

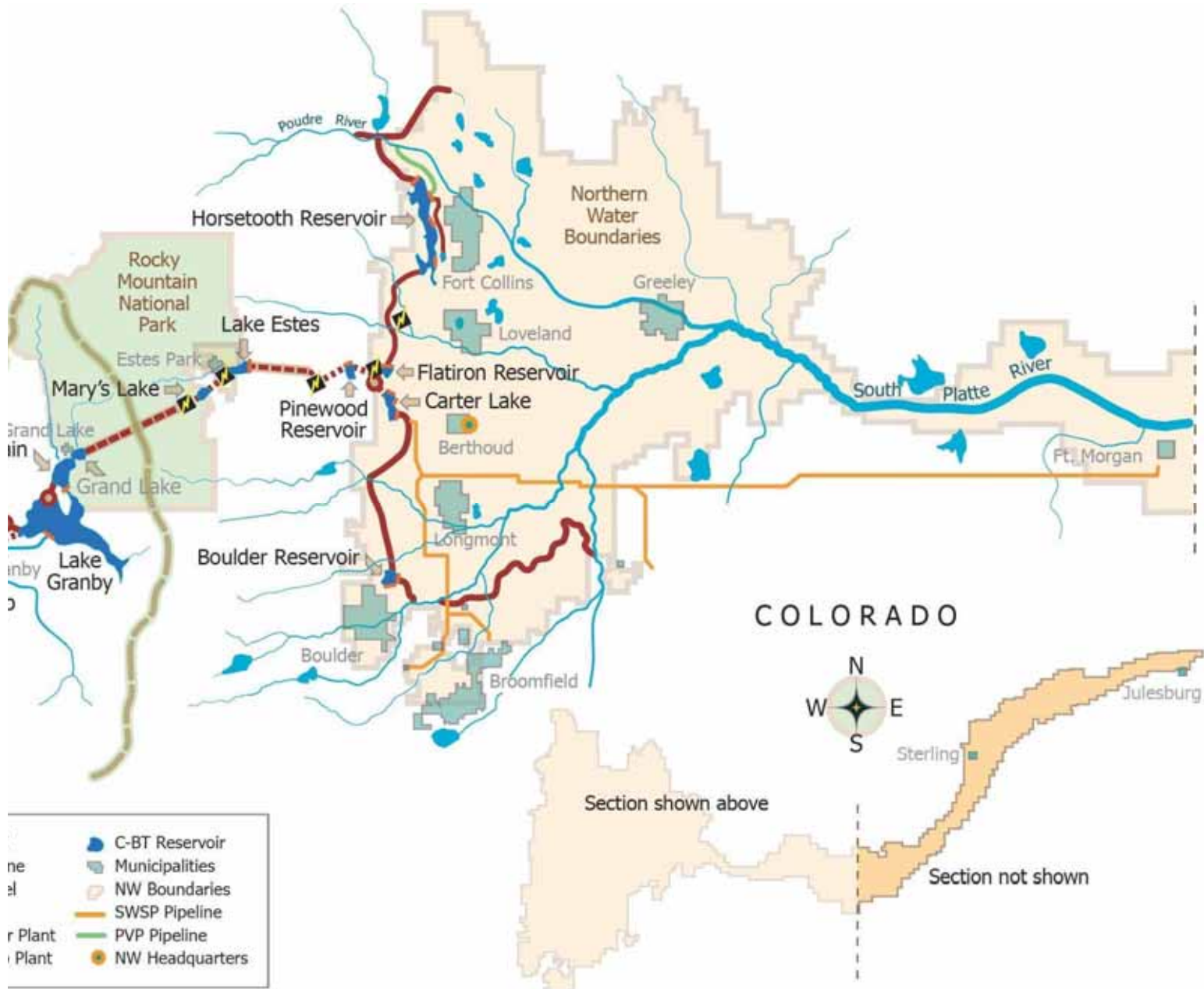
# NORTHERN WATER DAILY PLANNING MODEL

Luke Shawcross, Northern Water

RiverWare User Group Meeting  
August 27, 2013





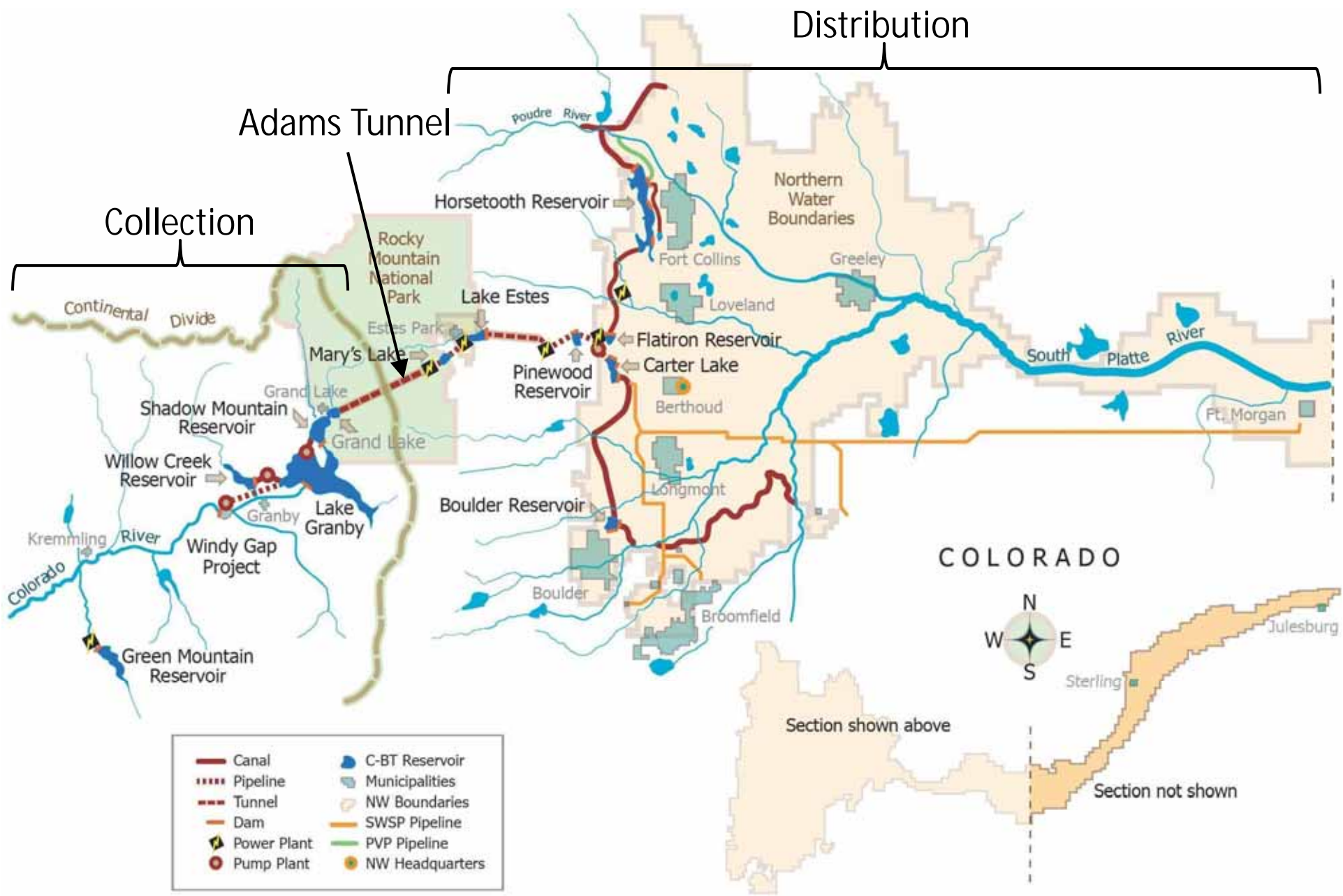


# COLORADO



Section shown above

Section not shown



Distribution

Adams Tunnel

Collection

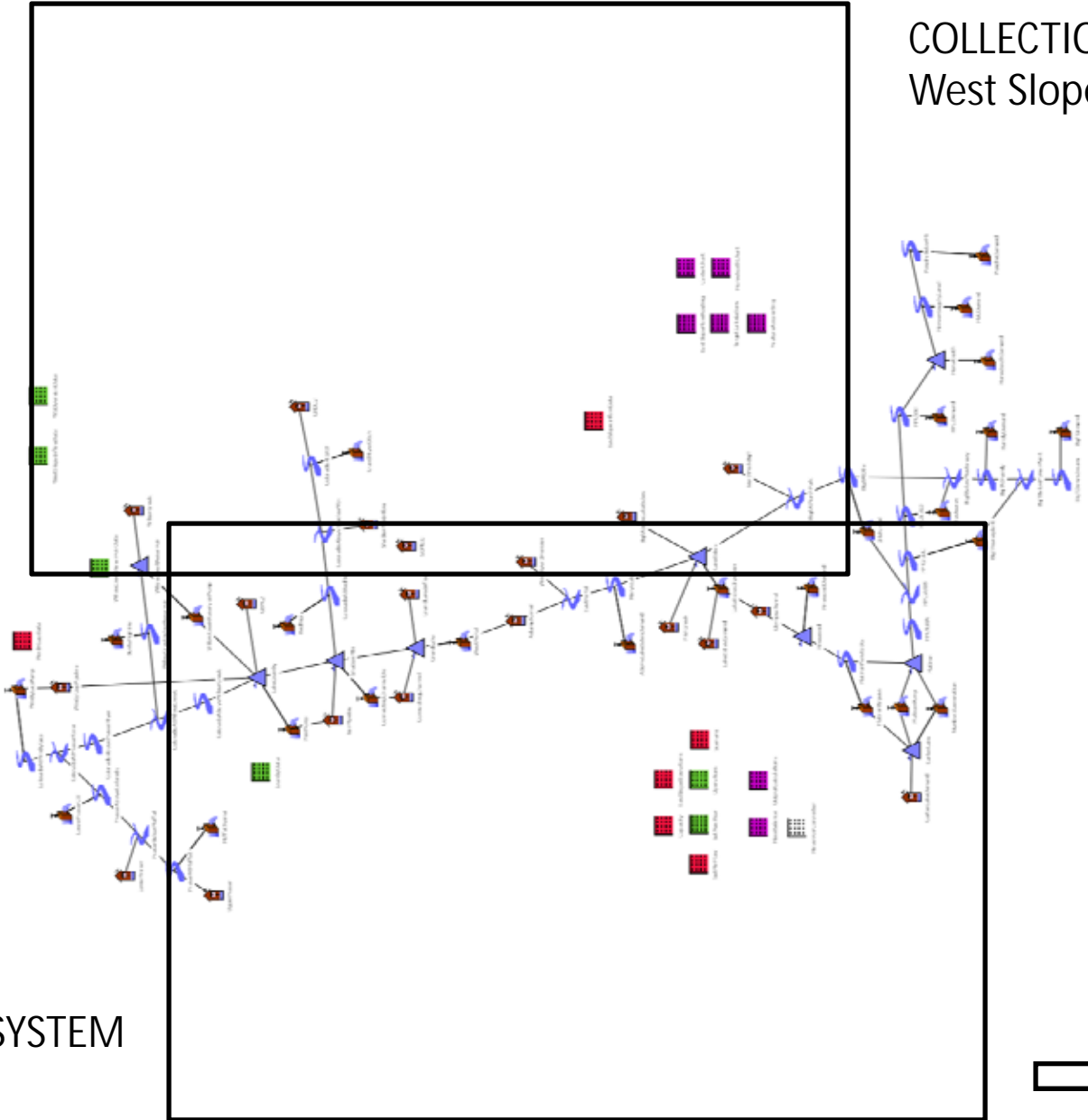
COLORADO



