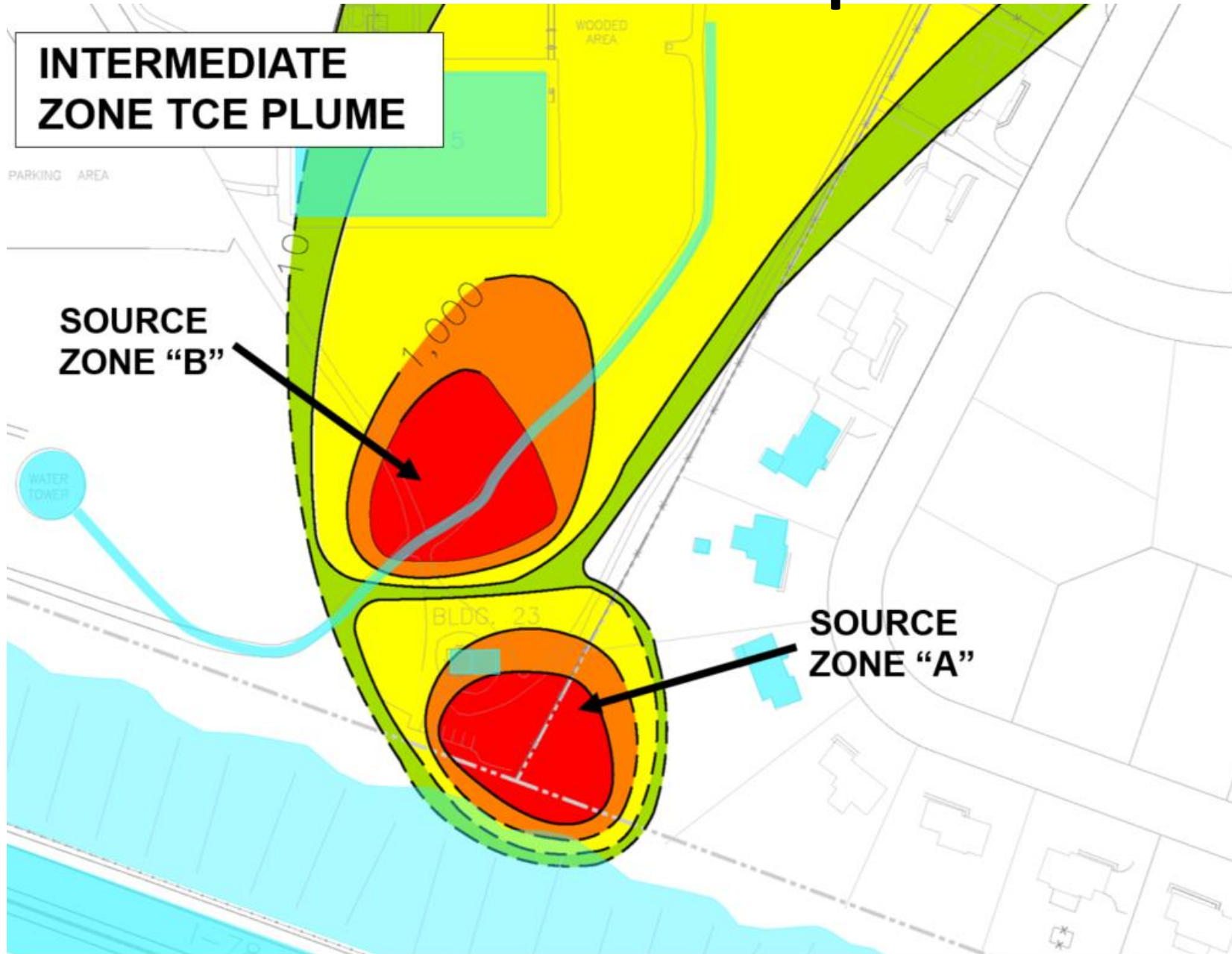
TI Waiver Request

Case Study - Site Location



