# Upper Platte Basin Drought Contingency Plan

Drought Task Force Meeting #3

May 23, 2023

# Safety Moment

- Emergency exits
- Tornado shelter
- 911 caller
- CPR
- Restrooms

# Supply Check

- Nametag
- Pen/Pencil
- Reference Packet
- Photo Release Form
  - If you haven't already, sign and return to NeDNR or HDR staff
  - If you don't want your face visible in a photo, grab a "No Photo" sticker and wear it on the front of your shirt

# Today's Agenda

- Welcome and Introductions
- Review of Vulnerabilities, Priorities, and Monitoring Data
- Discussion of Mitigation and Response Actions by Sector
- Drought Tabletop Exercise
  - Single-Year Drought Scenario
  - Multi-Year Drought Scenario
- Next Steps

# Introductions

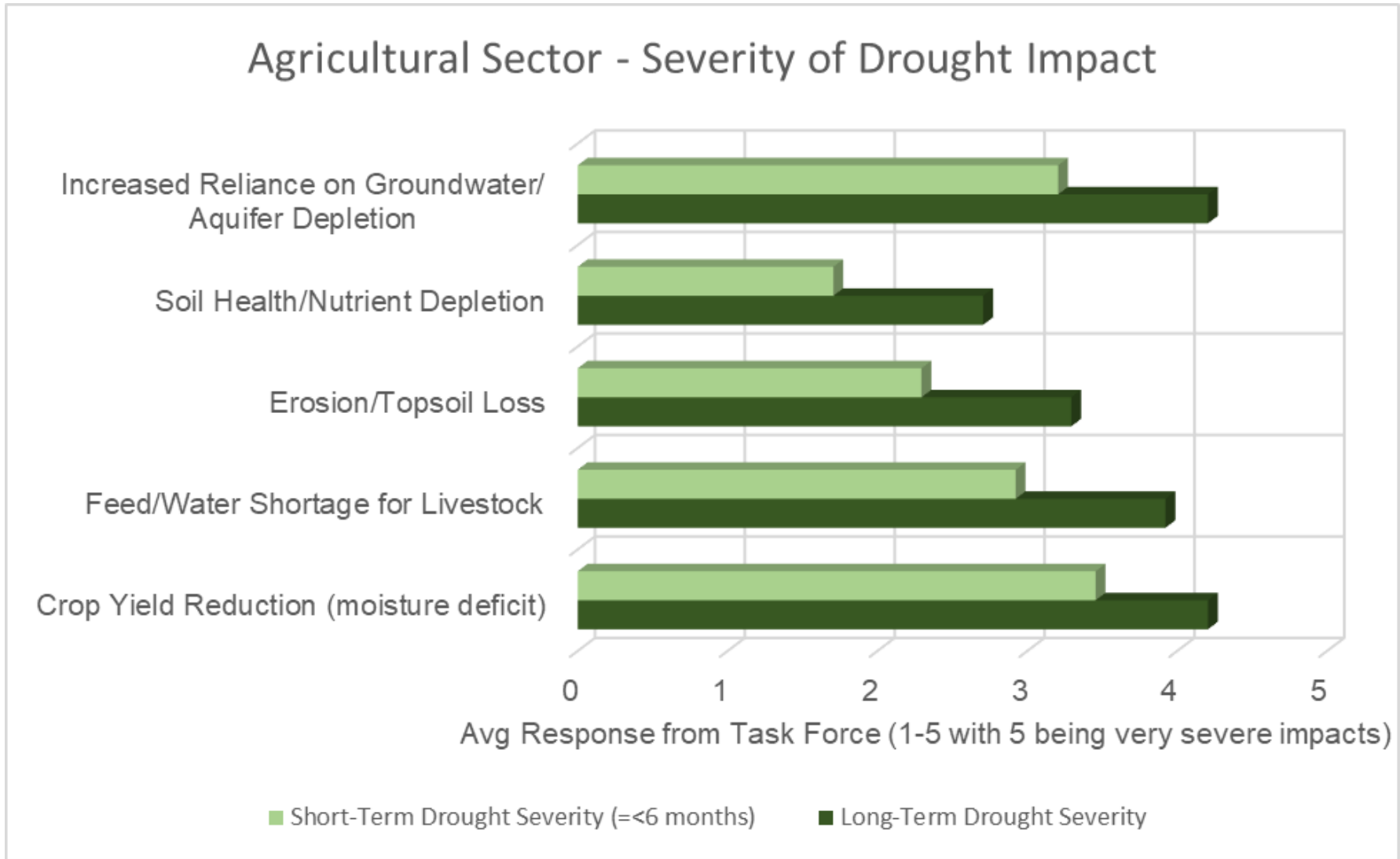
Tell us who you are! (Name, Role, Organization)

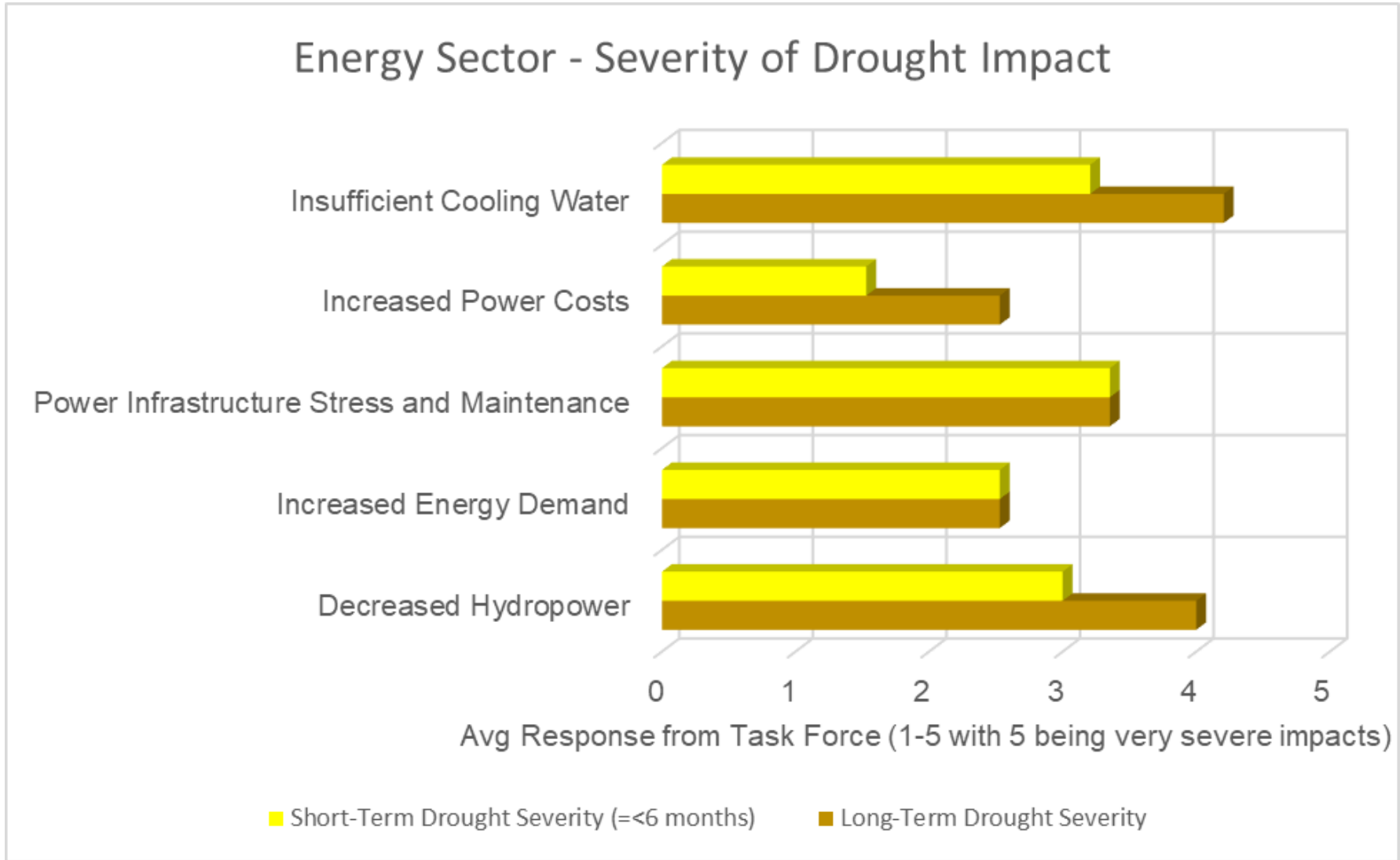
# Review

## What have we discussed so far?

# Vulnerabilities and Priorities

- Drought Task Force members helped identify different drought vulnerabilities, by sector
- Members also helped identify which sector vulnerabilities needed to be prioritized


Agricultural Sector - Severity of Drought Impact
Increased Reliance on Groundwater/ Aquifer Depletion
Soil Health/Nutrient Depletion
Erosion/Topsoil Loss
Feed/Water Shortage for Livestock
Crop Yield Reduction (moisture deficit)
0
1
2
3
4
5
Avg Response from Task Force (1-5 with 5 being very severe impacts)
Short-Term Drought Severity (=<6 months)
Long-Term Drought Severity


Energy Sector - Severity of Drought Impact
Insufficient Cooling Water
Increased Power Costs
Power Infrastructure Stress and Maintenance
Increased Energy Demand
Decreased Hydropower
0
1
2
3
4
5
Avg Response from Task Force (1-5 with 5 being very severe impacts)
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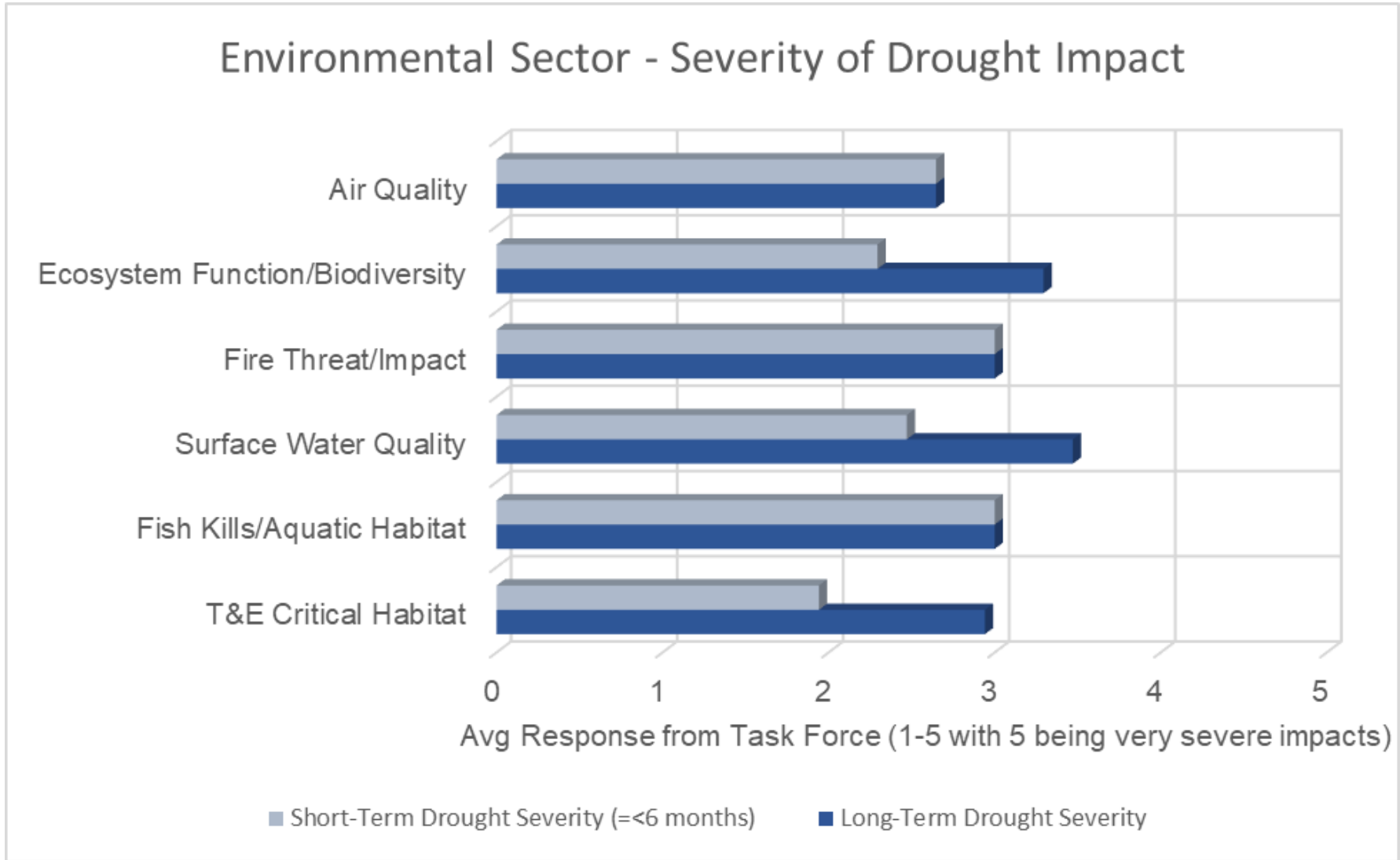
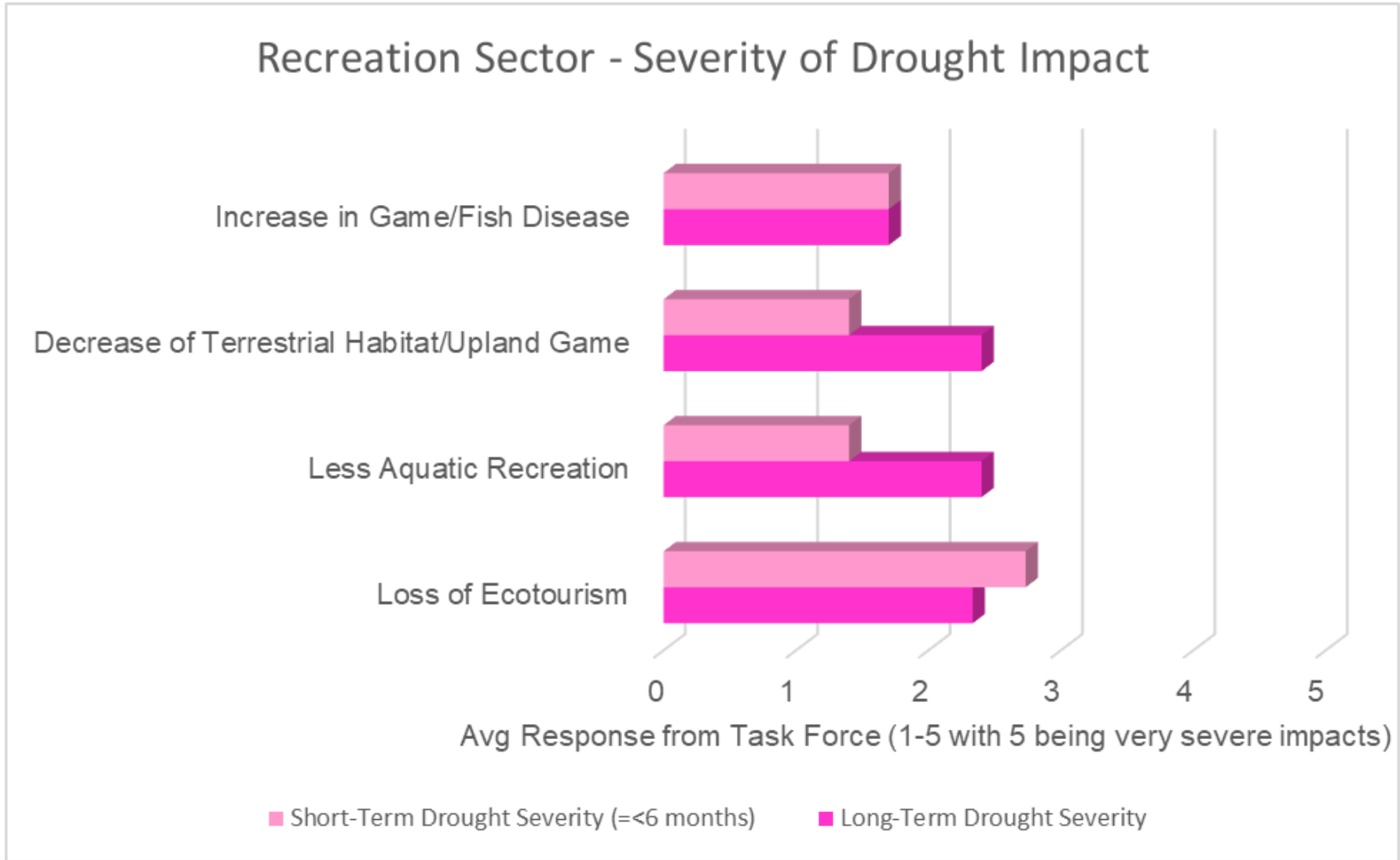
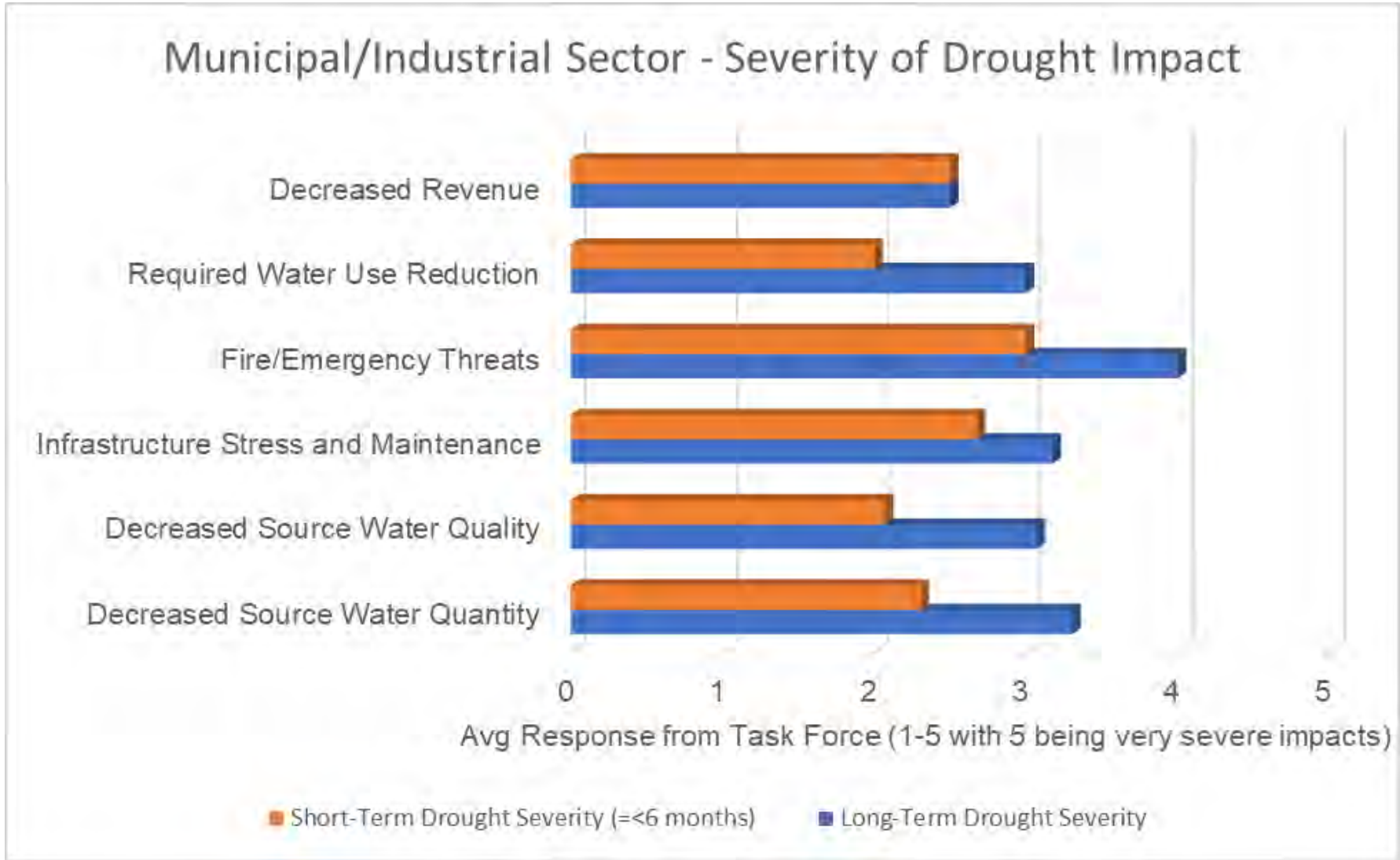
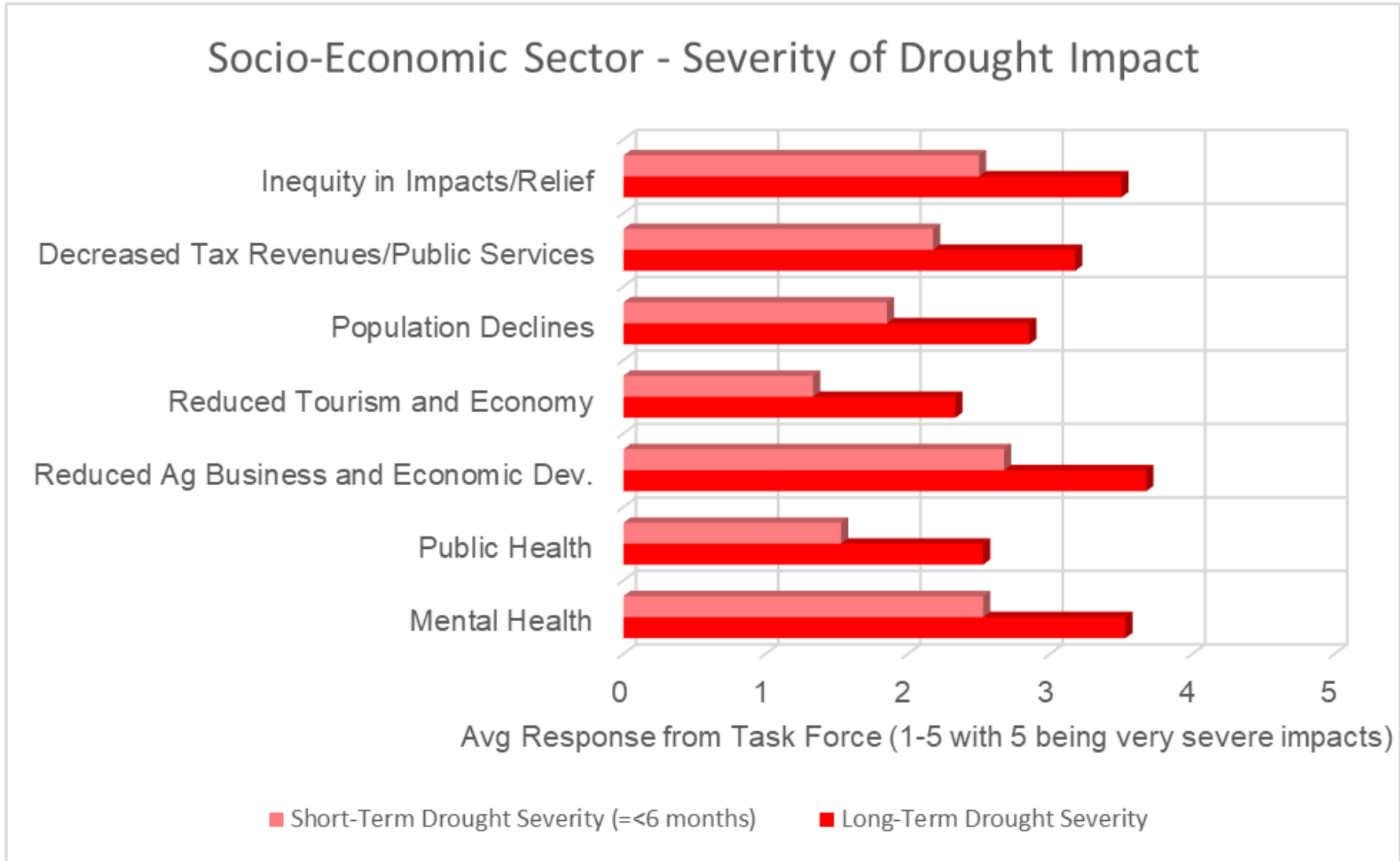

Environmental Sector - Severity of Drought Impact
Air Quality
Ecosystem Function/Biodiversity
Fire Threat/Impact
Surface Water Quality
Fish Kills/Aquatic Habitat
T&E Critical Habitat
0
1
2
3
4
5
Avg Response from Task Force (1-5 with 5 being very severe impacts)
Short-Term Drought Severity (=<6 months)
Long-Term Drought Severity


Recreation Sector - Severity of Drought Impact
Increase in Game/Fish Disease
Decrease of Terrestrial Habitat/Upland Game
Less Aquatic Recreation
Loss of Ecotourism
0
1
2
3
4
5
Avg Response from Task Force (1-5 with 5 being very severe impacts)
Short-Term Drought Severity (=<6 months)
Long-Term Drought Severity


Municipal/Industrial Sector - Severity of Drought Impact
Decreased Revenue
Required Water Use Reduction
Fire/Emergency Threats
Infrastructure Stress and Maintenance
Decreased Source Water Quality
Decreased Source Water Quantity
0
1
2
3
4
5
Avg Response from Task Force (1-5 with 5 being very severe impacts)
Short-Term Drought Severity (=<6 months)
Long-Term Drought Severity


Socio-Economic Sector - Severity of Drought Impact
Inequity in Impacts/Relief
Decreased Tax Revenues/Public Services
Population Declines
Reduced Tourism and Economy
Reduced Ag Business and Economic Dev.
Public Health
Mental Health
0
1
2
3
4
5
Avg Response from Task Force (1-5 with 5 being very severe impacts)
Short-Term Drought Severity (=<6 months)
Long-Term Drought Severity

# Monitoring Data

**Based on feedback from previous meetings, the following indicators and indices were determined to be the most beneficial**

- Crop Yields/Net Irrigation Requirements: EDDI or SPEI (1- to 6-months)
- Energy Demands/Cooling Degree Days: EDDI or SPEI (1- to 4-months)
- Filling of Reservoir Storage*: PDSI, SPEI, North Platte Snowpack
- Summer River flows*: PDSI, Snowpack

* A preferred method is linking Missouri Basin River Forecast Center stream flow ensembles with reservoir/water supply Modeling, such as USBR's North Platte River Basin Annual Operating Plans

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# Monitoring Data

| Monitoring Element | Timing |
|---|---|
| System Reservoir Water Storage | Year-round |
| Drought Indices (PDSI, EDDI, SPI) | Year-round |
| River Flows | Year-round |
| Snowpack | February – May |
| Water Delivery/Runoff Forecasts (BOR, etc.) | February-April |
| Aquifer Levels | Spring and Fall |
| Allocation Status (Where Applicable) | Spring/Summer |

# Mitigation & Response Actions

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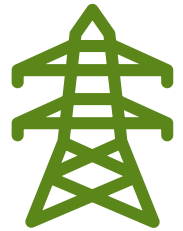
# Agriculture

| Action Type | Action | Vulnerability Addressed |
|---|---|---|
| **Mitigation** | Crop Variety and Seed Spacing | Crop Yield Reduction |
| **Mitigation** | Groundwater Recharge Projects | Groundwater/Aquifer Depletion |
| **Mitigation** | Irrigation Efficiency | Groundwater/Aquifer Depletion |
| **Mitigation** | Rangeland Health (rotational grazing, etc.) | Livestock Feed Shortage, Soil Health |
| **Mitigation** | Soil Health (conservation tillage, cover crops, etc.) | Crop Yield Reduction, Soil Health, Erosion |
| **Mitigation** | Erosion Conservation Measures | Erosion, Soil Health |
| **Mitigation** | Commingled Irrigation | Crop Yield Reduction |

# Agriculture

| Action Type | Action | Vulnerability Addressed |
|---|---|---|
| **Response** | Livestock Protection, Shade, and Water | Livestock Water Shortage/Health |
| **Response** | Irrigation Scheduling | Groundwater/Aquifer Depletion |
| **Response** | Emergency Hay/Forage (FSA programs, etc.) | Livestock Feed Shortage |

# Energy



| Action Type | Action | Vulnerability Addressed |
|---|---|---|
| **Mitigation** | Increase Groundwater Available for Cooling Water | Insufficient Cooling Water |
| **Mitigation** | Protect Power Infrastructure from Fire Threats (like wildfires, etc.) | Power Infrastructure Stress and Maintenance |
| **Mitigation** | Improvements to Power Infrastructure to Reduce Potential Fire Cause | Power Infrastructure Stress and Maintenance, Fire Threat |
| **Mitigation** | Improve efficiency of Water Delivery | Decreased Hydropower, Insufficient Cooling Water |

# Energy

| Action Type | Action | Vulnerability Addressed |
|---|---|---|
| **Response** | Load and Peak Demand Management | Increased Energy Demand and Power Costs |

# Municipal/Industrial/Domestic

| Action Type | Action | Vulnerability Addressed |
|---|---|---|
| **Mitigation** | Develop Emergency Action Plans for Water Shortage | Decreased Source Water Quantity, Fire/Emergency Threats |
| **Mitigation/ Response** | Drill Deeper Production Wells/Replace Older Infrastructure | Decreased Source Water Quantity, Infrastructure Stress and Maintenance, Decreased Revenue |
| **Mitigation/ Response** | Increase Groundwater Quantity Monitoring | Decreased Source Water Quantity |
| **Mitigation (# of monitoring wells)/ Response (increased frequency)** | Increase Groundwater Quality Monitoring | Decreased Source Water Quality |

# Municipal/Industrial/Domestic

| Action Type | Action | Vulnerability Addressed |
|---|---|---|
| **Response** | Water Use Restrictions - Voluntary and Mandatory (Lawn Irrigation) | Decreased Source Water Quantity |
| **Response** | Emergency/ Fire Water Storage and/or Access | Fire/Emergency Threats |
| **Response** | Emergency Potable Water | Fire/Emergency Threats |

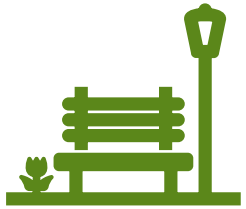
# Environmental

| Action Type | Action | Vulnerability Addressed |
|---|---|---|
| **Mitigation** | Increased habitat/biodiversity ("Corners for Wildlife" for example) | Ecosystem Function/ Biodiversity, T&E Critical Habitat |
| **Mitigation** | Increase Riparian Buffer Zones | Terrestrial and Aquatic Habitat, Surface Water Quality |
| **Mitigation** | Improve Drought Resilient Habitats (existing and new) | Ecosystem Function/ Biodiversity, T&E Critical Habitat |
| **Mitigation** | Controlled Burns | Fire Threat |
| **Mitigation** | Improve Wildlife Protection | Biodiversity, Aquatic Habitat, T&E Critical Habitat |
| **Mitigation** | Control Invasive and Monoculture Vegetation (Phragmites, Cedars, Russian Olive) | Fire Threat/Impact, Ecosystem Function, T&E Critical Habitat |

# Environmental

| Action Type | Action | Vulnerability Addressed |
|---|---|---|
| Response | Coordinate Wildfire Suppression | Fire Threat/Impact |
| Response | Habitat Recovery | Biodiversity, Aquatic Habitat, T&E Critical Habitat |

# Recreation



| Action Type | Action | Vulnerability Addressed |
|---|---|---|
| **Mitigation** | Lake Dredging | Aquatic Recreation, Ecotourism |
| **Mitigation** | Watershed WQ Management | Aquatic Recreation, Game/Fish Disease, Ecotourism |
| **Mitigation** | Drought Resilient Water-Based Recreational Facilities | Aquatic Recreation, Ecotourism |
| **Mitigation** | Improve diversity of recreational activities | Ecotourism |

# Recreation

| Action Type | Action | Vulnerability Addressed |
|---|---|---|
| **Response** | Fish and Game Regulations During Drought | Game/Fish Disease, Aquatic Recreation, Upland Game |

# Socio-Economic

| Action Type | Action | Vulnerability Addressed |
|---|---|---|
| **Mitigation** | Access to Different Mental Health Resources | Mental and Public Health |
| **Mitigation** | Public Outreach and Drought Education | Decreased Public Services, Economic Development |
| **Mitigation** | Prepare and Train for Disease Outbreaks | Public Health |
| **Mitigation** | Improve Communication About Available Financial Assistance | Inequity in Relief, Mental Health, Population Decline |
| **Mitigation** | Improve Drought Resilience of Public Services | Decreased Tax Revenue, Reduced Economy, Economic Development |

# Socio-Economic

| Action Type | Action | Vulnerability Addressed |
|---|---|---|
| **Response** | Increase Drinking WQ Monitoring | Public Health |
| **Response** | Increase Air Quality Monitoring | Public Health |
| **Response** | Coordinate Disaster Relief | Inequity in Relief, Mental Health, Reduced Economy |
| **Response** | Emergency Response (Red Cross, National Guard, coordinate volunteer fire districts, etc.) | Public and Mental Health |

# BREAK

We'll see you back here in about 15 minutes!

