Hydrologic Connection Analyses in the Lower Platte

Lower Platte River Basin Annual Meeting

July 23, 2019

Philip Paitz

Water Planning IWM Analyst
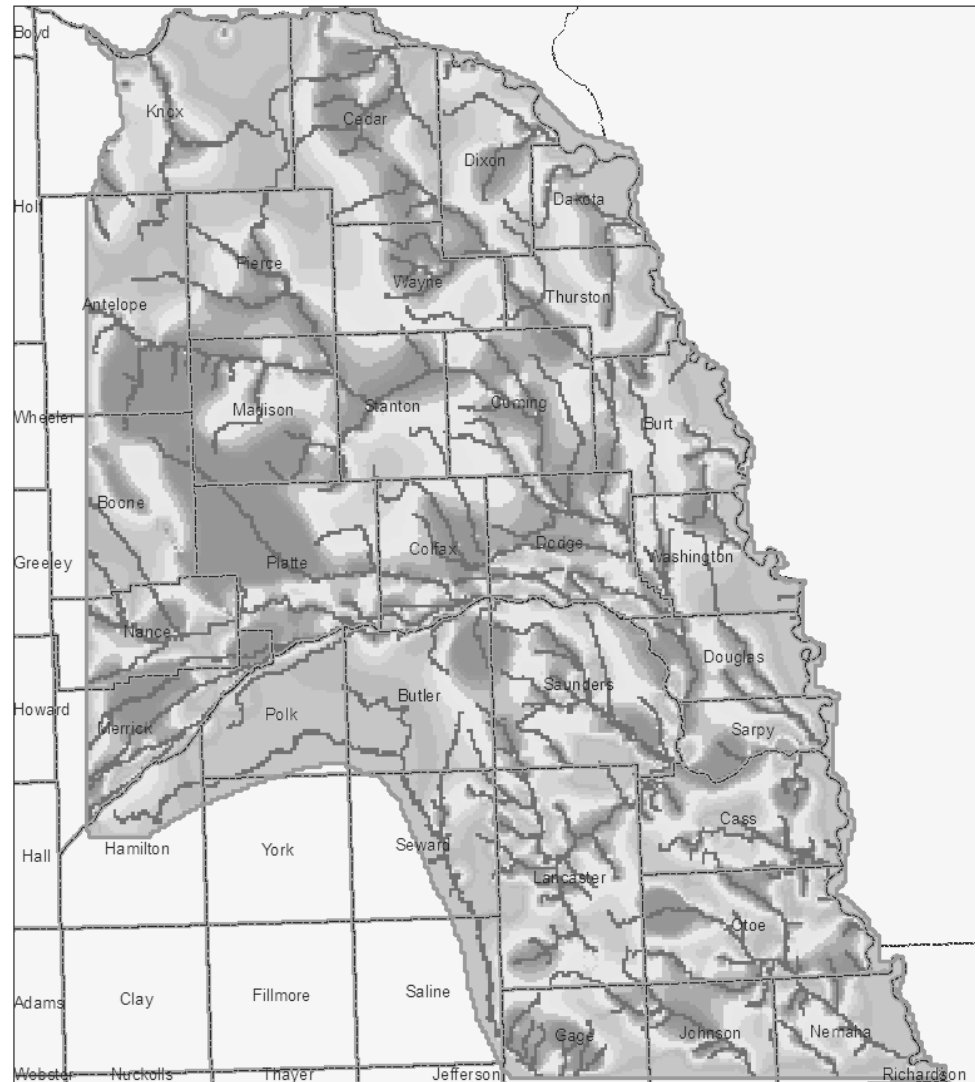
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Outline

