

# GEOTECHNICAL CONSTRAINTS IN STORMWATER INFILTRATION PRACTICE

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May 23, 2011

# Overview of Presentation

1. Established Geotechnical Practice
2. Typical Geotechnical Constraints Where Infiltration Practices Are Discouraged
3. Typical Mitigation Measures
4. Integrating Geotechnical Considerations Into Stormwater Design

# Established Geotechnical Practice

- Geotechnical Engineers are concerned with hazards associated with geologic conditions on development projects including:
  - Slope Stability
  - Foundation Design
  - Shrink Swell Potential of Soils
  - Groundwater

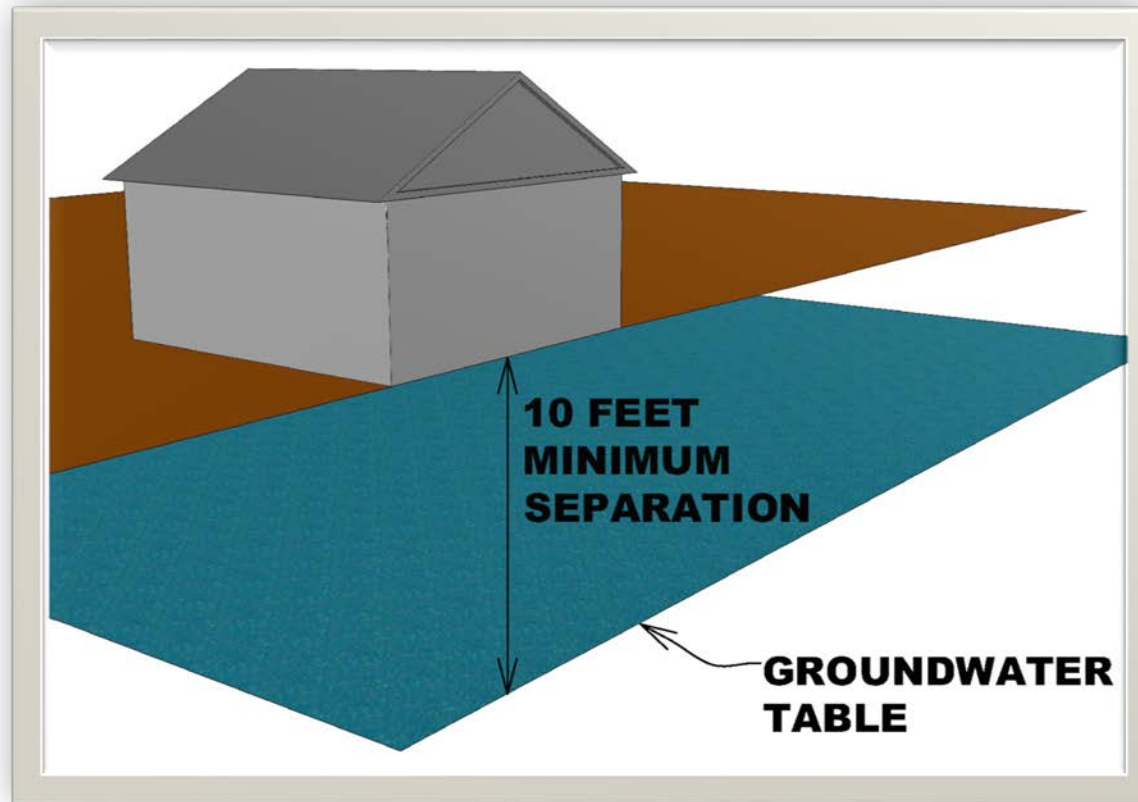


# “New” Stormwater Management Considerations

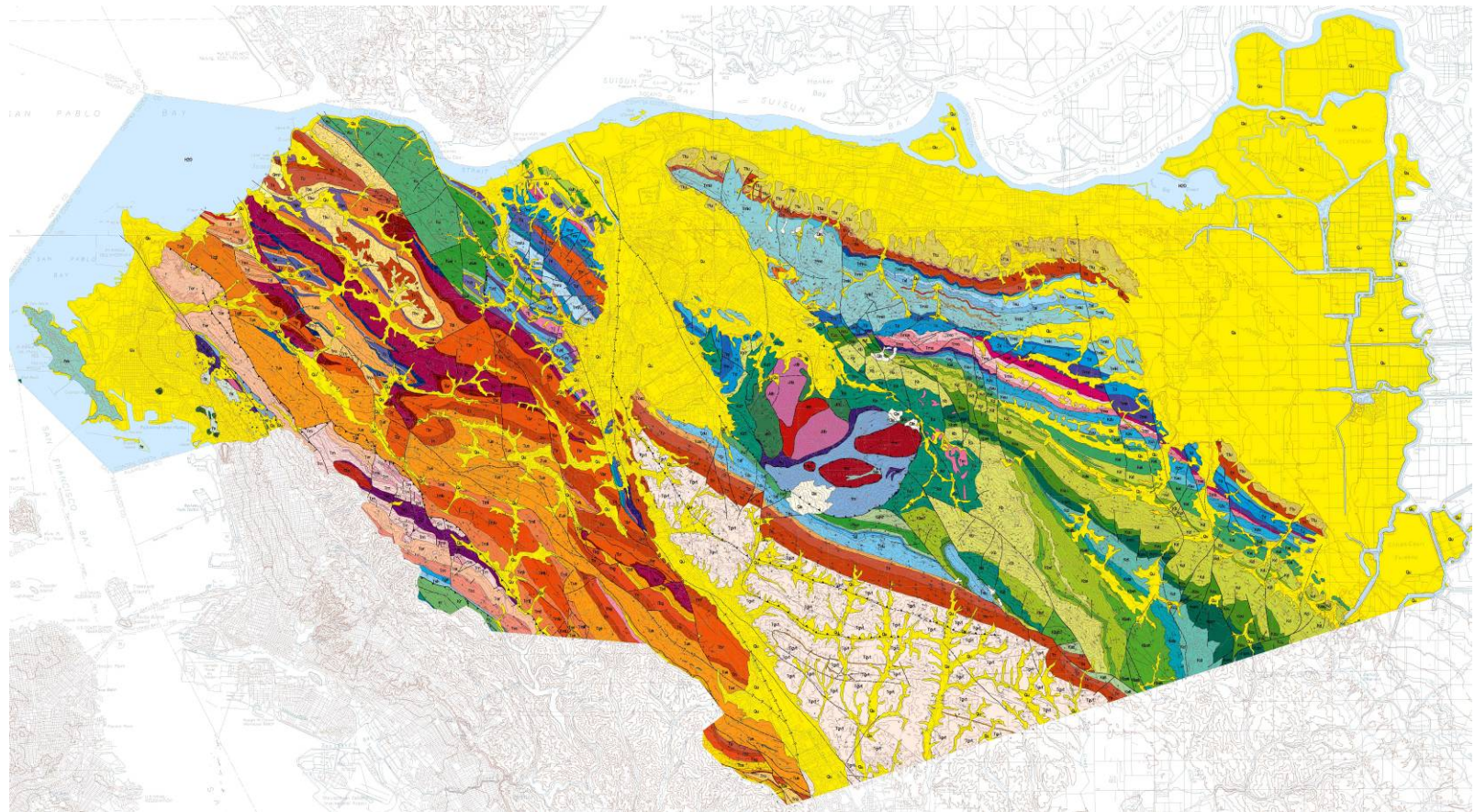
- Infiltrate rainfall runoff into ground or open space where feasible.
- Construct stormwater Integrated Management Practices (IMPs) near roadways and structures.
- Disperse on-site IMPs as much as possible.