# Drought Tabletop Exercise

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NATURAL RESOURCES DISTRICT

SOUTH PLATTE
Natural Resources District

Tri Basin
Natural Resources District

TWIN PLATTE
NATURAL RESOURCES DISTRICT

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# Drought Tabletop Exercise

- Walking through two drought scenarios
- Looking at monitoring data
- Identifying triggers and applying mitigation and response actions
- Want to examine:
  - What should trigger each mitigation and response action
  - Potential benefits/complications of each action
  - What monitoring data are we missing, that may help with these scenarios?

# Drought Tabletop Exercise

- Breaking into small groups
- Packet of reference materials
  - Suggested Mitigation and Response Actions
  - Indicators and Indices Table
  - Discussion Questions
  - Monitoring References
  - Several Reference Articles on Agriculture, Energy, Water Supply

# Single-Year Drought Scenario

Tabletop Exercise

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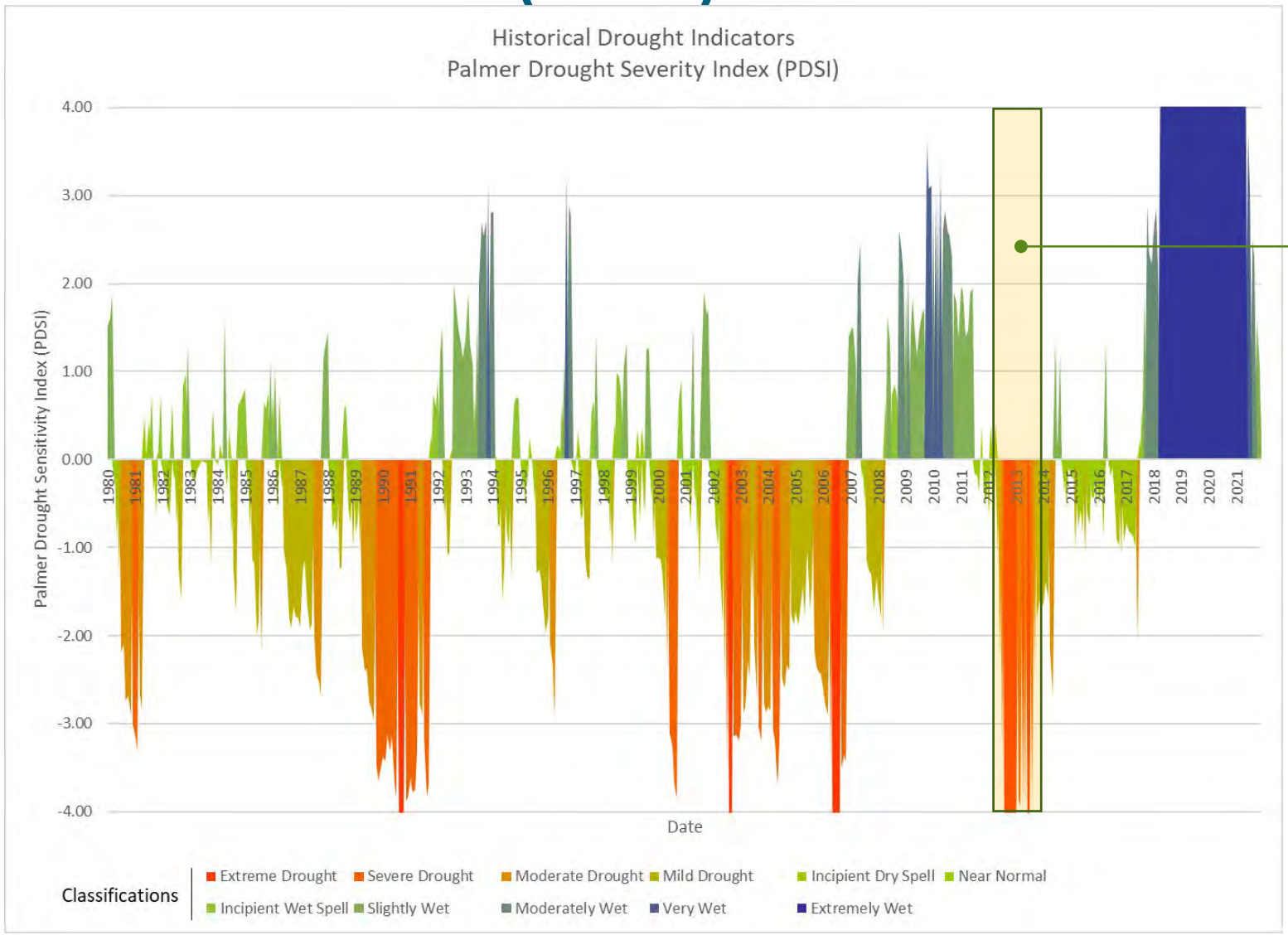
# Single-Year Drought Scenario

- Using 2012 as a historical reference

# Historical Indicators (PDSI)




Single-year Drought

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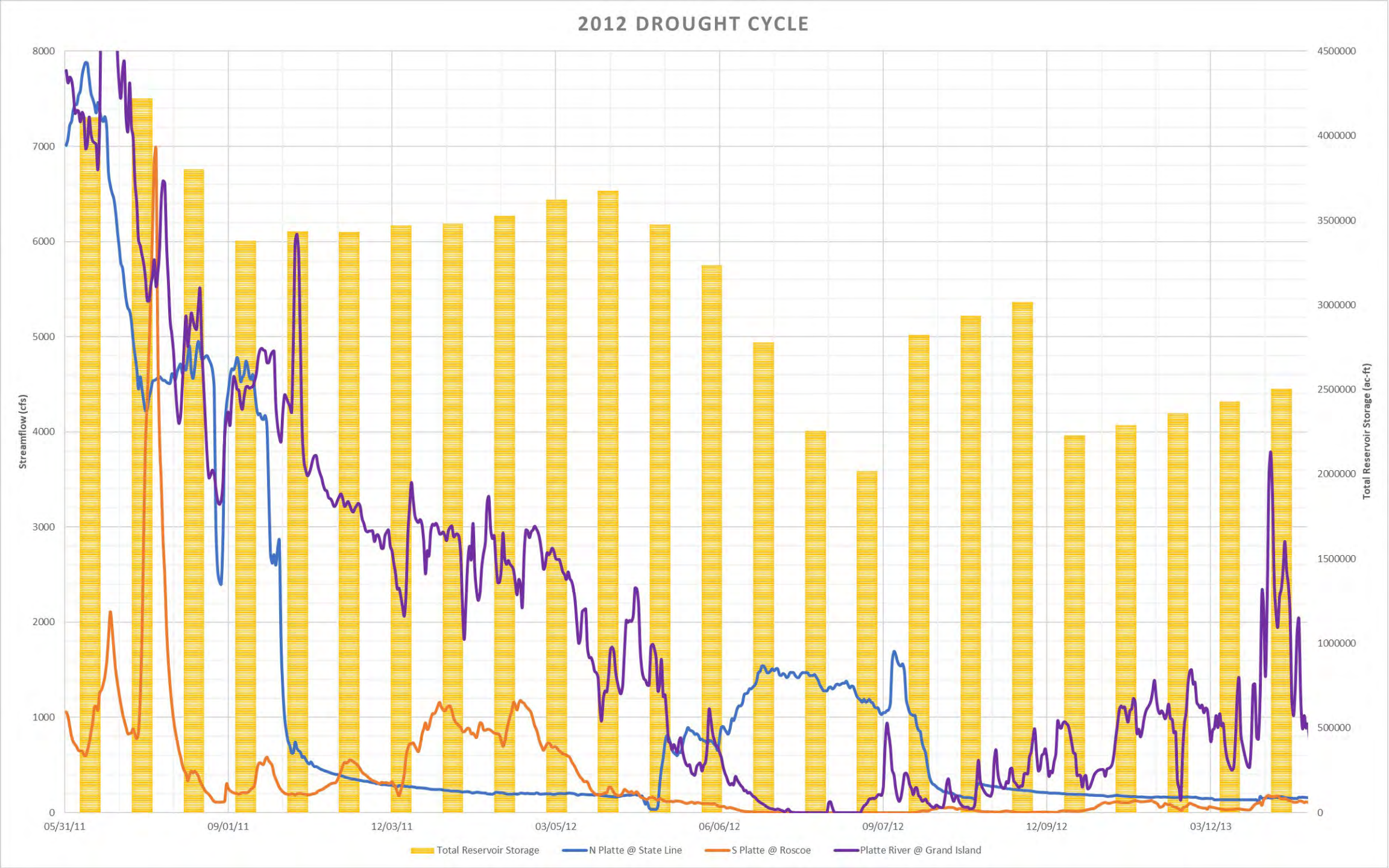
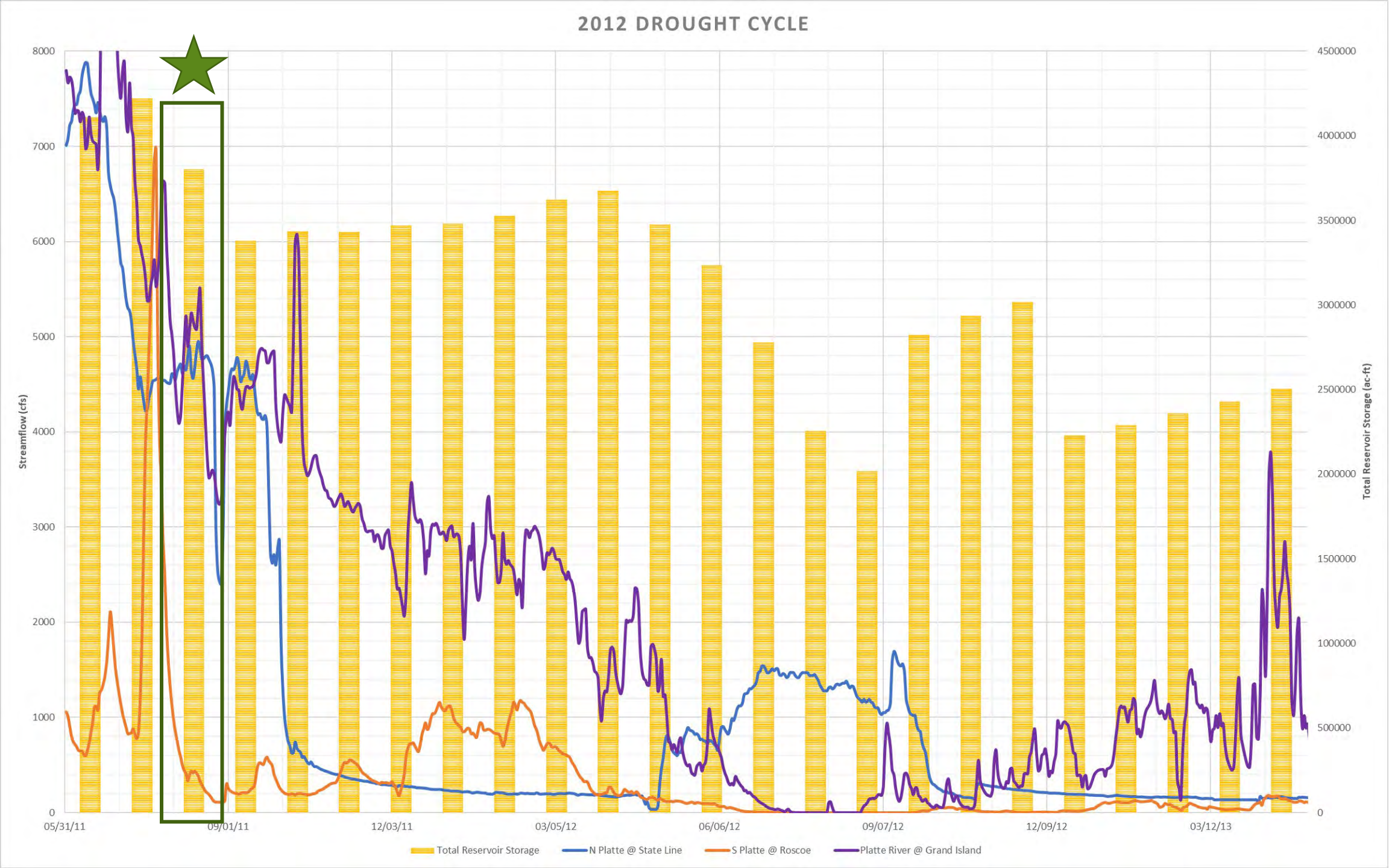
# 2012 DROUGHT CYCLE




2012 DROUGHT CYCLE
Streamflow (cfs)
Total Reservoir Storage (ac-ft)
8000
7000
6000
5000
4000
3000
2000
1000
0
4500000
4000000
3500000
3000000
2500000
2000000
1500000
1000000
500000
0
05/31/11
09/01/11
12/03/11
03/05/12
06/06/12
09/07/12
12/09/12
03/12/13
Total Reservoir Storage
N Platte @ State Line
S Platte @ Roscoe
Platte River @ Grand Island

# Historical Indicators & Indices (2012)

## Various Indices – August 2011

# Historical Indicators & Indices (2012)

## Snow, Reservoir Storage, Stream Flows – August 2011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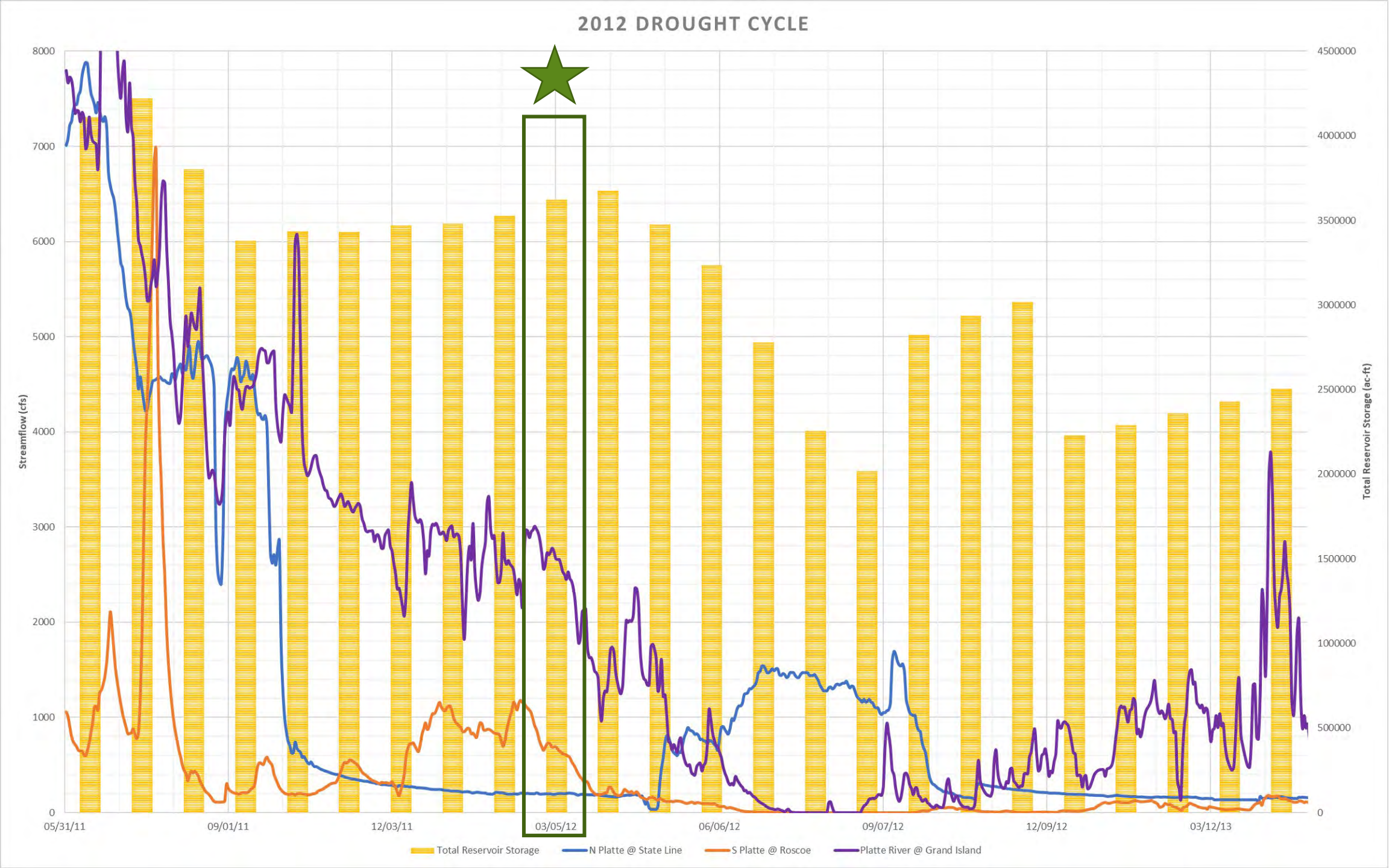
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03/05/12
06/06/12
09/07/12
12/09/12
03/12/13
Total Reservoir Storage
N Platte @ State Line
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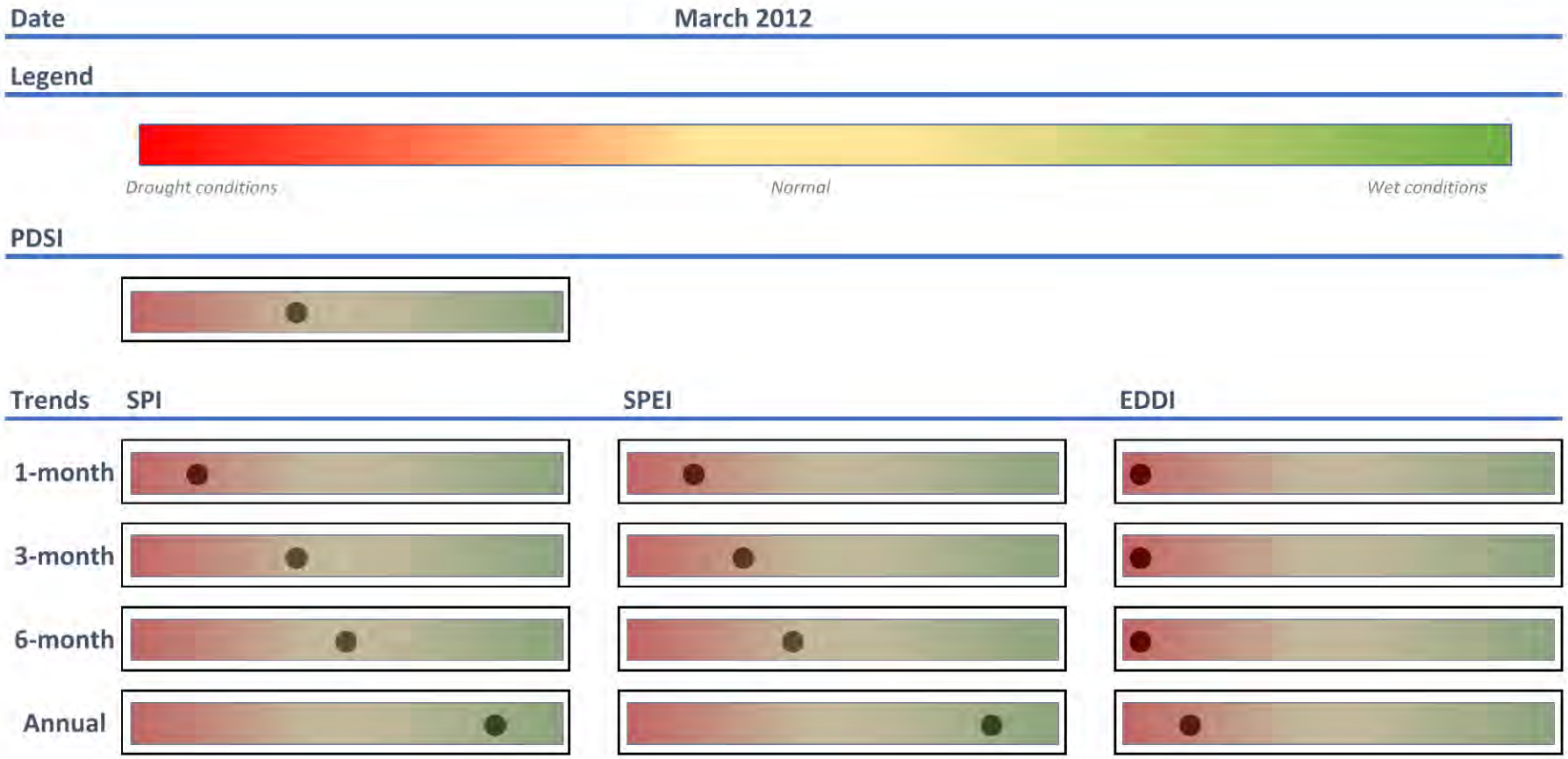
Platte River @ Grand Island

# Historical Indicators & Indices (2012)

## Various Indices – March 2012



# Historical Indicators & Indices (2012)

## Snow, Reservoir Storage, Stream Flows – March 2012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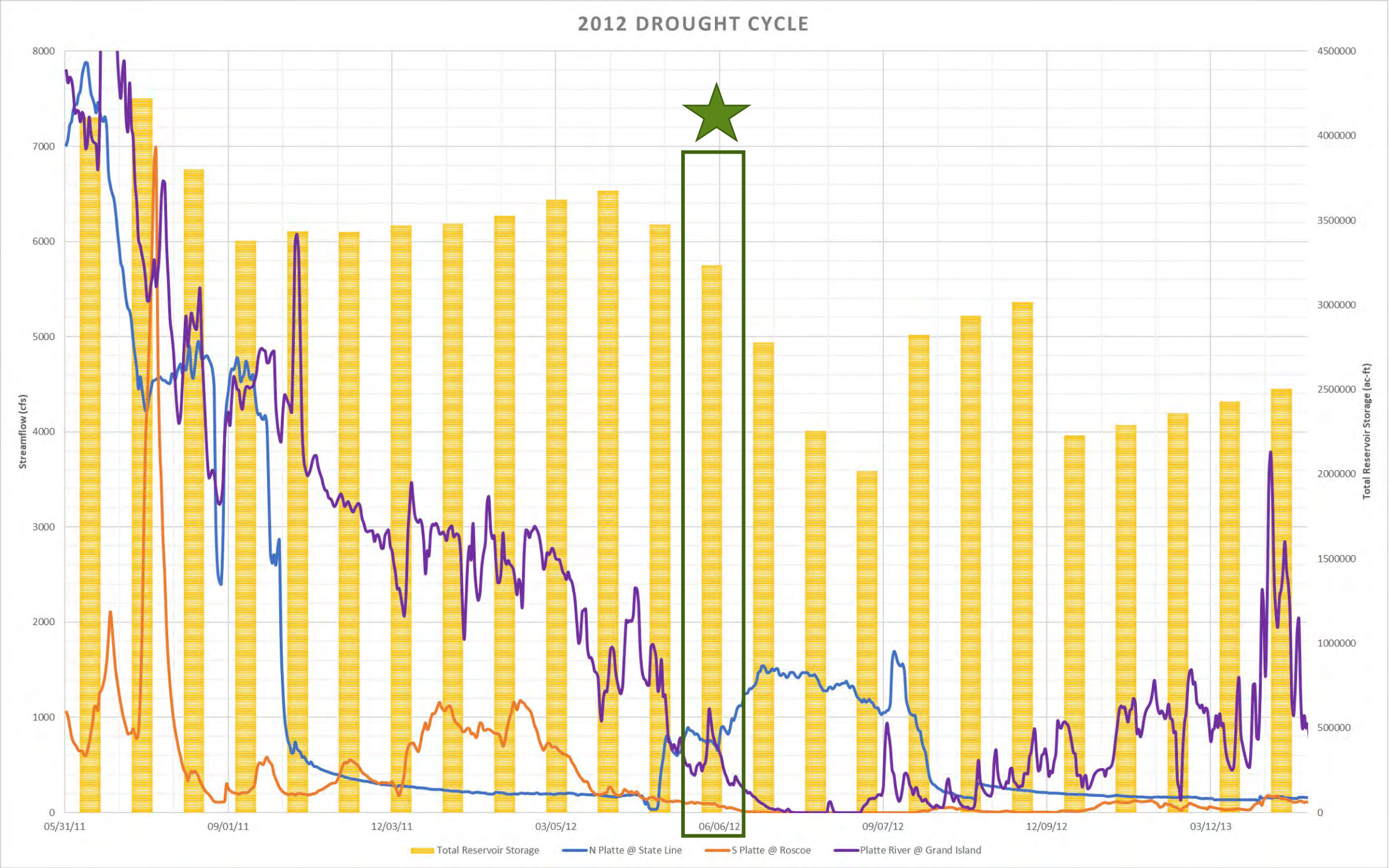
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500000
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09/01/11
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09/07/12
12/09/12
03/12/13
Total Reservoir Storage
N Platte @ State Line
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Platte River @ Grand Island