➢ Cycle Well Analysis Preliminary Results

➢ Lower Elkhorn NRD Pilot Scale Area (LENRD-PSA Model) Overview

➢ LENRD-PSA Results

➢ Future Analyses with LENRD-PSA

➢ LPNNRD AEM Survey Project

LPMT Cycle Well Results

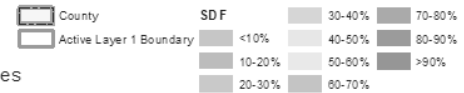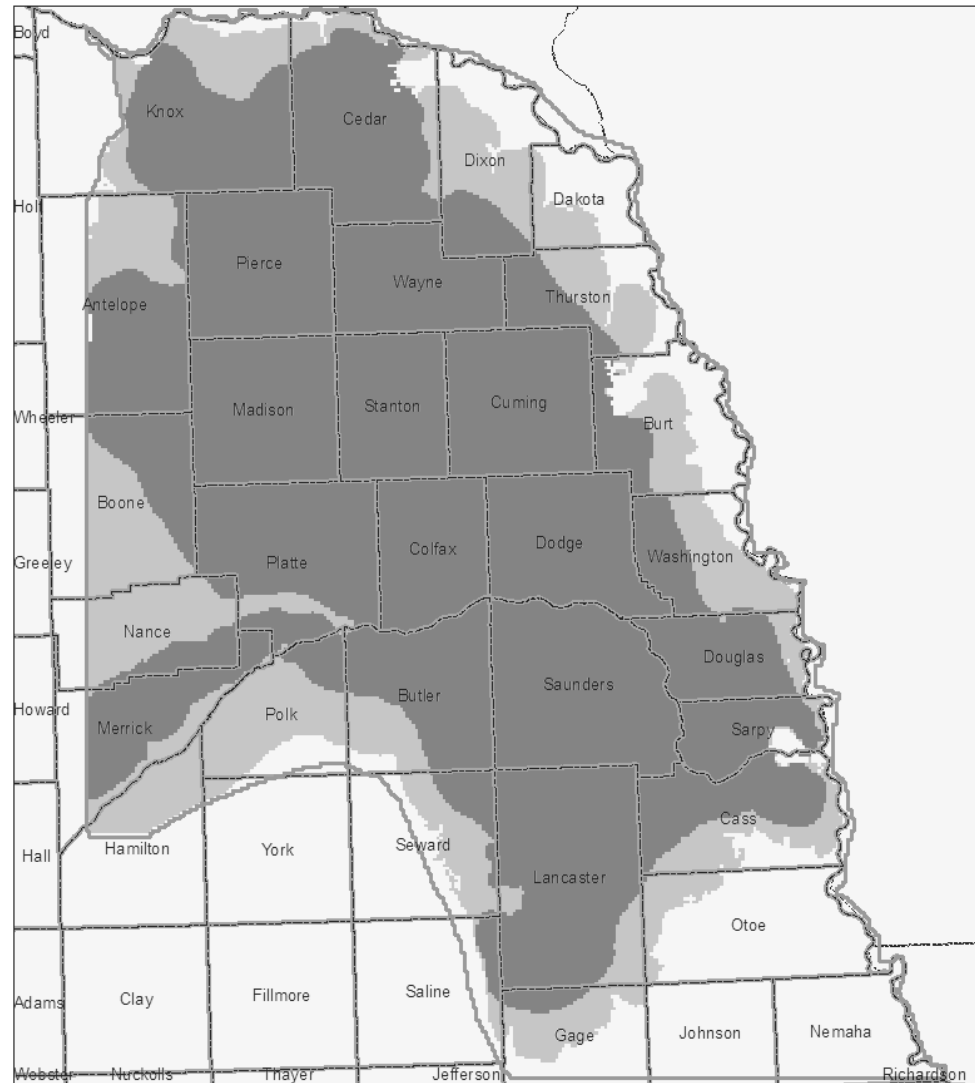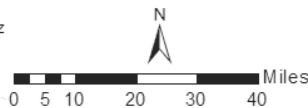Lower Platte Missouri Tributary Stream Depletion Factors

LPMT Cycle Well Results – Platte River Tributaries only

Lower Platte Missouri Tributary Stream Depletion Factors

What's Left to Do?

