



Robust Review Analysis

NPNRD Results

NPNRD IMP Stakeholder Meeting #2
August 16, 2018



Robust Review Goals

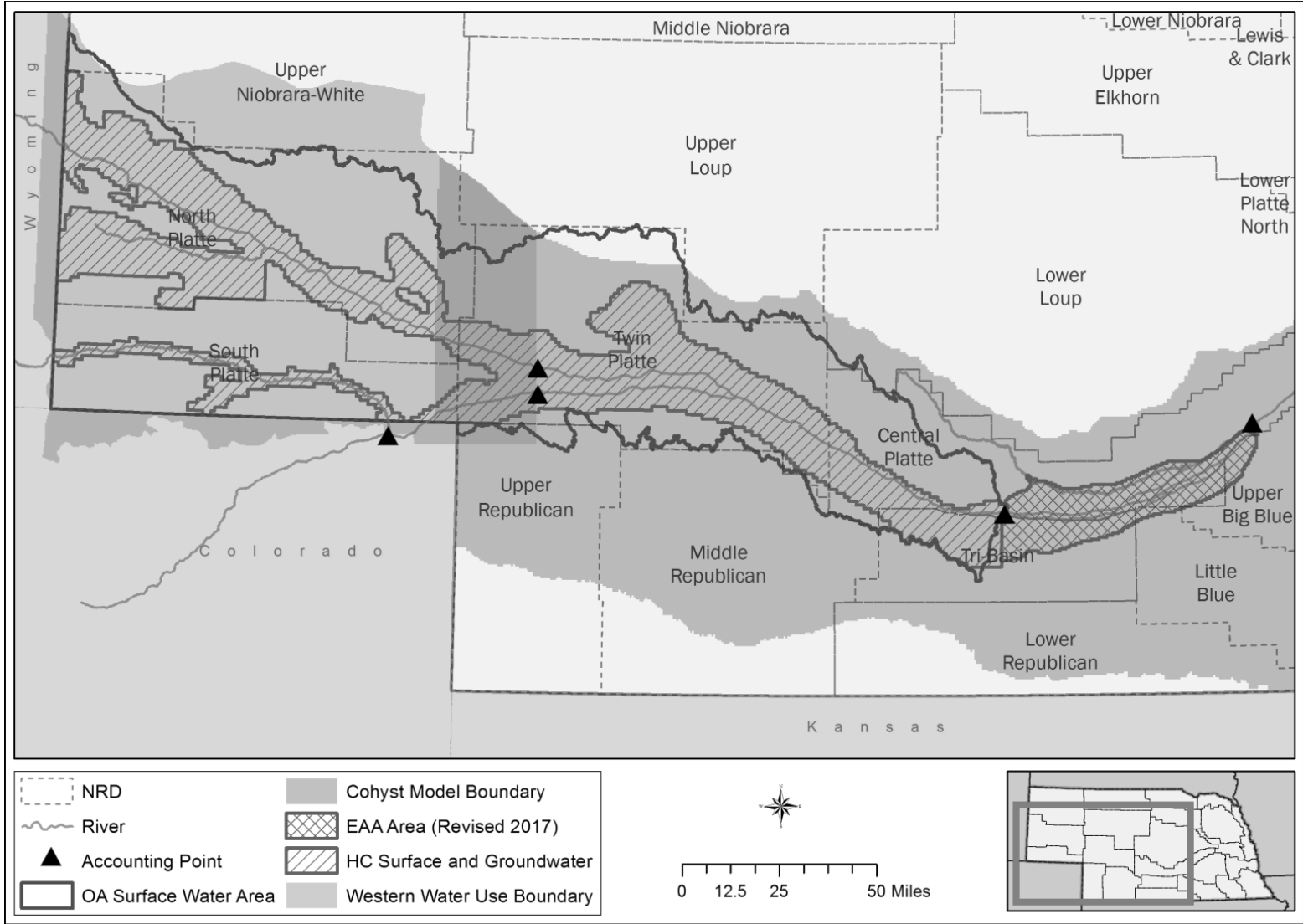
- **Complete monitoring activities outlined in the current IMP**
- **Assess progress on first increment goals and objectives**
- **Provide for more informed discussion of second increment objectives with the NPNRD IMP stakeholders**

