



Robust Review Analysis

SPNRD Results

SPNRD IMP Stakeholder Meeting #2

August 15, 2018

Robust Review Goals

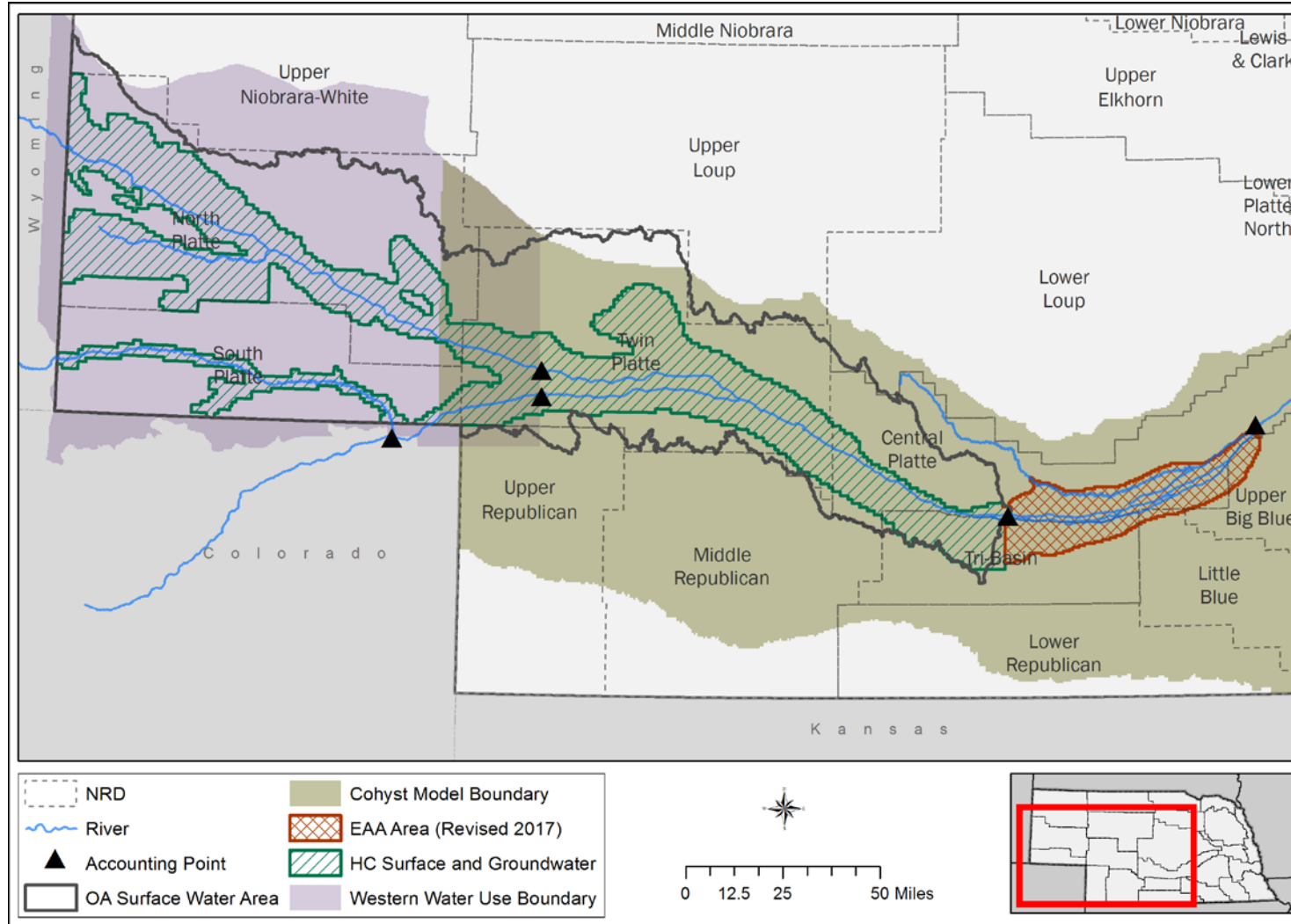
- **Complete monitoring activities outlined in the current IMP**
- **Assess progress on first increment goals and objectives**
- **Provide for more informed discussion of second increment objectives with the SPNRD IMP stakeholders**

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
- Results are summarized for three areas: 1) North Platte River; 2) South Platte River; and 3) Lodgepole Creek

Model Areas



SPNRD Inputs

(Change in acres)