# Historical Indicators & Indices (2012)

## Various Indices – June 2012

# Historical Indicators & Indices (2012)

## Snow, Reservoir Storage, Stream Flows – June 2012


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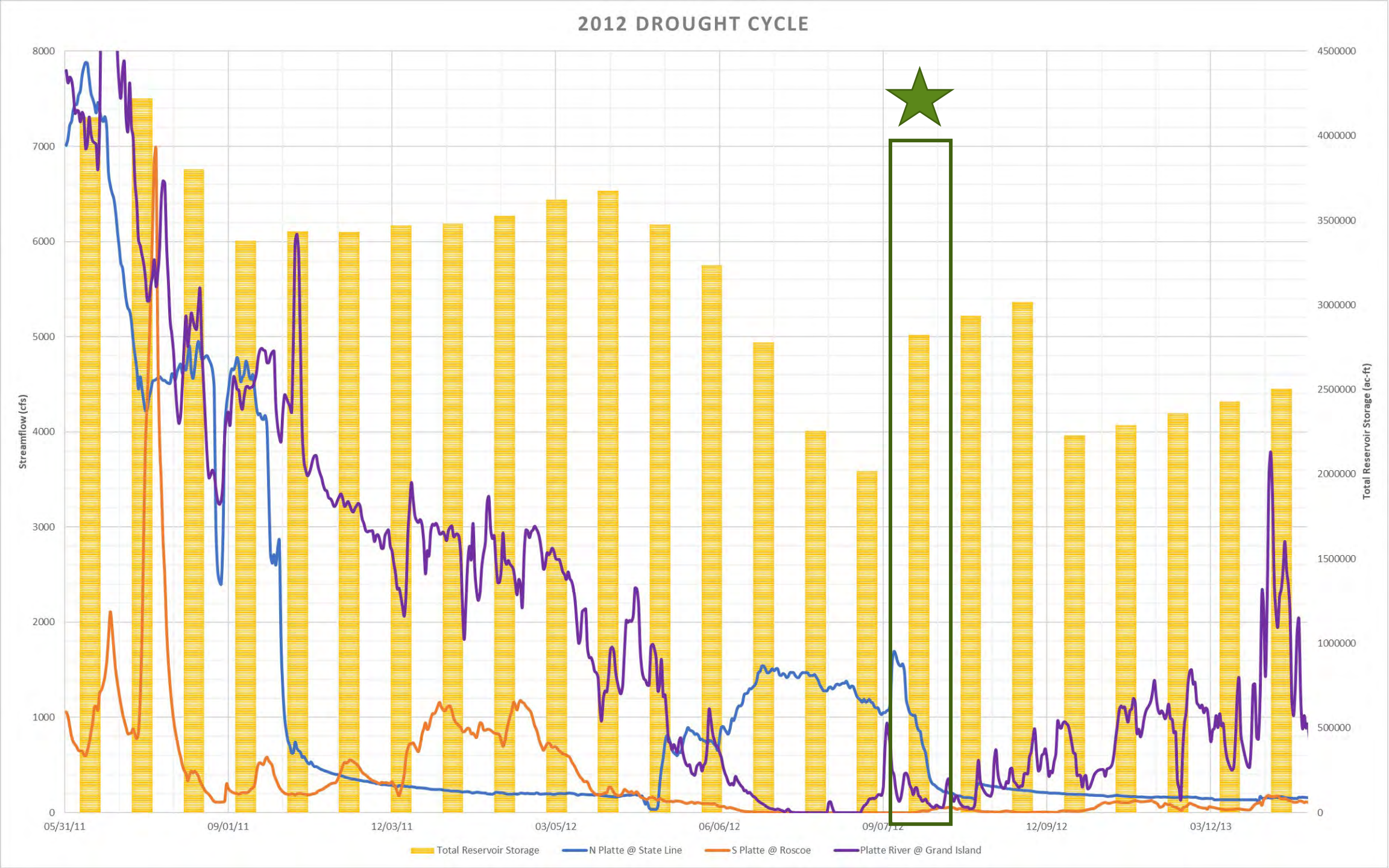
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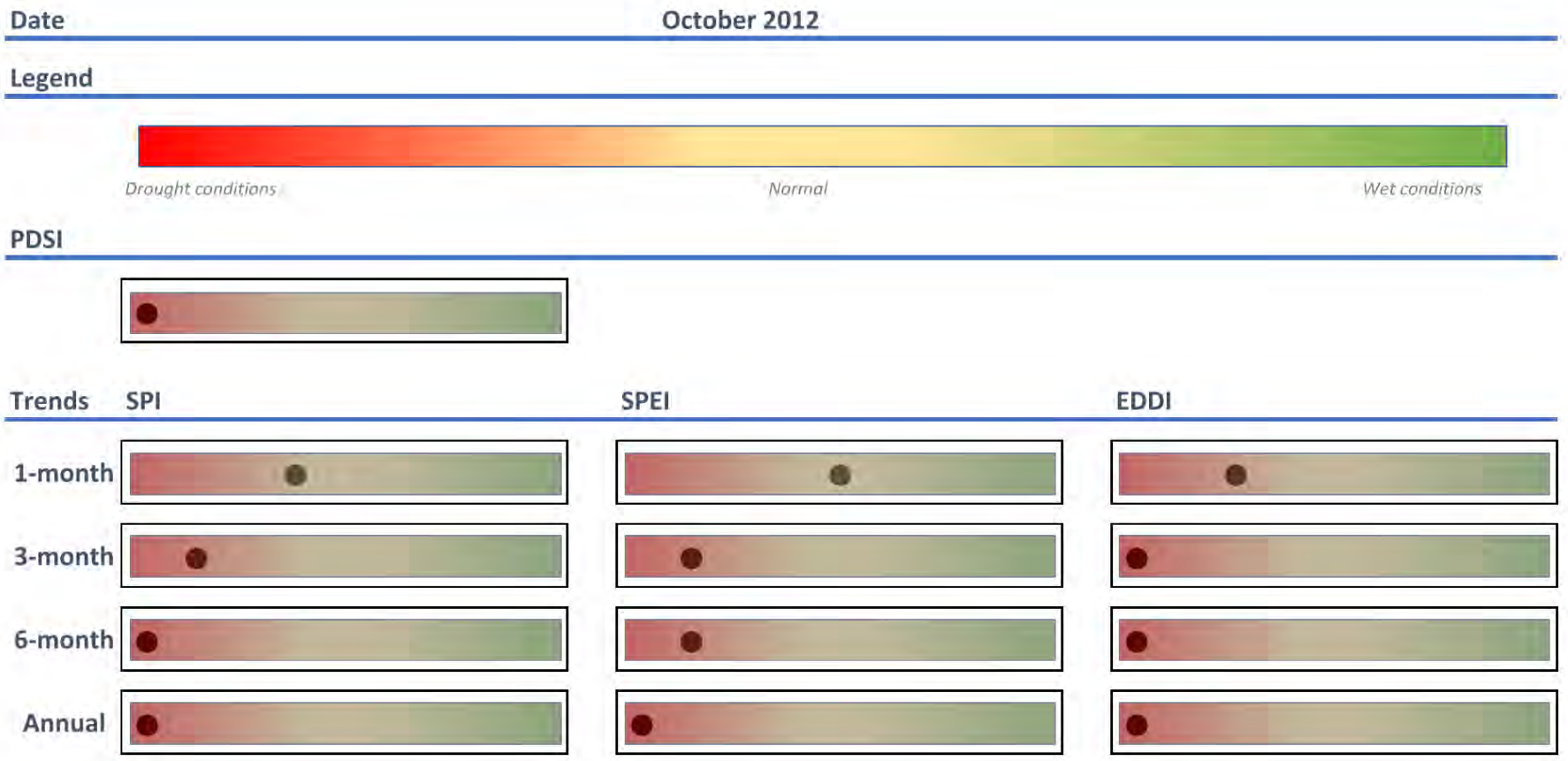
06/06/12
09/07/12
12/09/12
03/12/13
Total Reservoir Storage
N Platte @ State Line
S Platte @ Roscoe
Platte River @ Grand Island

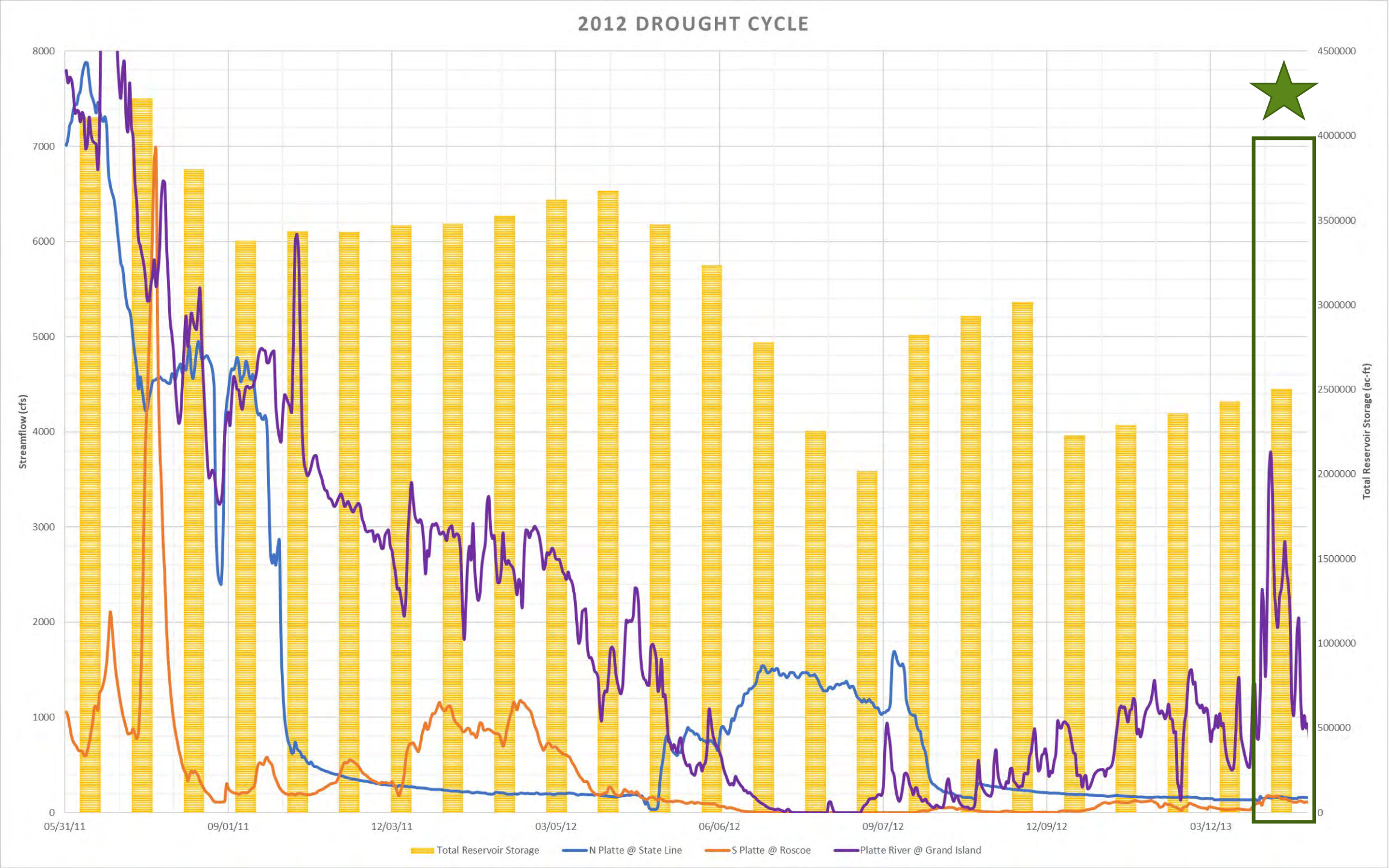
# Historical Indicators & Indices (2012)

## Various Indices – October 2012



# Historical Indicators & Indices (2012)

## Snow, Reservoir Storage, Stream Flows – October 2012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Platte River @ Grand Island

# Historical Indicators & Indices (2012)

## Various Indices – March 2013

# Historical Indicators & Indices (2012)

## Snow, Reservoir Storage, Stream Flows – March 2013


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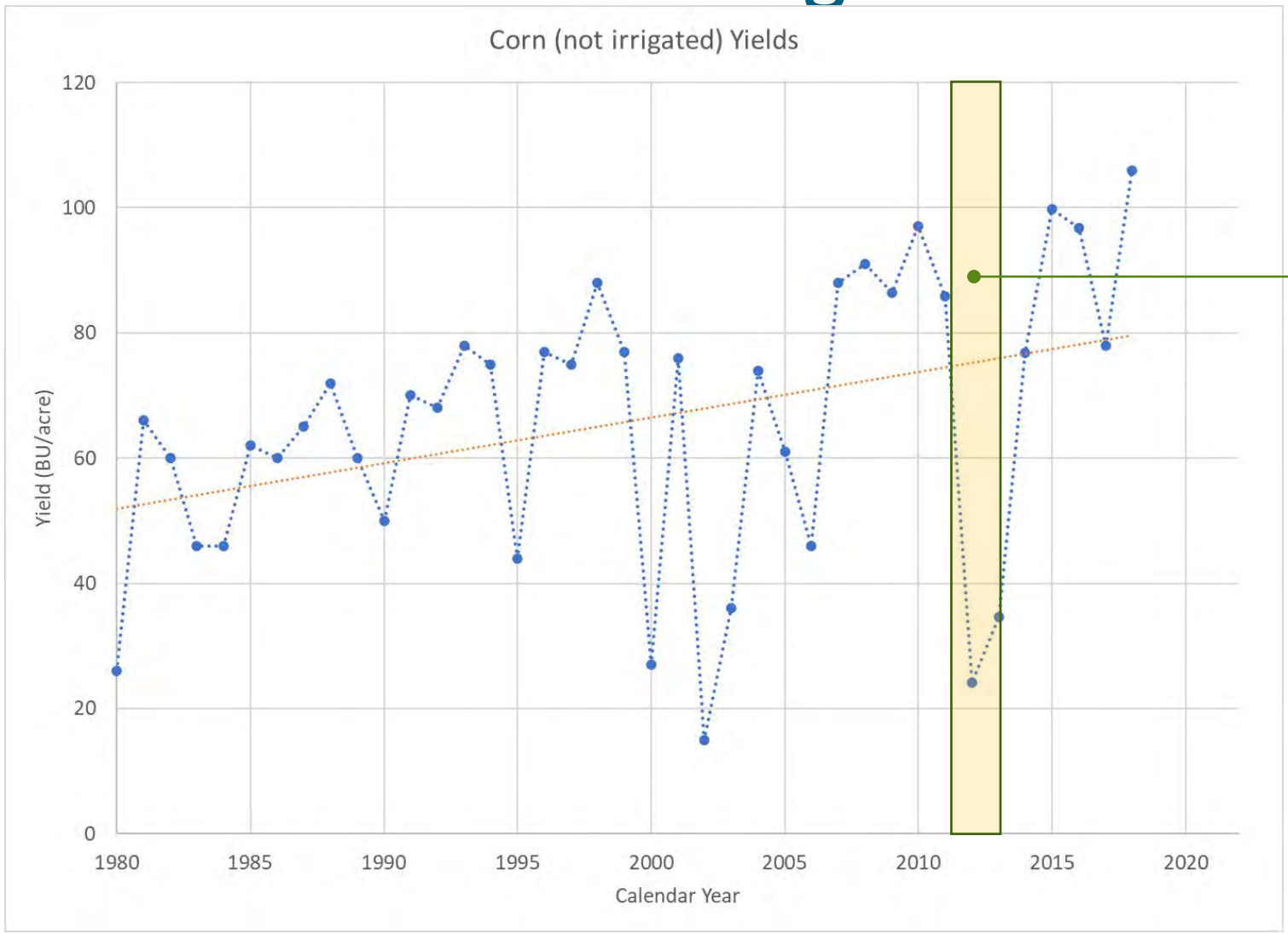
# Impacts of the 2012 Drought




Single-year Drought

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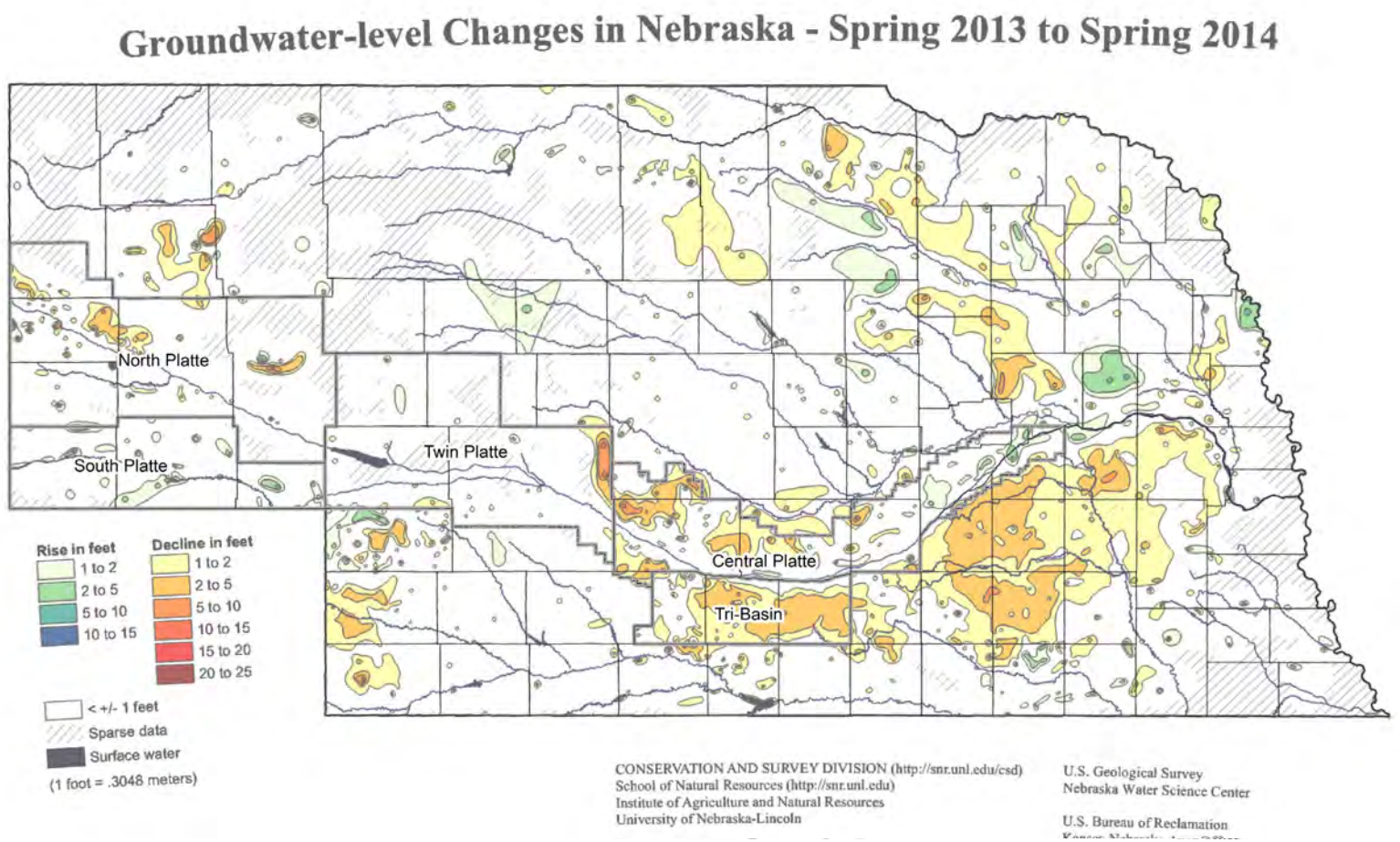
# Impacts of the 2012 Drought

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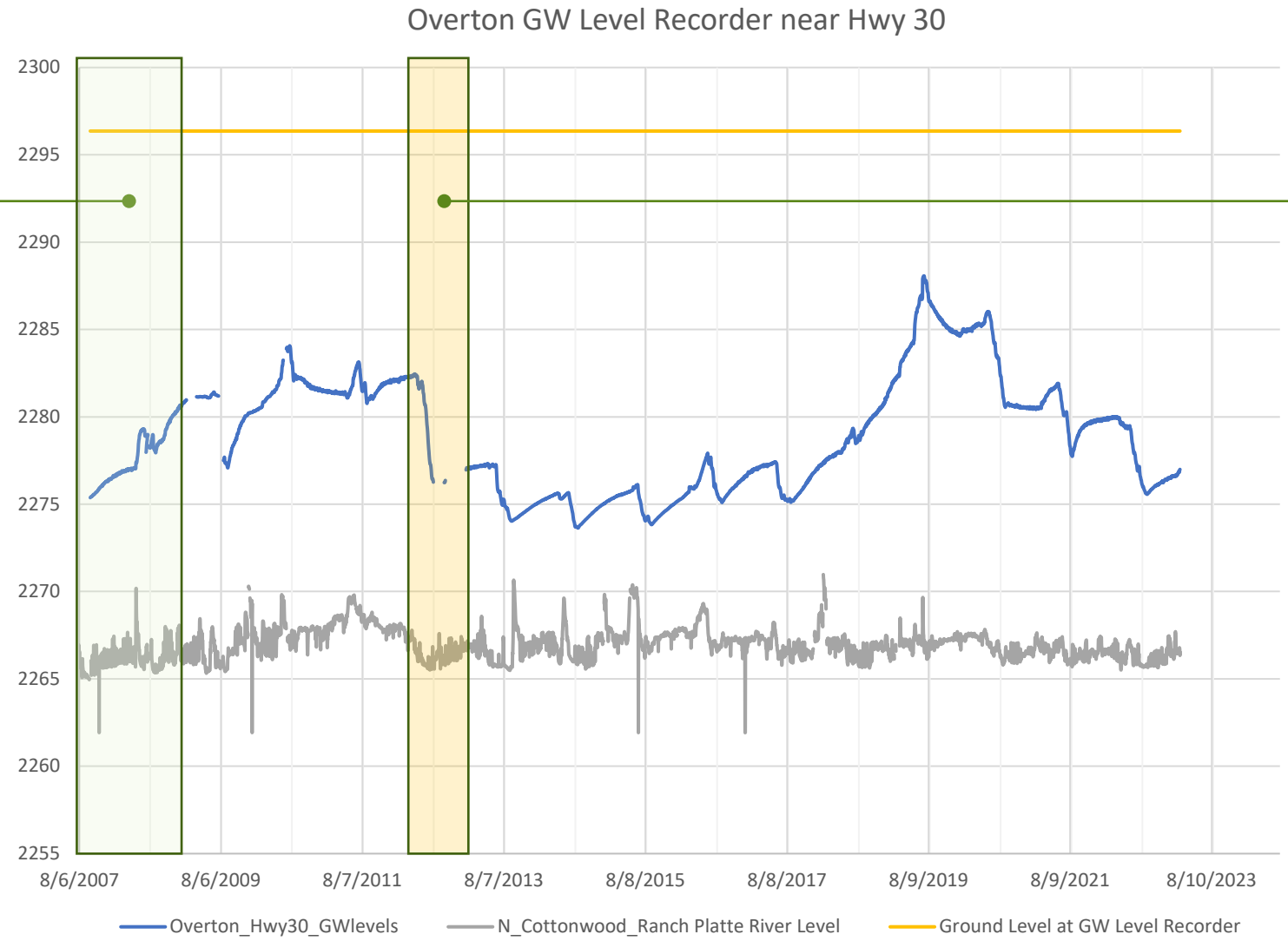
# Impacts of the 2012 Drought (GW Levels)

Recovery from Multi-year Drought (2003-2006)