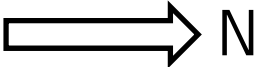
Section shown above

Section not shown

COLLECTION SYSTEM  
West Slope



DISTRIBUTION SYSTEM  
East Slope

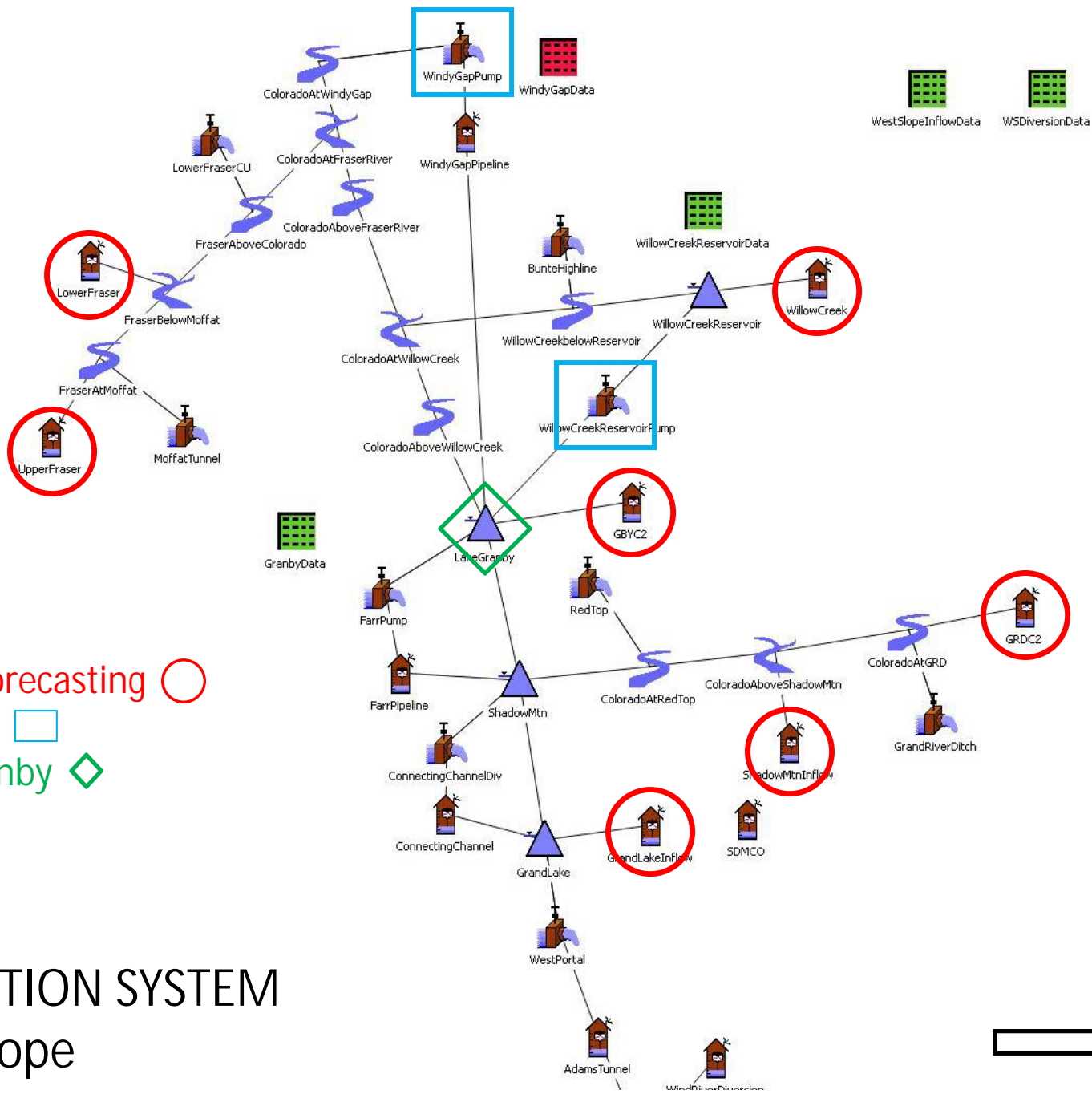






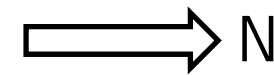
COLLECTION SYSTEM - West Slope





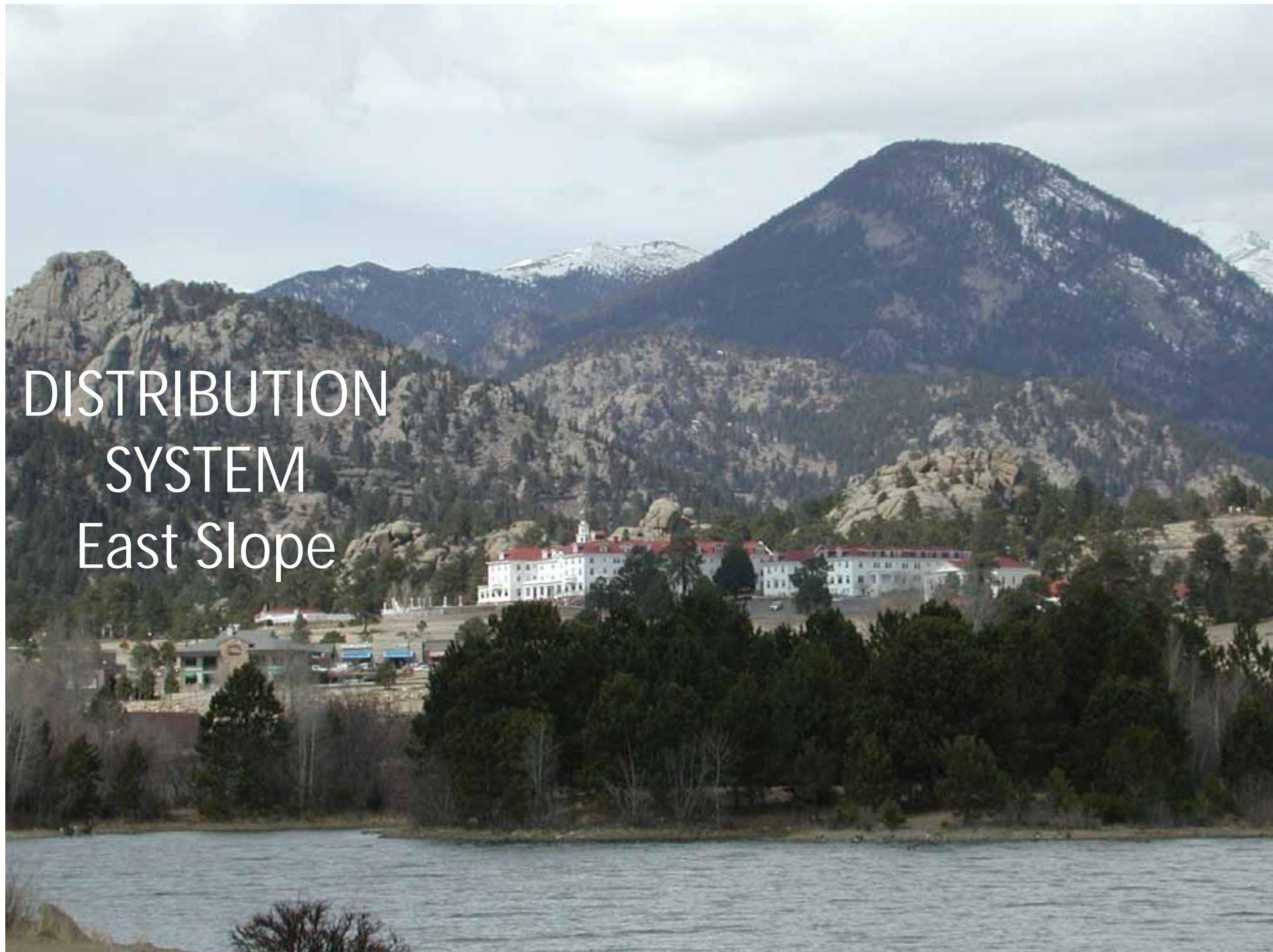
Inflow Forecasting ○  
 Pumping □  
 Lake Granby ◇