➢QAQC the process, post-processing, and results

➢Finalize documentation and write metadata for shapefiles

➢Present final results to the Lower Platte River Basin Coalition Technical Committee
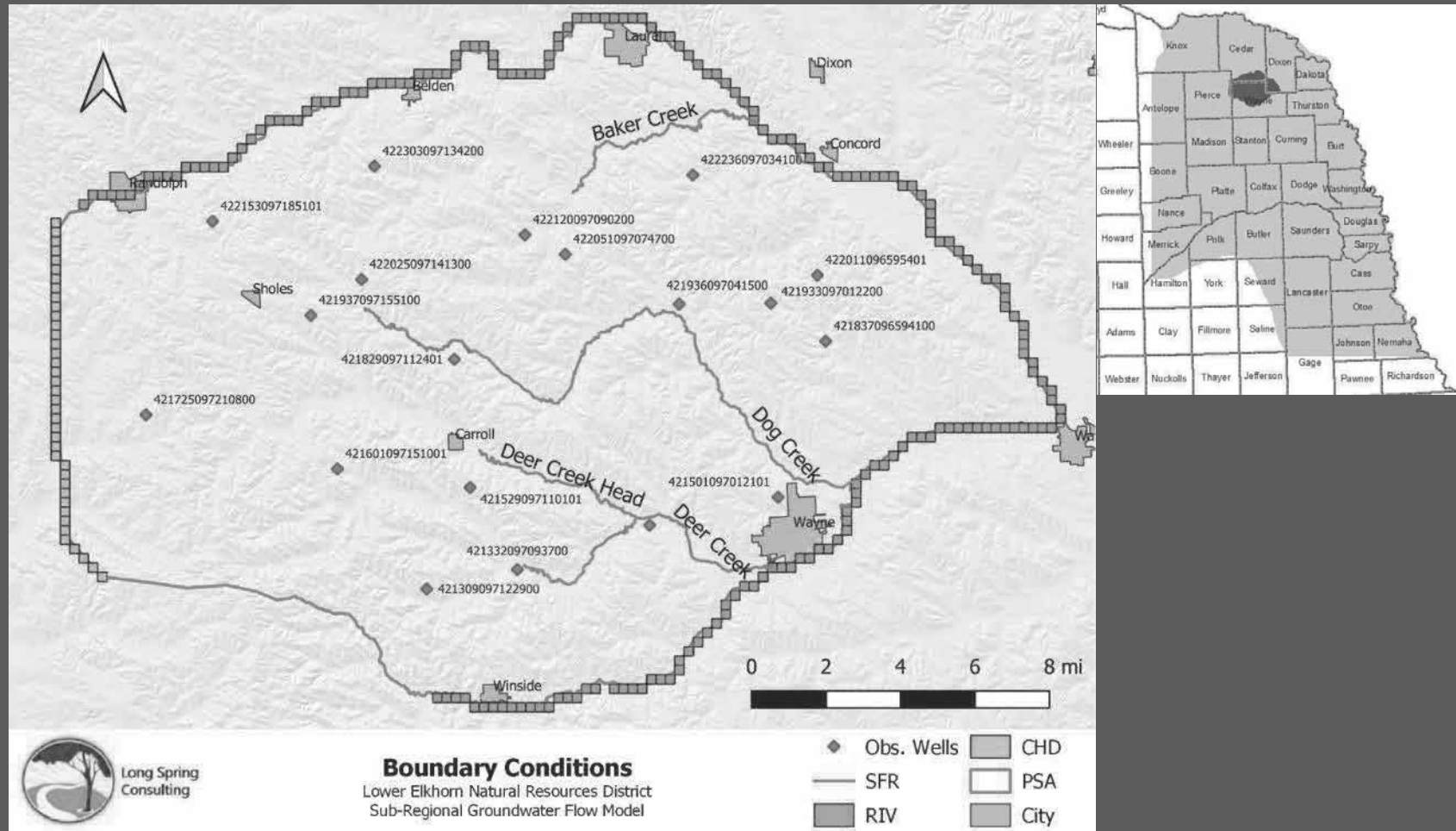
LENRD-Pilot Scale Area Model