Single-year Drought



# Multi-Year Drought Scenario

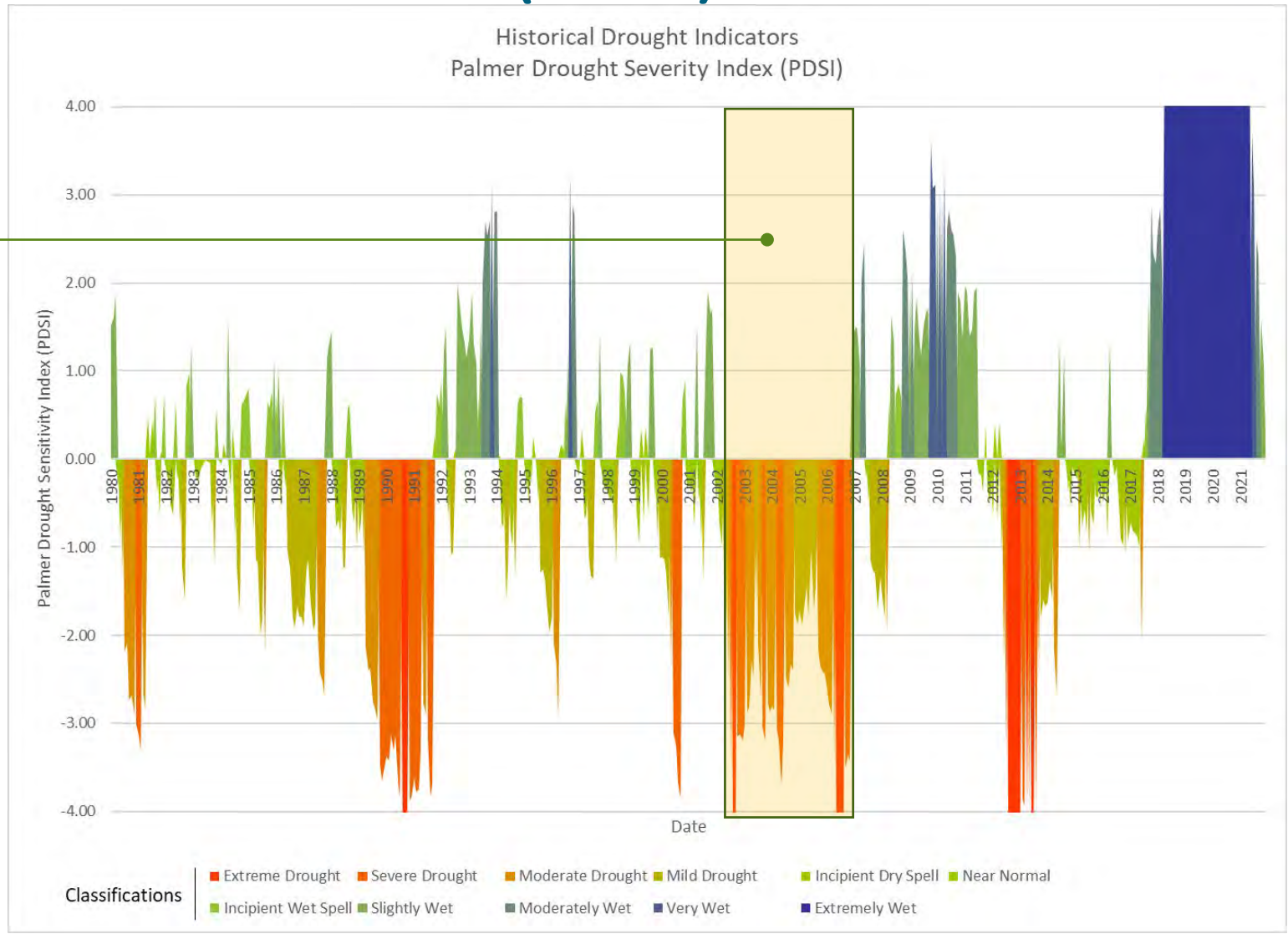
Tabletop Exercise

# Multi-Year Drought Scenario

- Using 2003 - 2006 as a historical reference

# Historical Indicators (PDSI)

Multiple-year Drought

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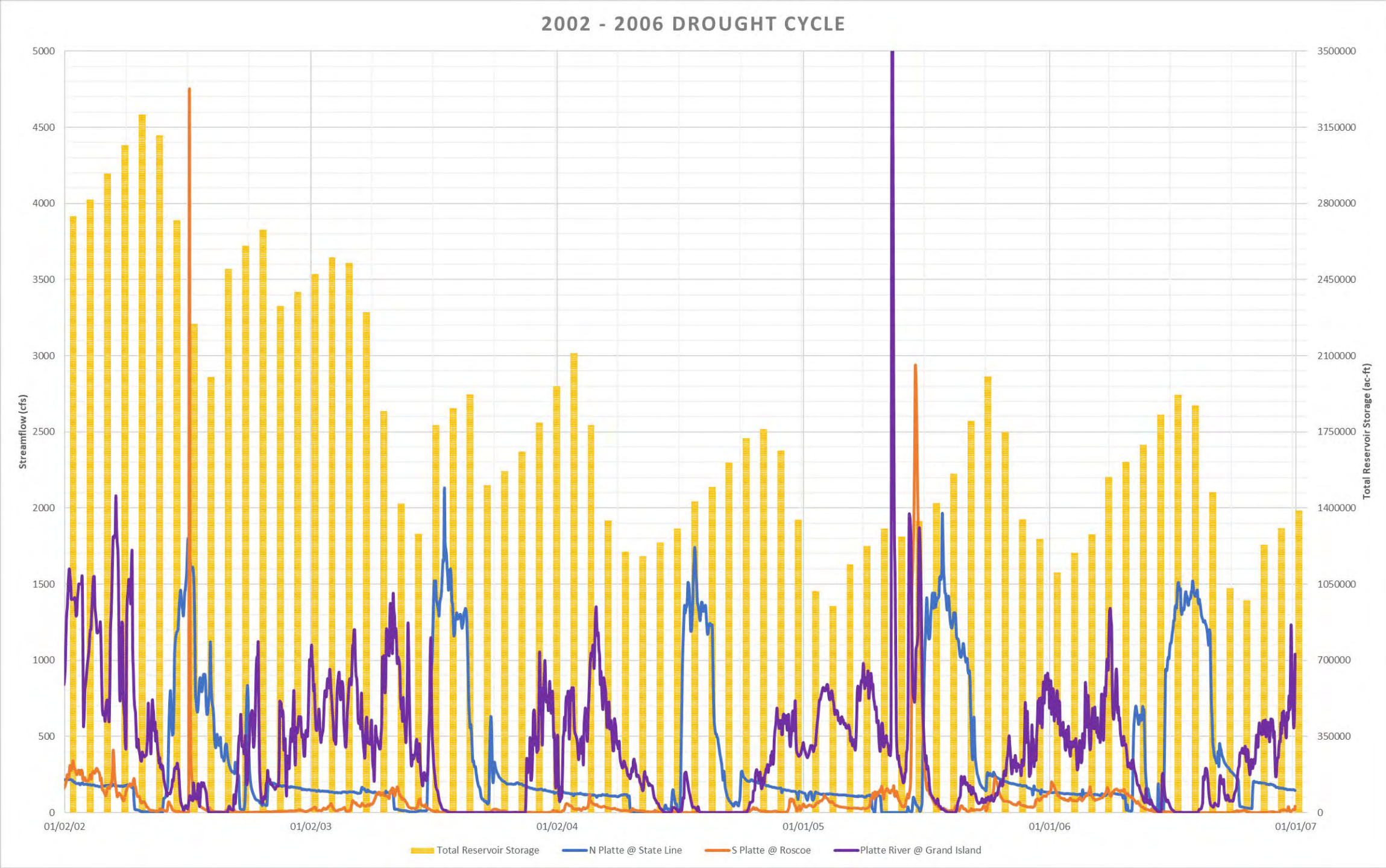
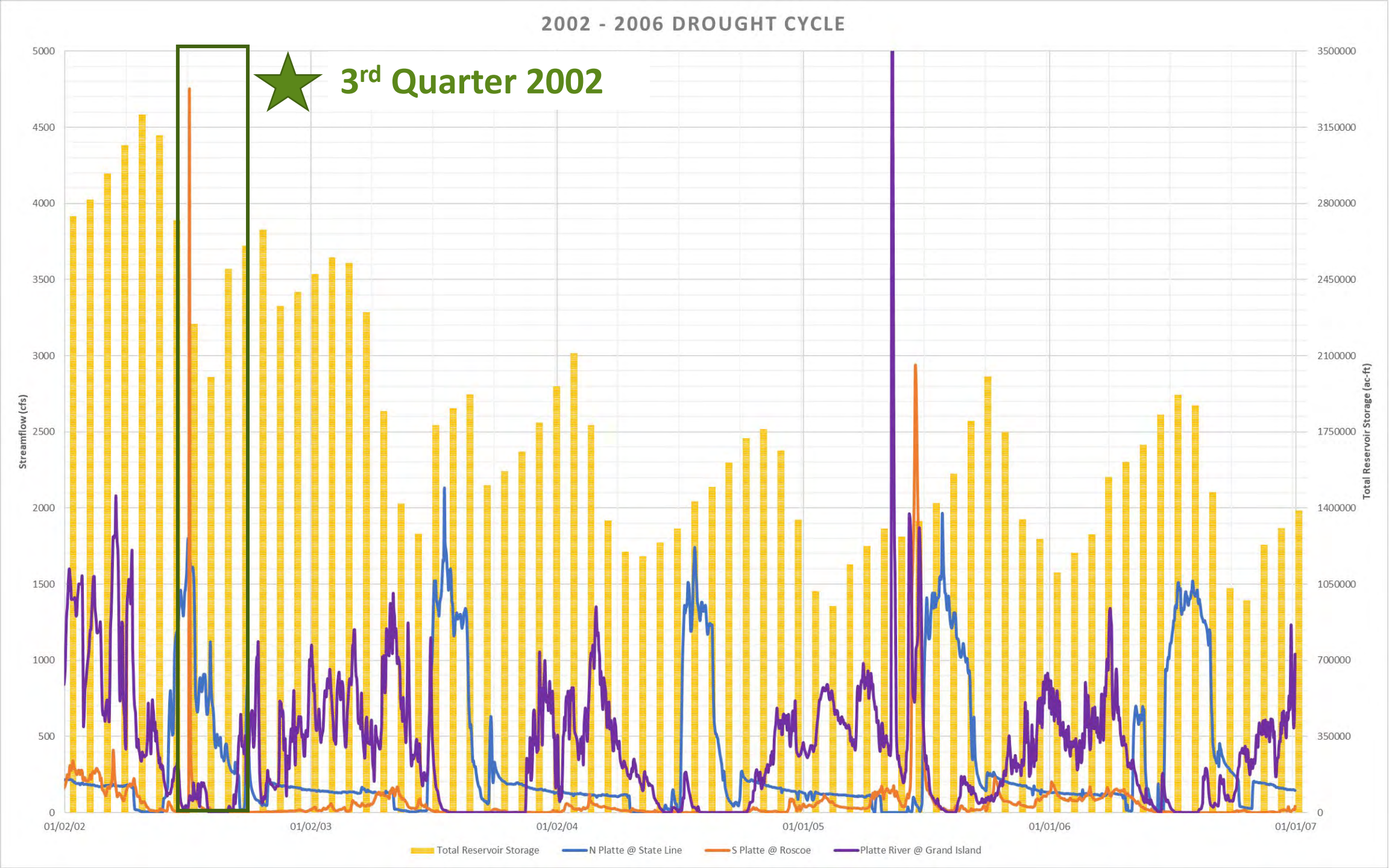
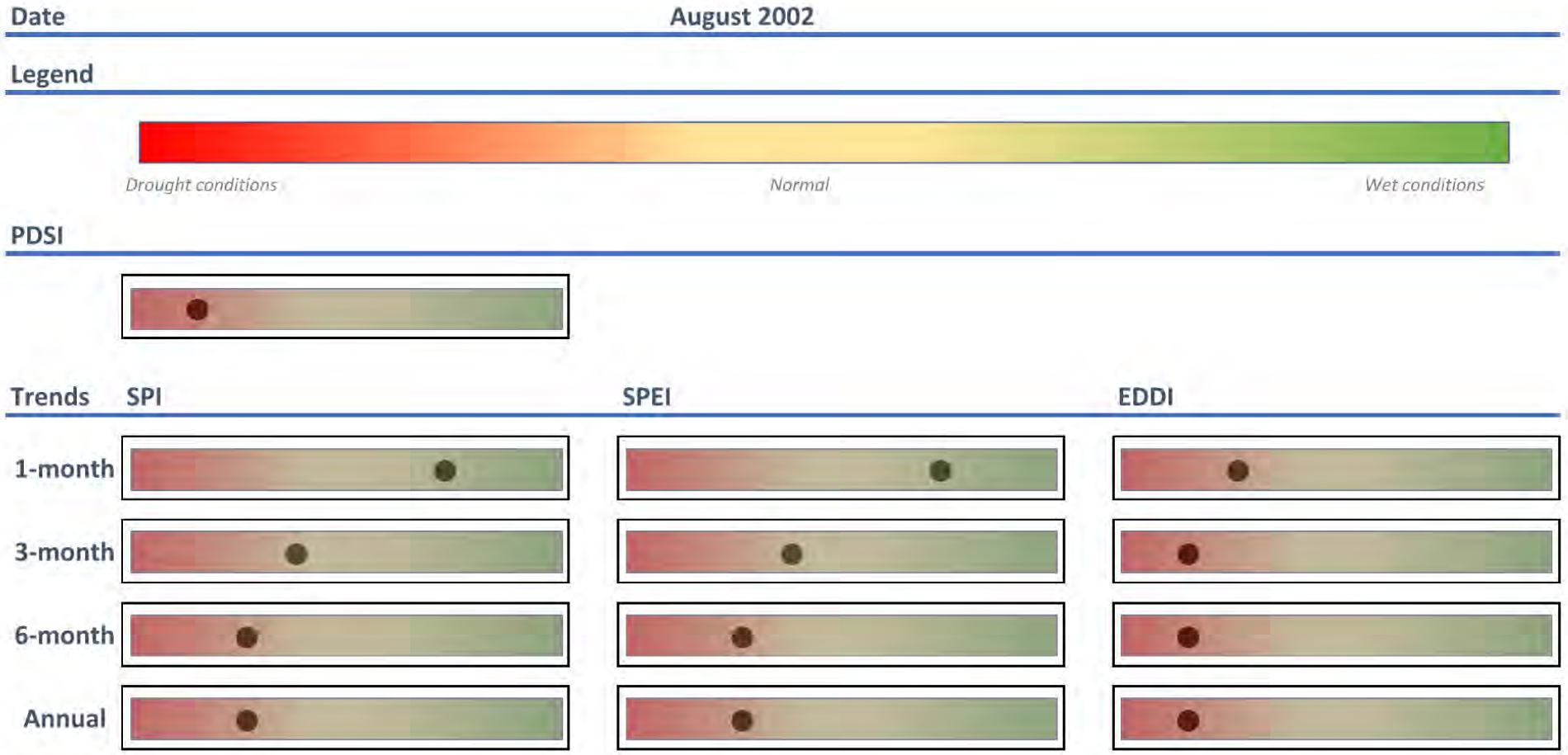

2002 - 2006 DROUGHT CYCLE
Streamflow (cfs)
Total Reservoir Storage (ac-ft)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
3500000
3150000
2800000
2450000
2100000
1750000
1400000
1050000
700000
350000
0
01/02/02
01/02/03
01/02/04
01/01/05
01/01/06
01/01/07
Total Reservoir Storage
N Platte @ State Line
S Platte @ Roscoe
Platte River @ Grand Island


2002 - 2006 DROUGHT CYCLE
3rd Quarter 2002
Streamflow (cfs)
Total Reservoir Storage (ac-ft)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
3500000
3150000
2800000
2450000
2100000
1750000
1400000
1050000
700000
350000
0
01/02/02
01/02/03
01/02/04
01/01/05
01/01/06
01/01/07
Total Reservoir Storage
N Platte @ State Line
S Platte @ Roscoe
Platte River @ Grand Island

# Historical Indicators & Indices (2003-2006)

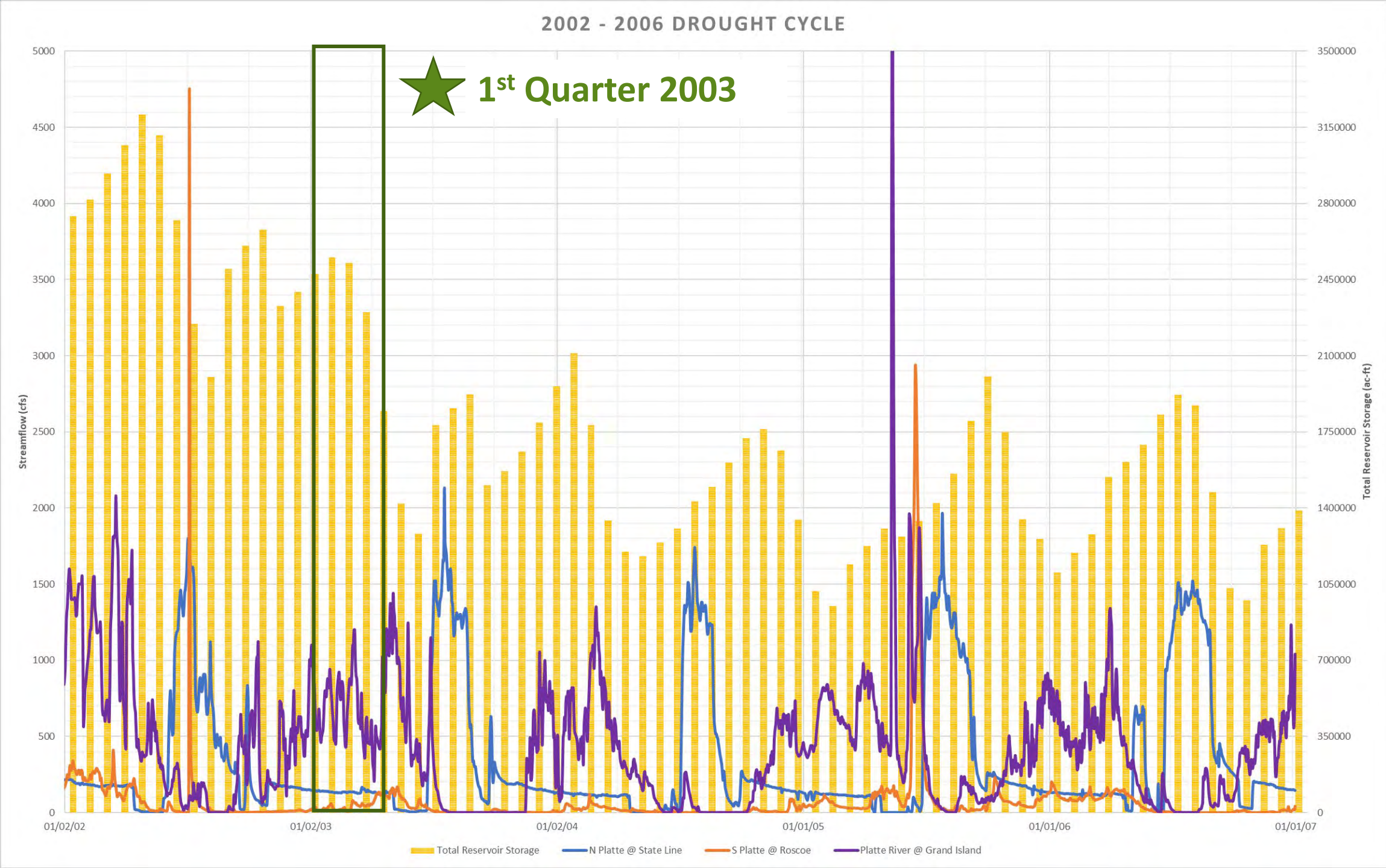
## Various Indices – August 2002



# Historical Indicators & Indices (2003-2006)

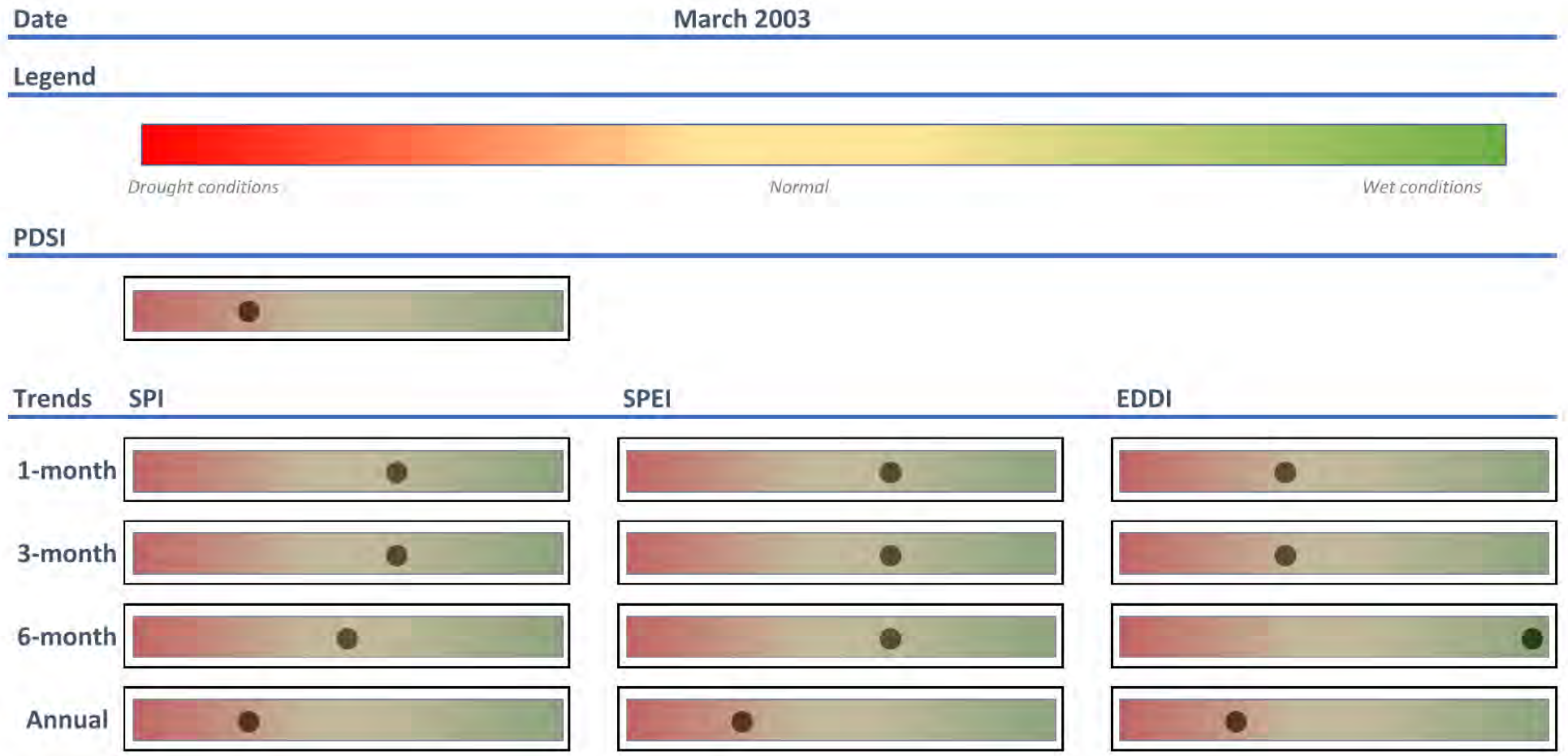
## Snow, Reservoir Storage, Stream Flows – August 2002


CPNRD Central Platte Natural Resources District · North Platte Natural Resources District · South Platte Natural Resources District · Tri Basin Natural Resources District · Twin Platte Natural Resources District · Nebraska Department of Natural Resources · Bureau of Reclamation


2002 - 2006 DROUGHT CYCLE
1st Quarter 2003
Streamflow (cfs)
Total Reservoir Storage (ac-ft)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
3500000
3150000
2800000
2450000
2100000
1750000
1400000
1050000
700000
350000
0
01/02/02
01/02/03
01/02/04
01/01/05
01/01/06
01/01/07
Total Reservoir Storage
N Platte @ State Line
S Platte @ Roscoe
Platte River @ Grand Island

# Historical Indicators & Indices (2003-2006)

## Various Indices – March 2003

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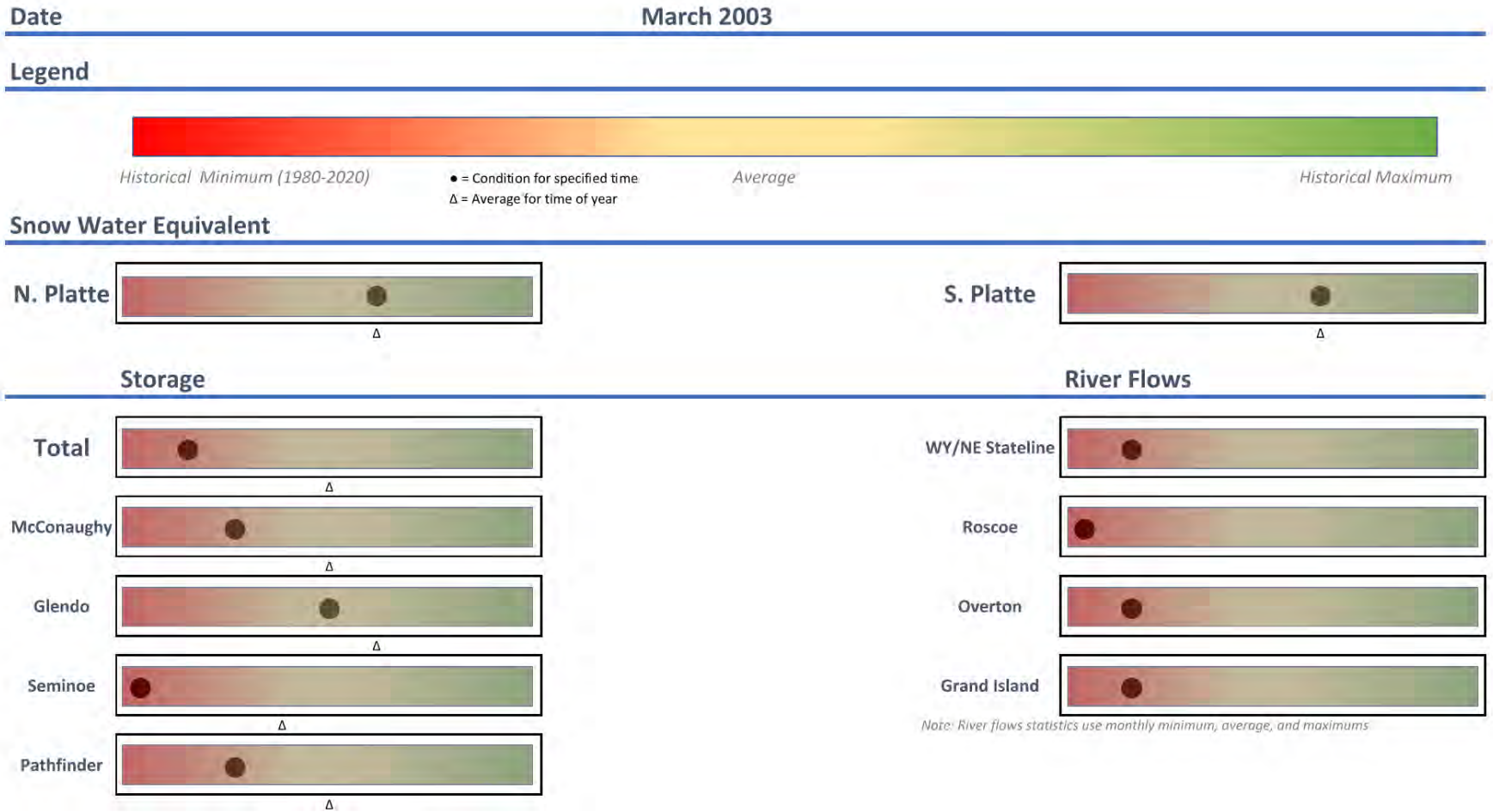
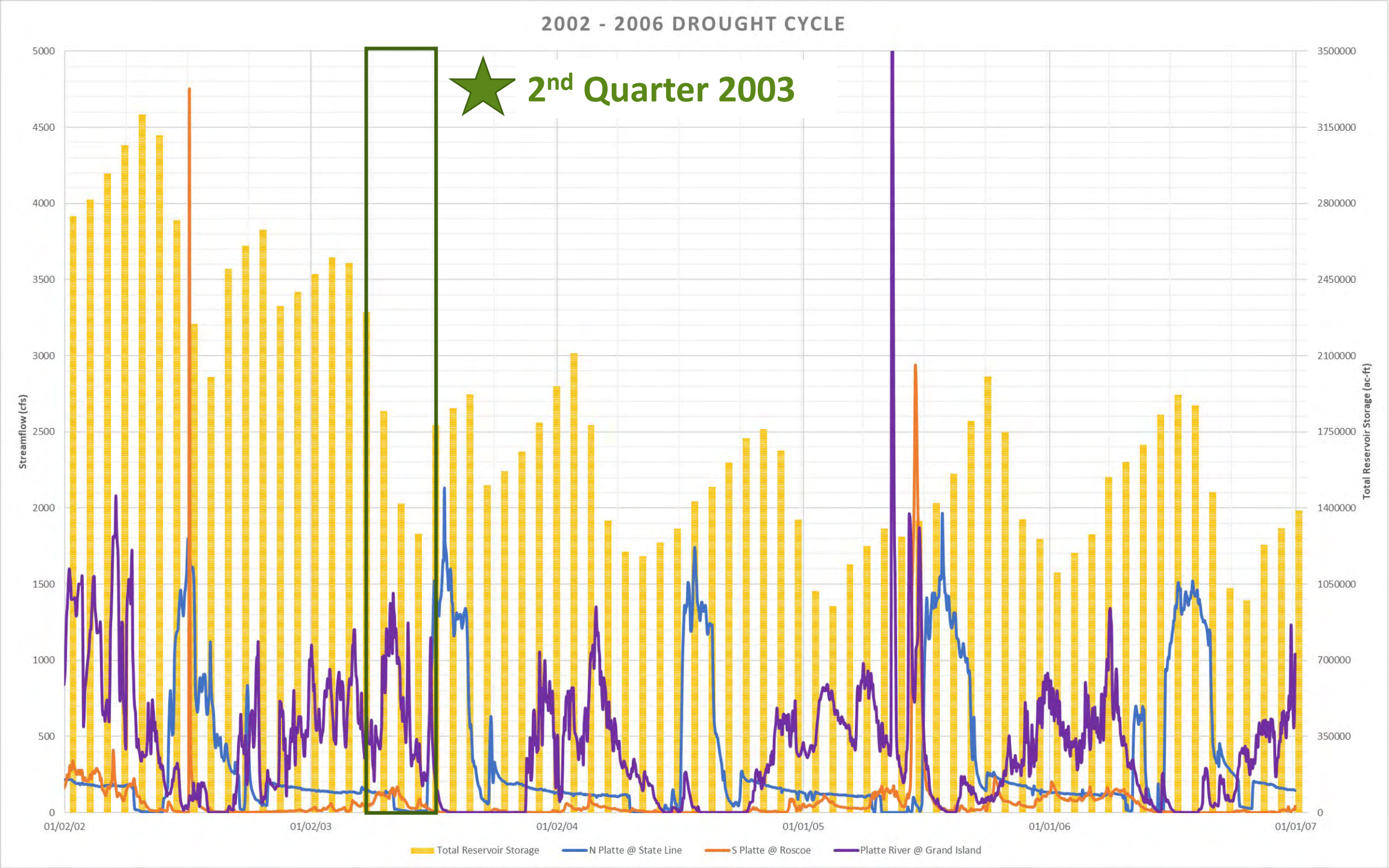
# Historical Indicators & Indices (2003-2006)

## Snow, Reservoir Storage, Stream Flows – March 2003

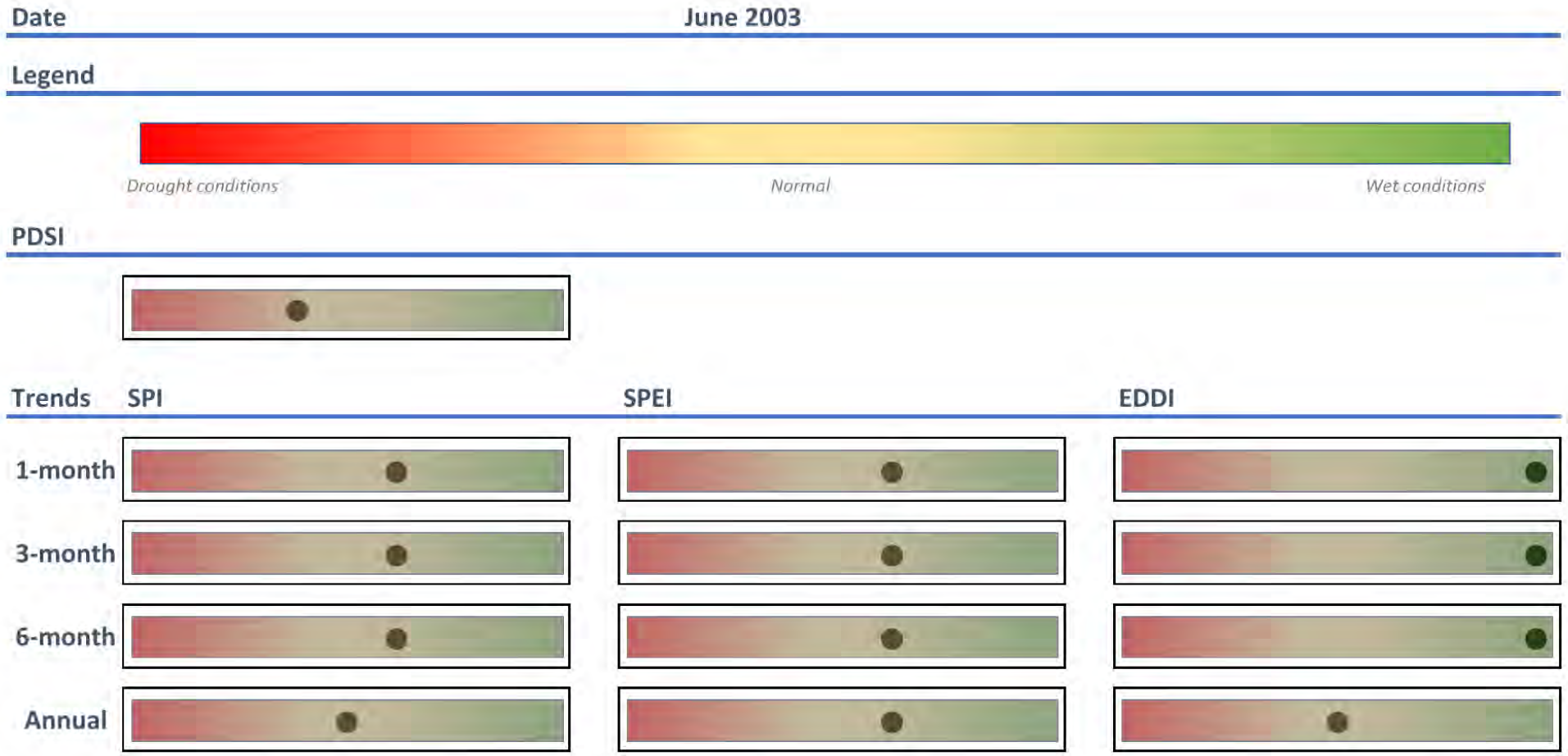



CPNRD Central Platte Natural Resources District · North Platte Natural Resources District · South Platte Natural Resources District · Tri Basin Natural Resources District · Twin Platte Natural Resources District · Nebraska Department of Natural Resources · Bureau of Reclamation