# COLLECTION SYSTEM West Slope



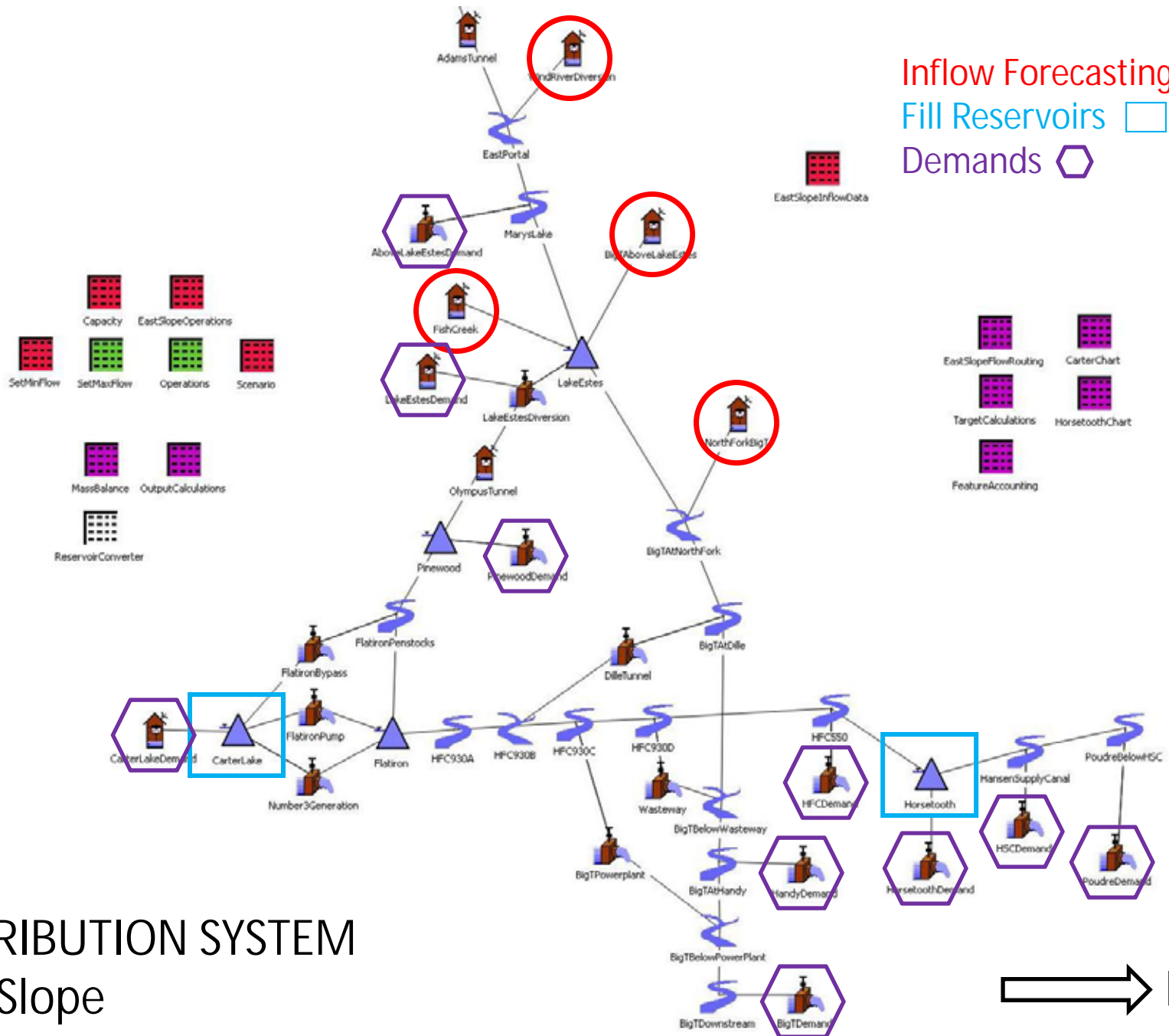




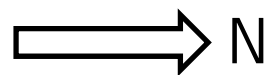


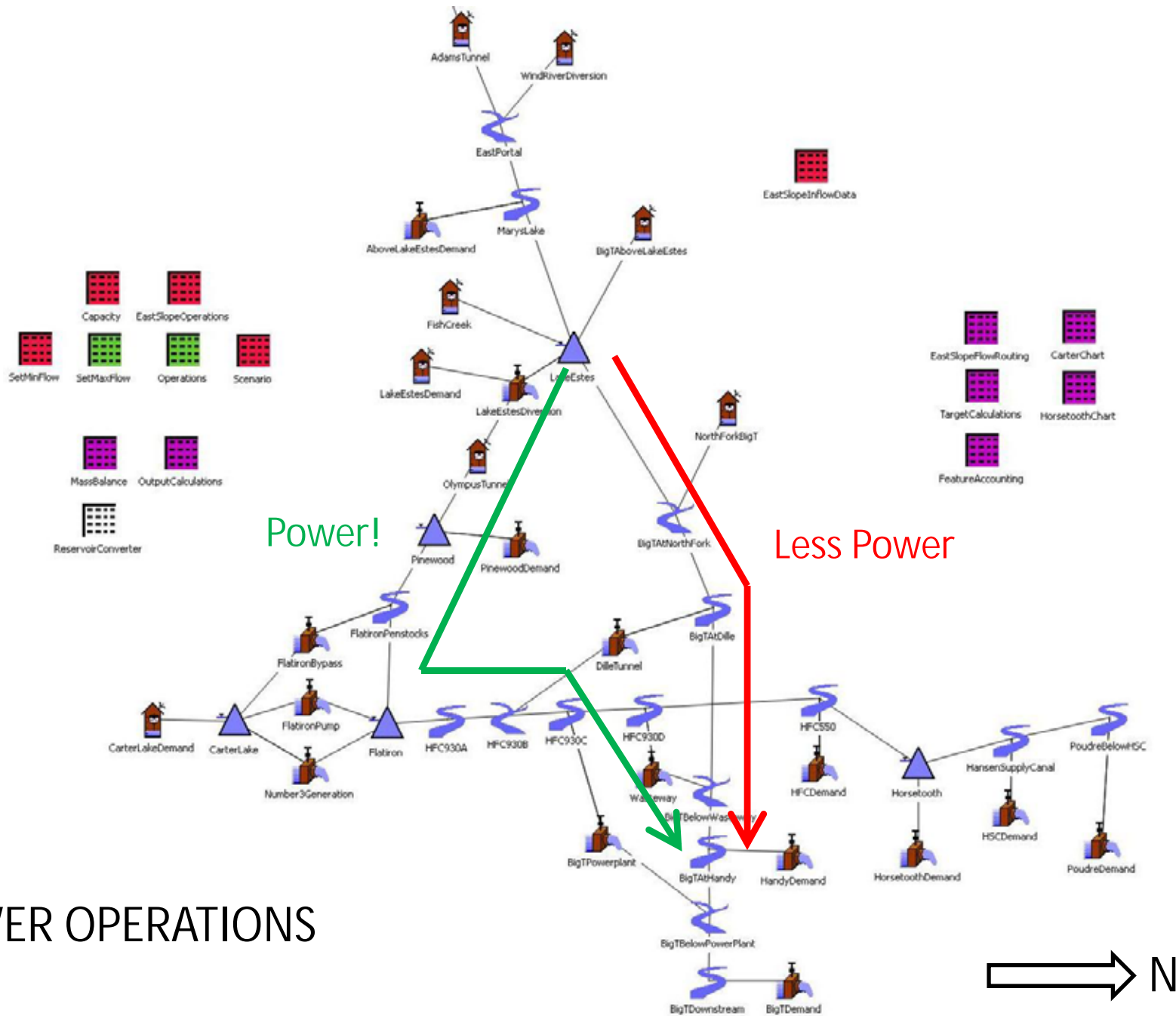
DISTRIBUTION  