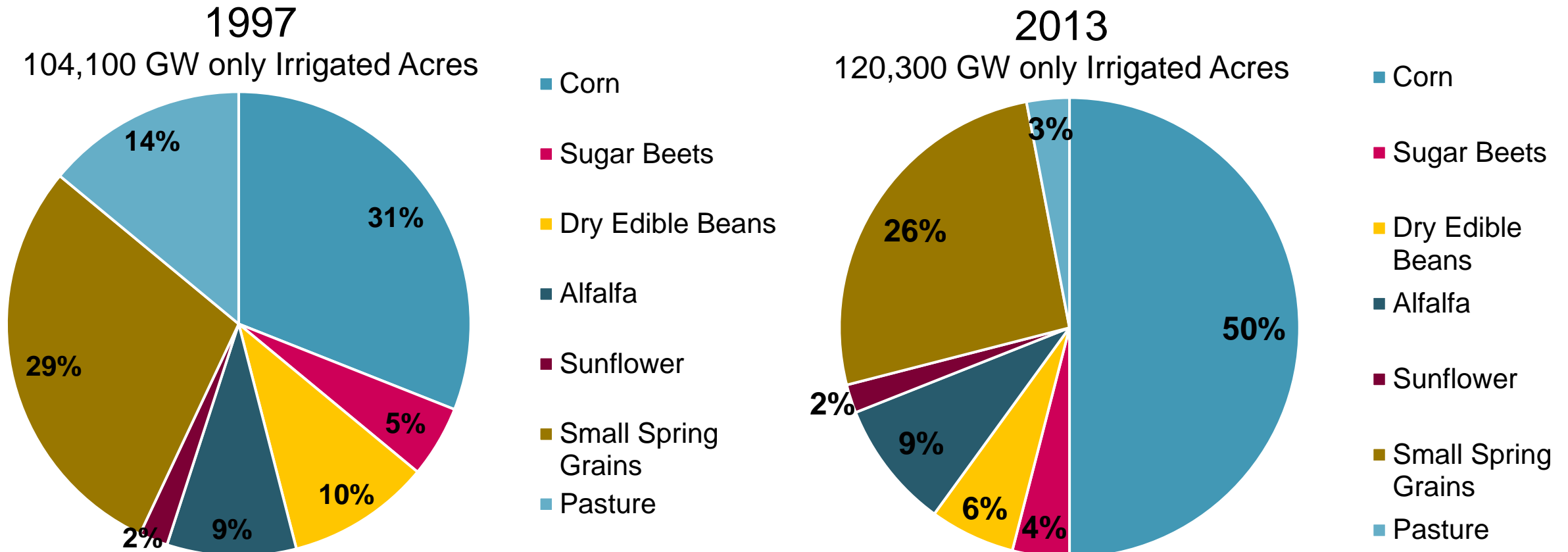
Change in groundwater-only irrigated acres 1997-2013

SPNRD	Total change (1997 to 2013)
District-Wide	16,200 acres

SPNRD Inputs

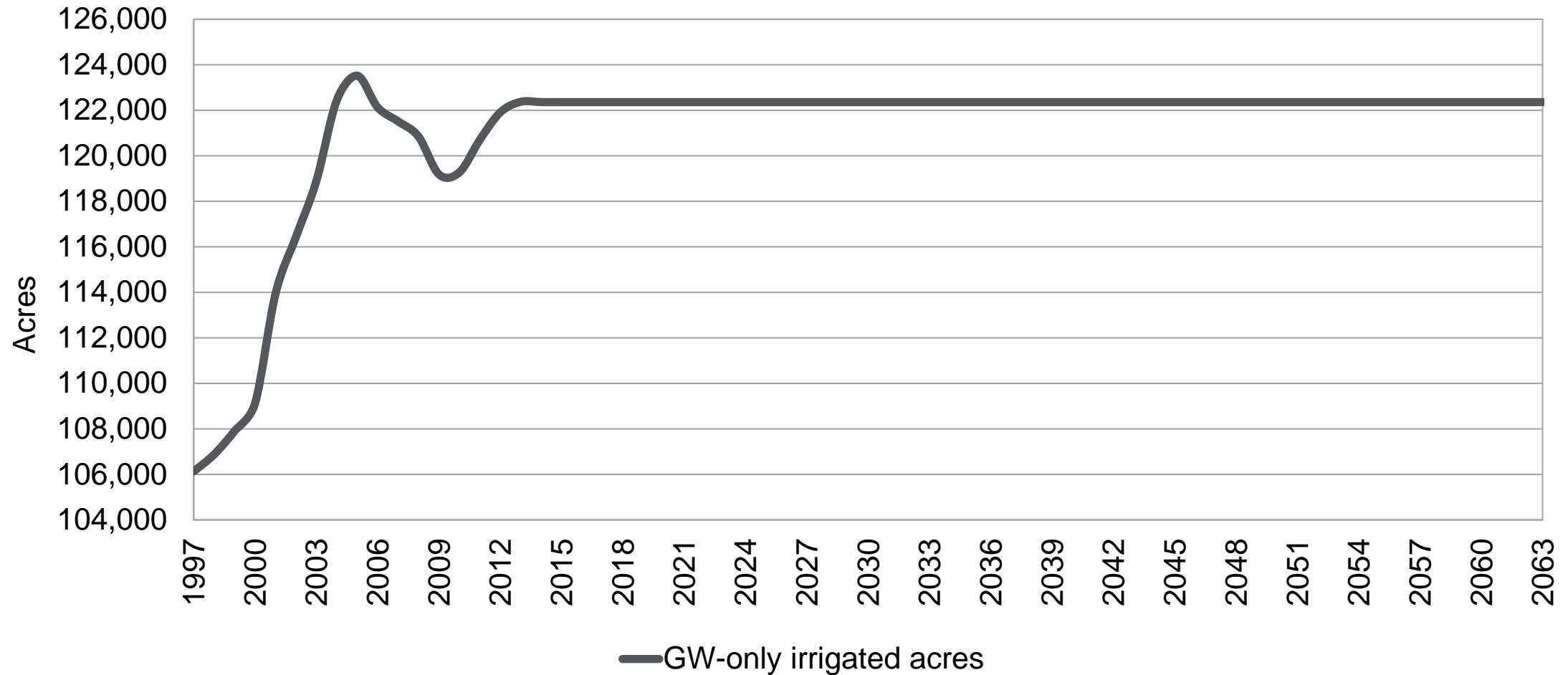
(Changes in crop type, District-wide)

