

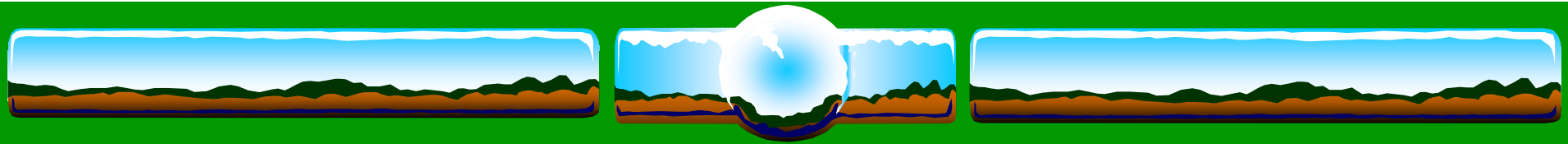
# Irrigation at Rocky Mountain Arsenal – Restoration/Mitigation of More Than 8,000 Acres

## Authors:

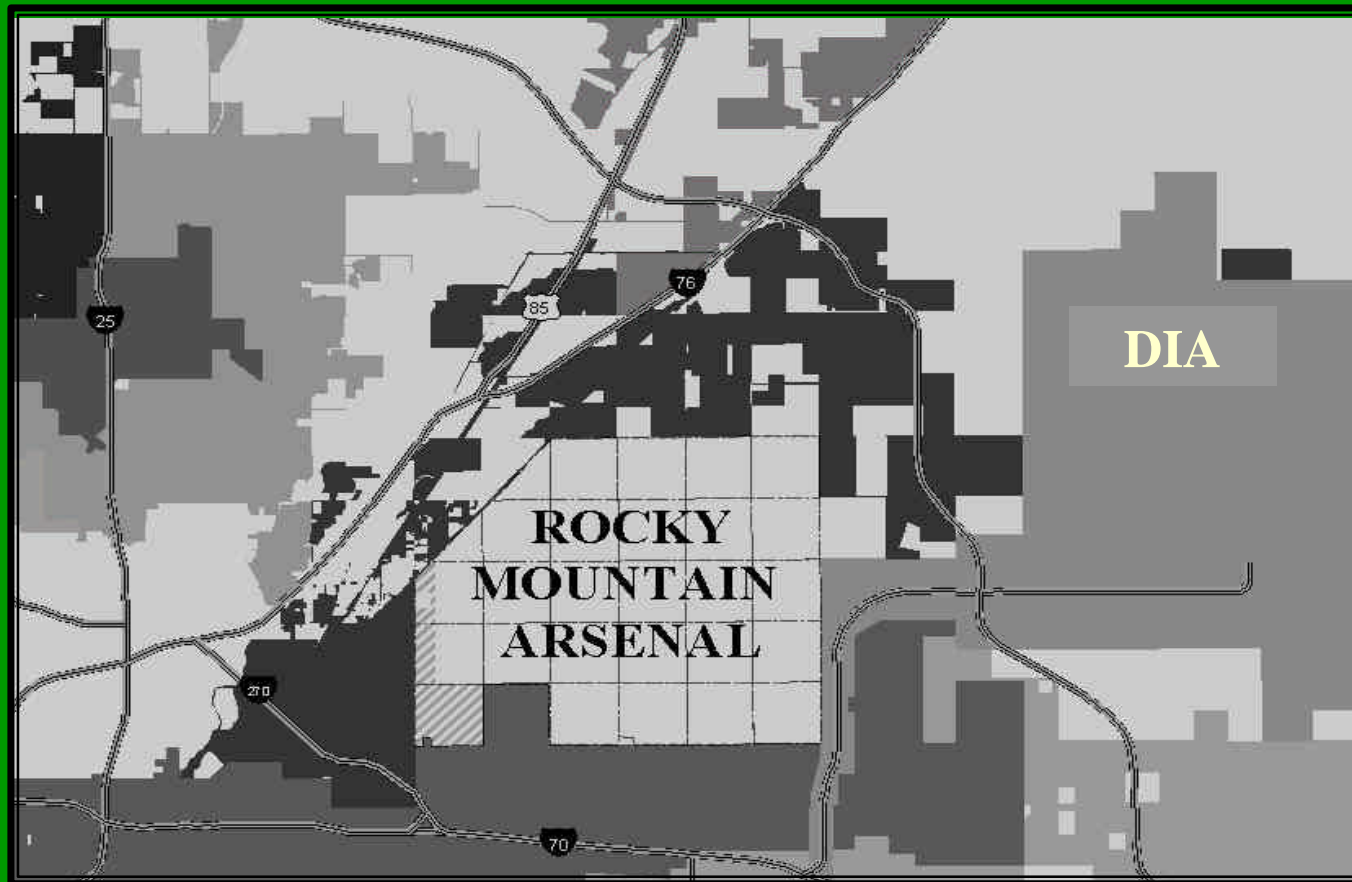
Ronald E. Versaw, Foster Wheeler  
Environmental Corp