SYSTEM  
East Slope





DISTRIBUTION SYSTEM  
East Slope



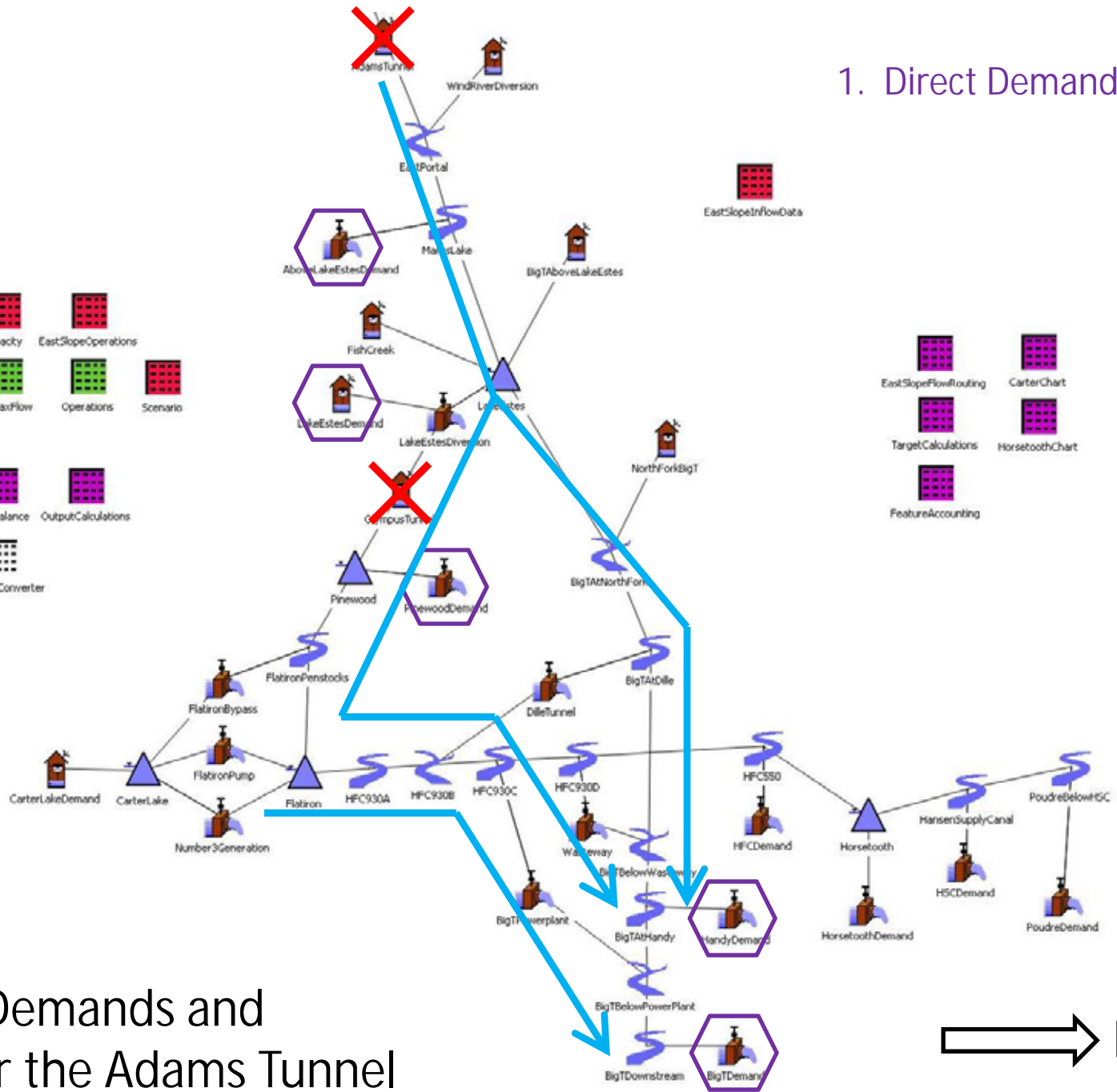
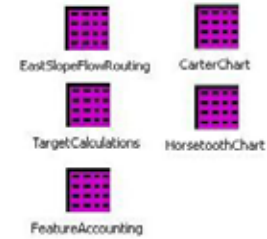
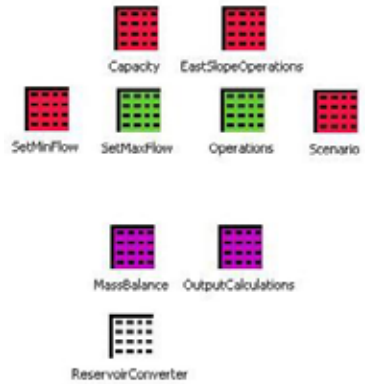