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



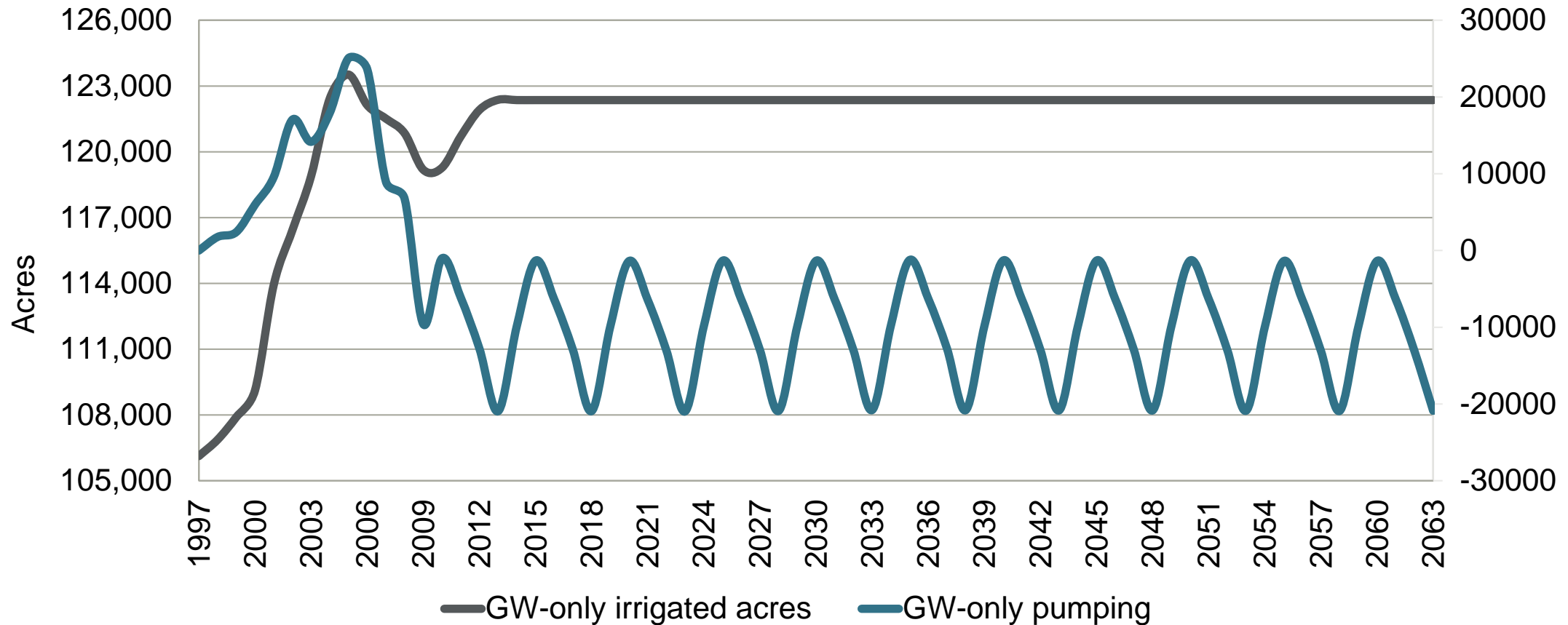
SPNRD Inputs

Change in groundwater-only irrigated acres from 1997, District-wide



SPNRD Inputs

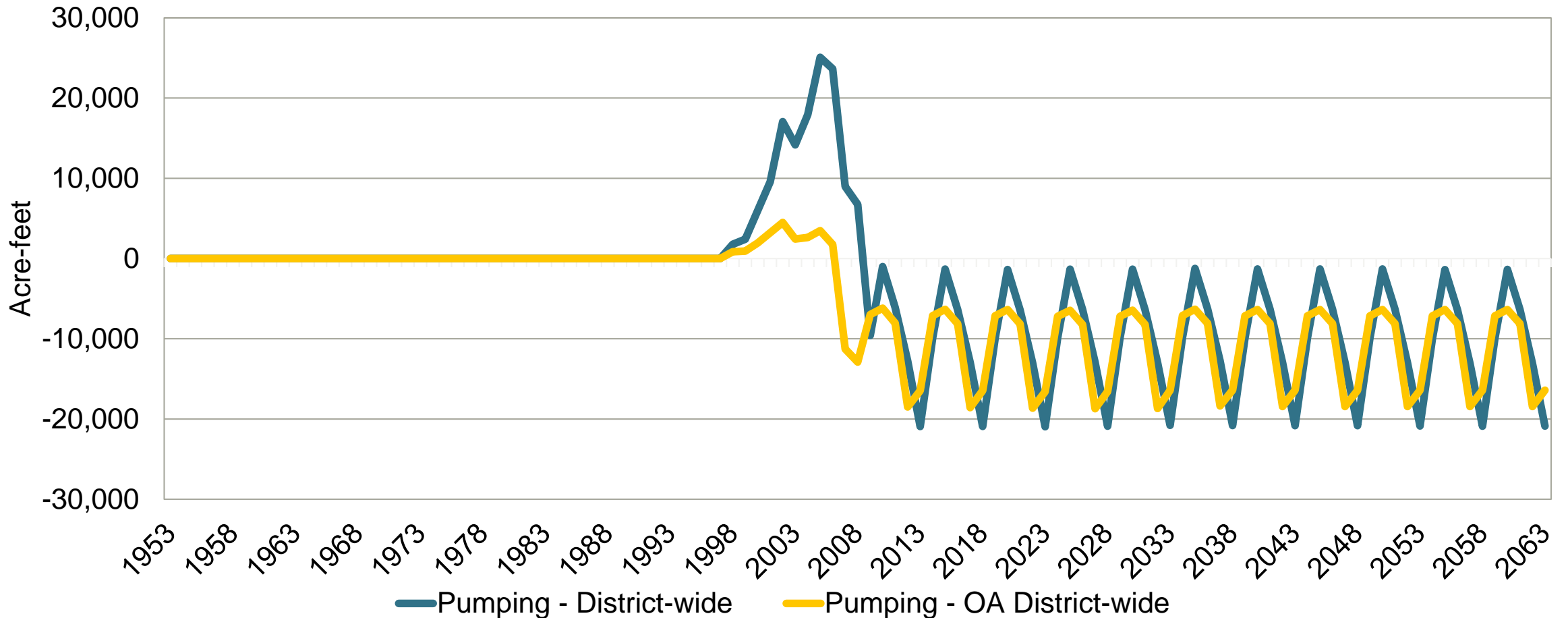
Change in groundwater-only irrigated acres and groundwater pumping for groundwater-only irrigated acres, municipal & industrial uses, from 1997, District-wide