➢Purpose
  o Incorporate AEM flight data into the existing LPMT regional model to determine if improved modeling results can be achieved through finer remotely sensed geologic data
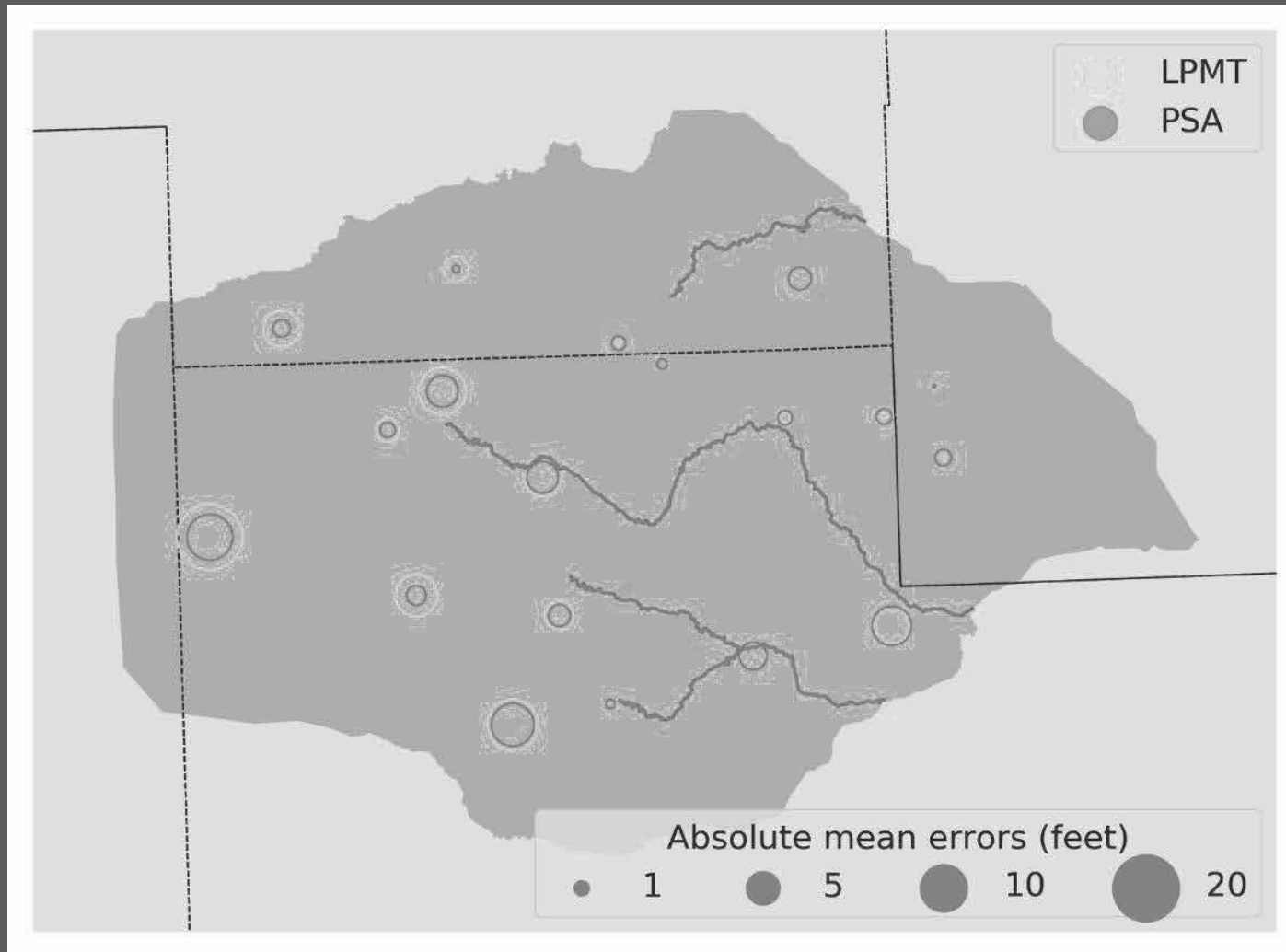
➢AEM

➢Contracted and Built
  o LENRD and NeDNR: Model sponsors
  o JEO Consulting: Main contracting and consulting work
  o Long Spring Consulting: Construction of the Numerical Model
  o WSP USA: AEM interpretation