# POWER OPERATIONS



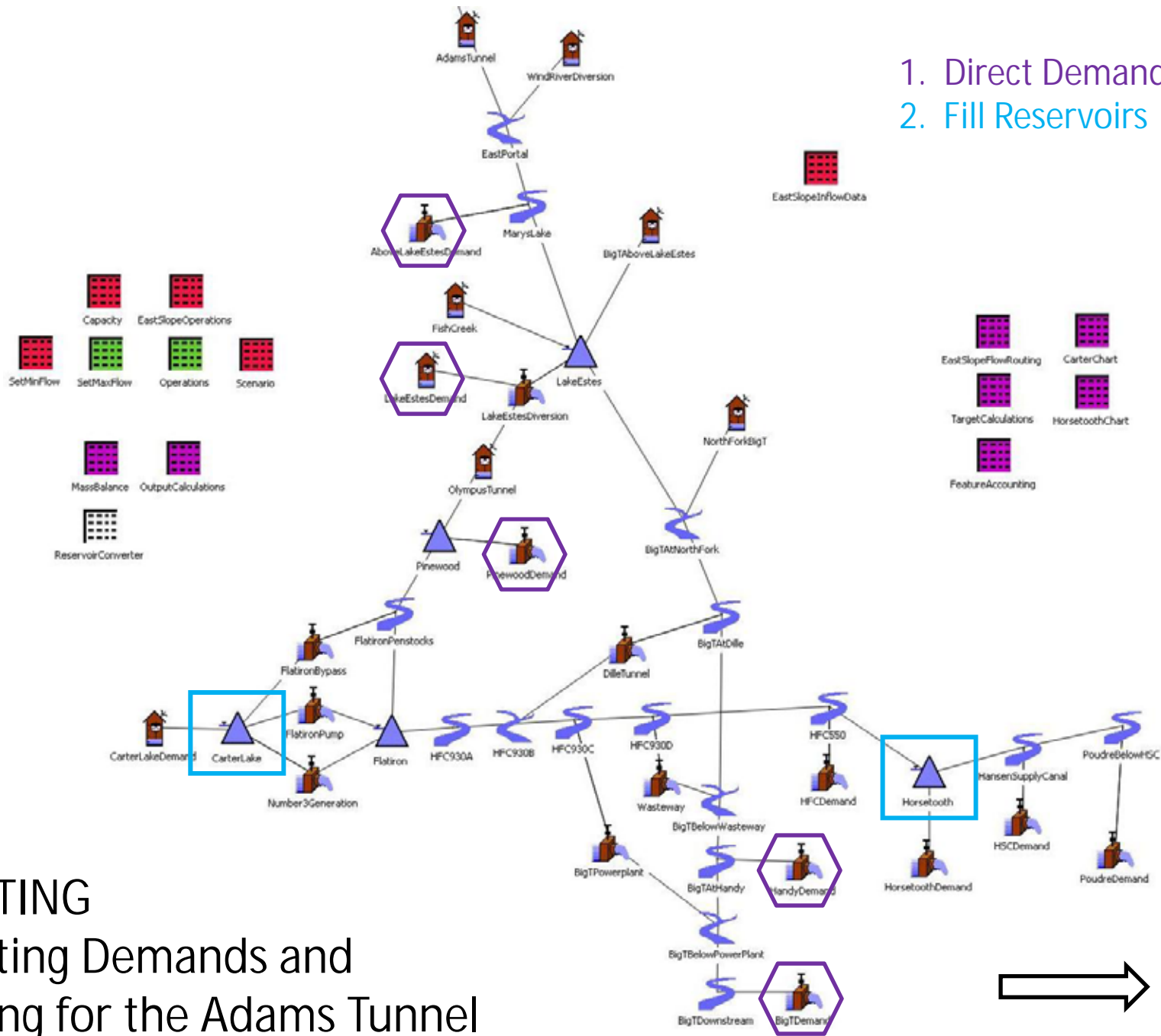


# 1. Direct Demands

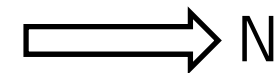


ROUTING  
Meeting Demands and  
Solving for the Adams Tunnel

1. Direct Demands 
2. Fill Reservoirs 

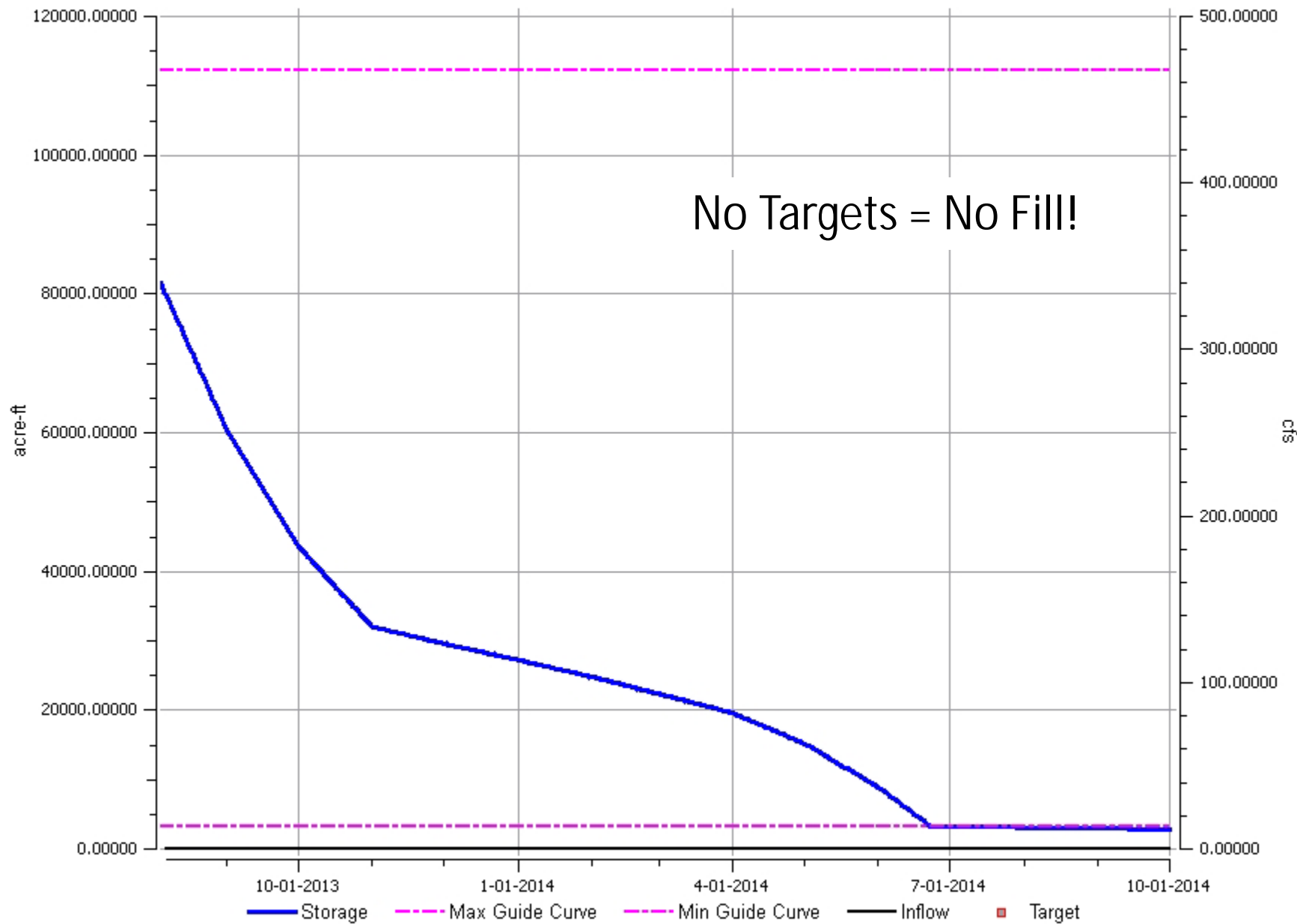


ROUTING  
Meeting Demands and  