SPNRD Inputs

Post-1997 Pumping Changes, District-Wide and OA

Groundwater-only irrigation pumping (16,200 acres district-wide, -1,200 acres OA)
AND municipal/industrial pumping



SPNRD Inputs

Current Estimates of Industrial and Municipal Pumping

Industrial average annual volume 2% greater (≈18 AF) compared to 1997.

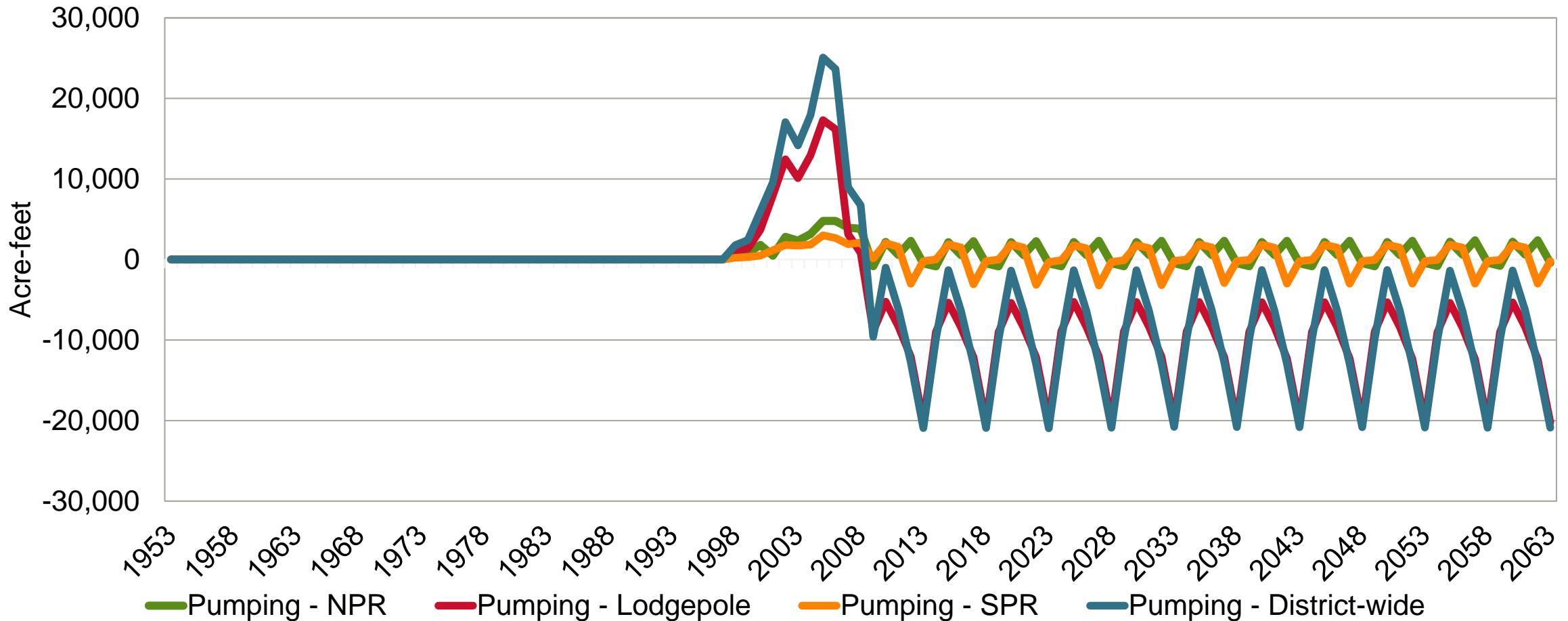
Municipal average annual volume 3% lower (≈80 AF) compared to 1997