Robust Review Model Simulation Setup

WWUMM Area Assumptions

- Used historical calibrated version of the groundwater and watershed models (Run 028/LU004/NIR set 2 for GW only lands)
- Model is simulated from 1953 – 2063
- Irrigation pumping repeats 2009-2013 in the baseline simulation and 1997 acres and crop types in the “1997” simulation with 2009-2013 weather repeated into the future
- Municipal and Industrial baseline simulation estimates use through time to 2013 and “1997” simulation is held constant
- Surface water and commingled acres remain constant in the baseline and 1997 simulations to cancel out commingled effects

Model Areas



NPNRD Inputs

(Change in acres)

Change in groundwater-only irrigated acres 1997-2013

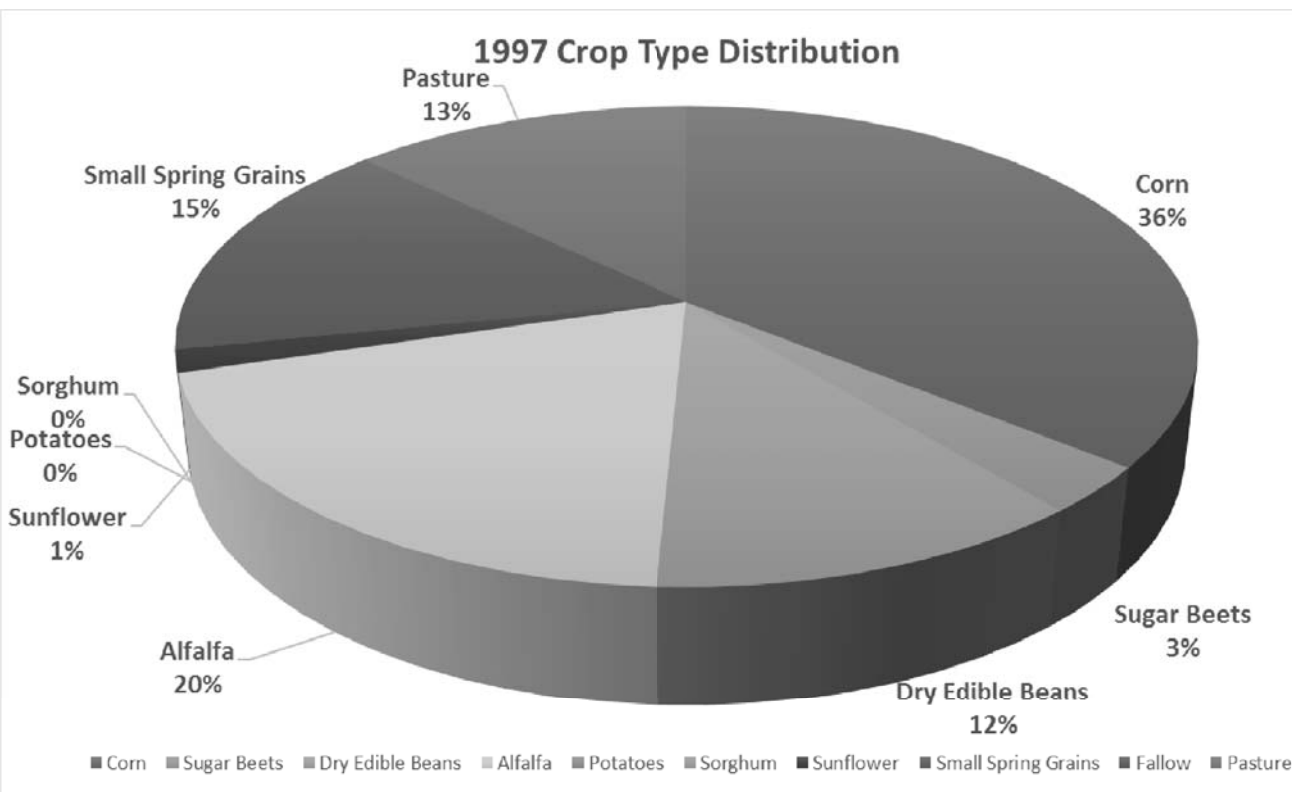
NPNRD	Total change (1997 to 2013)
District-Wide	-3,400 acres
OA	-5,400 acres

