
Thomas Hawk, Flickr

WRV Model Scenarios

Presented to the Wood River Water Collaborative by Sean Vincent, P.G.
January 18, 2019

Talking points

- Who am I?
- Why am I here?
- Why did IDWR build a groundwater flow model for the WRV?

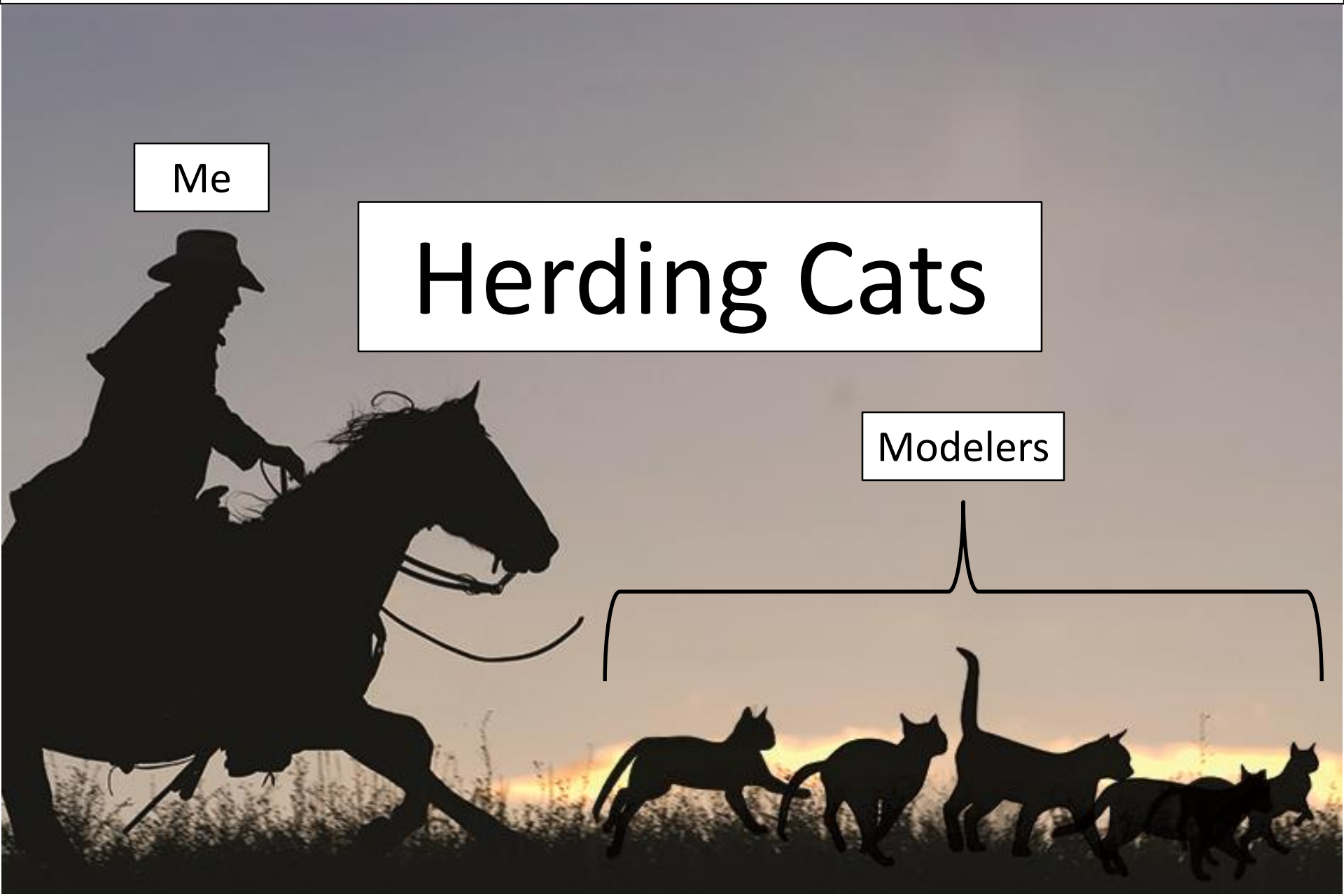
Talking points (cont'd)

- Roles
- Review of modeling objectives
- Model scenarios
- Proposed WRWC model run

Who am I?

- State employee
- Hydrogeologist/personnel manager
- Project manager for several model development projects

A Project Manager's Perspective on Model Development



Who am I?

- State employee
- Hydrogeologist/personnel manager
- Project manager for several model development projects
- Concerned citizen who depends on water for irrigation and consumption and recreates on/in the water

Why am I here?

- Express support for what the WRWC is attempting to do
- Confusion regarding the role of the Department in development and application of groundwater flow models
  - Indirect lines of communication w/ multiple parties
- Clarify IDWR's role

Why build a groundwater flow model?