1997 = 1,024 AF industrial 2,967 AF municipal

2013 = 1,136 AF industrial 2,441 AF municipal

Post-1997 Pumping Changes, District-Wide

Groundwater-only irrigation pumping (16,200 acres) AND municipal/industrial pumping



SPNRD Inputs

(Groundwater Recharge)

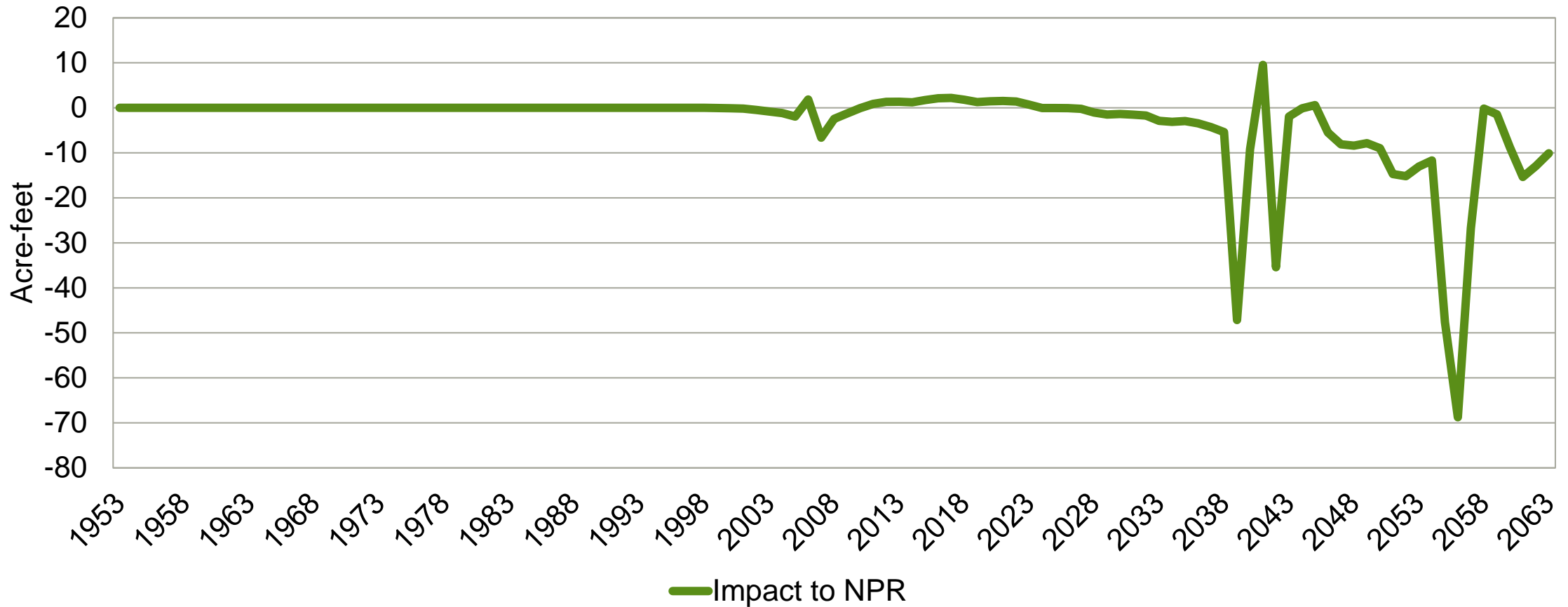
Excess Flows Diverted and Recharged into Western Canal

SPNRD	Acre-Feet of Excess Flow	
	Diversion	Recharge
2011	5,127	2,104
2013	1,443	516

*This project is shared 30/70 between the SPNRD and TPNRD, this data represents 30% of the diversion and recharge