2002 - 2006 DROUGHT CYCLE
2nd Quarter 2003
Streamflow (cfs)
Total Reservoir Storage (ac-ft)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
3500000
3150000
2800000
2450000
2100000
1750000
1400000
1050000
700000
350000
0
01/02/02
01/02/03
01/02/04
01/01/05
01/01/06
01/01/07
Total Reservoir Storage
N Platte @ State Line
S Platte @ Roscoe
Platte River @ Grand Island

# Historical Indicators & Indices (2003-2006)

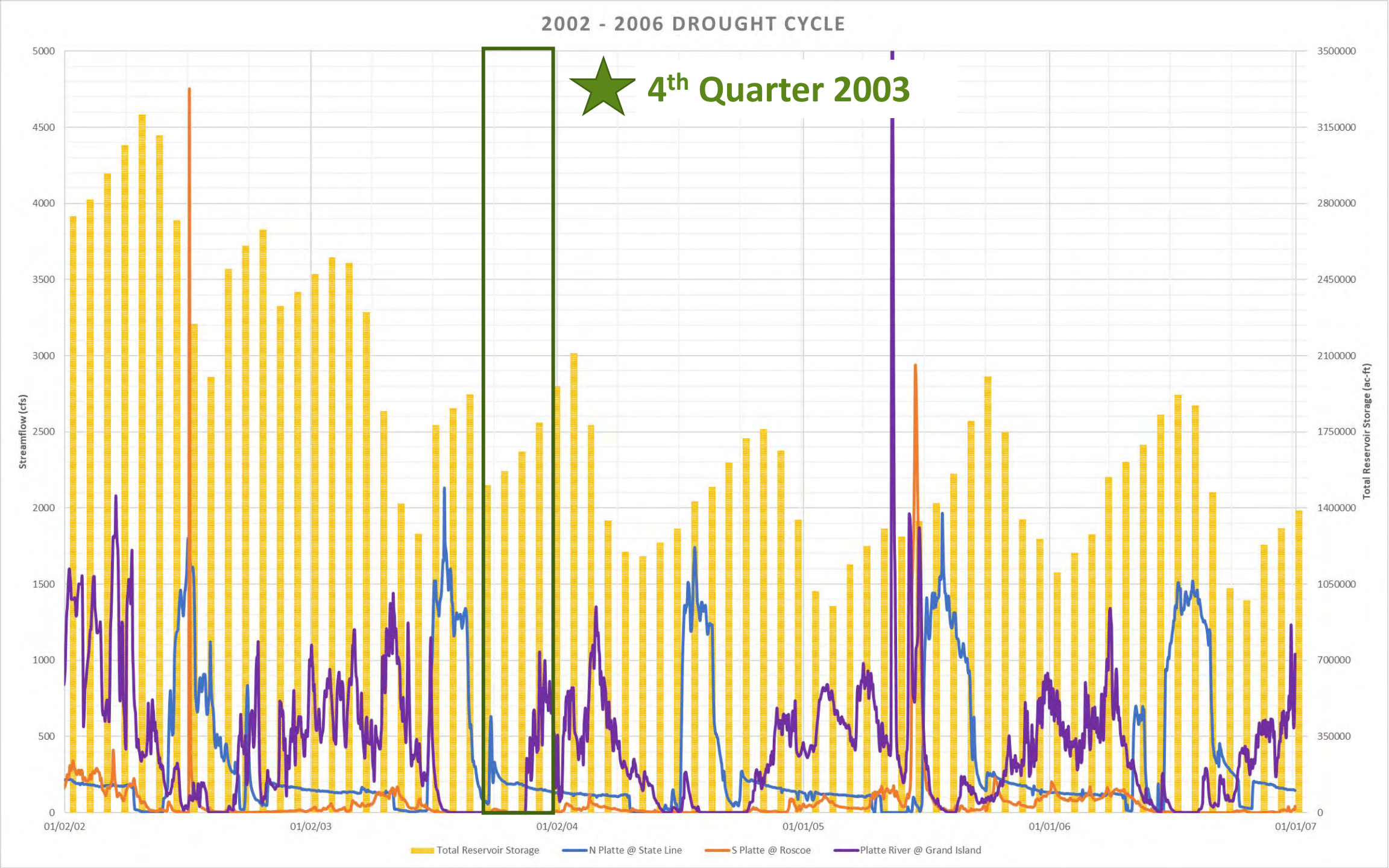
## Various Indices – June 2003



# Historical Indicators & Indices (2003-2006)

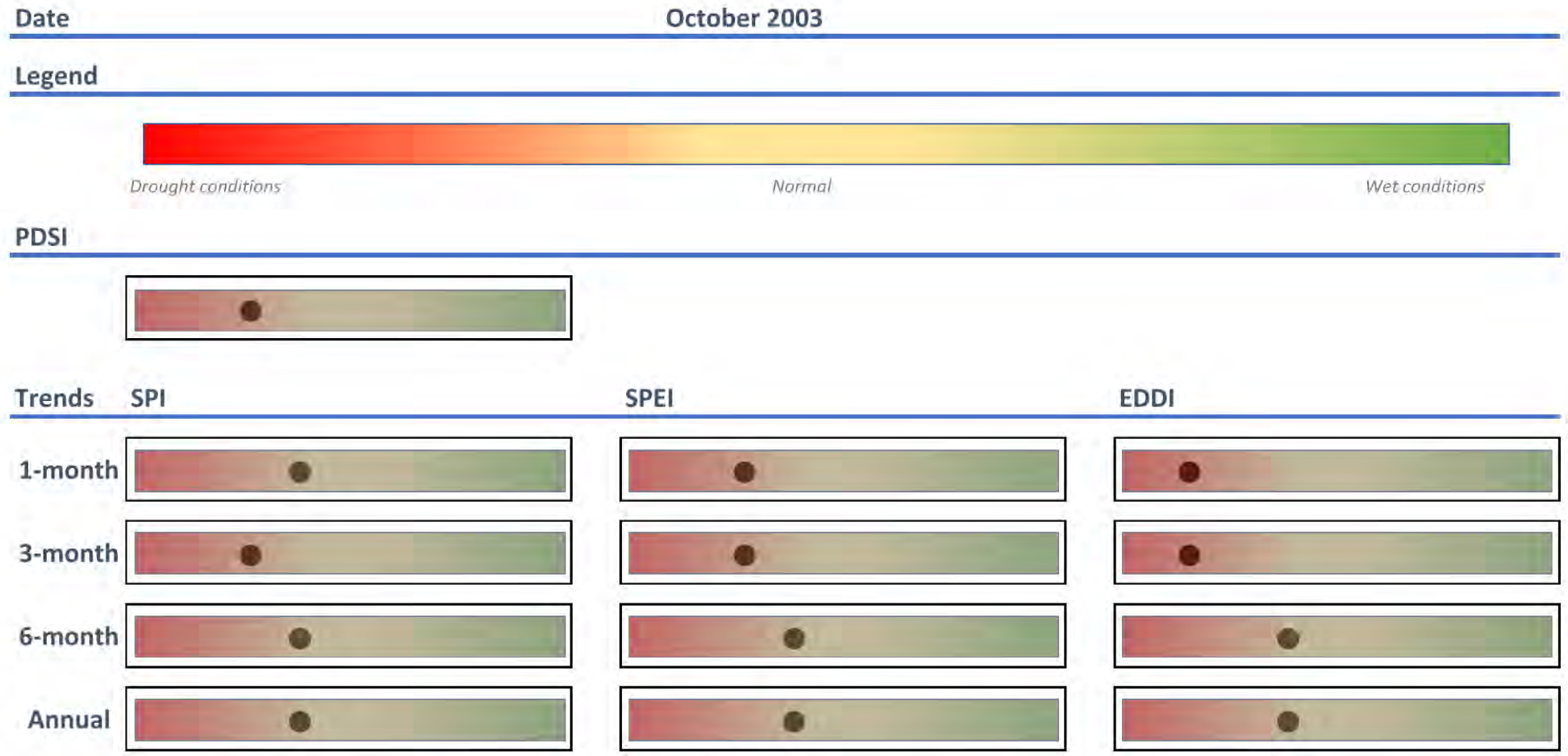
## Snow, Reservoir Storage, Stream Flows – June 2003


CPNRD Central Platte Natural Resources District · North Platte Natural Resources District · South Platte Natural Resources District · Tri Basin Natural Resources District · Twin Platte Natural Resources District · Nebraska Department of Natural Resources · Bureau of Reclamation


2002 - 2006 DROUGHT CYCLE
4th Quarter 2003
Streamflow (cfs)
Total Reservoir Storage (ac-ft)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
3500000
3150000
2800000
2450000
2100000
1750000
1400000
1050000
700000
350000
0
01/02/02
01/02/03
01/02/04
01/01/05
01/01/06
01/01/07
Total Reservoir Storage
N Platte @ State Line
S Platte @ Roscoe
Platte River @ Grand Island

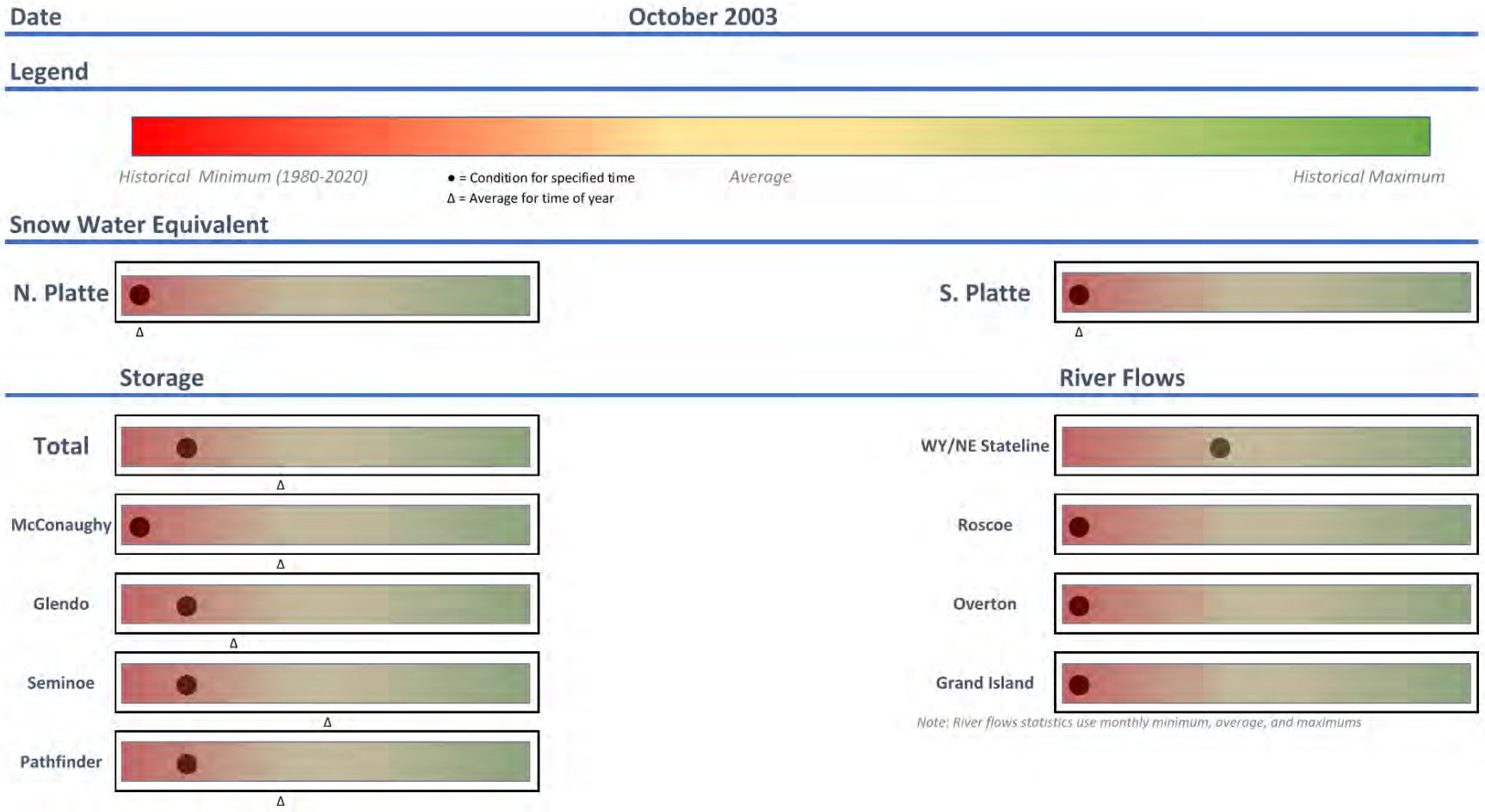
# Historical Indicators & Indices (2003-2006)

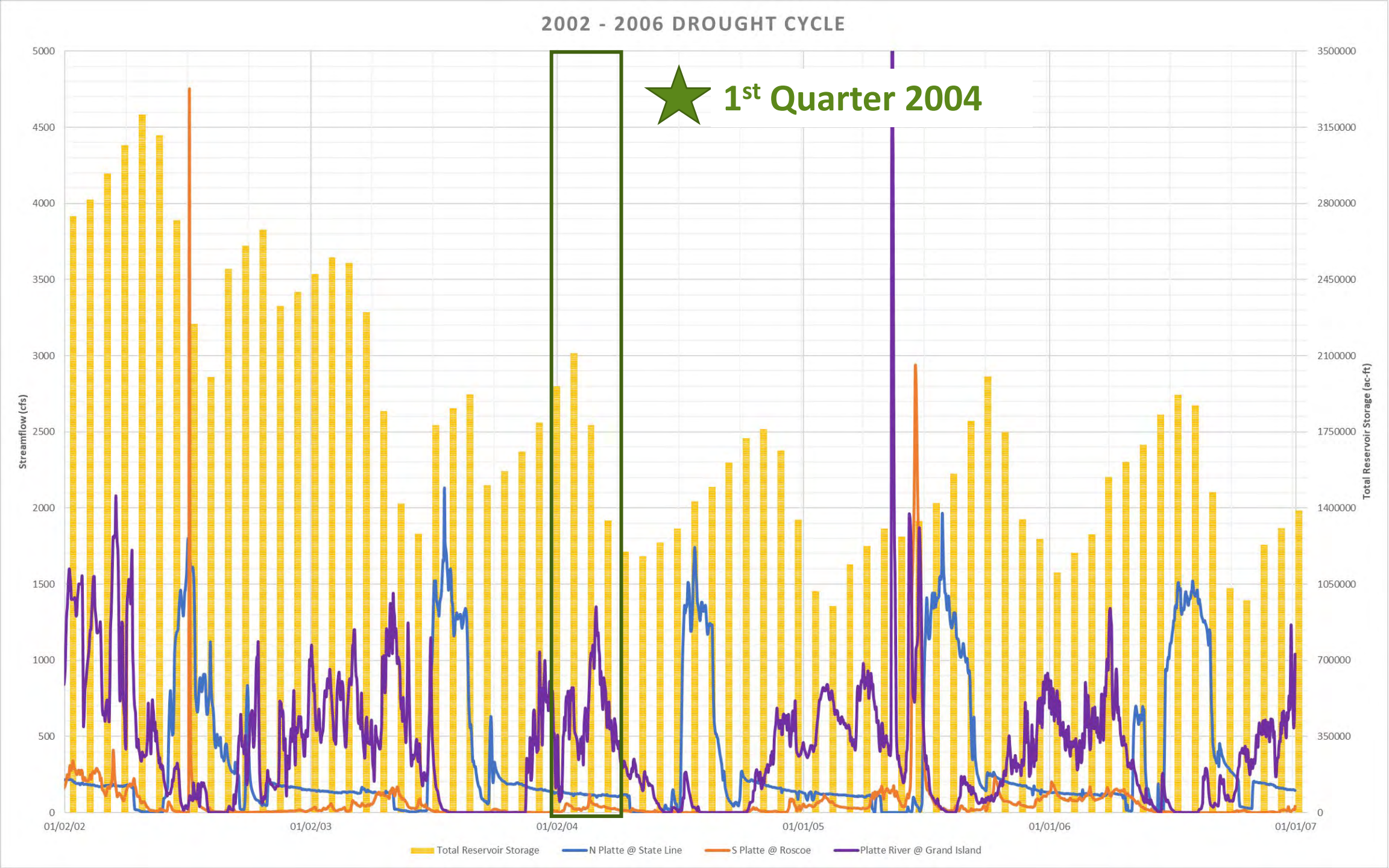
## Various Indices – October 2003



# Historical Indicators & Indices (2003-2006)

## Snow, Reservoir Storage, Stream Flows – October 2003




2002 - 2006 DROUGHT CYCLE
1st Quarter 2004
Streamflow (cfs)
Total Reservoir Storage (ac-ft)
5000
4500
4000
3500
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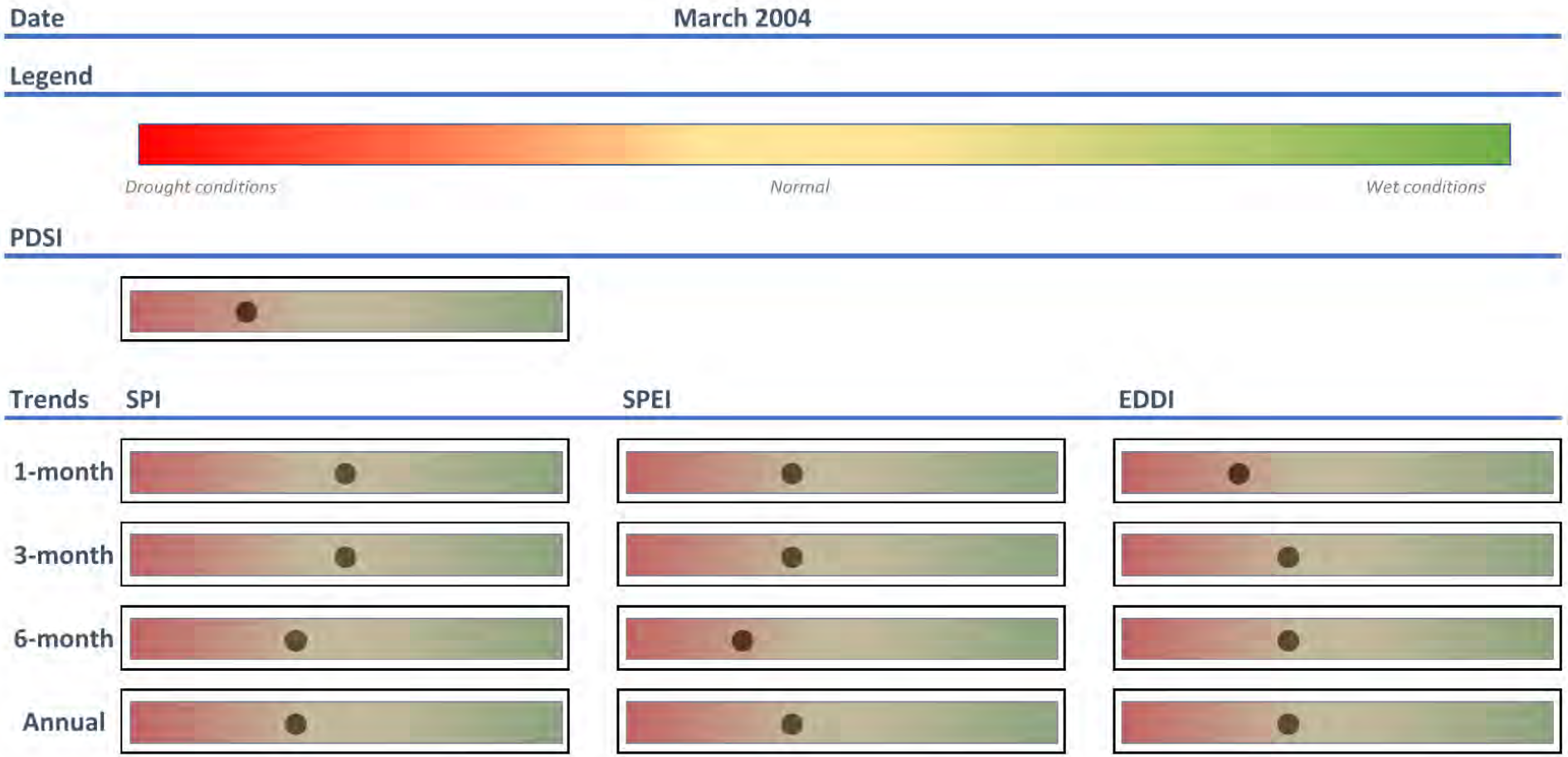
3150000
2800000
2450000
2100000
1750000
1400000
1050000
700000
350000
0
01/02/02
01/02/03
01/02/04
01/01/05
01/01/06
01/01/07
Total Reservoir Storage
N Platte @ State Line
S Platte @ Roscoe
Platte River @ Grand Island

# Historical Indicators & Indices (2003-2006)

## Various Indices – March 2004

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Tri Basin Natural Resources District
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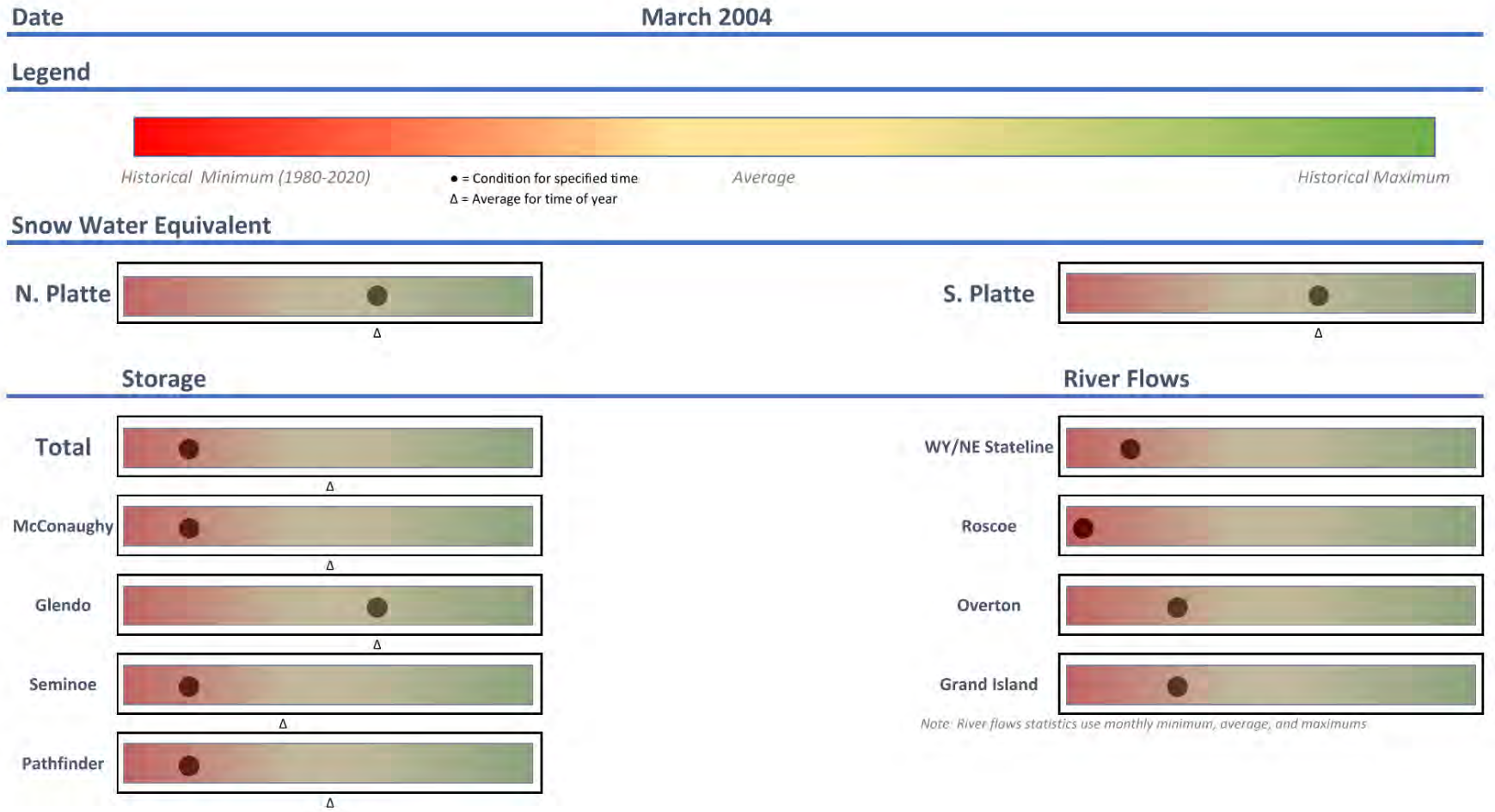
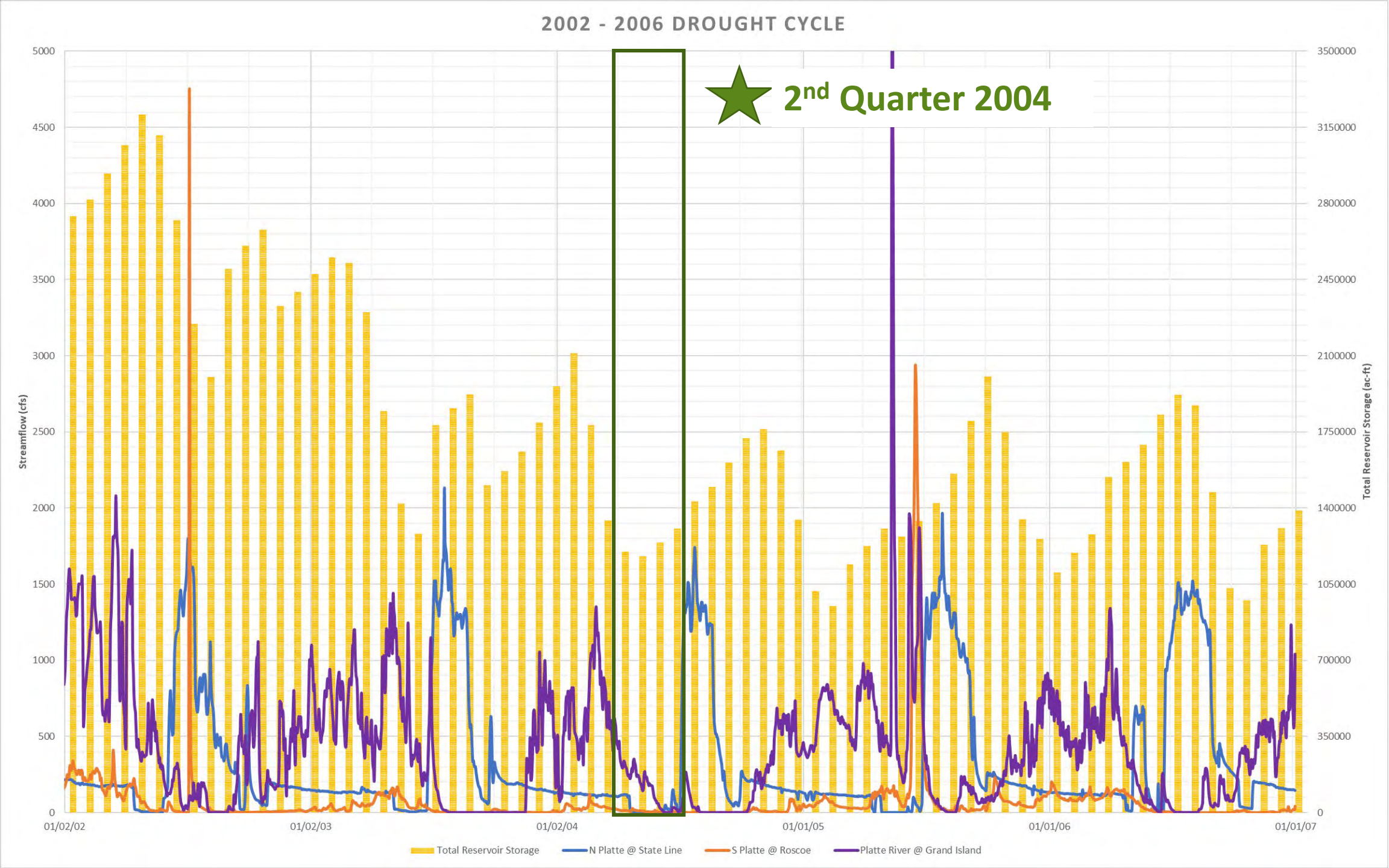
BUREAU OF RECLAMATION