NPNRD Inputs

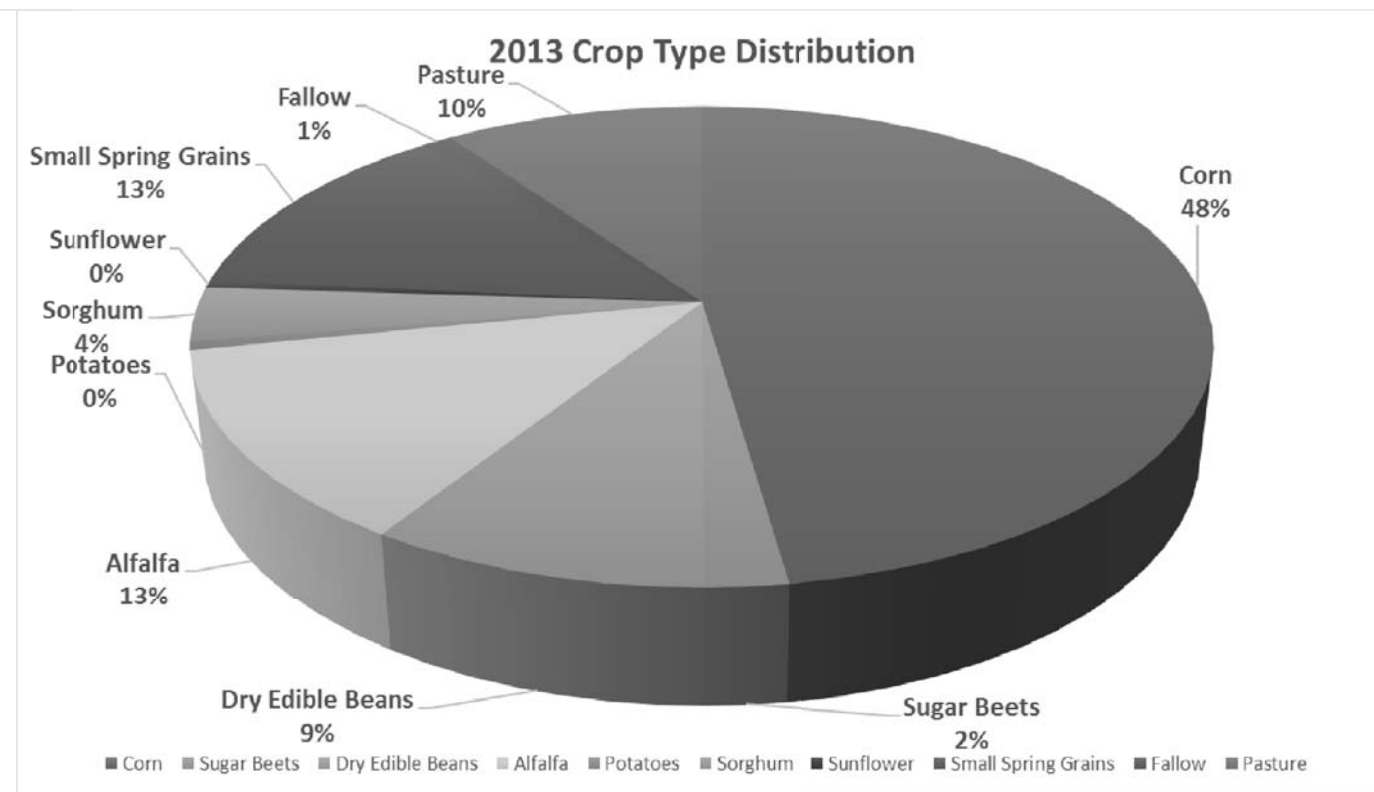
(Changes in crop type, district-wide)