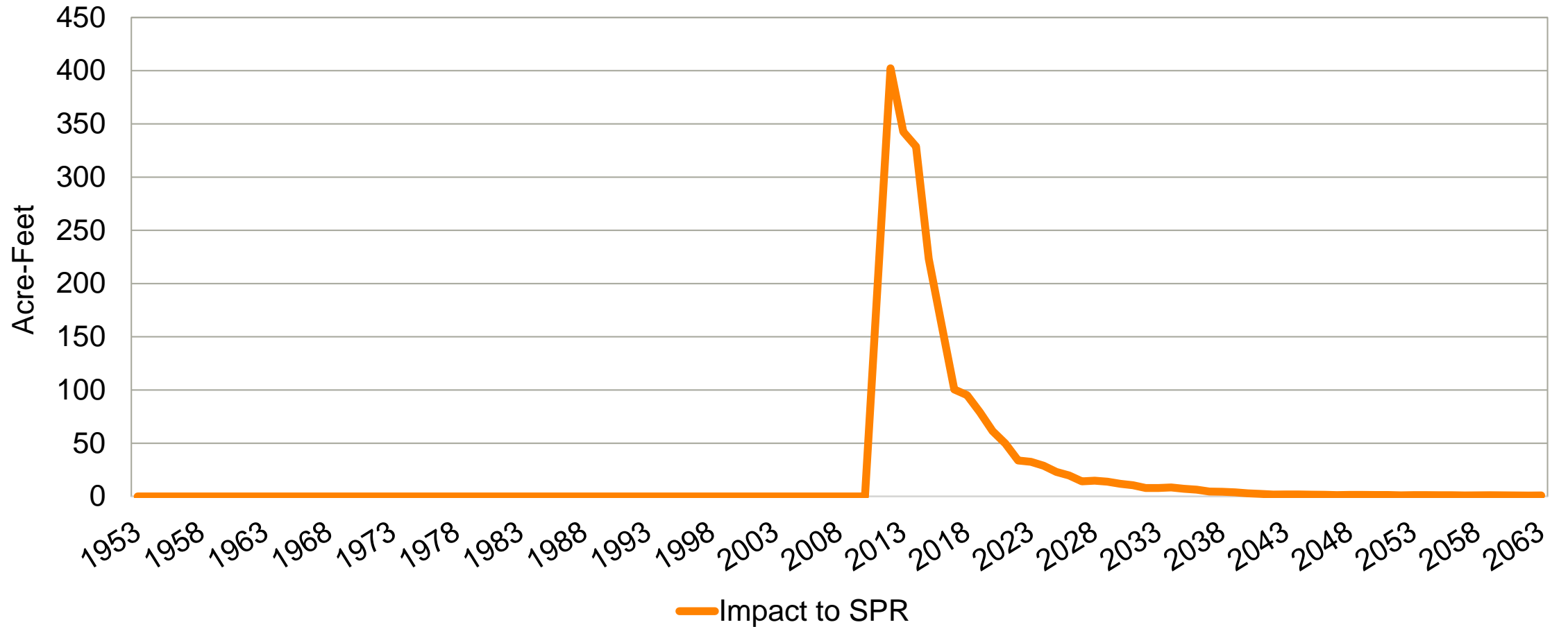
SPNRD Results

Impact to North Platte River in SPNRD



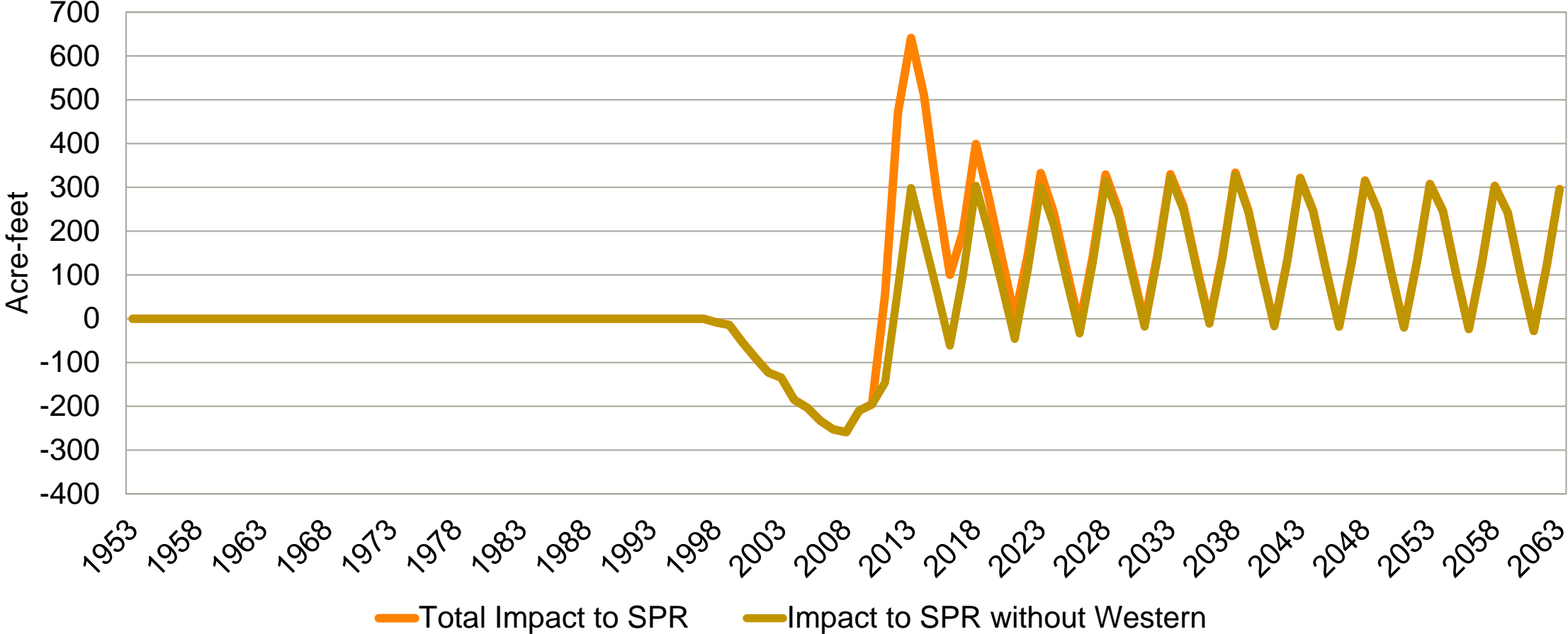
SPNRD Results

Impact to South Platte River in SPNRD