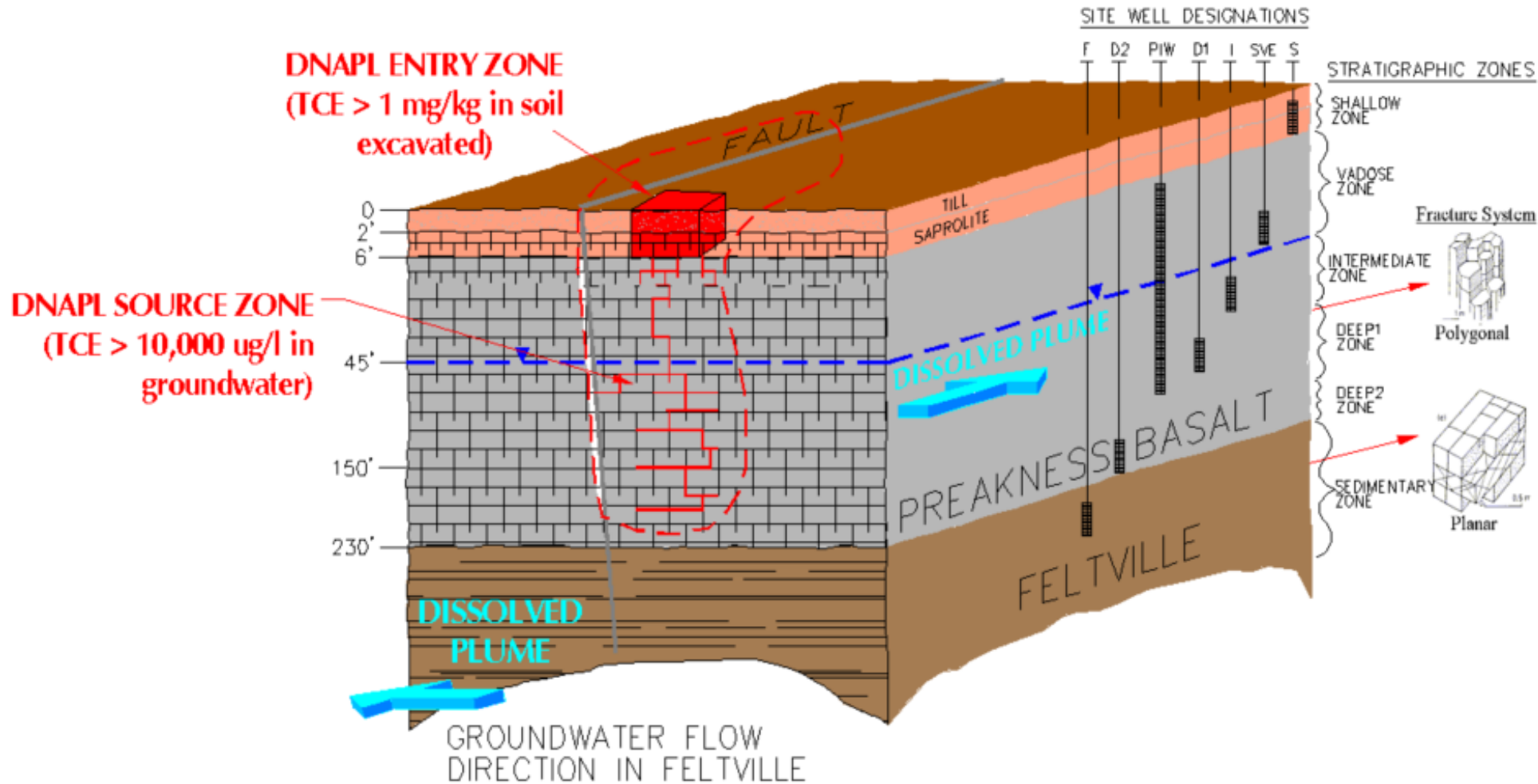
Chatham, New Jersey U.S.G.S. Topographic Quadrangle