# Historical Indicators & Indices (2003-2006)

## Snow, Reservoir Storage, Stream Flows – March 2004




2002 - 2006 DROUGHT CYCLE
2nd Quarter 2004
Streamflow (cfs)
Total Reservoir Storage (ac-ft)
5000
4500
4000
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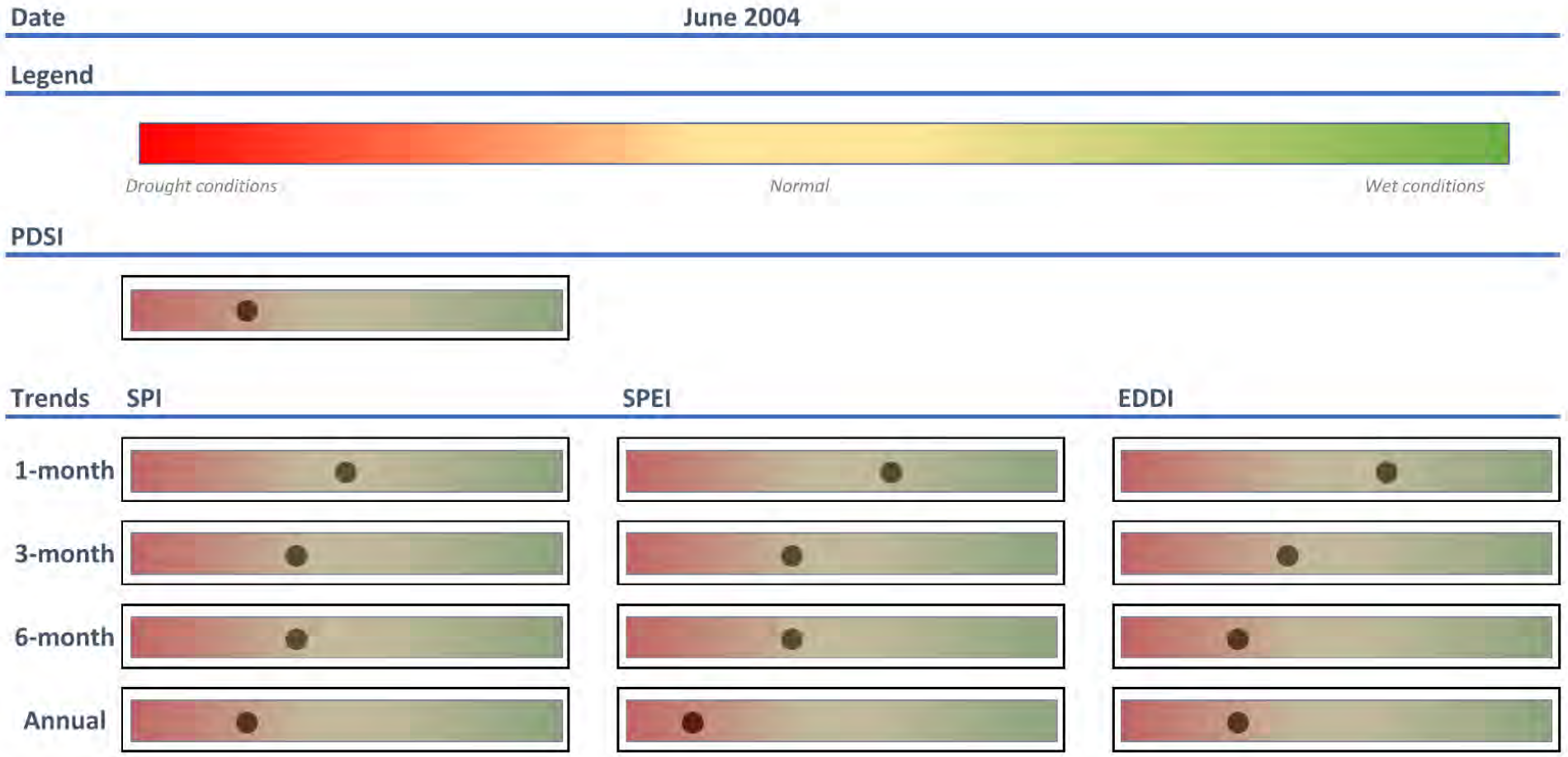
3150000
2800000
2450000
2100000
1750000
1400000
1050000
700000
350000
0
01/02/02
01/02/03
01/02/04
01/01/05
01/01/06
01/01/07
Total Reservoir Storage
N Platte @ State Line
S Platte @ Roscoe
Platte River @ Grand Island

# Historical Indicators & Indices (2003-2006)

## Various Indices – June 2004

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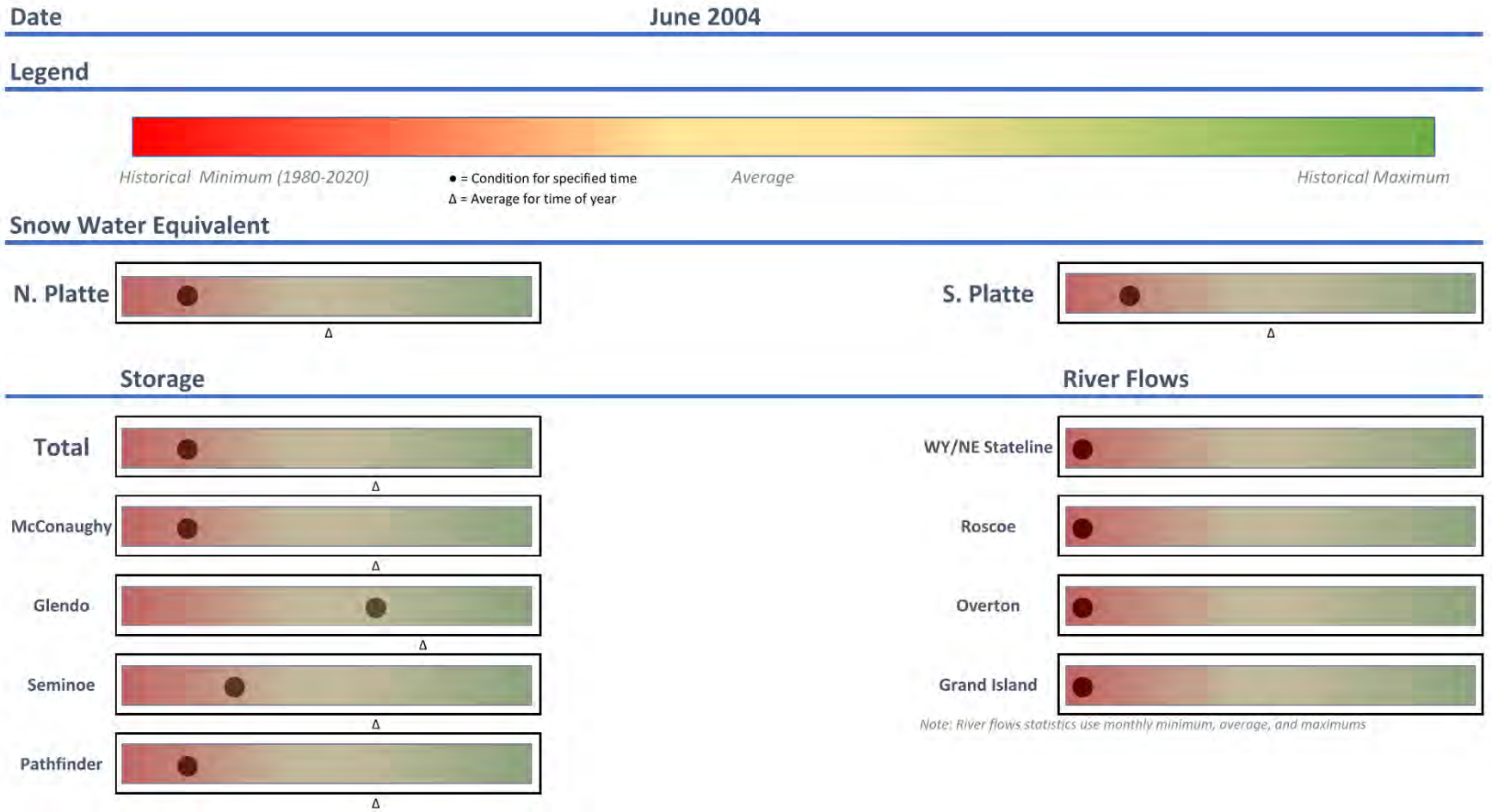
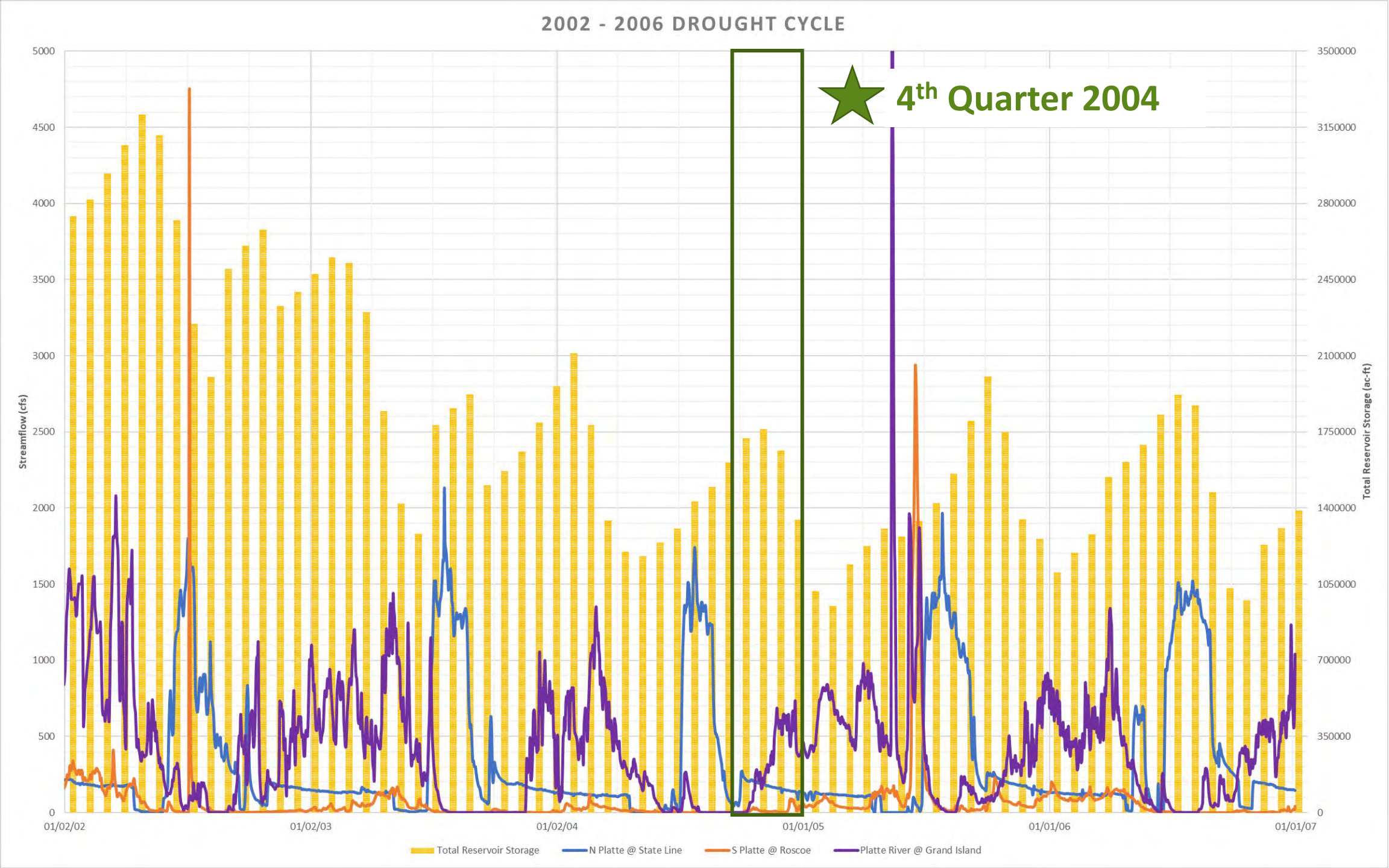
# Historical Indicators & Indices (2003-2006)

## Snow, Reservoir Storage, Stream Flows – June 2004

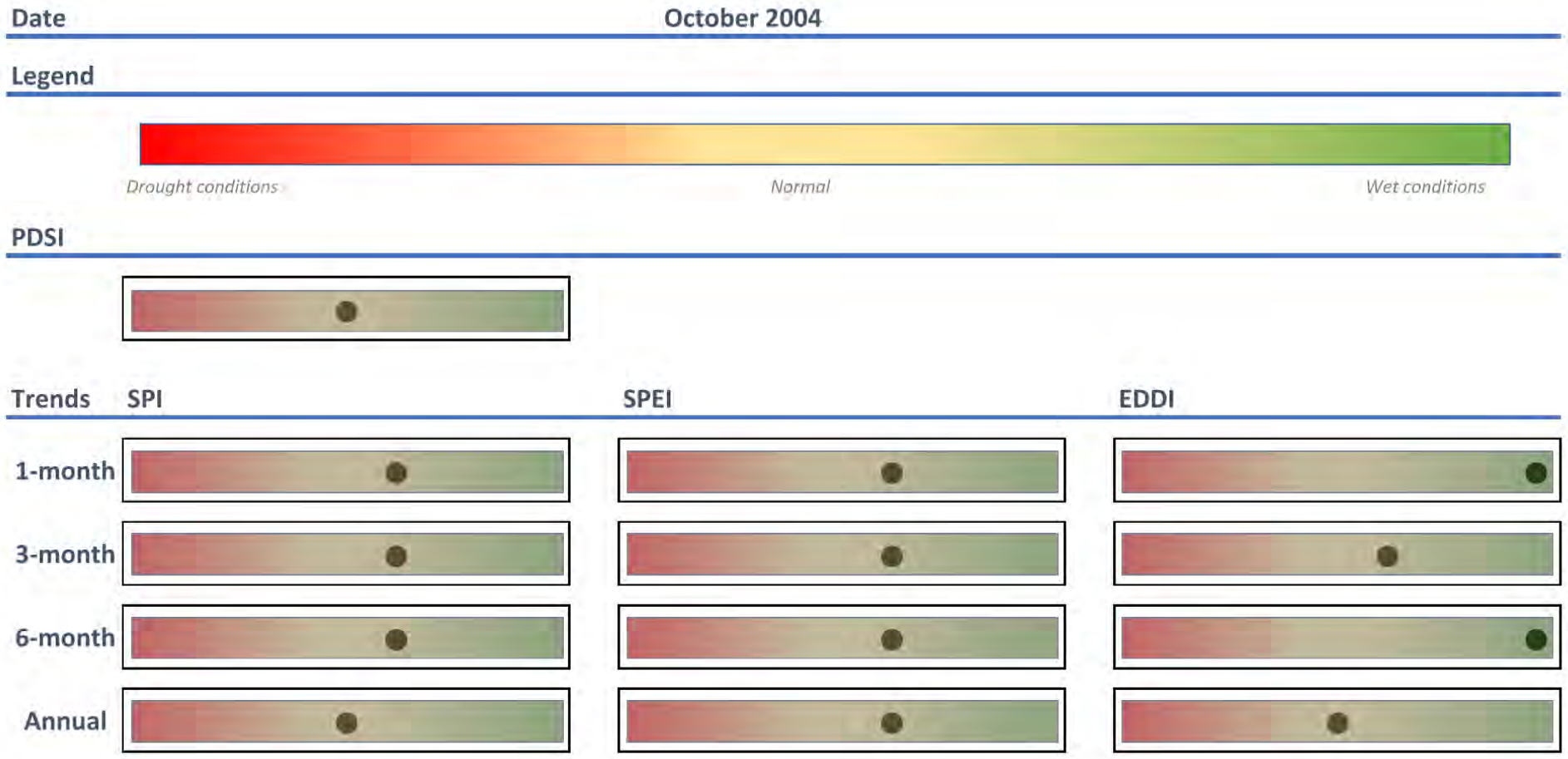



CPNRD Central Platte Natural Resources District · North Platte Natural Resources District · South Platte Natural Resources District · Tri Basin Natural Resources District · Twin Platte Natural Resources District · Nebraska Department of Natural Resources · Bureau of Reclamation


2002 - 2006 DROUGHT CYCLE
4th Quarter 2004
Streamflow (cfs)
Total Reservoir Storage (ac-ft)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
3500000
3150000
2800000
2450000
2100000
1750000
1400000
1050000
700000
350000
0
01/02/02
01/02/03
01/02/04
01/01/05
01/01/06
01/01/07
Total Reservoir Storage
N Platte @ State Line
S Platte @ Roscoe
Platte River @ Grand Island

# Historical Indicators & Indices (2003-2006)

## Various Indices – October 2004

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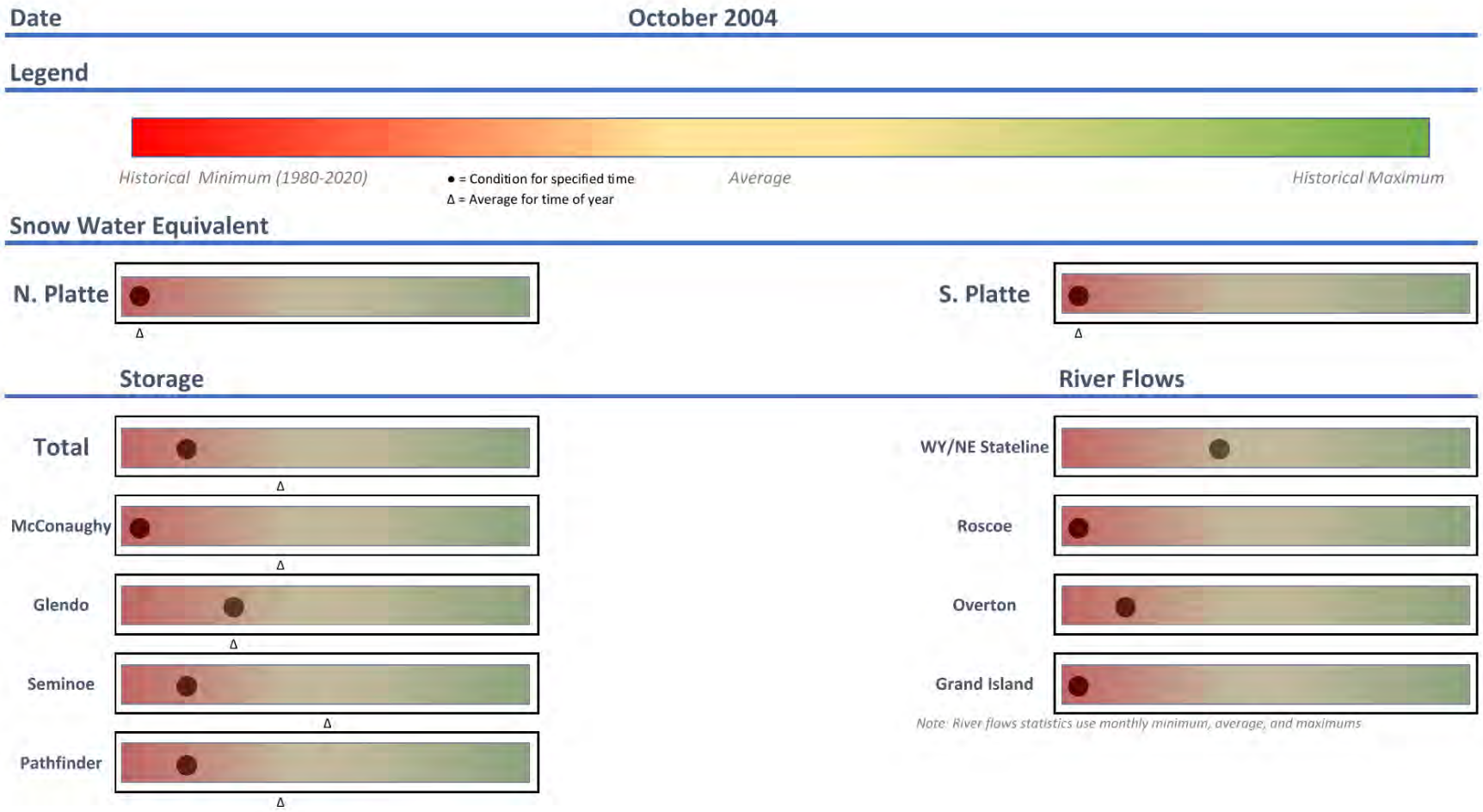
# Historical Indicators & Indices (2003-2006)

## Snow, Reservoir Storage, Stream Flows – October 2004

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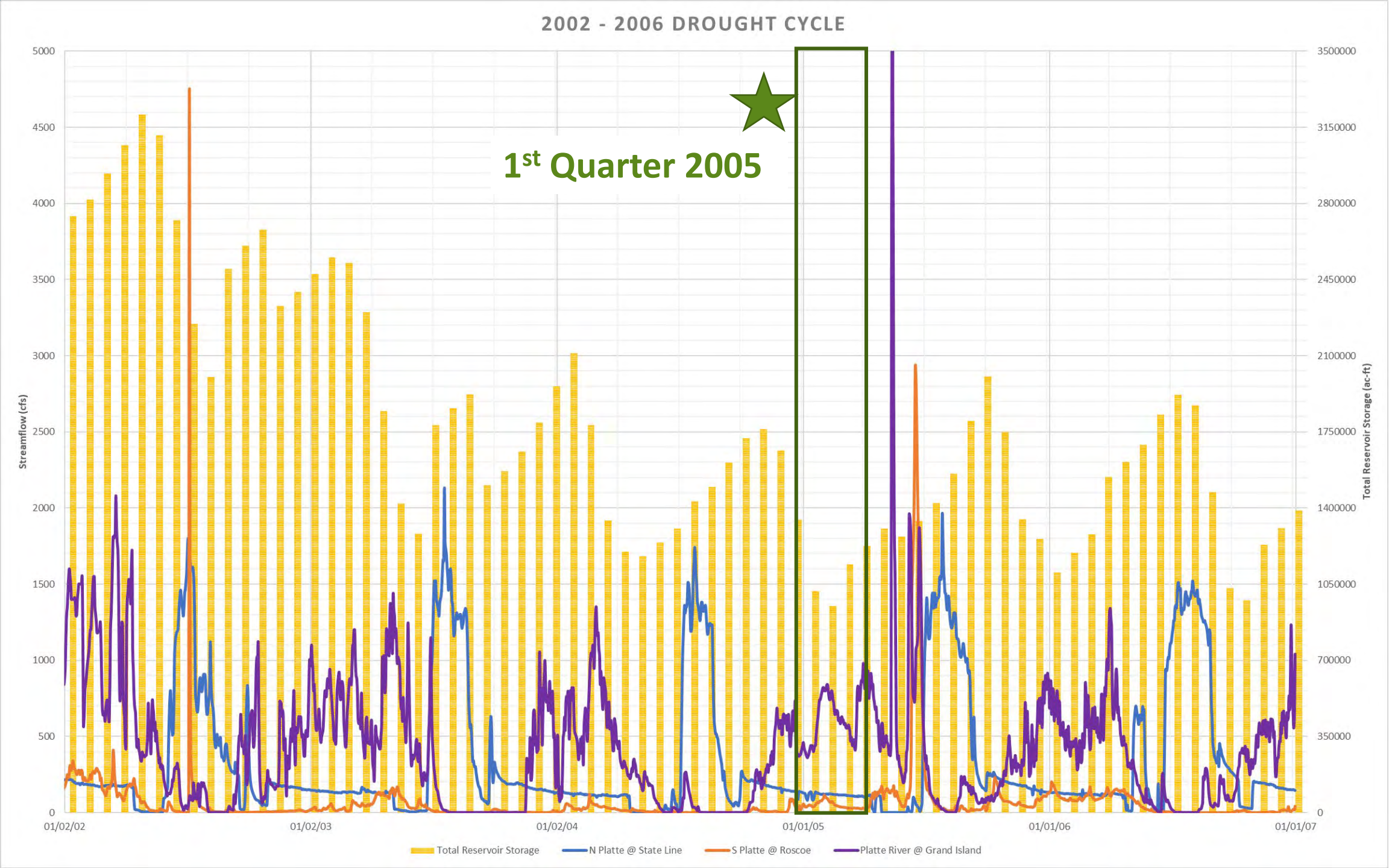
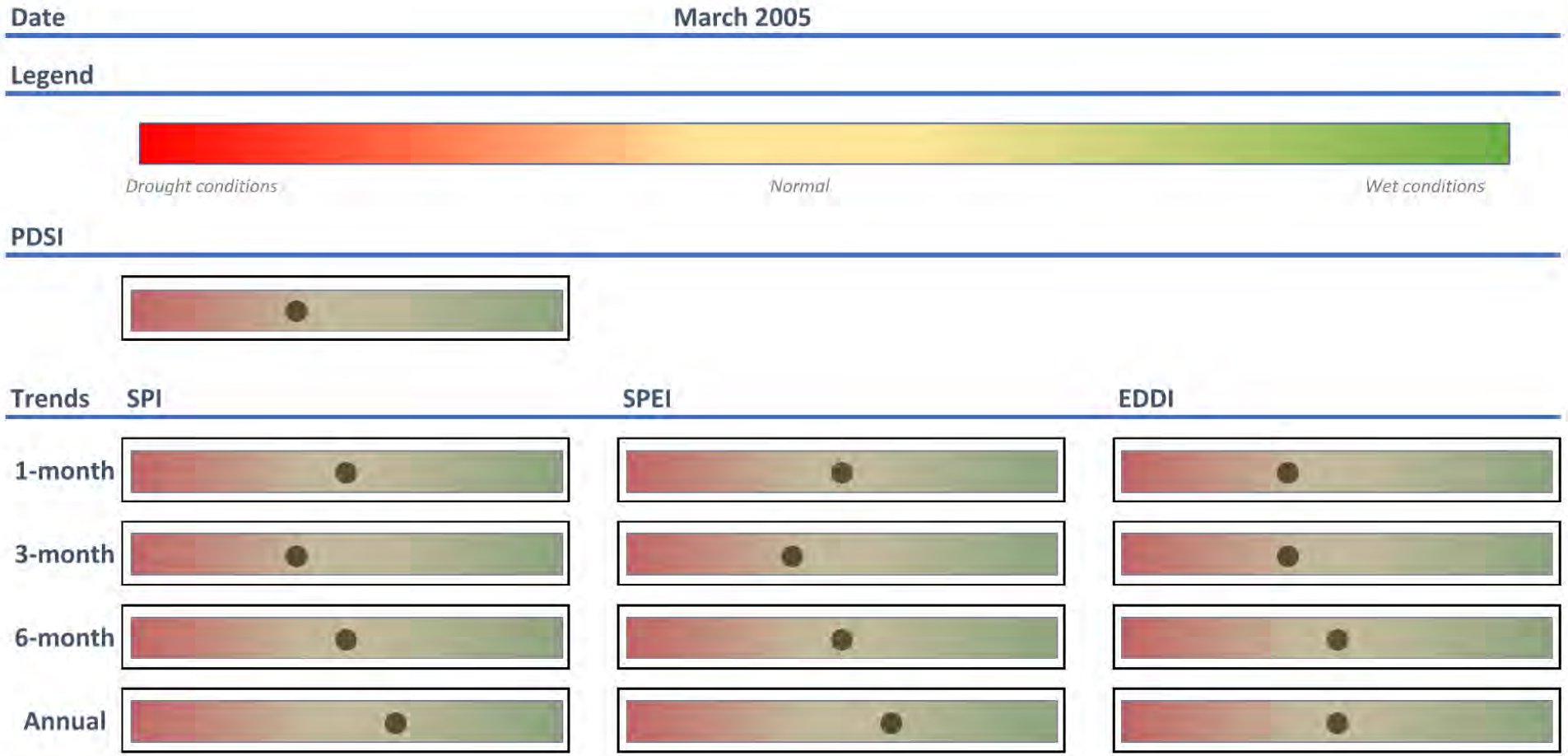

2002 - 2006 DROUGHT CYCLE
1st Quarter 2005
Streamflow (cfs)
Total Reservoir Storage (ac-ft)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
3500000
3150000
2800000
2450000
2100000
1750000
1400000
1050000
700000
350000
0
01/02/02
01/02/03
01/02/04
01/01/05
01/01/06
01/01/07
Total Reservoir Storage
N Platte @ State Line
S Platte @ Roscoe
Platte River @ Grand Island