from Western Canal Recharge



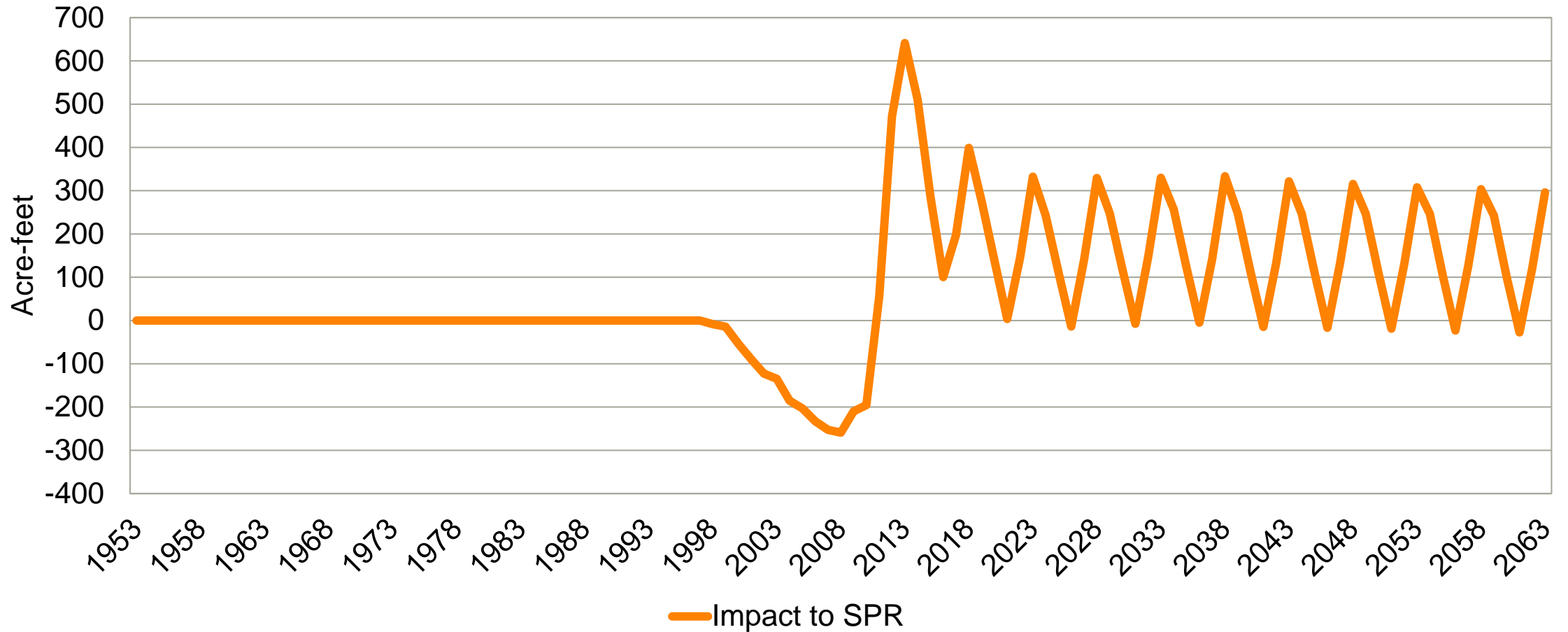
SPNRD Results

Total Impact to South Platte River in SPNRD (with Recharge) Compared to Impact from Pumping Changes



