

Characterization of Field Experimental Sites at Hanford's 300-Area IFC Site

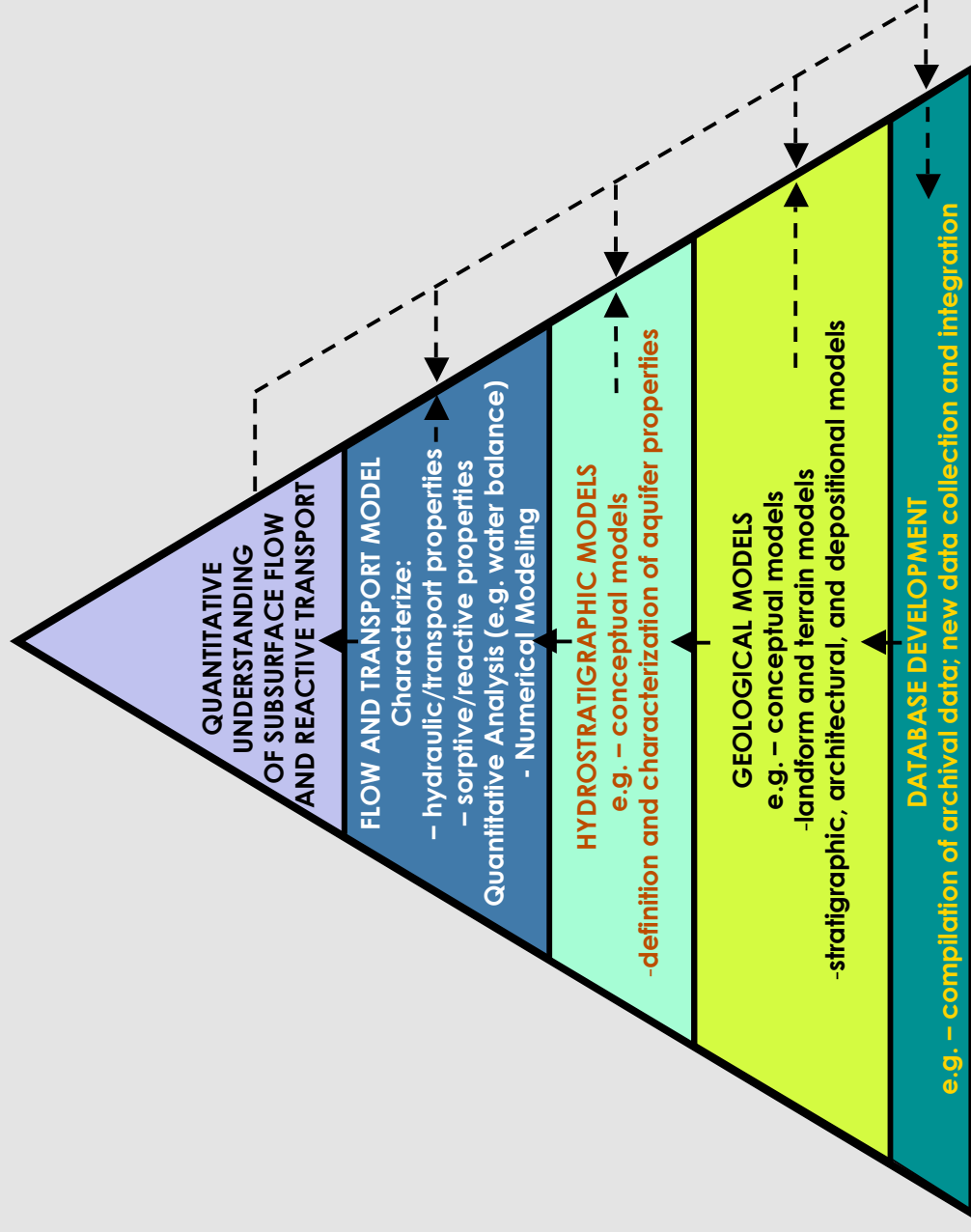
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Primary Goal

- ▶ Develop quantitative model of heterogeneity that incorporates dominant features at the significant scales, and
 - reflects geologic variability
 - reflects multi-scale nature of stratigraphy
 - honors core and well log data
 - forms basis of conceptual hydrostratigraphic models

Approach



Sedimentary Facies Concept

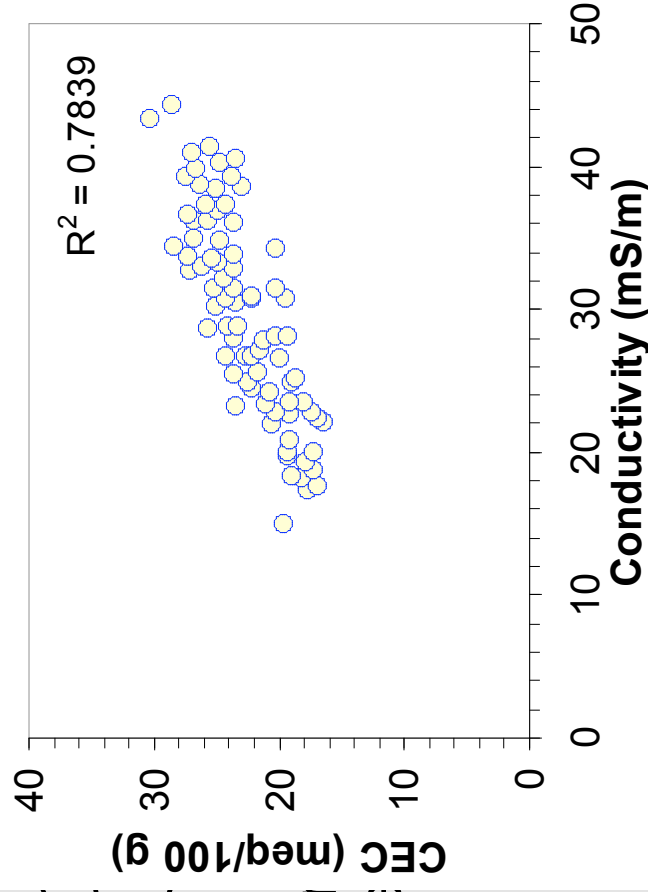
► Classifies formation using primary sedimentary features at scale of facies structure