Ronald R. Thomas, Foster Wheeler  
Environmental Corp.

Brent Peterson, Rain For Rent



# Rocky Mountain Arsenal Location Map



# Brief



- ❖ Pearl Harbor and WWII
- ❖ The Cold War Years
- ❖ Demilitarization Role
- ❖ CERCLA Investigations
- ❖ ROD and Refuge Act

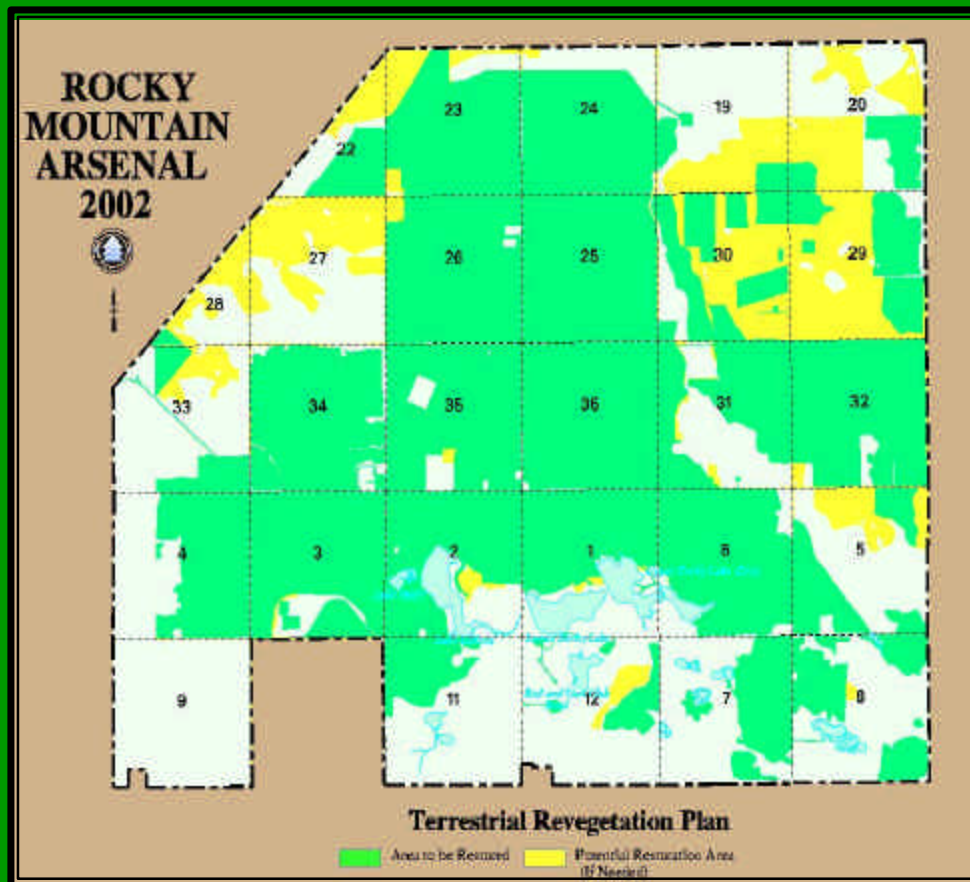


# Remedy Execution

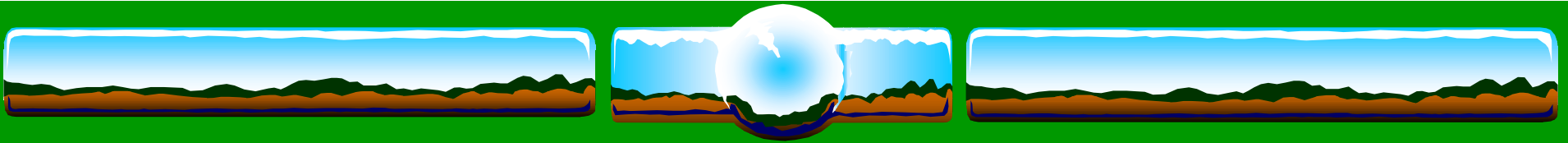


- ❖ Remediation Venture Office
- ❖ FWENC Awarded Program Management Contractor
- ❖ \$1 Billion Program Cost – 31 ROD Implementation Sites
- ❖ Award Winning Performance