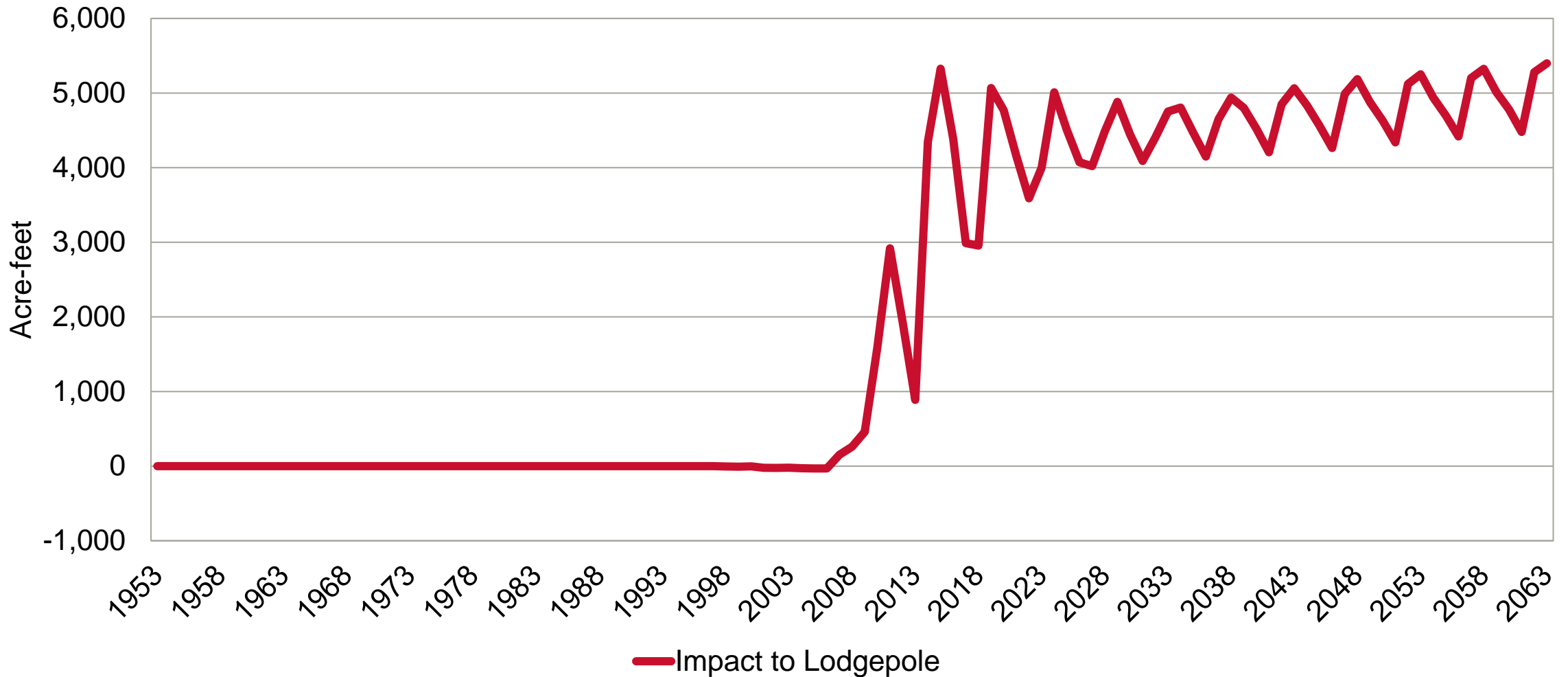
SPNRD Results

Impact to South Platte River in SPNRD



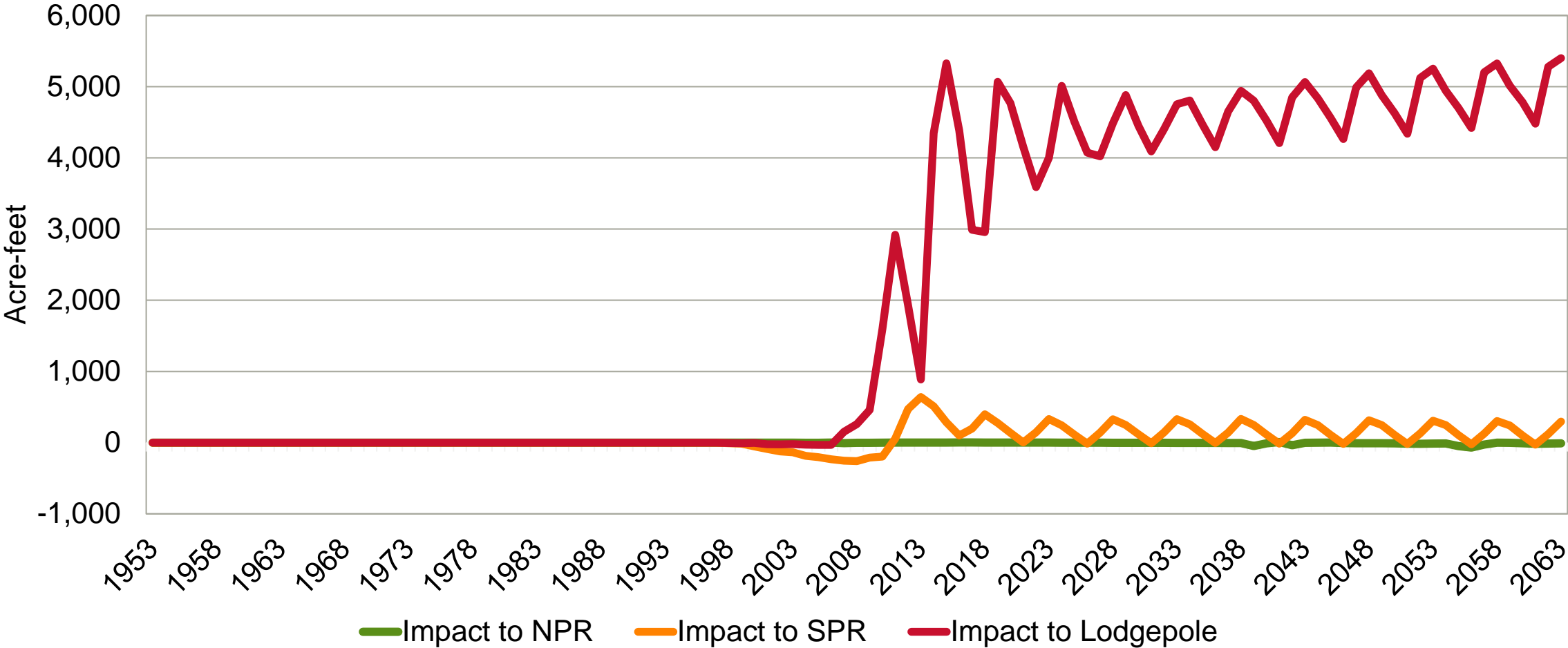
SPNRD Results

Impact to Lodgepole Creek in SPNRD



SPNRD Results

Impact to North Platte River, South Platte River, and Lodgepole Creek in SPNRD



SPNRD Results

Post-1997 estimates

	Year	2019	2029	50-year
North Platte River	Current IMP	-13		-150
	Updated Estimate	0	0	-10
South Platte River	Current IMP	-149.1		-400
	Updated Estimate	280	250	300
Lodgepole Creek	Current IMP	-63.9		-150
	Updated Estimate	5,070	4,880	5,400

- All values in acre-feet/year

NEBRASKA

A yellow swoosh graphic that starts under the 'N', goes under the 'B', 'R', 'A', 'S', and 'K', and ends under the 'A'.

DEPT. OF NATURAL RESOURCES

301 Centennial Mall South, 4th Floor

PO Box 94676

Lincoln, NE 68509-4676

402-471-2366