

Part One: How Groundwater Models Work (or Modeling 101)

Part Two: Hanford Groundwater Models Used Today

Purpose of presentation: To better inform RAP members about how ground water modeling is done at Hanford, how models are created and the difference between the TC&WM-EIS and other models.

River and Plateau Committee

August 6, 2013

Engstrom:

1. Modeling 101 – What is a groundwater model

GW flow (MODFLOW), VZ (STOMP), Transport (particle tracking)

- 3-D gridded landscape
- Computational engine (formulas, calculator, cell-to-cell transfm)
- Input numbers (recharge, well heads, geology, chemistry, GP)
- Parameters (porosity, permeability, 3-D gradient, flux, retard'n)
- PEST, uncertainty analysis, sensitivity analyses.

1. *Explain the difference in construction between the EIS groundwater model and the other models most often used at Hanford*

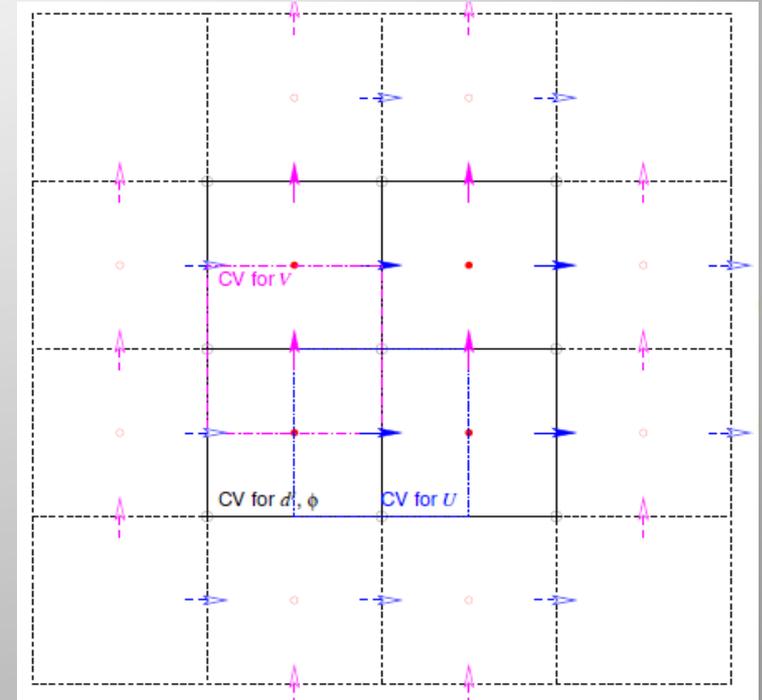
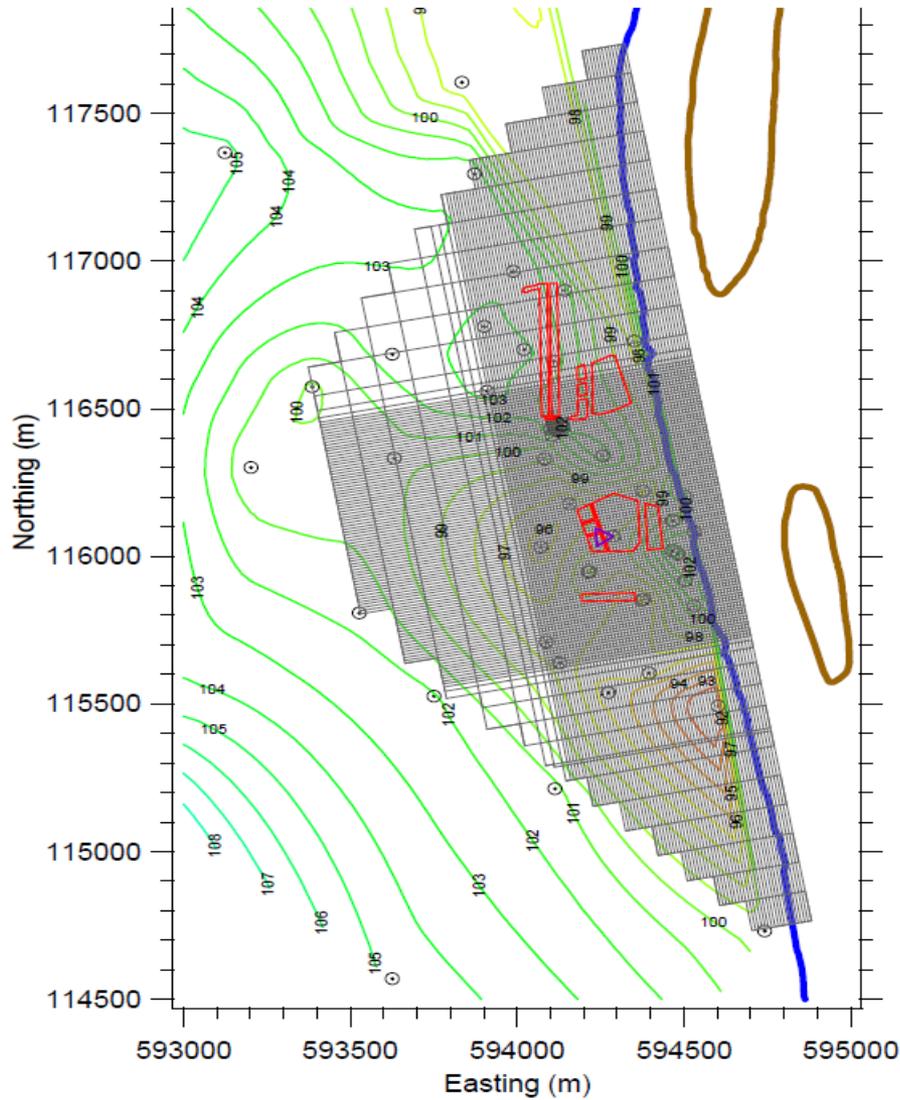
- *EIS model was used to compare impacts of EIS alternatives (not considered “real” output); huge scale/large grid cells; lots of averaging, not detail; better vs worse alternative outcomes.*
- *Other Hanford models (e.g. RI/FS, pump-and-treat optimization) are used to simulate, and then predict real outcomes.*

2. *How is parameter selection done for Hanford groundwater models?*

3. *Similar input data, different scales Importance of details), similar parameters (TPA agreement), same codes.*

300-Area Gridding Example

STOMP 300 Area uranium plume-



Thompson:

- *Describe the “ordinary” groundwater Models being used at Hanford for things like the RI/FS process.*
 - *What became of the EIS groundwater model (Site-wide Model)? Are there plans to keep using it?*
 - *Do the results of the EIS groundwater model impact the other groundwater/RI-FS/cleanup decision functions at Hanford?*
- Were the results of the EIS model incorporated into cleanup levels.?*