# Historical Indicators & Indices (2003-2006)

## Various Indices – March 2005




CPNRD CENTRAL PLATTE NATURAL RESOURCES DISTRICT
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NEBRASKA DEPT. OF NATURAL RESOURCES
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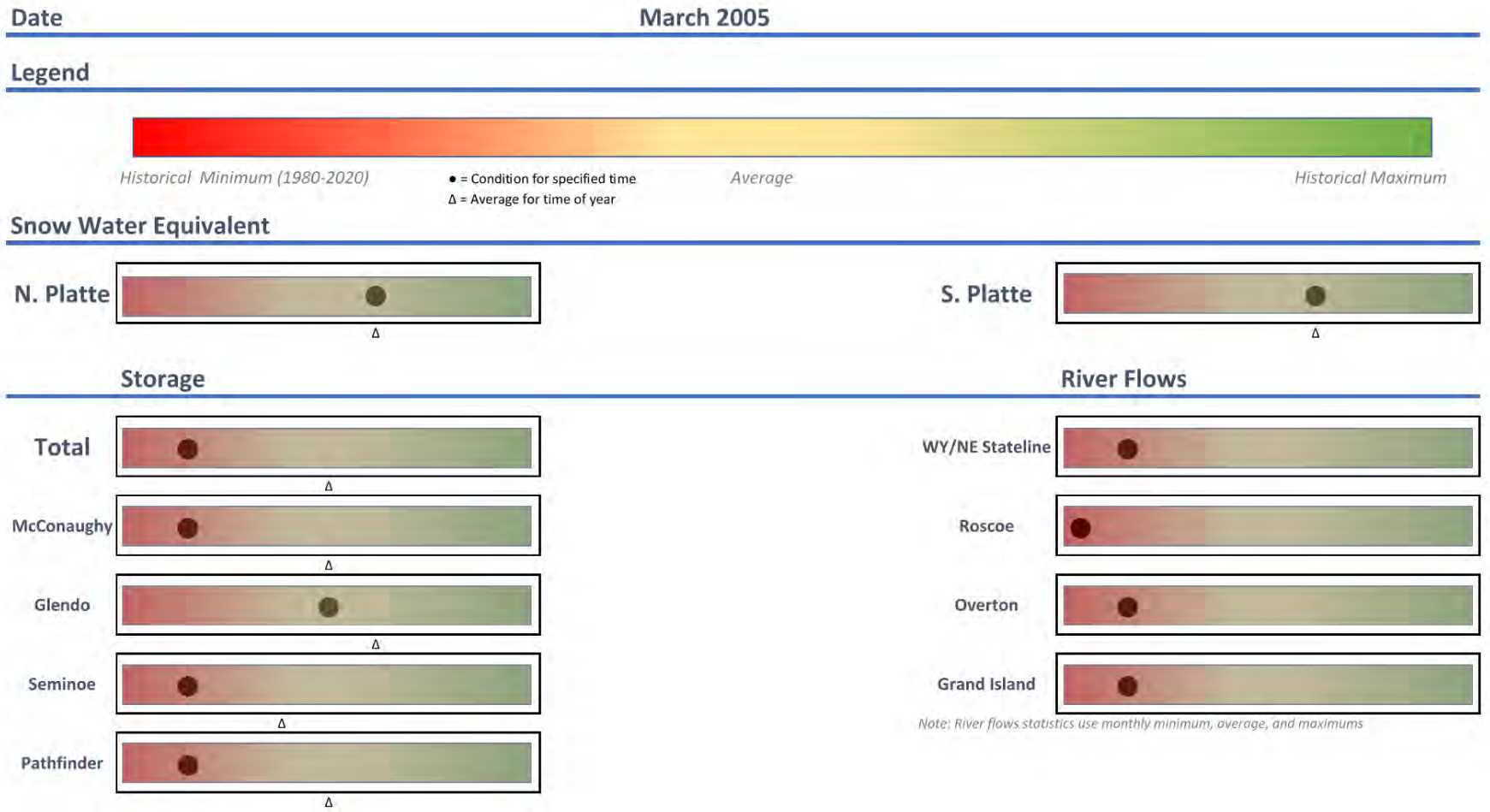
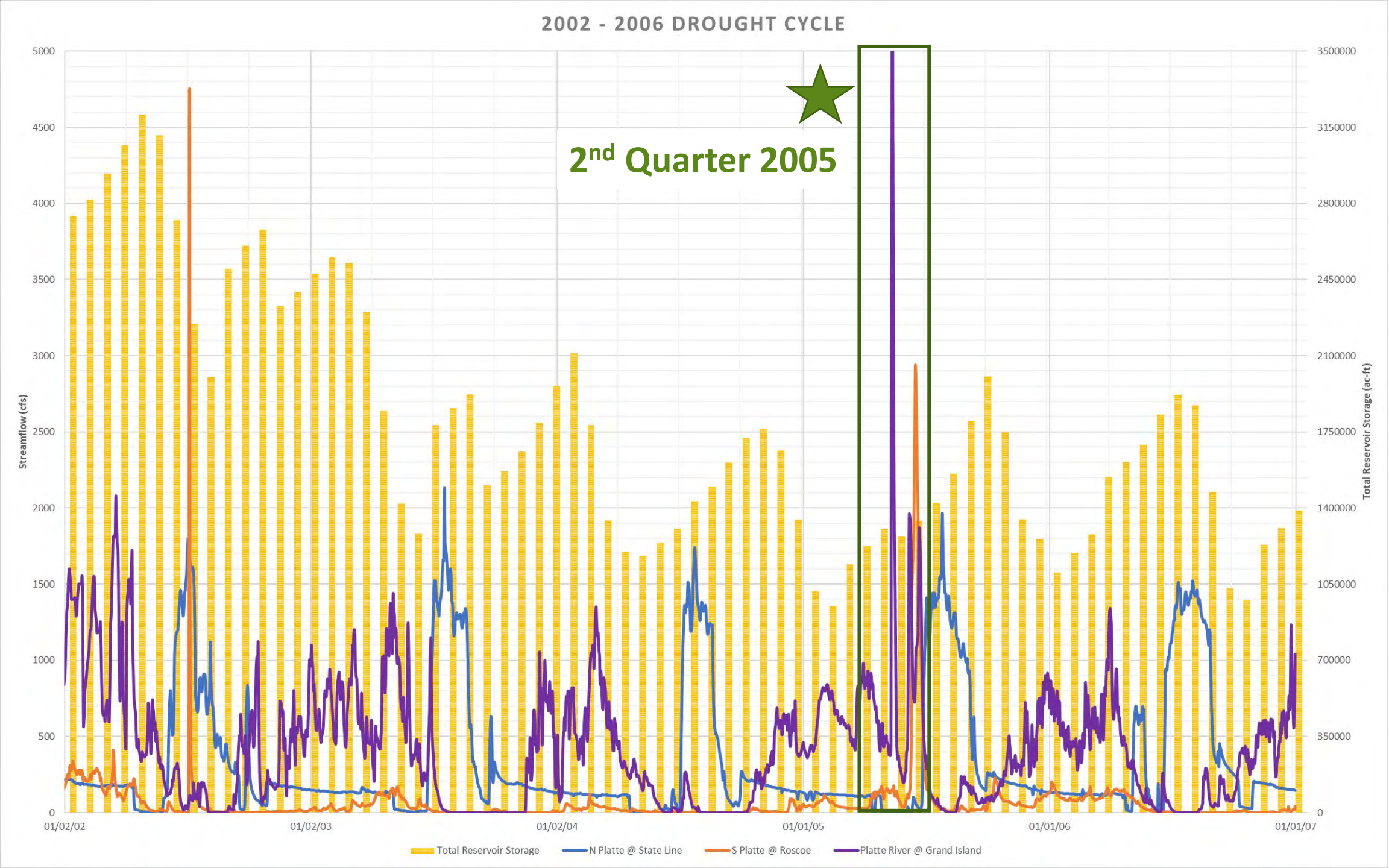
# Historical Indicators & Indices (2003-2006)

## Snow, Reservoir Storage, Stream Flows – March 2005

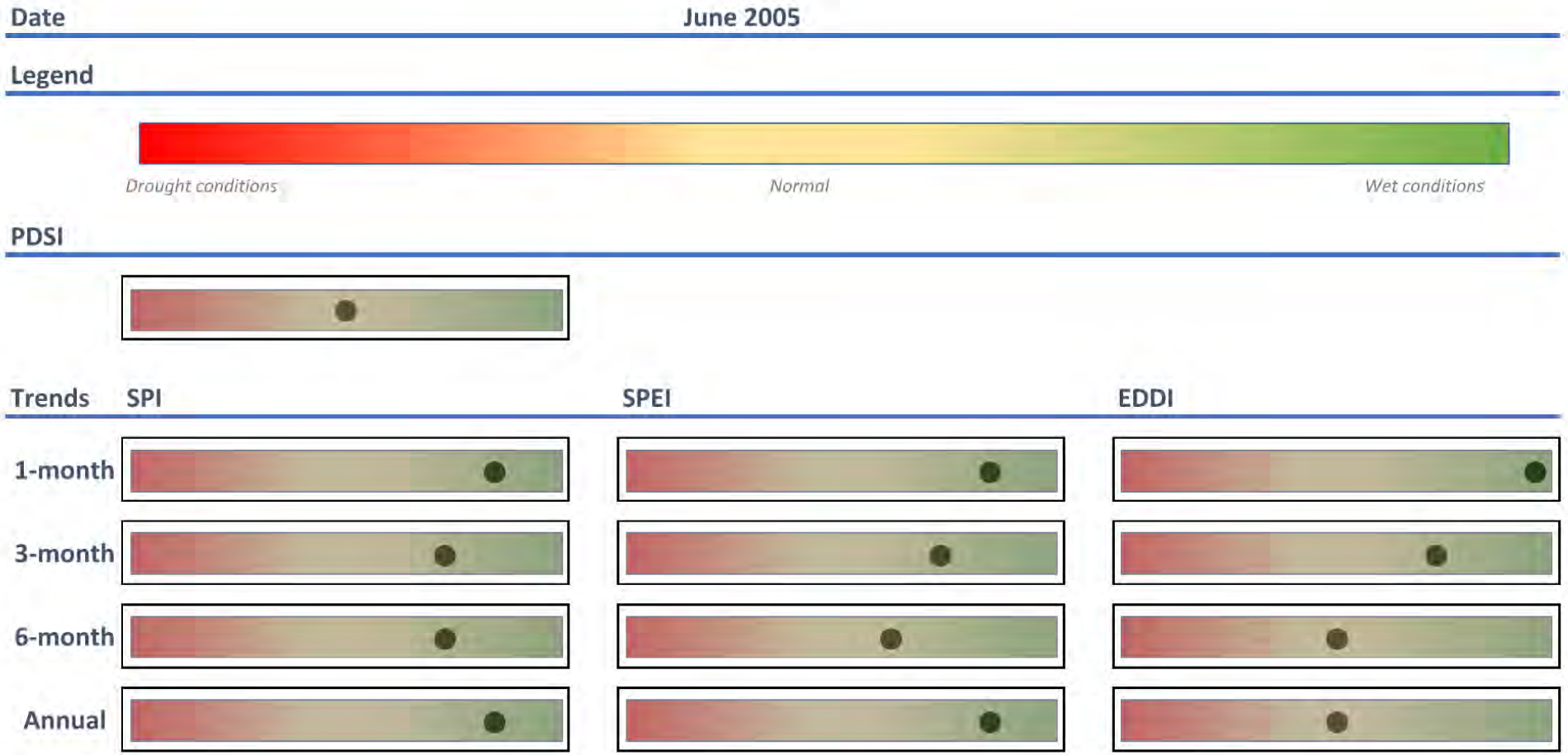



CPNRD Central Platte Natural Resources District · North Platte Natural Resources District · South Platte Natural Resources District · Tri Basin Natural Resources District · Twin Platte Natural Resources District · Nebraska Department of Natural Resources · Bureau of Reclamation


2002 - 2006 DROUGHT CYCLE
2nd Quarter 2005
Streamflow (cfs)
Total Reservoir Storage (ac-ft)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
3500000
3150000
2800000
2450000
2100000
1750000
1400000
1050000
700000
350000
0
01/02/02
01/02/03
01/02/04
01/01/05
01/01/06
01/01/07
Total Reservoir Storage
N Platte @ State Line
S Platte @ Roscoe
Platte River @ Grand Island

# Historical Indicators & Indices (2003-2006)

## Various Indices – June 2005

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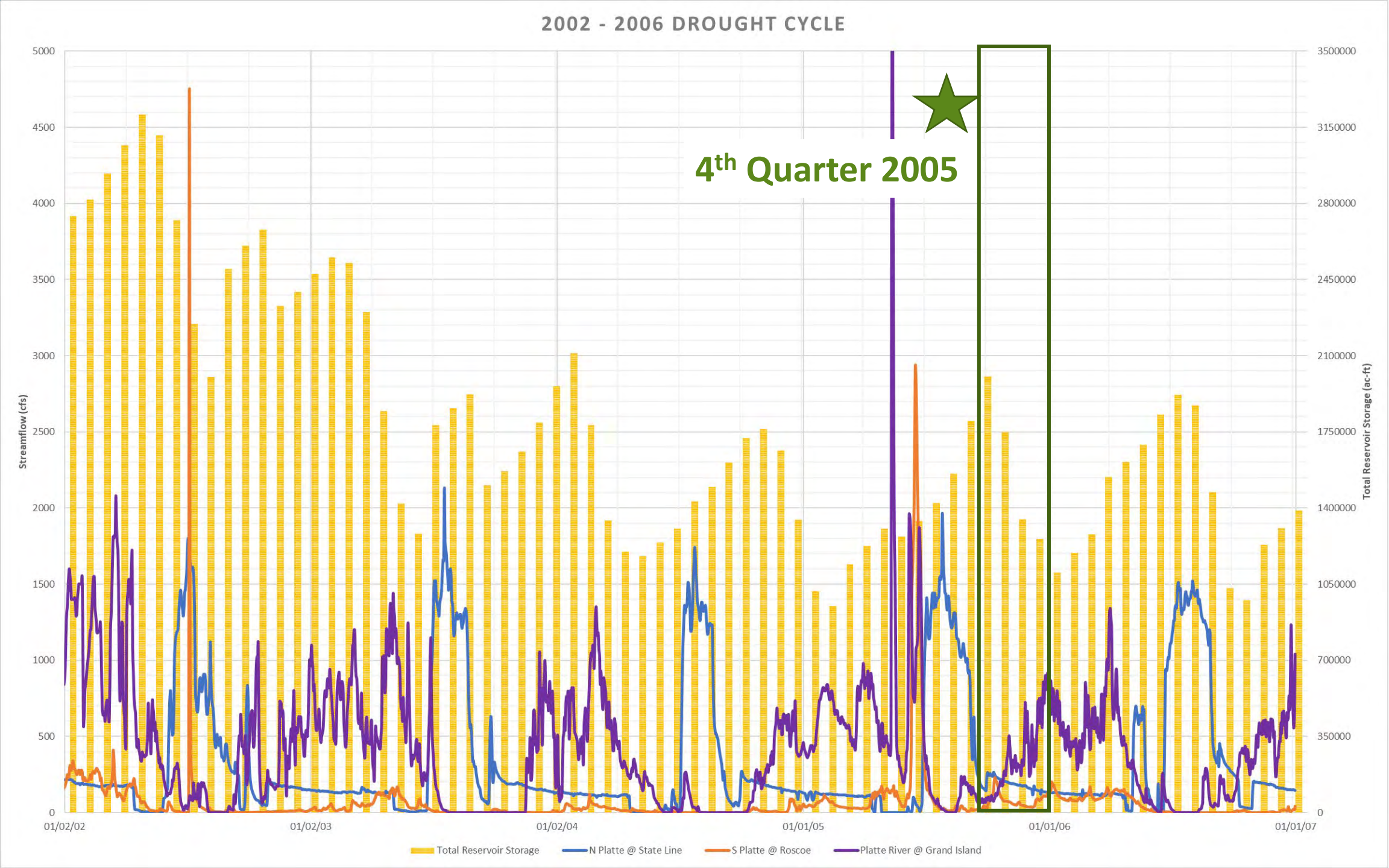
# Historical Indicators & Indices (2003-2006)

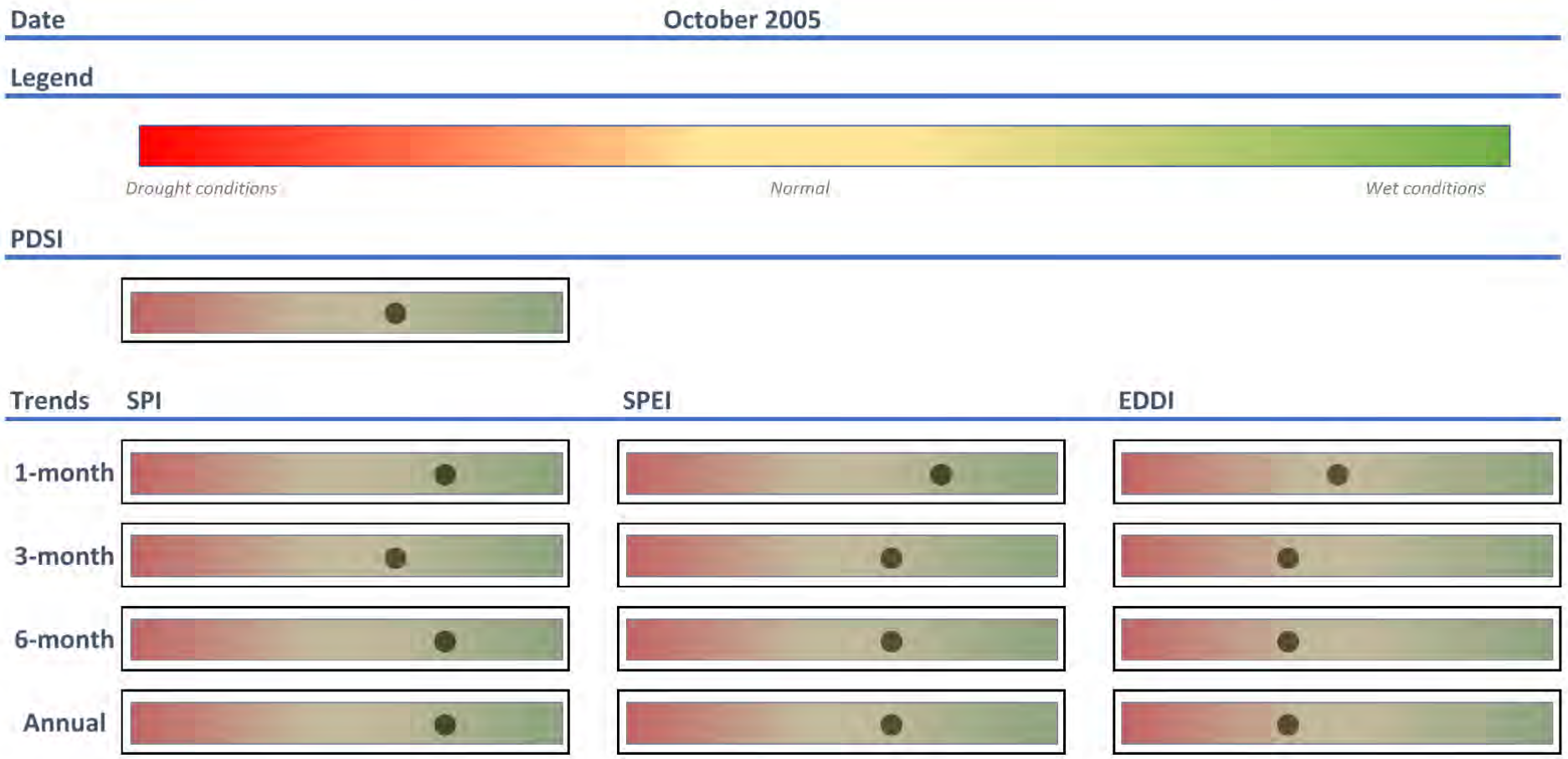
## Snow, Reservoir Storage, Stream Flows – June 2005


CPNRD Central Platte Natural Resources District · North Platte Natural Resources District · South Platte Natural Resources District · Tri Basin Natural Resources District · Twin Platte Natural Resources District · Nebraska Department of Natural Resources · Bureau of Reclamation


2002 - 2006 DROUGHT CYCLE
4th Quarter 2005
Streamflow (cfs)
Total Reservoir Storage (ac-ft)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
3500000
3150000
2800000
2450000
2100000
1750000
1400000
1050000
700000
350000
0
01/02/02
01/02/03
01/02/04
01/01/05
01/01/06
01/01/07
Total Reservoir Storage
N Platte @ State Line
S Platte @ Roscoe
Platte River @ Grand Island

# Historical Indicators & Indices (2003-2006)

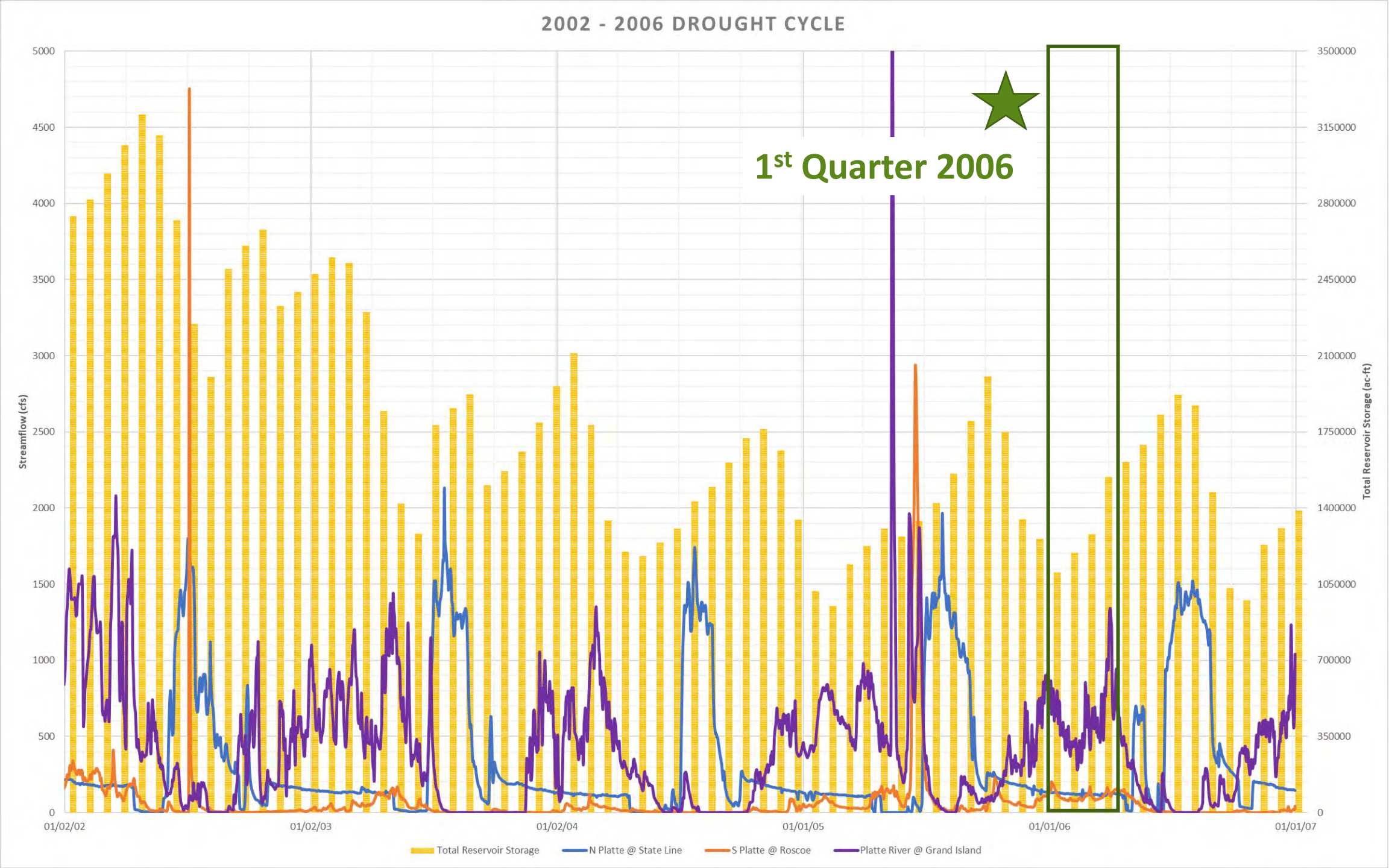
## Various Indices – October 2005



# Historical Indicators & Indices (2003-2006)

## Snow, Reservoir Storage, Stream Flows – October 2005


CPNRD Central Platte Natural Resources District · North Platte Natural Resources District · South Platte Natural Resources District · Tri Basin Natural Resources District · Twin Platte Natural Resources District · Nebraska Department of Natural Resources · Bureau of Reclamation


2002 - 2006 DROUGHT CYCLE
1st Quarter 2006
Streamflow (cfs)
Total Reservoir Storage (ac-ft)
5000
4500
4000
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1000
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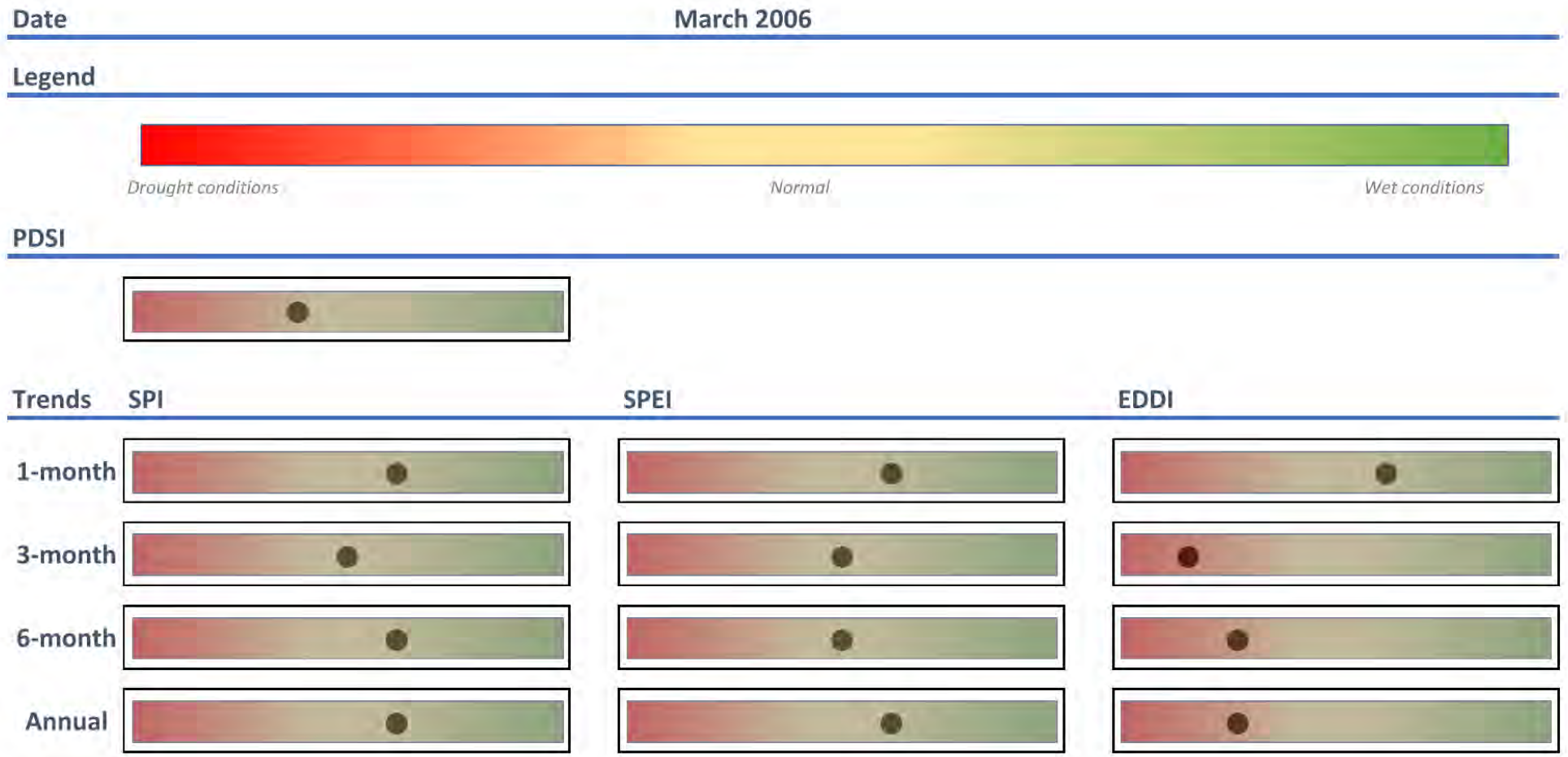
0
3500000
3150000
2800000
2450000
2100000
1750000
1400000
1050000
700000
350000
0
01/02/02
01/02/03
01/02/04
01/01/05
01/01/06
01/01/07
Total Reservoir Storage
N Platte @ State Line
S Platte @ Roscoe
Platte River @ Grand Island