Solving for the Adams Tunnel

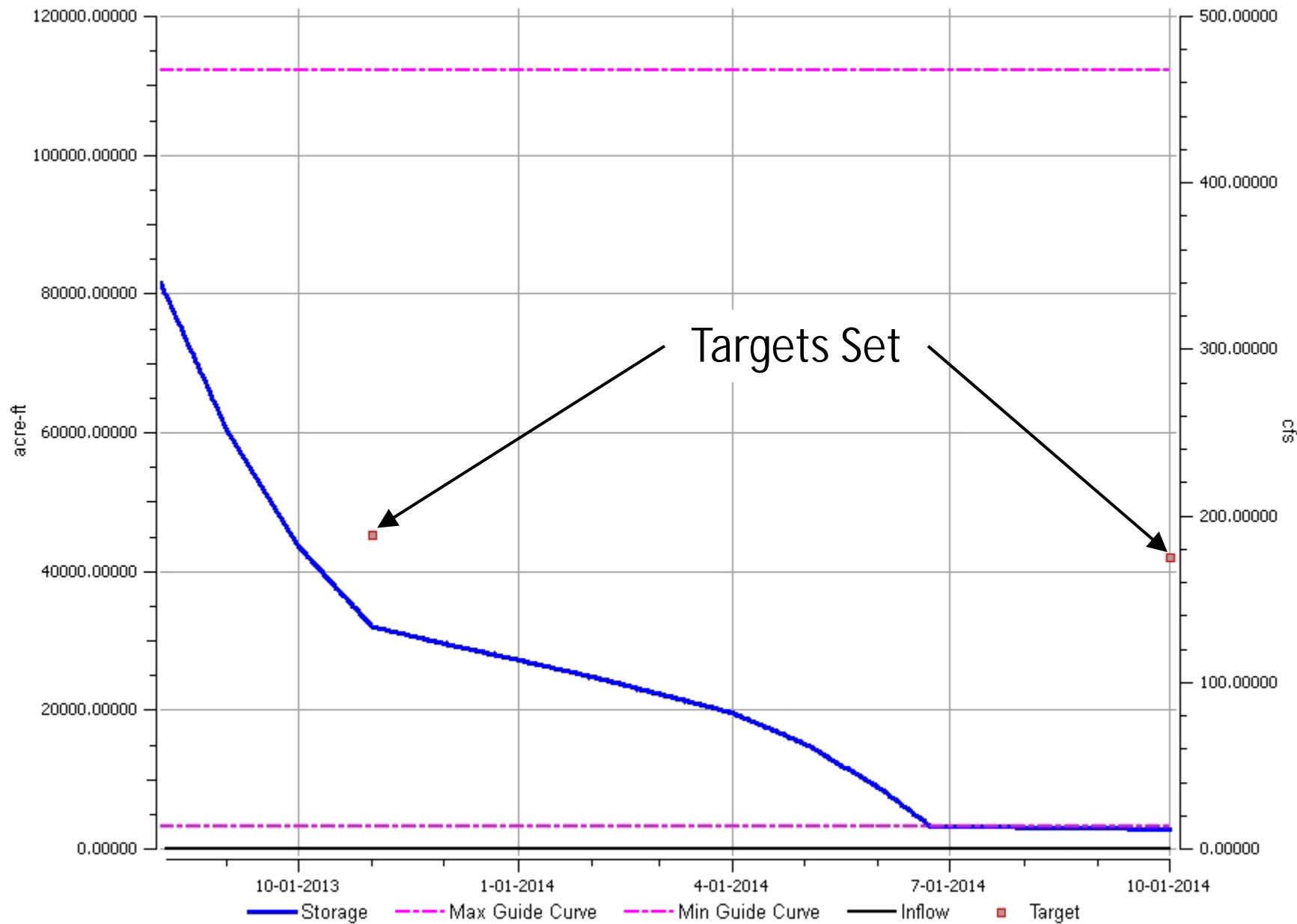




### CarterLake



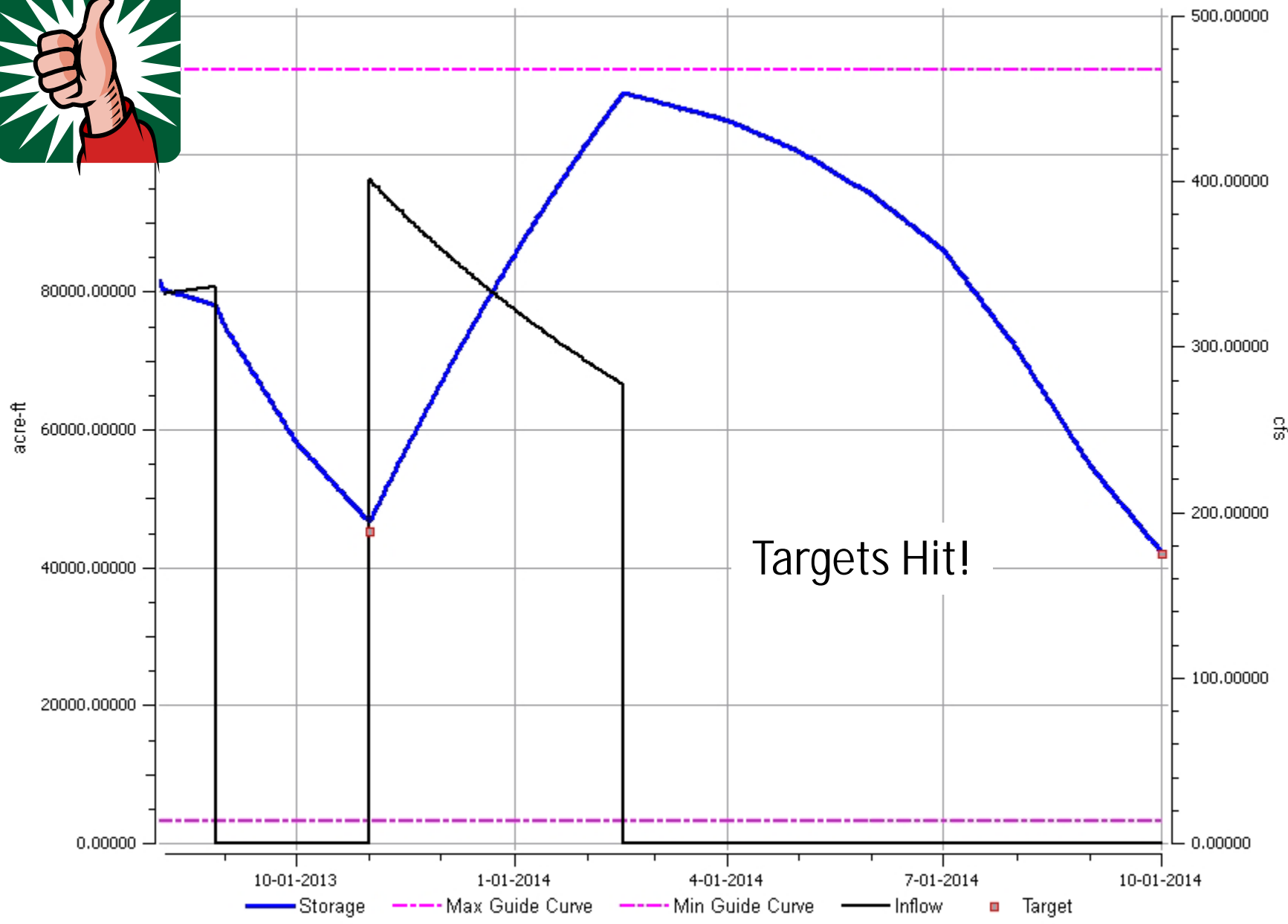
### CarterLake





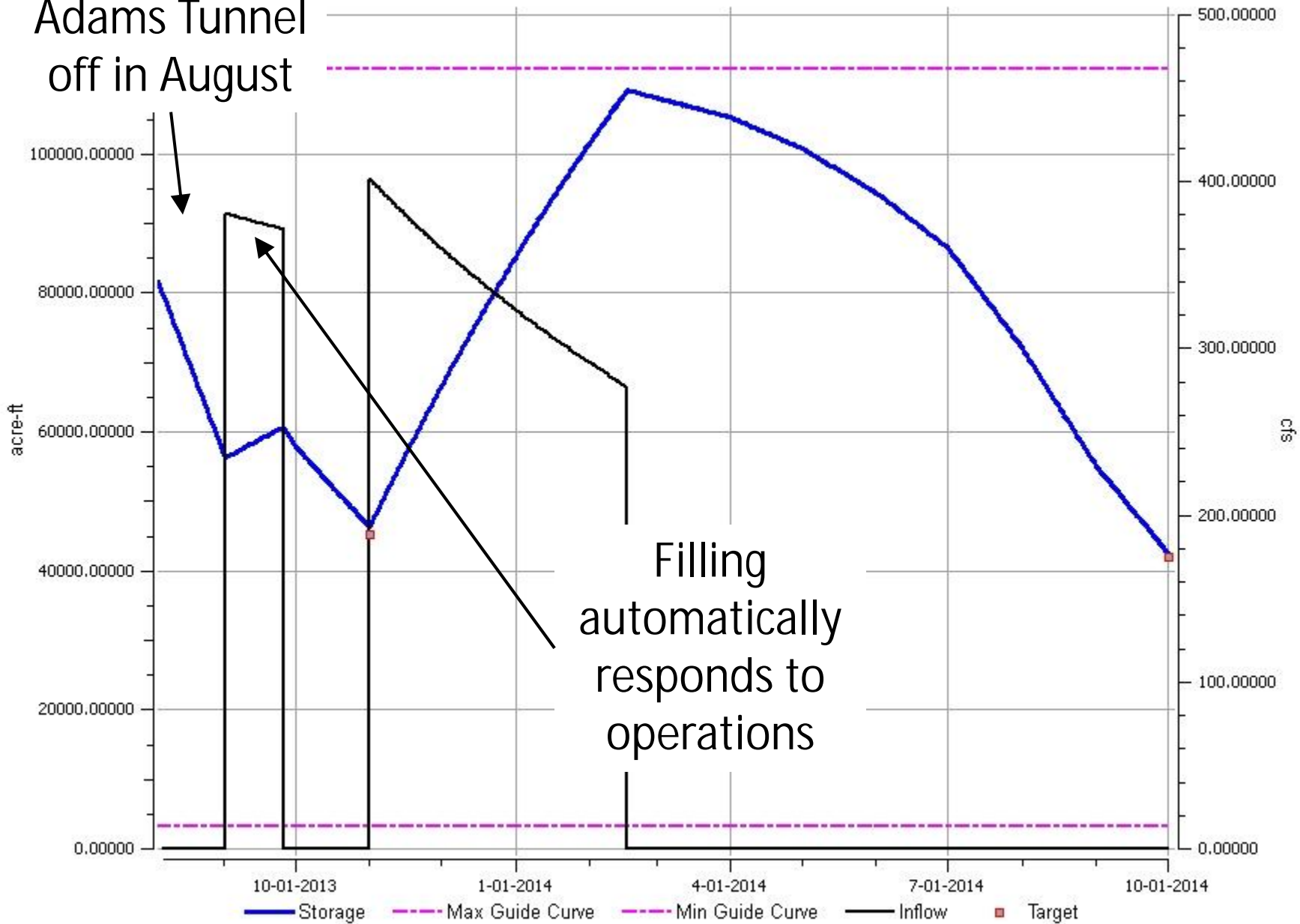


### CarterLake



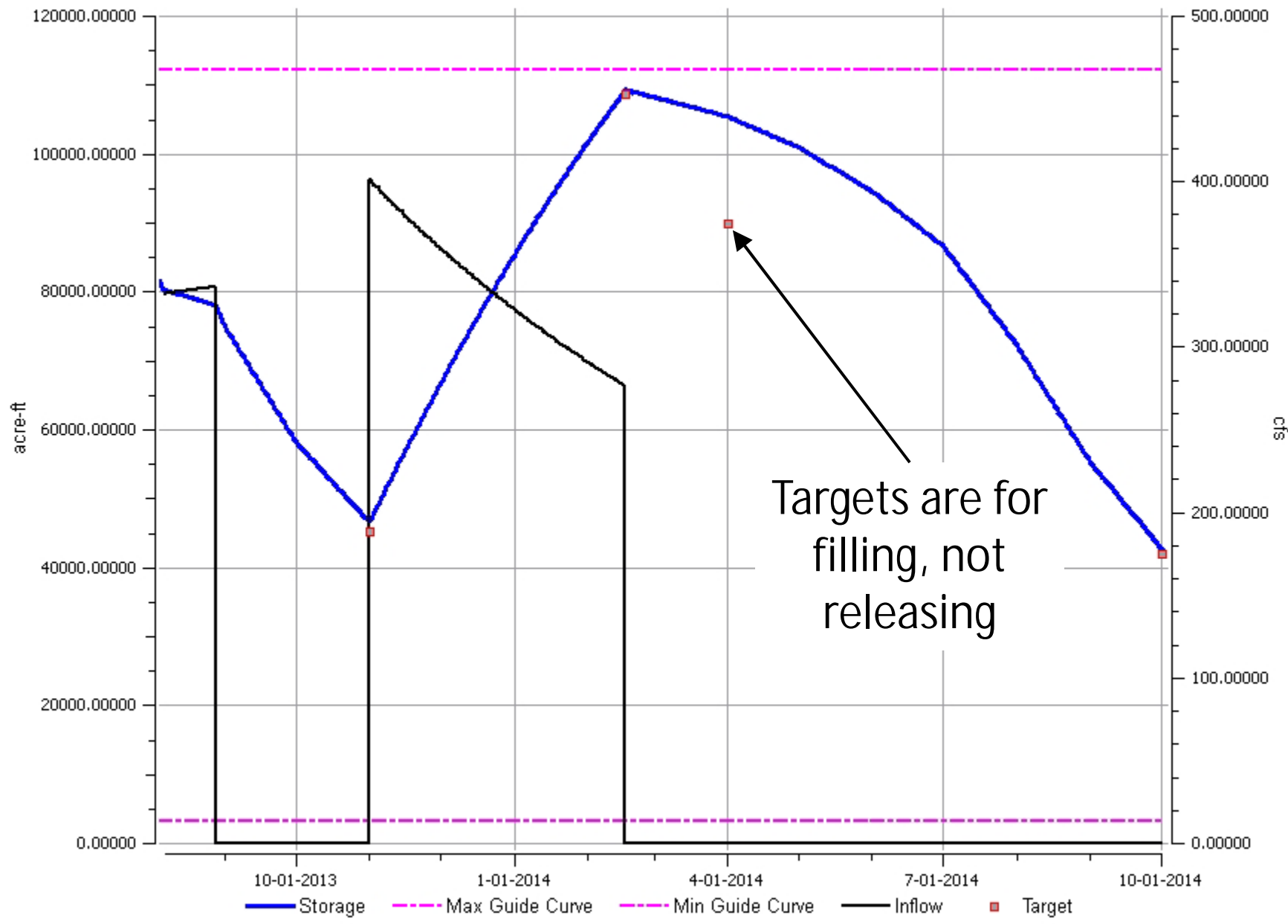
CarterLake

Adams Tunnel  
off in August