- Big Wood River upstream from Magic Reservoir fully appropriated (1980)
- Groundwater and surface water are hydraulically connected (1991)
- Need to be able to evaluate/quantify gw/sw interaction
- GW flow model is tool of choice for planning, water resource management, & conjunctive administration

Roles

- IDWR
  - Taxpayer funded → does not compete with private sector
  - Builds and applies public domain aquifer models
    - Public domain modeling platform
    - Model and documentation on website
    - Provides training on use of our models/modeling tools
      - ESPA model scenario training on 8/9/2011
      - WRV model scenario training on 10/5/2016

Running scenarios with the fully populated WRV model

1. A “baseline” simulation is generated by running the WRV model with the historic water budget from model calibration (we’ve already completed this step)

2. Stresses are added to the historic water budget and the WRV model is run again with the revised *.wel file

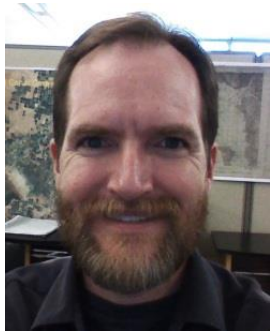
3. Results from the scenario simulation and the baseline simulation are differenced to find the predicted change in flux or head

Roles (cont'd)

- IWRB is sister organization and funds model development
- USGS & IWRRI are unbiased, scientific collaborators

WRV modeling team

Jason Fisher
USGS



Mike McVay
IDWR

Jennifer Sukow
IDWR

Allan Wylie
IDWR

Jim Bartolino
USGS

Neeley Miller
IDWR

Sean Vincent
IDWR

Alex Moody
IDWR

Stephen Hundt
USGS

Roles (cont'd)

- Modeling Technical Advisory Committee (MTAC)
  - Comprised of stakeholder representatives
  - Vehicle for technical stakeholder input and data sharing
  - Exchange of ideas/data provides for transparency

TV MTAC meeting

Roles (cont'd)

- Modeling Technical Advisory Committee (MTAC)
  - Comprised of stakeholder representatives
  - Vehicle for technical stakeholder input and data sharing
  - Exchange of ideas/data provides for transparency

- Water resource consultants
  - Participate on MTAC in hopes of developing work for stakeholders
  - Apply models to evaluate water right/location-specific water use scenarios and develop mitigation plans

WRV model design objectives (12/02/2013)

1. Provide a basis for conjunctive administration
2. Accurately represent/quantify aquifer recharge, groundwater flow, and aquifer discharge
3. Improve understanding of river/aquifer system and guide future investigations
4. Provide tool for long-term planning
5. Be accessible, well documented, and defensible in litigation

Scenario simulations – what they aren't

- Not for curtailment date determination (IDWR)
- Not for mitigation plan development in response to injury determination (consultants)
- Not for evaluating water right/location-specific impacts (consultants)

Scenario simulations – what they are

- Means to better understand response of hydraulically connected river-aquifer system to a basin-wide stress (e.g., drought, change in irrigation practice, pumping curtailment)

Model design objectives (12/02/2013)

1. Provide a basis for conjunctive administration
2. Accurately represent/quantify aquifer recharge, groundwater flow, and aquifer discharge
3. Improve understanding of river/aquifer system and guide future investigations
4. Provide tool for long-term planning
5. Be accessible, well documented, and defensible in litigation

Wood River Valley Aquifer Model
Version 1
Simulated Curtailment of Groundwater Use

Idaho Department of Water Resources
Jennifer Sukow
December 9, 2016

Scenario simulations – what they are

- Means to better understand response of hydraulically connected river-aquifer system to a basin-wide stress (e.g., pumping curtailment, drought, change in irrigation practice)

- Developed in consultation with Modeling Technical Advisory Committee

ESPAM Current Practices Scenario

"Scenarios published by IWRRI and IDWR are developed in consultation with the Eastern Snake Hydrologic Modeling Committee (ESHMC)."

Eastern Snake Plain Aquifer Modeling Scenario:

Hydrologic Implications of Current Water-use Practices and Historical Climate Conditions

"Current Practices" Scenario

August 2007

Idaho Water Resources Research Institute
Idaho Falls, Idaho
Bryce A. Contor
Research Hydrologist

IWRRI Technical Report 200702

Proposed WRWC model run

- A lot of thought went into development
- Involves specific water rights/PODs
- Not developed in consultation with MTAC
- Not likely of interest to all water users

Summary

- IDWR builds public domain aquifer models for application by IDWR and others
- IDWR runs models to facilitate aquifer management, planning, and water rights administration
- IDWR also runs models for general insight into the functioning of river/aquifer systems

Conclusions

- IDWR will not run the model scenario developed by the WRWC
  - Water right/location-specific
  - Not vetted through MTAC
  - We don't compete w/ private sector
- As previously recommended, the WRWC should instead consider hiring a consultant
- IDWR will provide data, modeling tools, and, as required, technical assistance to consultants
- Take this opportunity to share the results of a IWRB-sponsored model run

Discussion