# Terrestrial Revegetation Plan



- ❖ Approximately 8000 Acres Restoration/Mitigation
- ❖ Goal 700-800 Acres per year
- ❖ Semi-Arid Climate Requires Irrigation



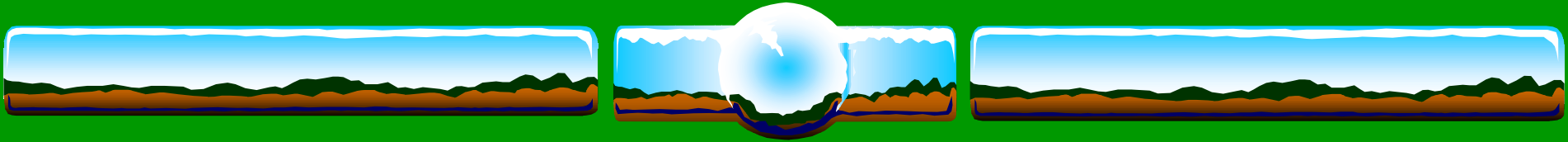
# Water Supply

Schedule Dates	Quantity & Frequency	Number of Applications	Total (Inches)
<b>June 3 - June 28</b>	<b>1/2 -inch once per week</b>	<b>4</b>	<b>2</b>
<b>July 1 – Aug. 9</b>	<b>1-inch every other week</b>	<b>3</b>	<b>3</b>
<b>Aug. 12 – Aug. 30</b>	<b>1/2-inch every other week</b>	<b>2</b>	<b>1</b>