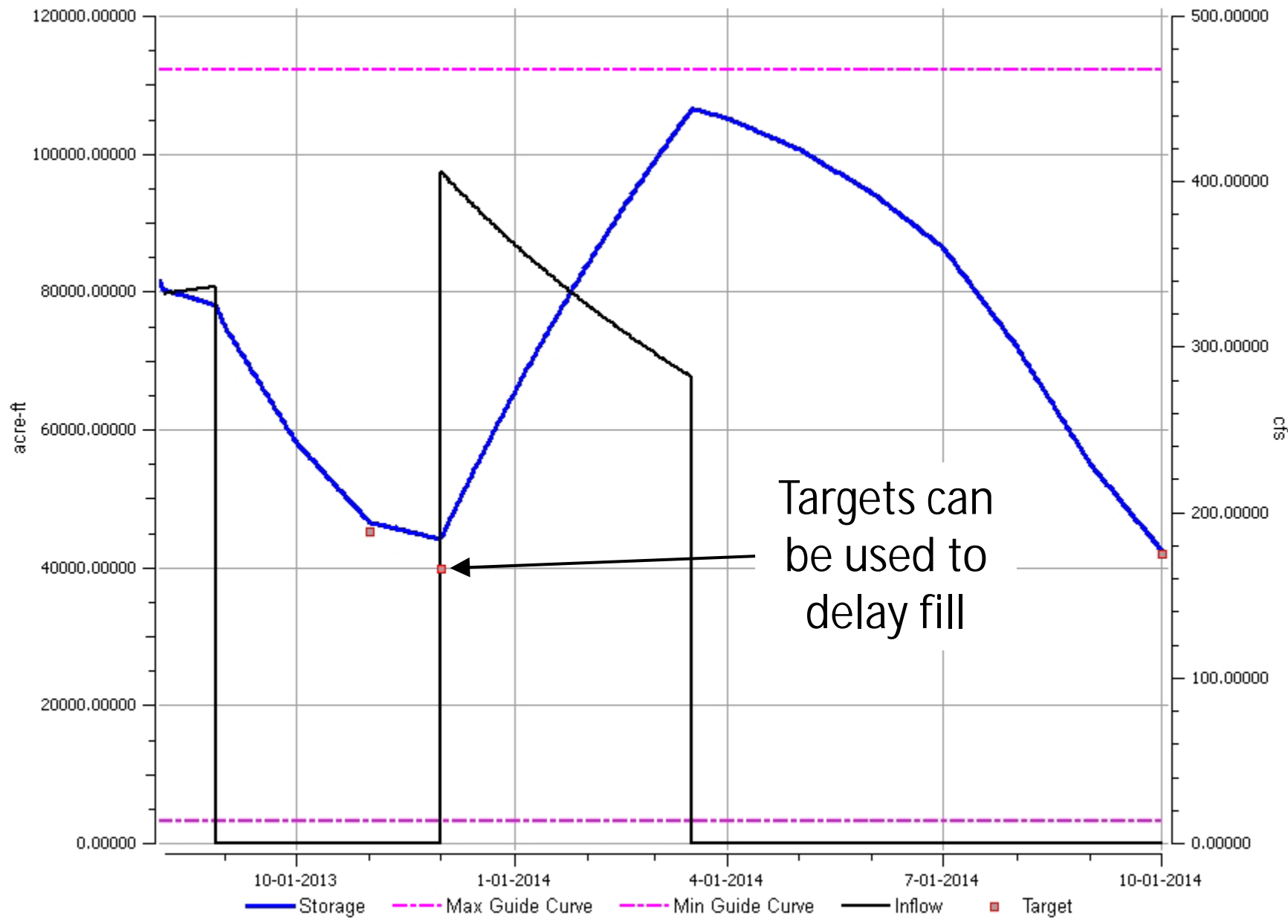




CarterLake

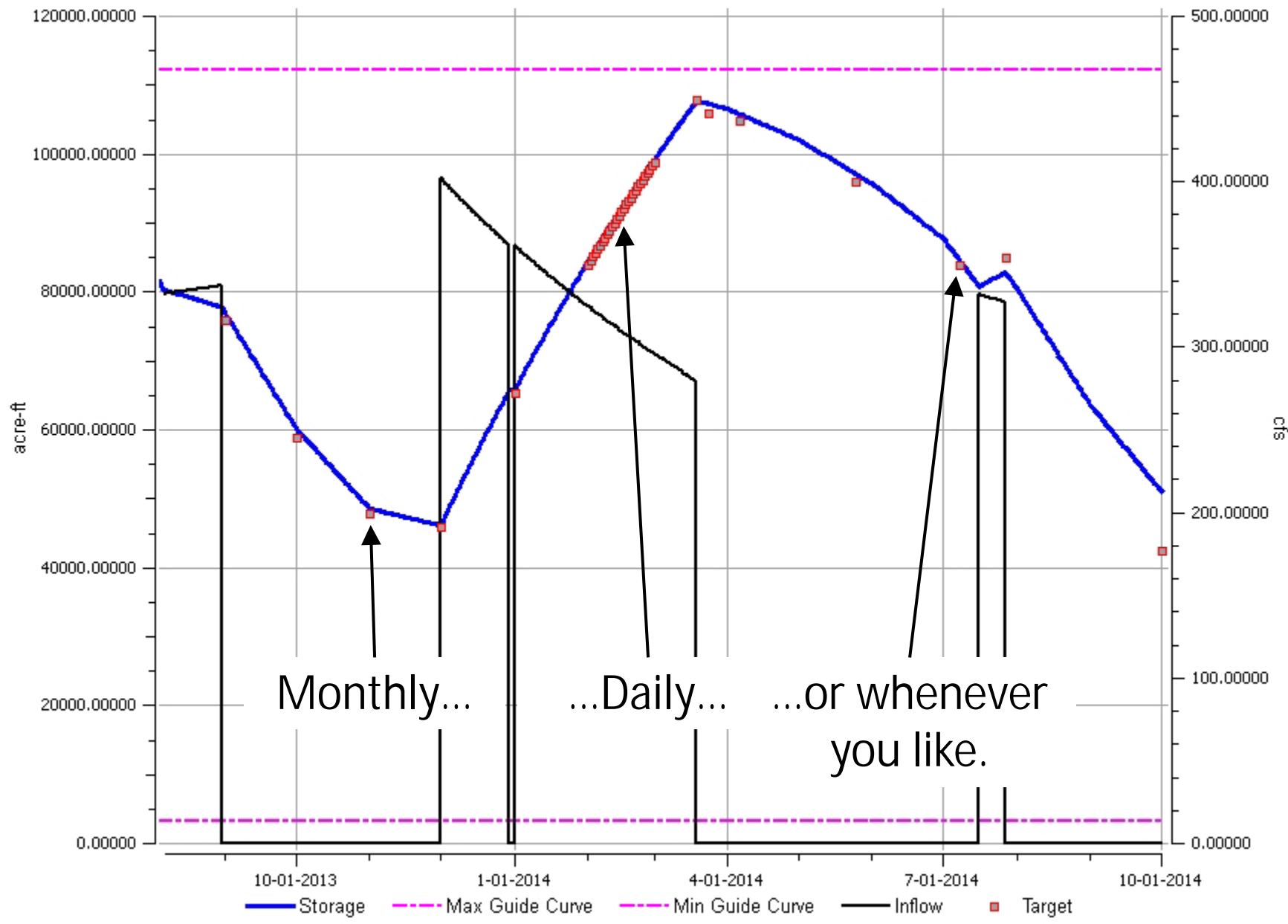


CarterLake



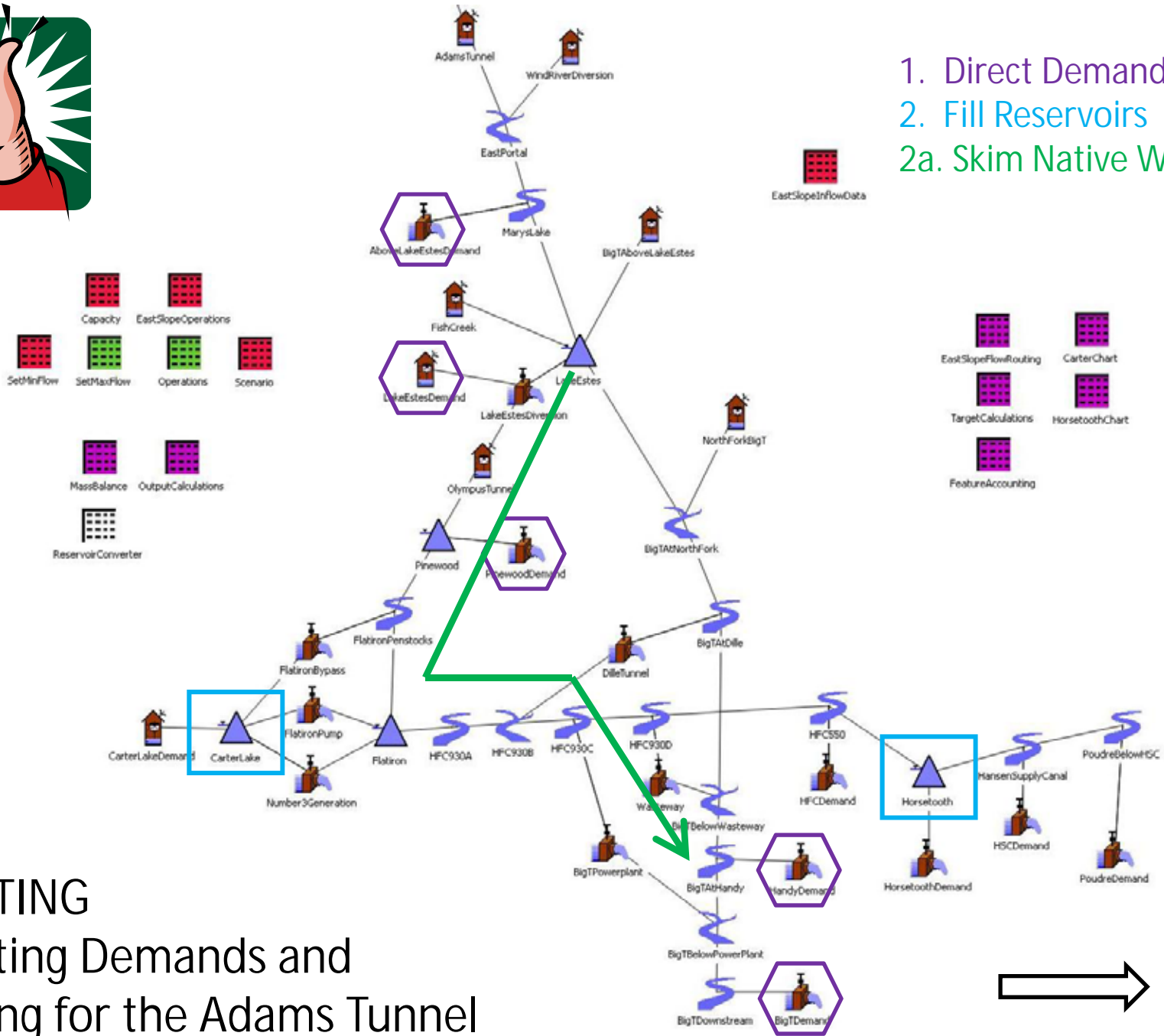


# CarterLake










1. Direct Demands 
2. Fill Reservoirs 
- 2a. Skim Native Water 



ROUTING  
Meeting Demands and  
Solving for the Adams Tunnel

# Summing Up

-  Streamflow forecast ensembles for spill prediction and operation (MRM)
-  Elegant handling of MRM output
-  Automatic routing of project water around outages and operations
-  Automatic flexible reservoir target handling
-  Skimming native flows for power generation





Questions?