Change in groundwater-only irrigated acre crop types 1997-2013

134,500 GW only irrigated acres



131,100 GW only irrigated acres

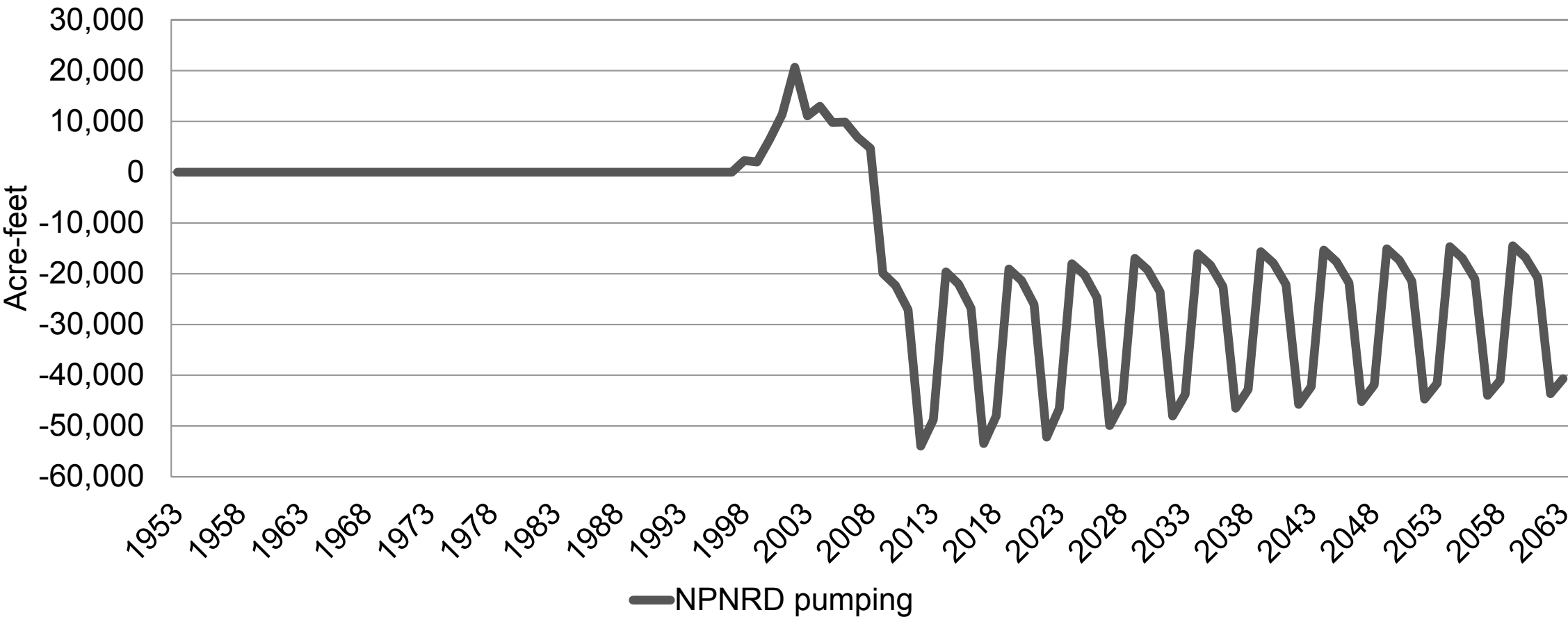


NPNRD Inputs

Current Estimates of Industrial and Municipal Pumping
Industrial average annual volume 14% lower (≈850 AF) compared to 1997.
Municipal average annual volume 4% lower (≈300 AF) compared to 1997
1997 = 5,472 AF industrial 7,639 AF municipal
2013 = 4,582 AF industrial 6,837 AF municipal