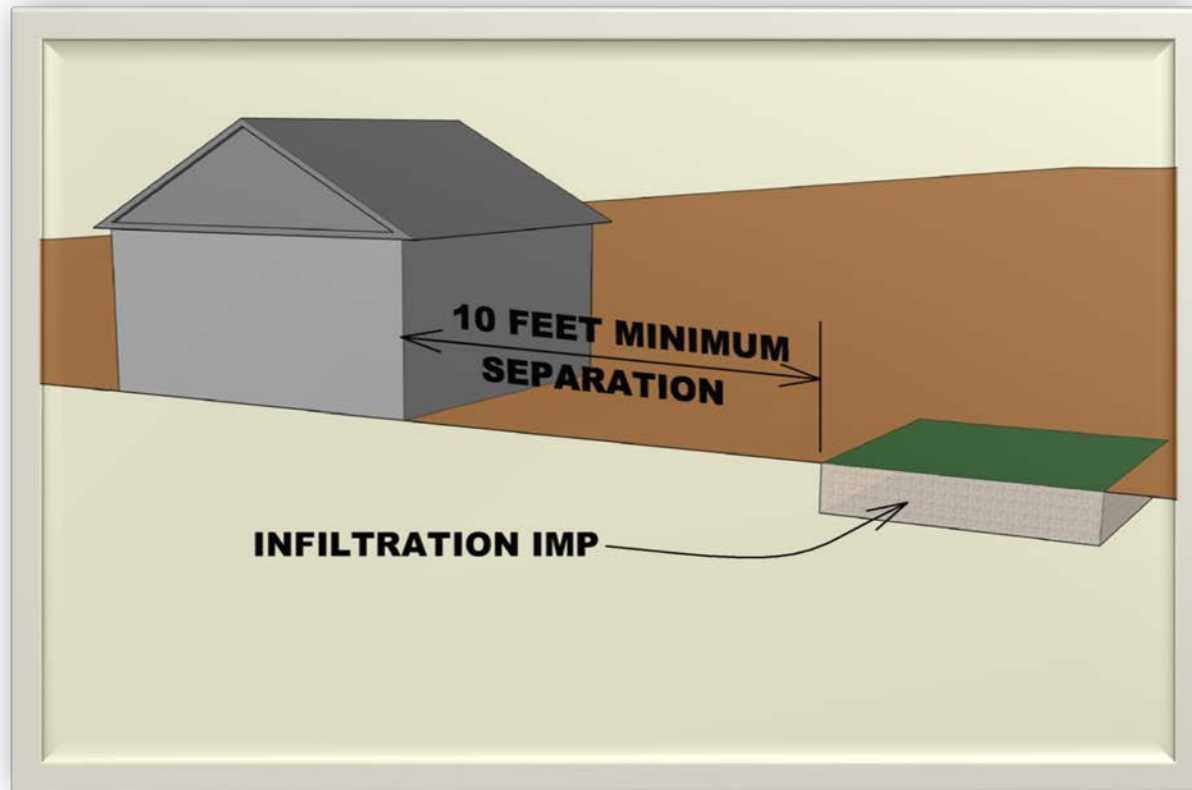
# Typical Geotechnical Constraint – High Groundwater Table



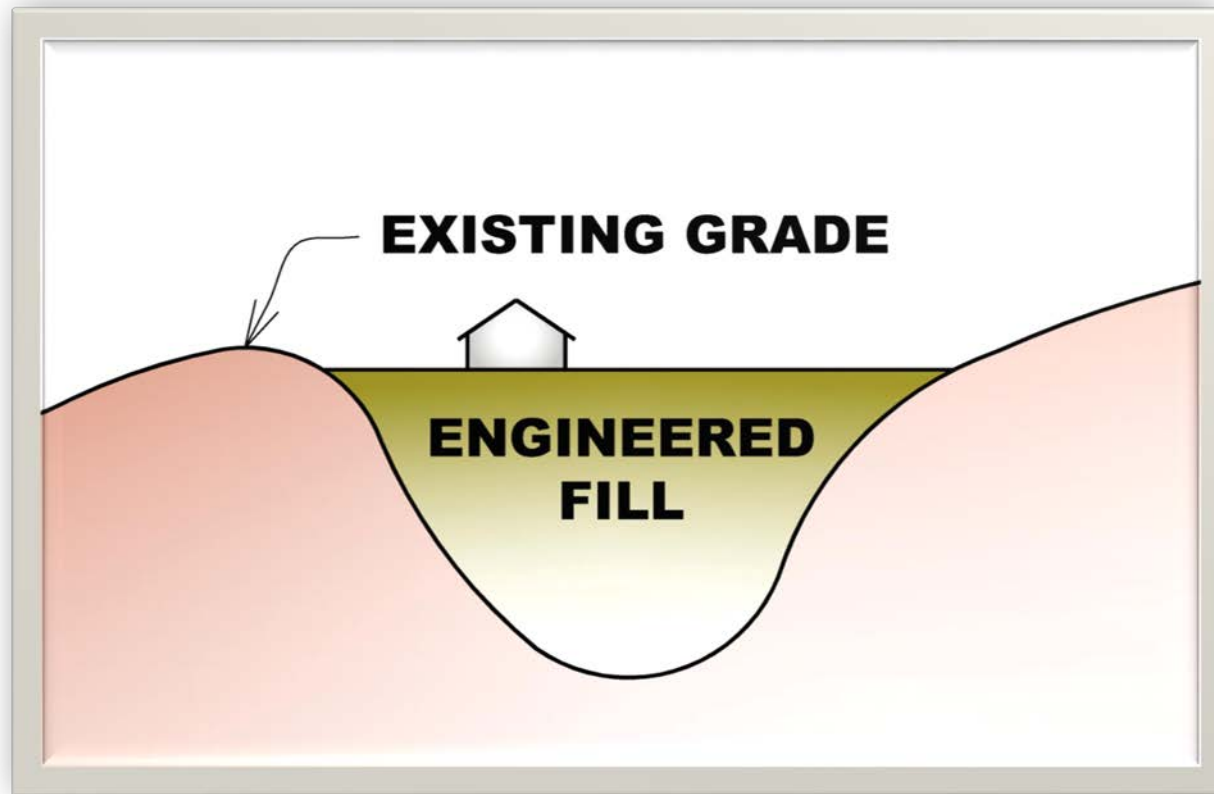
# Geologic Variability in Contra Costa County