TI Waiver Request



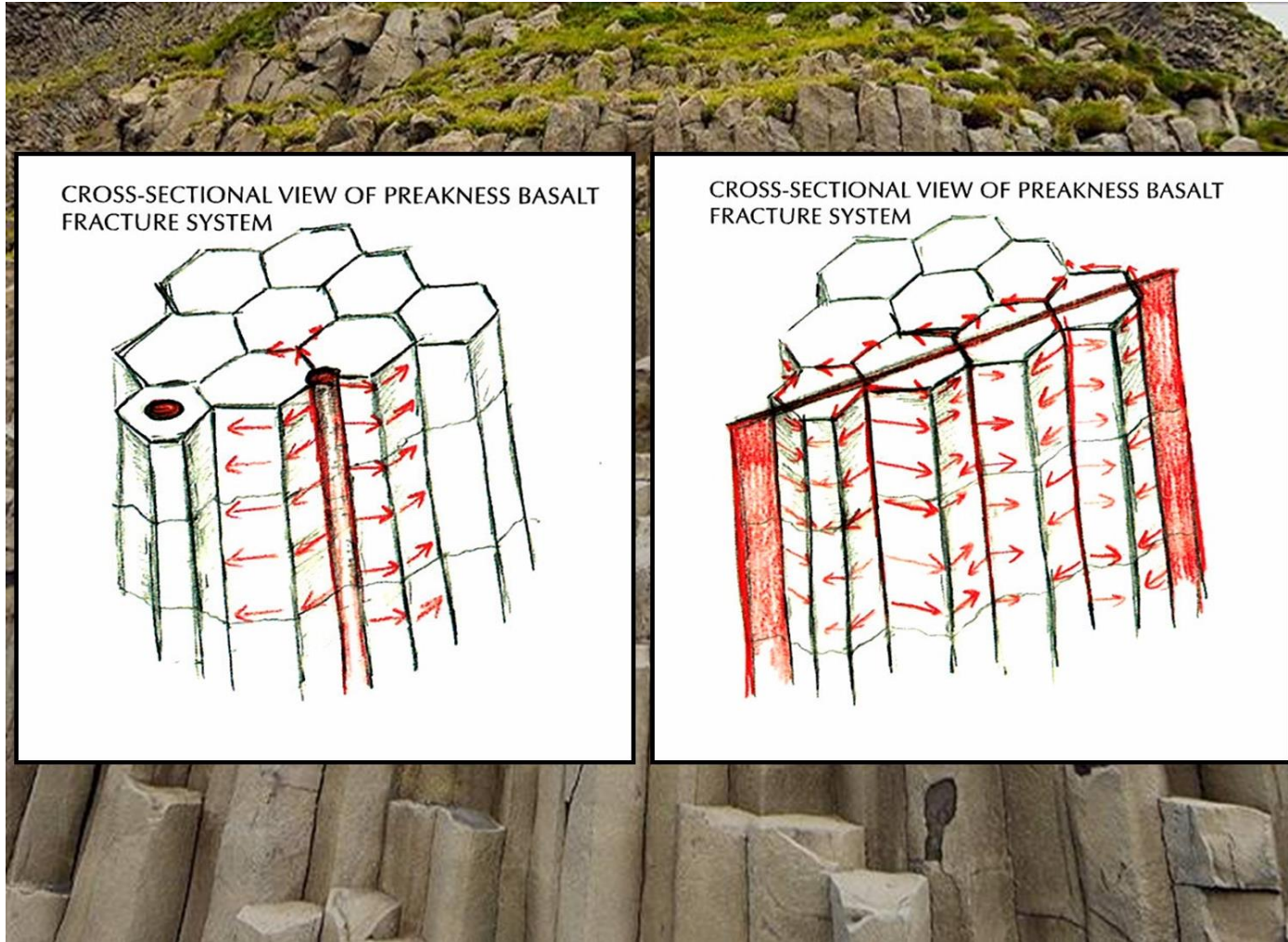
TI Waiver Request

Site Conceptual Model



TI Waiver Request

Columnar Basalt



Why Blast Fracture?

TI Waiver Request

Issues to Address

- Plume Migration
- Potential Receptors
- Containment
- Monitoring Network
- Data Trends

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Questions?