## ❖ Water Requirements

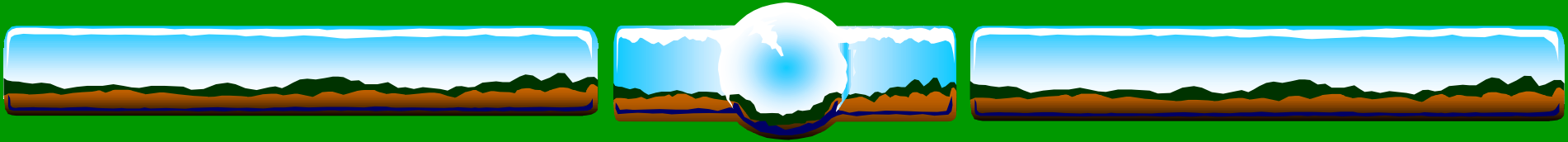
### ❖ Sources of Water

### ❖ Distribution System



# SOLID SET - 175 GPM per Valve

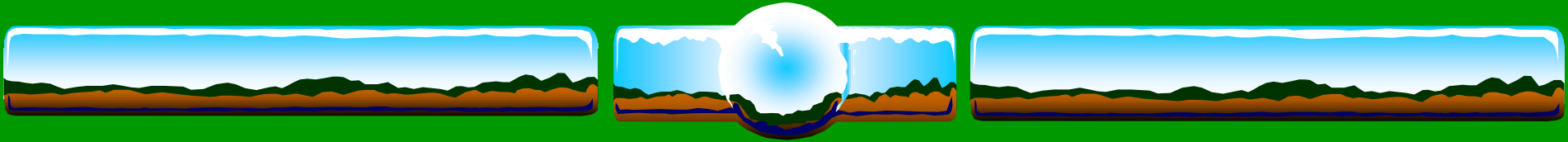




# SIDEROLL – 200 GPM Each

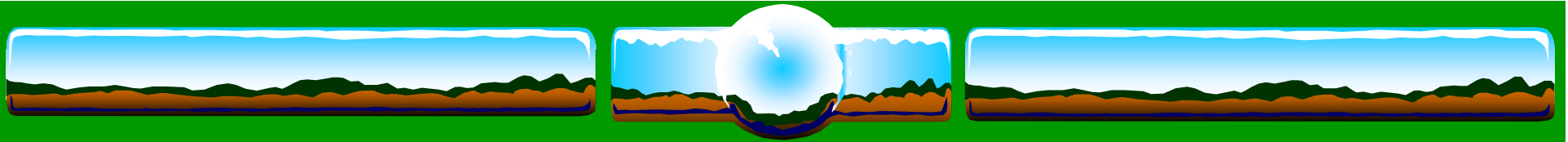






# LINEAR – 950 GPM





# Irrigation System Layout

- ❖ Mainline Piping 8 to 12 inch, 500 to 1600 GPM
- ❖ Total Flow Requirement about 3000 GPM
- ❖ Operating Pressure 30 – 45 PSI
- ❖ Distance (3-4 Miles) from Water Source
- ❖ Booster Pump

# Installation and Operations



Photo by Shattil/Rozinski

- ❖ Safety and Quality
- ❖ Wildlife Concerns
- ❖ Testing
- ❖ 4 or 5 Two-Man Crews
- ❖ Automation vs. Installation Cost

# Conclusions

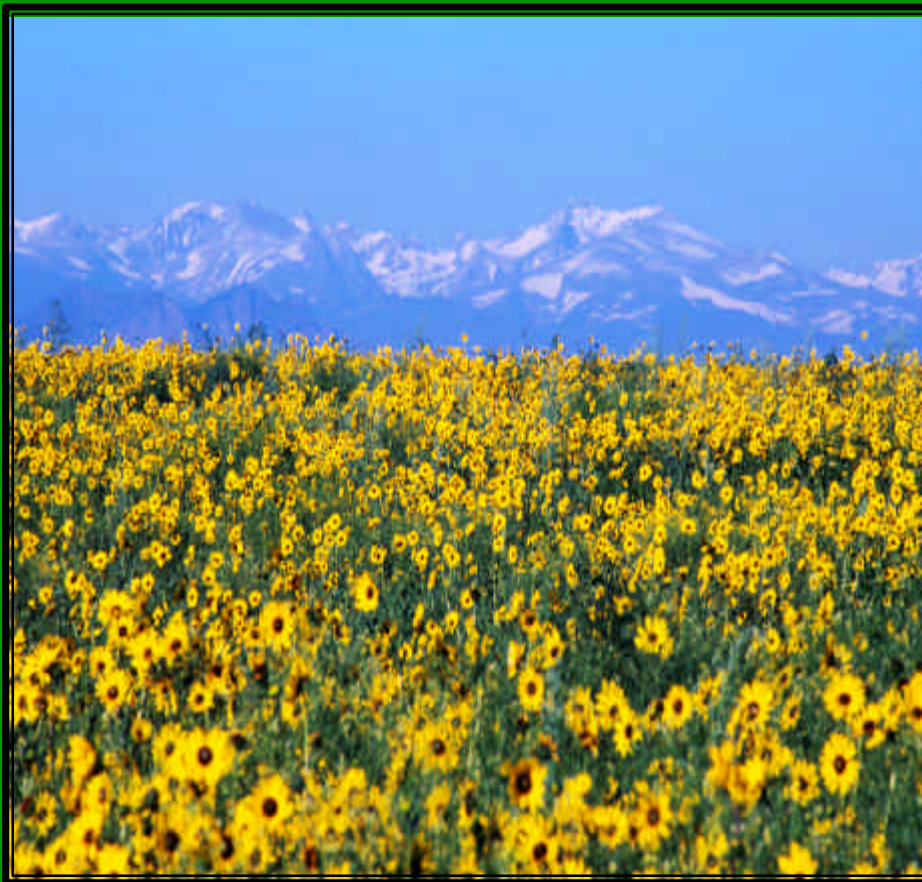
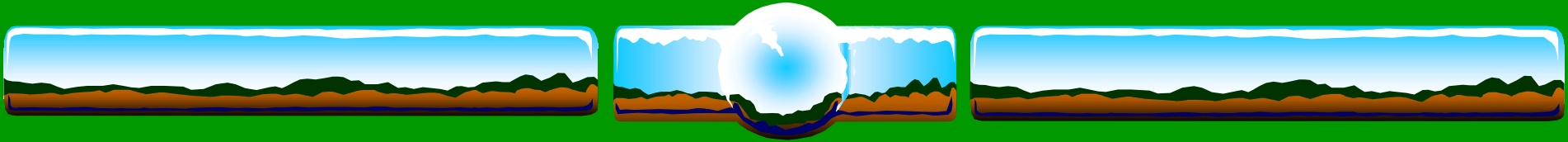