Changes to Post-1997 Pumping, District-Wide

Groundwater-only irrigation pumping (-3,400 acres) AND municipal/industrial uses



NPNRD Inputs

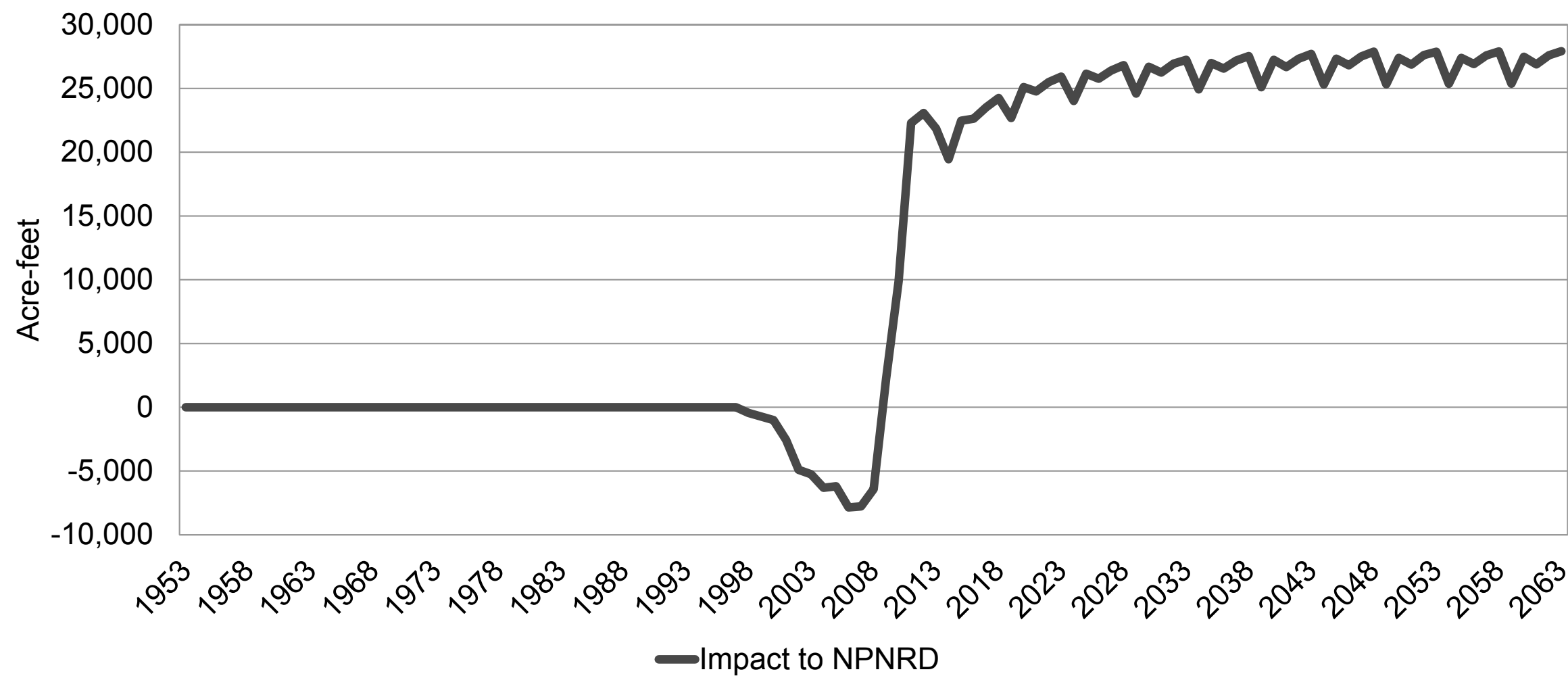
(Groundwater Recharge)

Excess Flows Diverted and Recharged into Canals in NPNRD

NPNRD	Acre-Feet of Excess Flow	
	Diversion	Recharge
2011	61,260	28,739

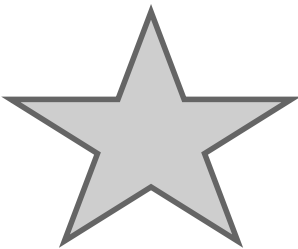
NPNRD Results

Total impact to NPNRD, from the Post-1997 Changes and Canal Recharge Event



NPNRD Summary

Post-1997 Estimates



NPNRD			
Year	2019	2029	50-year
Current IMP	-7,514		-8,000
Updated Estimate	22,000 – 24,500	24,000 - 26,000	25,000 - 27,900

- All values in acre-feet/year



Robust Review Analysis

Was a requirement of the first increment

Must be maintained in the second increment

Deals with Post-1997 Changes and Management Actions

It is the first step toward reaching a fully appropriated condition

NEBRASKA

DEPT. OF NATURAL RESOURCES

301 Centennial Mall South, 4th Floor

PO Box 94676

Lincoln, NE 68509-4676

402-471-2366