# Historical Indicators & Indices (2003-2006)

## Various Indices – March 2006




CPNRD CENTRAL PLATTE NATURAL RESOURCES DISTRICT
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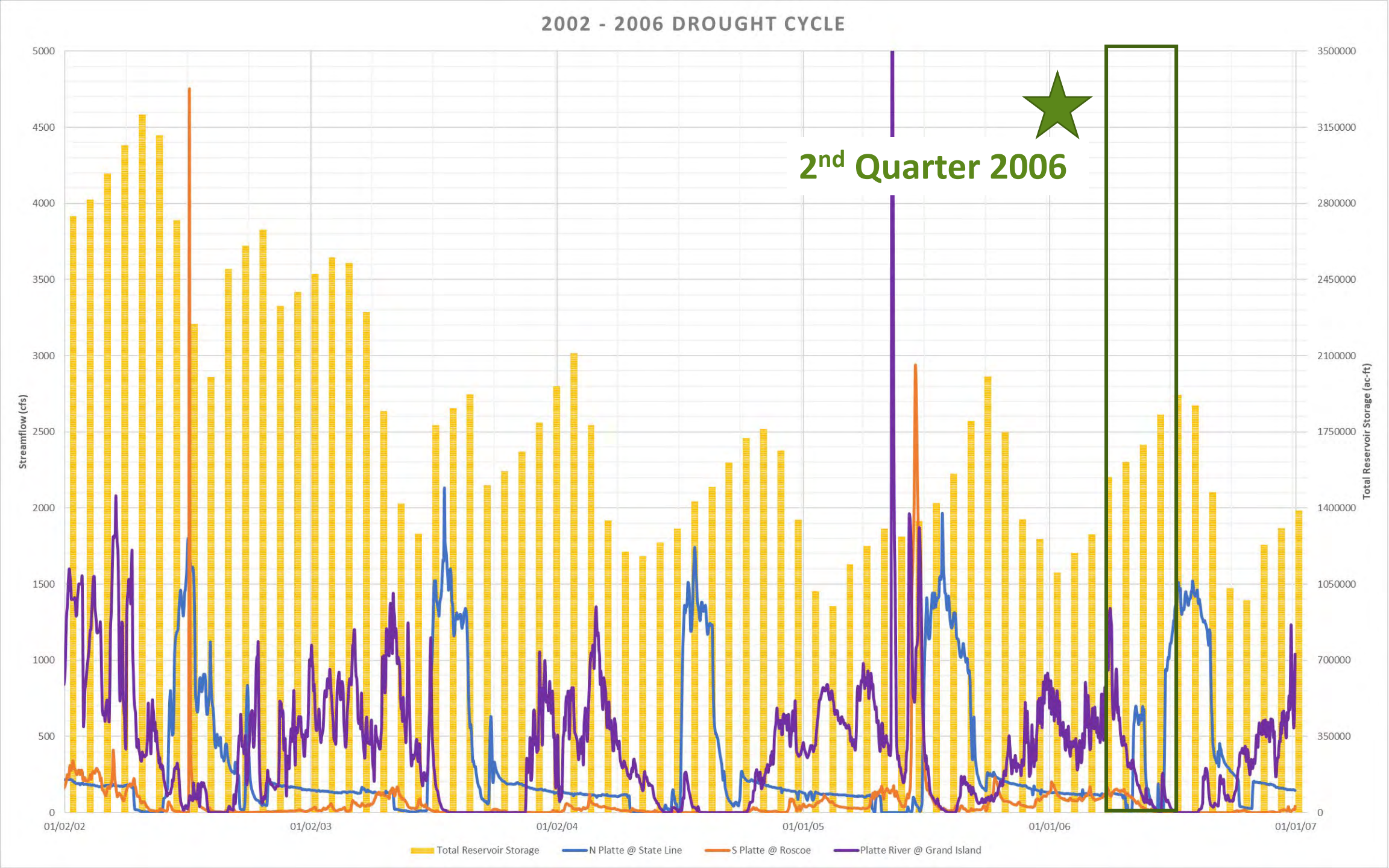
# Historical Indicators & Indices (2003-2006)

## Snow, Reservoir Storage, Stream Flows – March 2006


CPNRD Central Platte Natural Resources District · North Platte Natural Resources District · South Platte Natural Resources District · Tri Basin Natural Resources District · Twin Platte Natural Resources District · Nebraska Department of Natural Resources · Bureau of Reclamation


2002 - 2006 DROUGHT CYCLE
2nd Quarter 2006
Streamflow (cfs)
Total Reservoir Storage (ac-ft)
5000
4500
4000
3500
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2500
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3150000
2800000
2450000
2100000
1750000
1400000
1050000
700000
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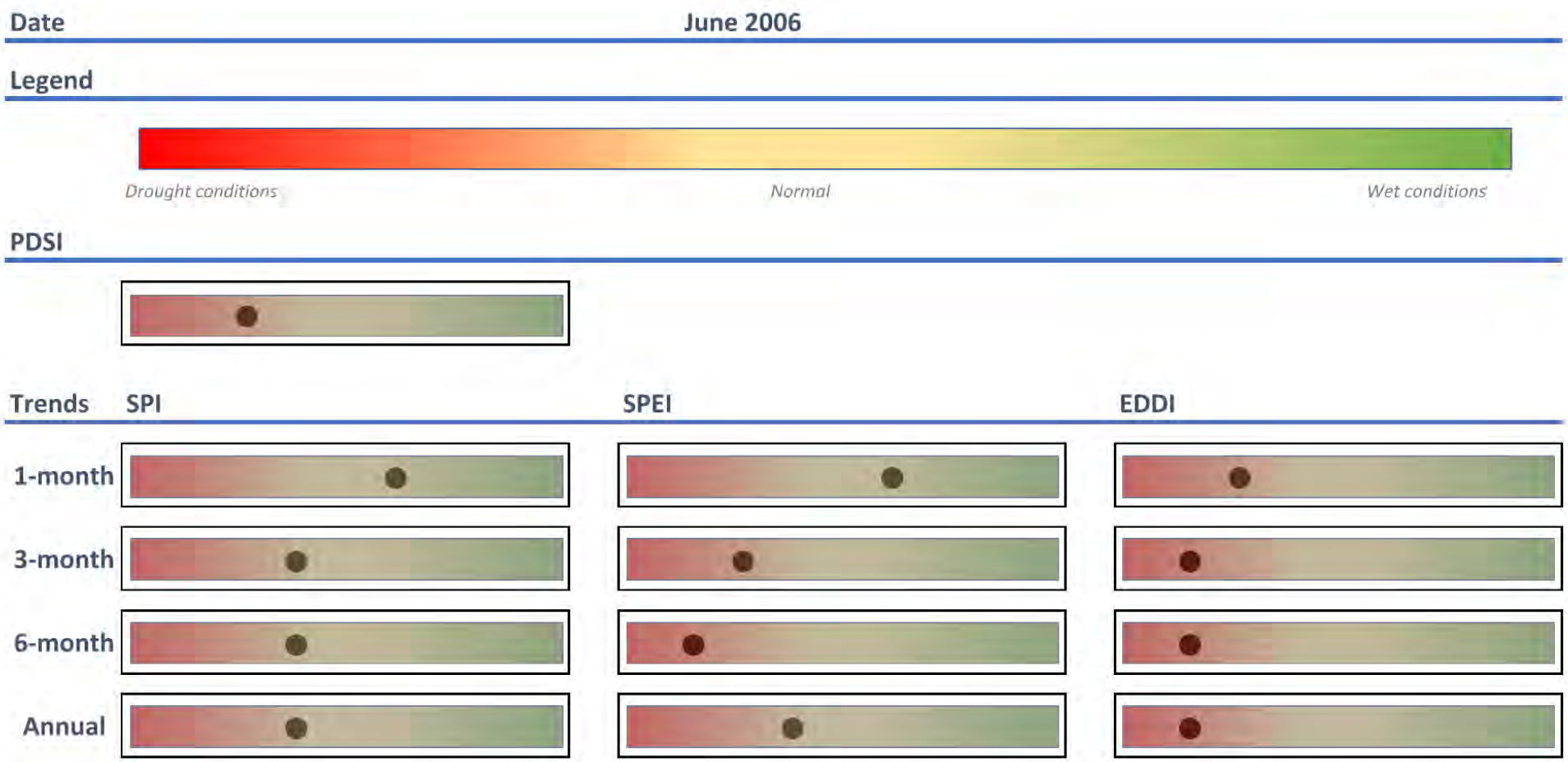
0
01/02/02
01/02/03
01/02/04
01/01/05
01/01/06
01/01/07
Total Reservoir Storage
N Platte @ State Line
S Platte @ Roscoe
Platte River @ Grand Island

# Historical Indicators & Indices (2003-2006)

## Various Indices – June 2006




CPNRD CENTRAL PLATTE NATURAL RESOURCES DISTRICT
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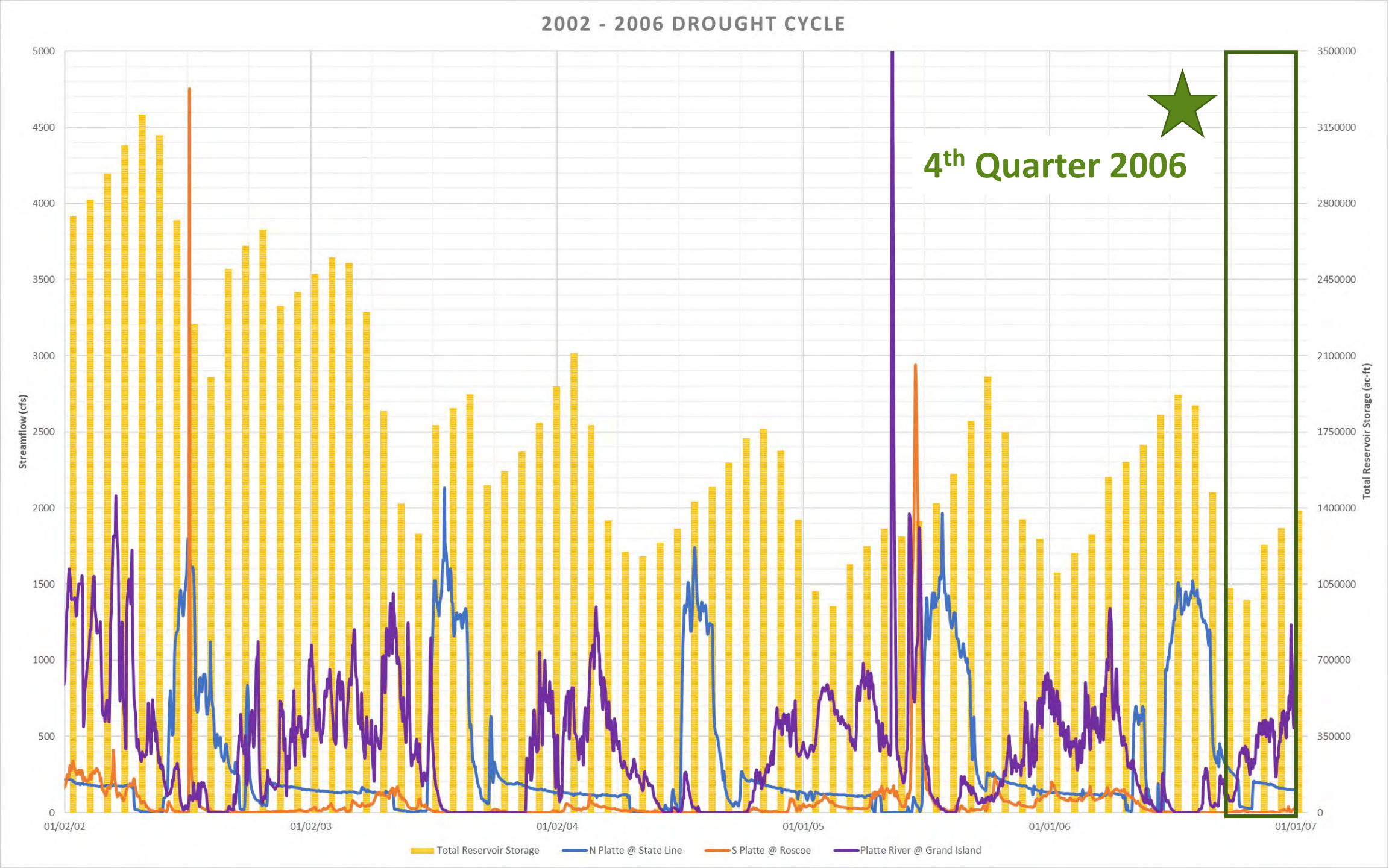
# Historical Indicators & Indices (2003-2006)

## Snow, Reservoir Storage, Stream Flows – June 2006


2002 - 2006 DROUGHT CYCLE
4th Quarter 2006
Streamflow (cfs)
Total Reservoir Storage (ac-ft)
5000
4500
4000
3500
3000
2500
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500
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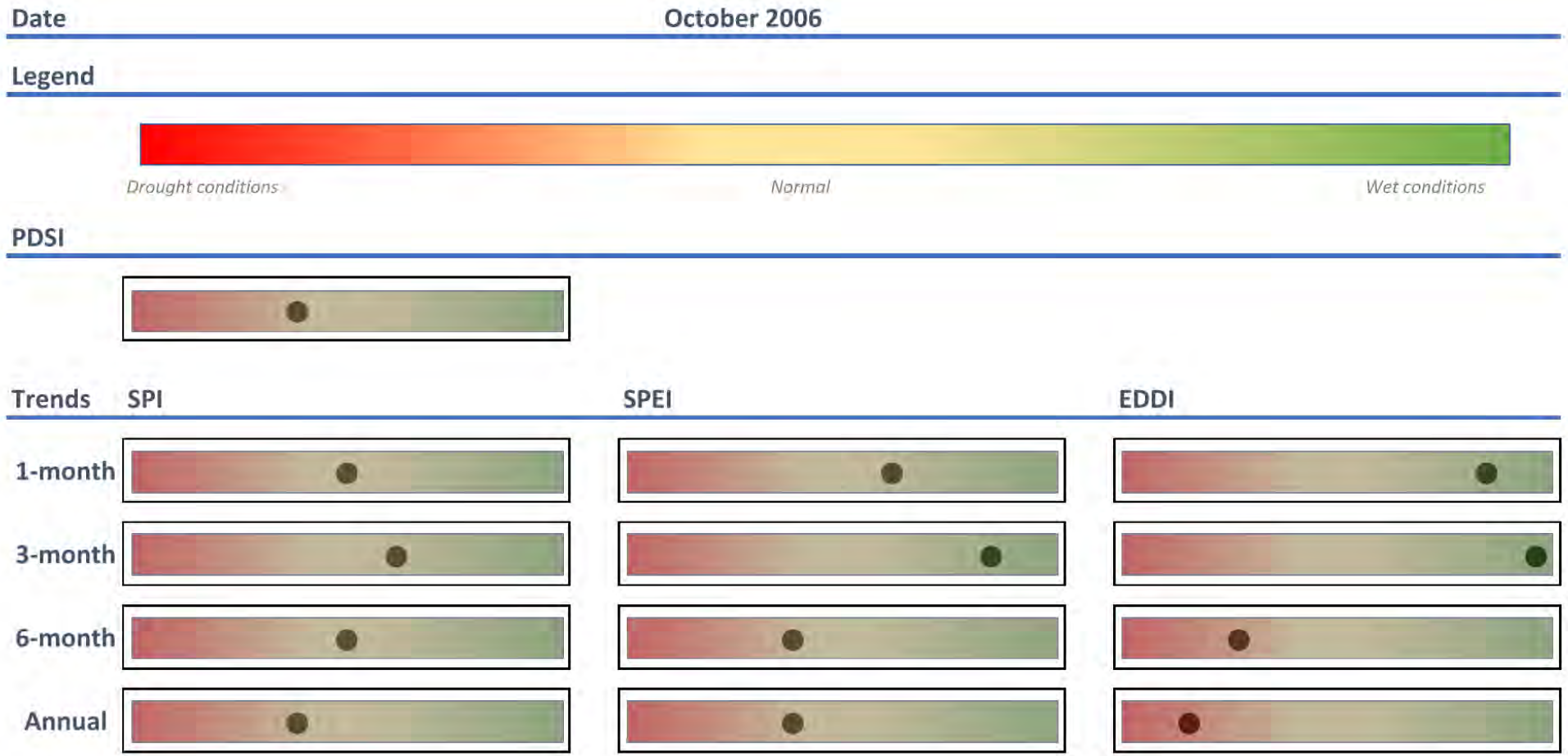
3500000
3150000
2800000
2450000
2100000
1750000
1400000
1050000
700000
350000
0
01/02/02
01/02/03
01/02/04
01/01/05
01/01/06
01/01/07
Total Reservoir Storage
N Platte @ State Line
S Platte @ Roscoe
Platte River @ Grand Island

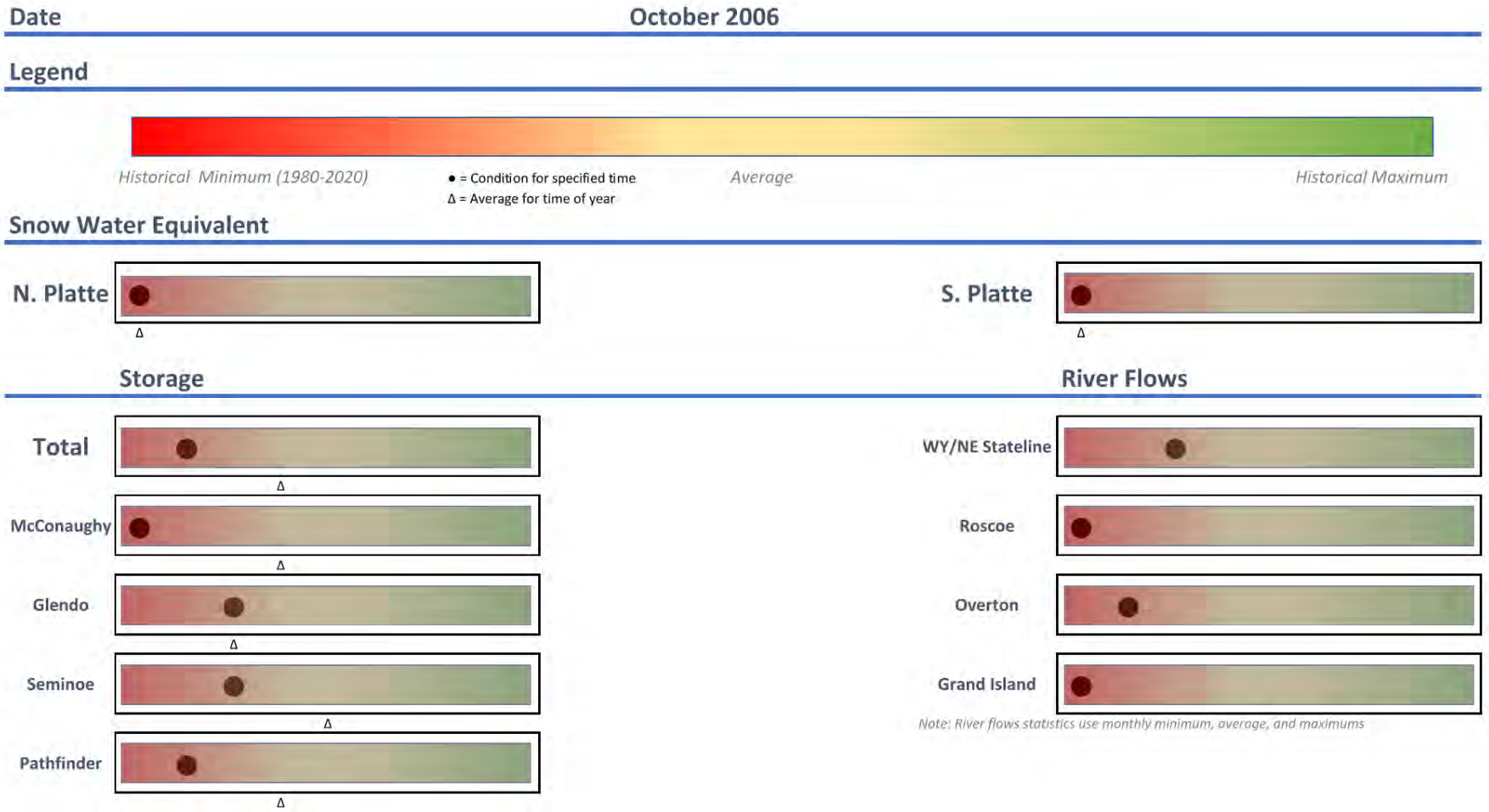
# Historical Indicators & Indices (2003-2006)

## Various Indices – October 2006



# Historical Indicators & Indices (2003-2006)

## Snow, Reservoir Storage, Stream Flows – October 2006




CPNRD Central Platte Natural Resources District · North Platte Natural Resources District · South Platte Natural Resources District · Tri Basin Natural Resources District · Twin Platte Natural Resources District · Nebraska Department of Natural Resources · Bureau of Reclamation

# Historical Indicators & Indices (2003-2006)

## Various Indices – January 2007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SOUTH PLATTE Natural Resources District
Tri Basin Natural Resources District
TWIN PLATTE NATURAL RESOURCES DISTRICT
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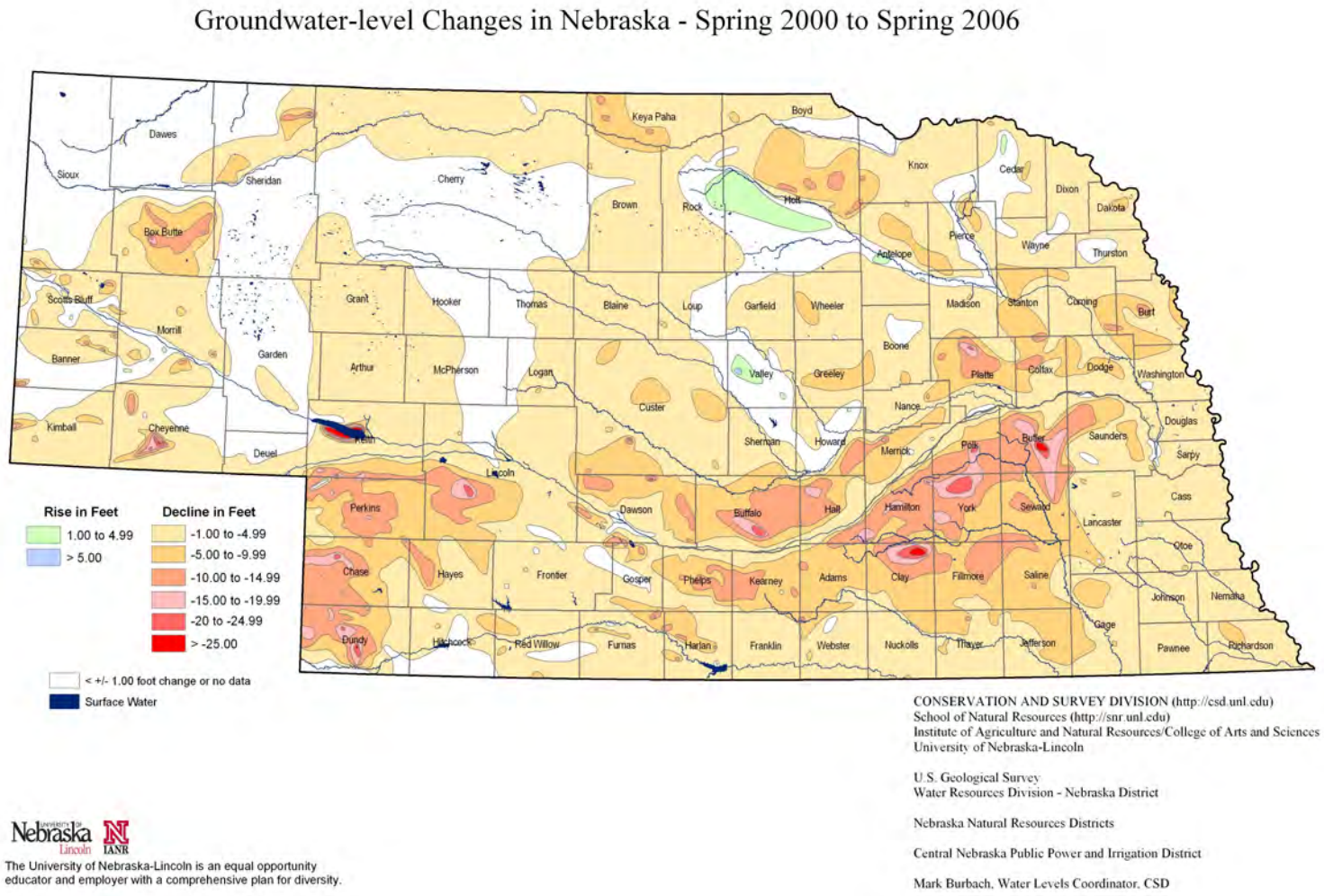
# Historical Indicators & Indices (2003-2006)

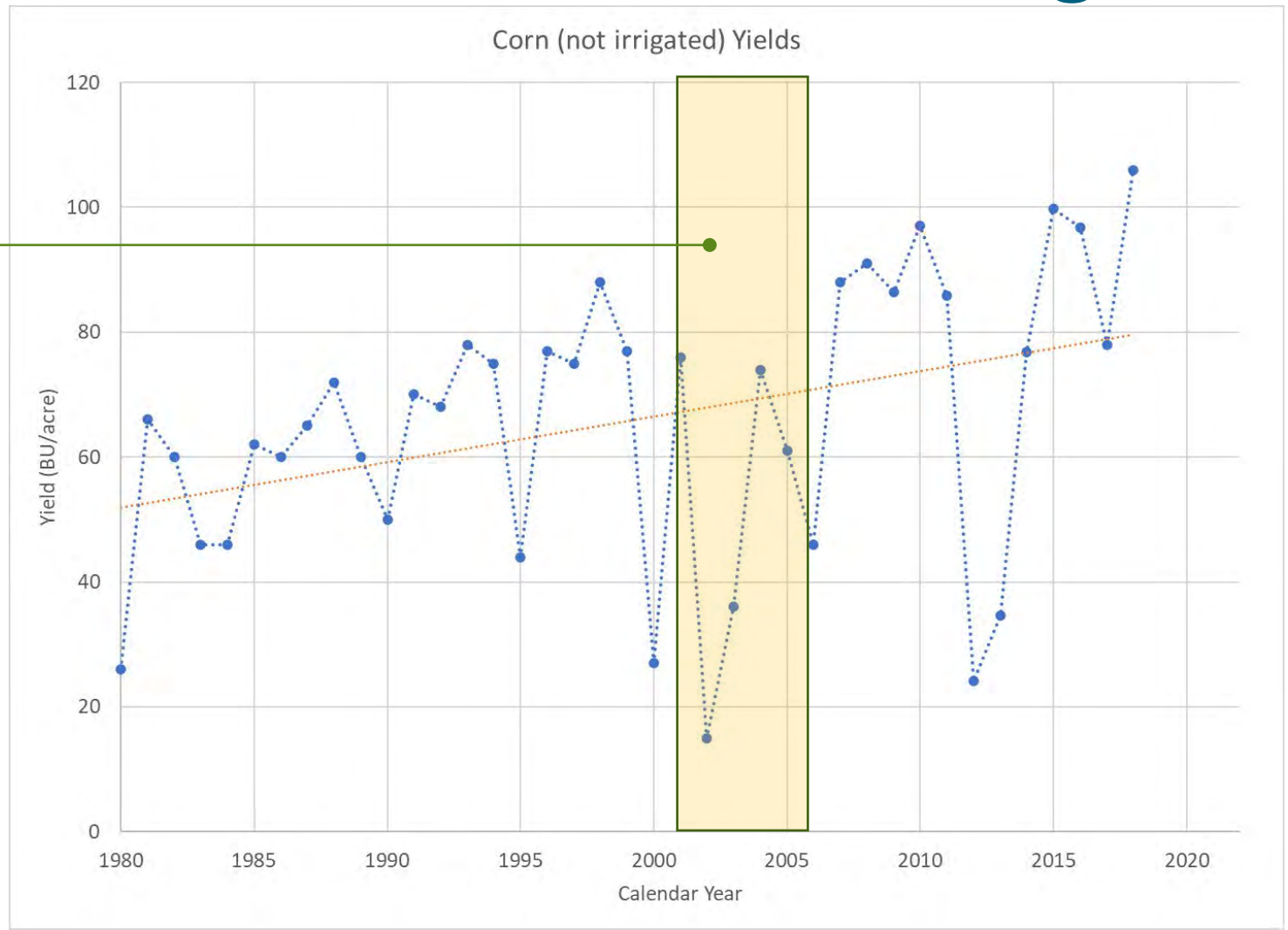
## Snow, Reservoir Storage, Stream Flows – January 2007

# Impacts of the 2003 – 2006 Drought



# Impacts of the 2003-2006 Drought

Multiple-year Drought

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# Discussion Questions

## When April/May forecasts come out (spring)…

- What data are you paying close attention to?
  - Where are you accessing that data?
- What coordination activities need to take place?
- What mitigation actions should be considered?
  - What mitigation actions can individual organizations take to lessen the effects?
  - What are the ripple effects of these actions? (Downstream, across NRDs, between communities and ag users, etc.)
  - What policies, projects, and/or coordination activities are needed to make the mitigation actions work?
  - How will these mitigation actions support or conflict with existing plans (NRD plans, City plans, etc.)?
- What are the specific triggers for each mitigation action?

# Discussion Questions

## When drought is starting (summer)…

- What data are you now paying close attention to?
  - Where are you accessing that data?
- What were the resulting effects of the mitigation actions taken following the spring forecasts?
- What response actions should be considered?
  - What response actions can individual organizations take to get through the next several weeks?
  - What are the ripple effects of these actions? (Downstream, across NRDs, between communities and ag users, etc.)
  - What policies, projects, and/or coordination activities are needed to make the response actions work?
  - How will these response actions support or conflict with existing plans (NRD plans, City plans, etc.)?
- What are the specific triggers for each response action?

# Discussion Questions

## Early in drought, following summer of Year 1 (fall)…

- What data are you now paying close attention to?
  - Where are you accessing that data?
  - What triggers are used to make decisions for the following year?
- What actions were taken during historic multi-year droughts?
- What additional coordination activities need to take place?
- What additional response actions should be considered?

# Discussion Questions

## When drought moves into multiple years…

- What data are you now paying close attention to?
  - Where are you accessing that data?
- What additional coordination activities need to take place?
- What additional response actions should be considered?
  - What policies projects, and/or coordination activities are needed to make additional response actions work?
  - How will these response actions support or conflict with existing plans (NRD plans, City plans, etc.)?
  - How will current conditions and needed response actions be communicated to the public?

# For Consideration…

- Which of the mitigation and response actions from the scenario are things that can be implemented relatively easily?
- Which of the mitigation and response actions from the scenario may need additional time, resources, and/or funding?

# Next Steps

# Next Steps

## Next Drought Task Force Meeting:

- June 27, 2023 - Take a Closer Look at the Draft Plan

## Draft Plan anticipated Summer 2023

# Any Questions?

# THANK YOU!

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