LENRD-Pilot Scale Area Model

Boundary Conditions
Lower Elkhorn Natural Resources District
Sub-Regional Groundwater Flow Model

PSA Residuals

Residual - Difference between and observed and modeled value

LENRD-PSA Future Analysis

➢Cycle Well Analysis

  o Compare results from LPMT

  o Test MODFLOW-USG

  o See how a refined model (layers, grid, pumping) responds

➢Additional Scenarios

  o See how model reacts due to pumping from different layers
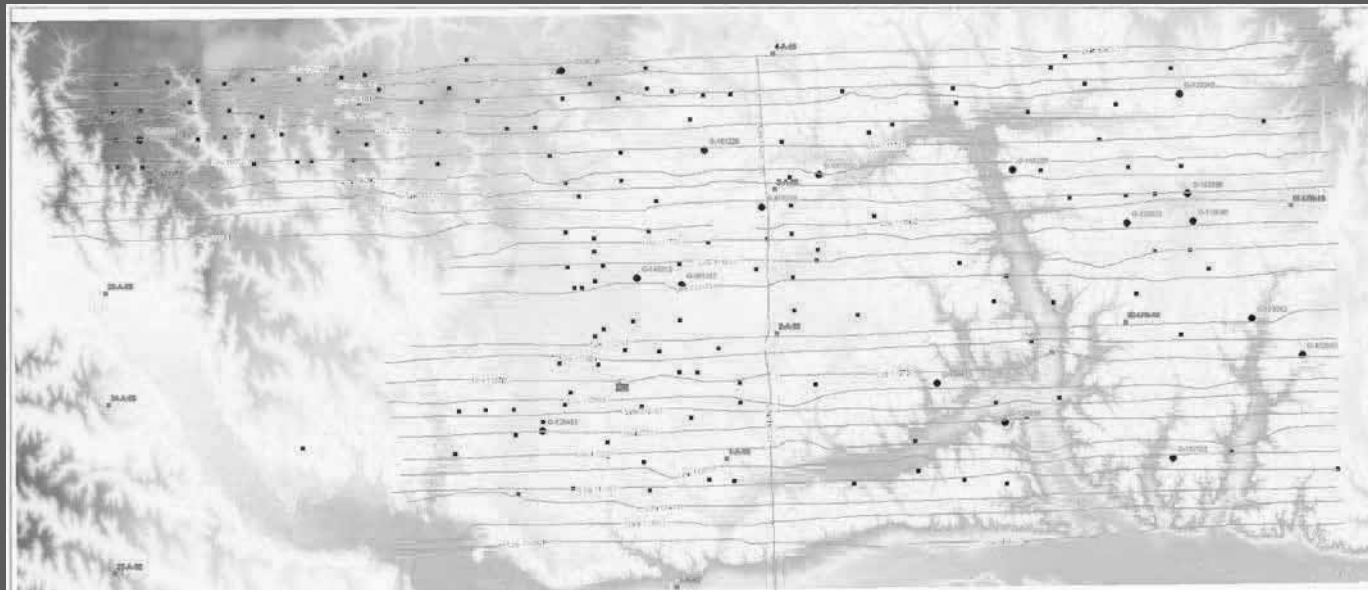
LPNNRD AEM Surveys

➢ Purpose

　○ Working with UNL-CSD to develop a hydrogeologic framework based on test hole, transducer, and AEM data for the Lower Platte North NRD

➢ Utilizing GeoScene3D for analysis

➢ Partnering with

　○ Jesse Korus and Jackie Polanshek (graduate student)

　○ Lower Platte North NRD

LPNNRD AEM Surveys

Summary

➢ Cycle Well QAQC is currently underway

➢ LENRD-PSA model incorporated AEM data

➢ LENRD-PSA cycle well analysis will begin soon

➢ Continue to work with our partners (LENRD, LPNNRD, and CSD) to integrate AEM data into the LPMT model

THANK YOU

Philip Paitz

Water Planning IWM Analyst

philip.paitz@nebraska.gov

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