# Typical Geotechnical Constraint – Foundation

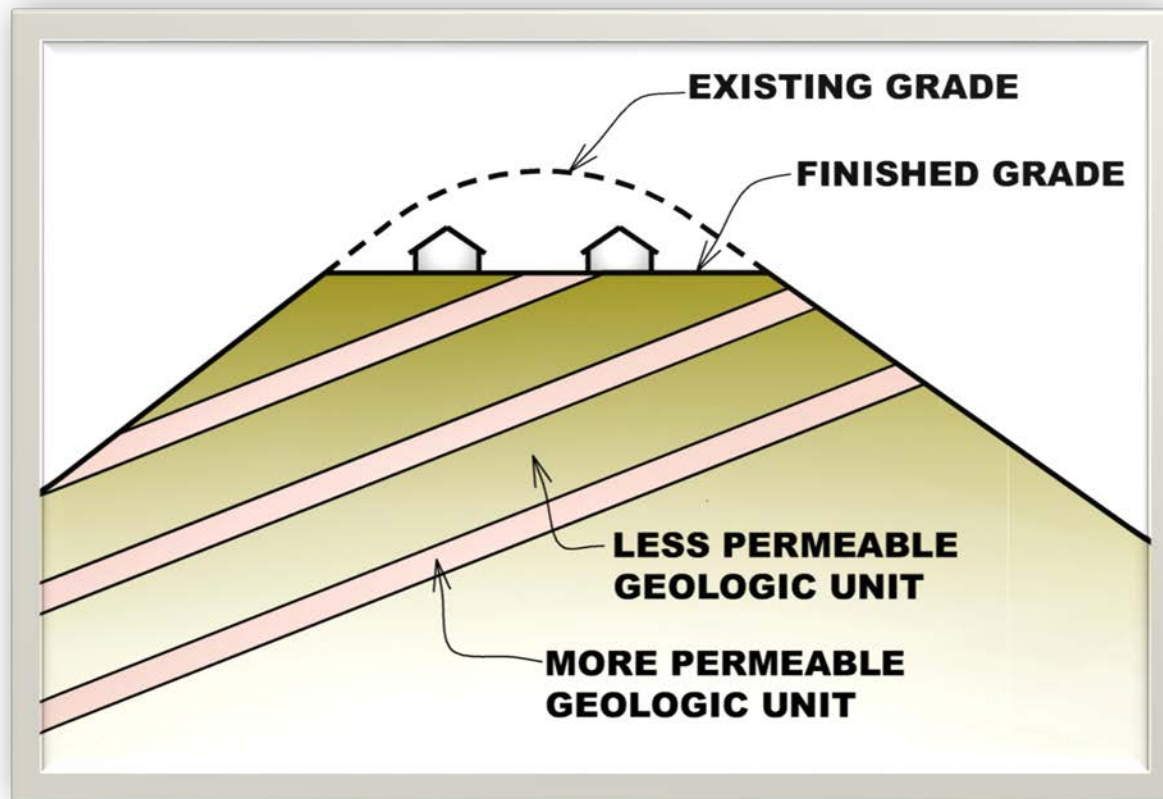


# Typical Geotechnical Constraint – Deep Fill





# Typical Geotechnical Constraint – Cut Areas



# Mitigation Measures

- Avoid discharging stormwater on slopes whenever possible
- In clay soils, un-lined stormwater IMPs should be located away from movement-sensitive improvements (pavements/structures etc.)
- Line IMPs in areas with potential geologic hazards as noted in previous slides
- IMPs that rely solely on infiltration will not function in clay soils due to extremely low soil permeability and will be likely to trigger problems described above

# Integrating Geotechnical Considerations Into Your Stormwater Design

- Consult a geotechnical engineer in the stormwater control plan (SWCP) early on
- Identify areas where infiltration practices are impractical
- Line IMPs or locate to areas where risks to structures, slopes and groundwater are lessened
- Confirm subsurface conditions beneath larger IMPs during construction phase

# QUESTIONS?

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