Photo by Rick Keen, DPRA

- ❖ Nearly 3,000 Acres Restored
- ❖ Irrigation Cost: \$1,500 per Acre
- ❖ Effective Establishment of Native Species
- ❖ Required in Semi-Arid Climate



# Rocky Mountain Arsenal Future Wildlife Refuge

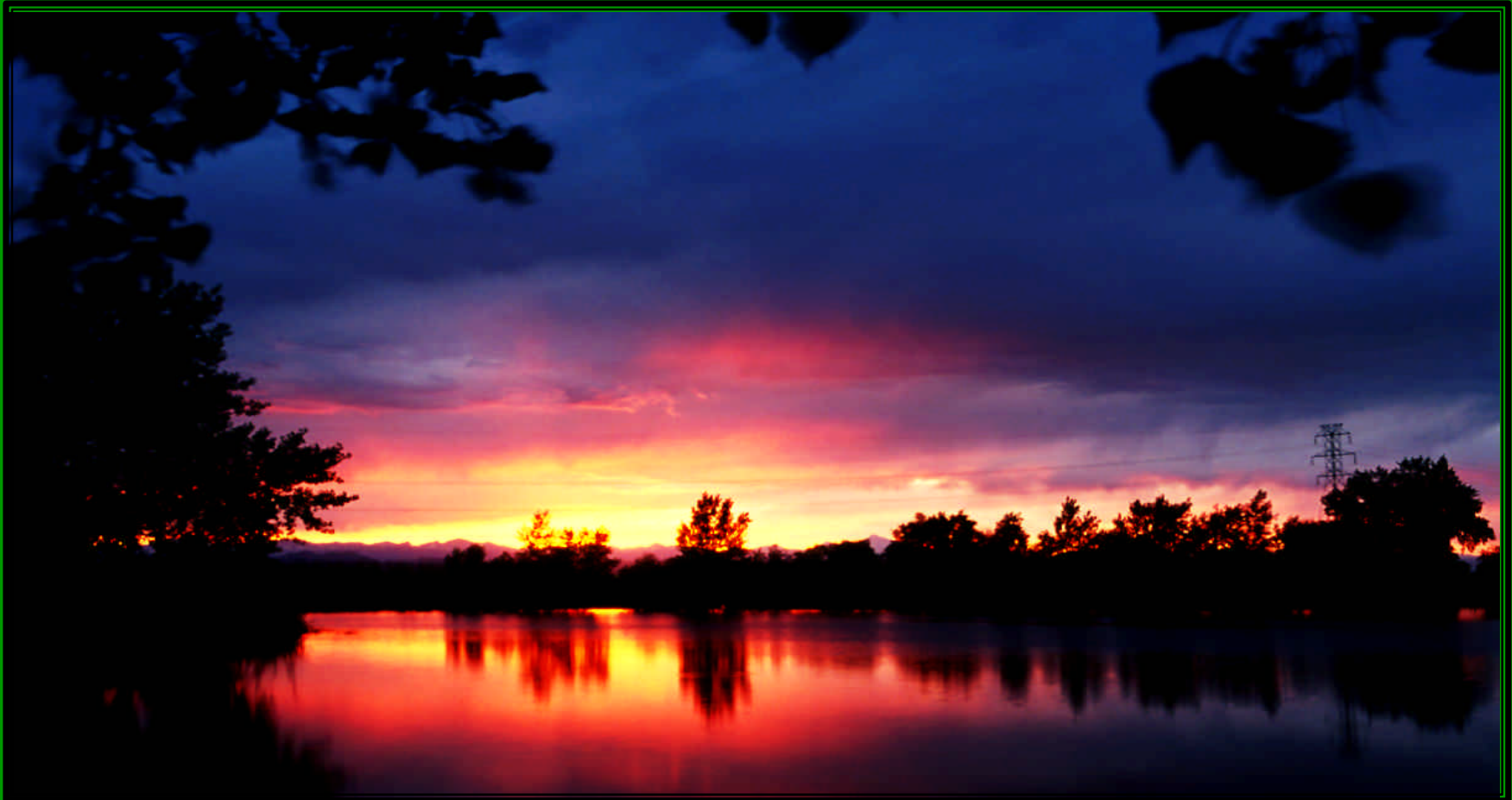


Photo By Joshua Barchers, DPRA