- No need to identify texture
- Size statistics, surface area, mineralogy, fabric

► Sediment properties primarily controlled by granulometry

► Sedimentary facies

- Electrofacies
- Lithofacies
- Hydrofacies
- Chemofacies
- Biofacies



Mapping
 Surface Geophysics
 Interpret Geophysical Images

Data input
 Information management
 GIS database

Borehole Logging
 Log Interpretation
 Transition Probabilities
 Well Correlation
 Surface Identification and Mapping

Calibration
 History Matching
 Sensitivity Analysis
 Management Decisions
 Design, Implement Remedy

3D Geological Model
 Geological Conceptual Model
 3D Flow/Transport Property Model
 Upscaling to Simulation Grid

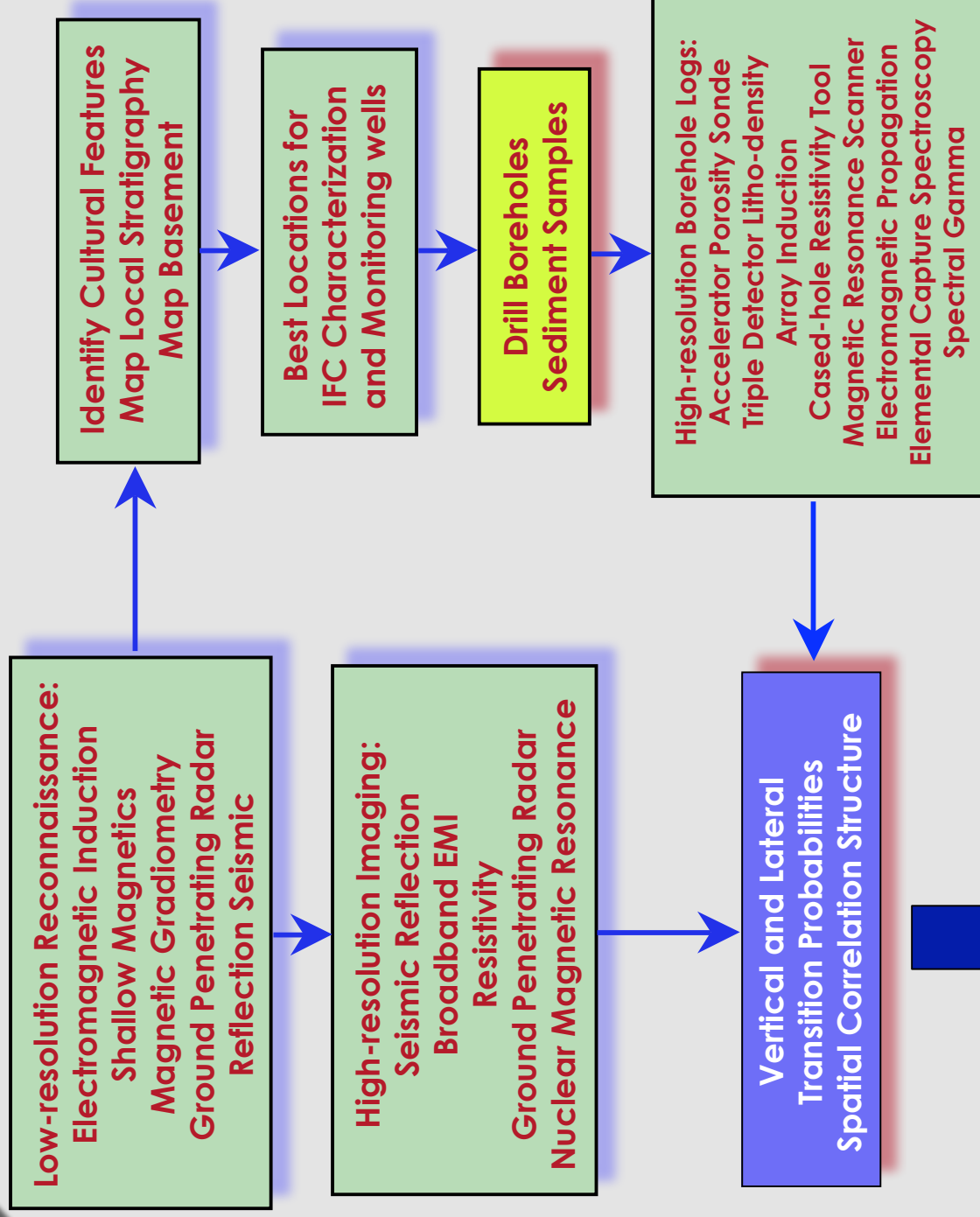
3D Flow and Transport simulation
 Multi-phase, Density-dependent Flow
 Fully-coupled Energy Equations
 Modeling of Geochemical Reactions

Uncertainty Analysis
 Upscaling of Processes
 Flow/Transport Property Population

Data Spatial Analysis
 Facies Modelling
 Transition Probabilities
 Borehole Testing

STOMP

Hydrogeophysical Workflow 300 Area IFC



Workflow for Quantitative Hydrostratigraphy

