Preliminary CAMP Modeling Results

Medium Packages

- -Demand Reduction Emphasis
- -Recharge Emphasis

Fish and Wildlife Sub-Committee

CAMP Meeting
July 23, 2008
Burley, Idaho

Purpose of Modeling Effort

Fish and Wildlife Impacts

- Determine changes to river flows and reservoir storage as a result of implementation of the medium scenarios
- Help identify key stream reaches and issues that may impact fish and wildlife during CAMP implementation
- Help identify potential benefits to fish and wildlife or opportunities to improve fish and wildlife resources through the CAMP process
- Cooperative effort between Idaho Power and the Idaho Department of Water Resources

Modeling Procedures and Major Assumptions

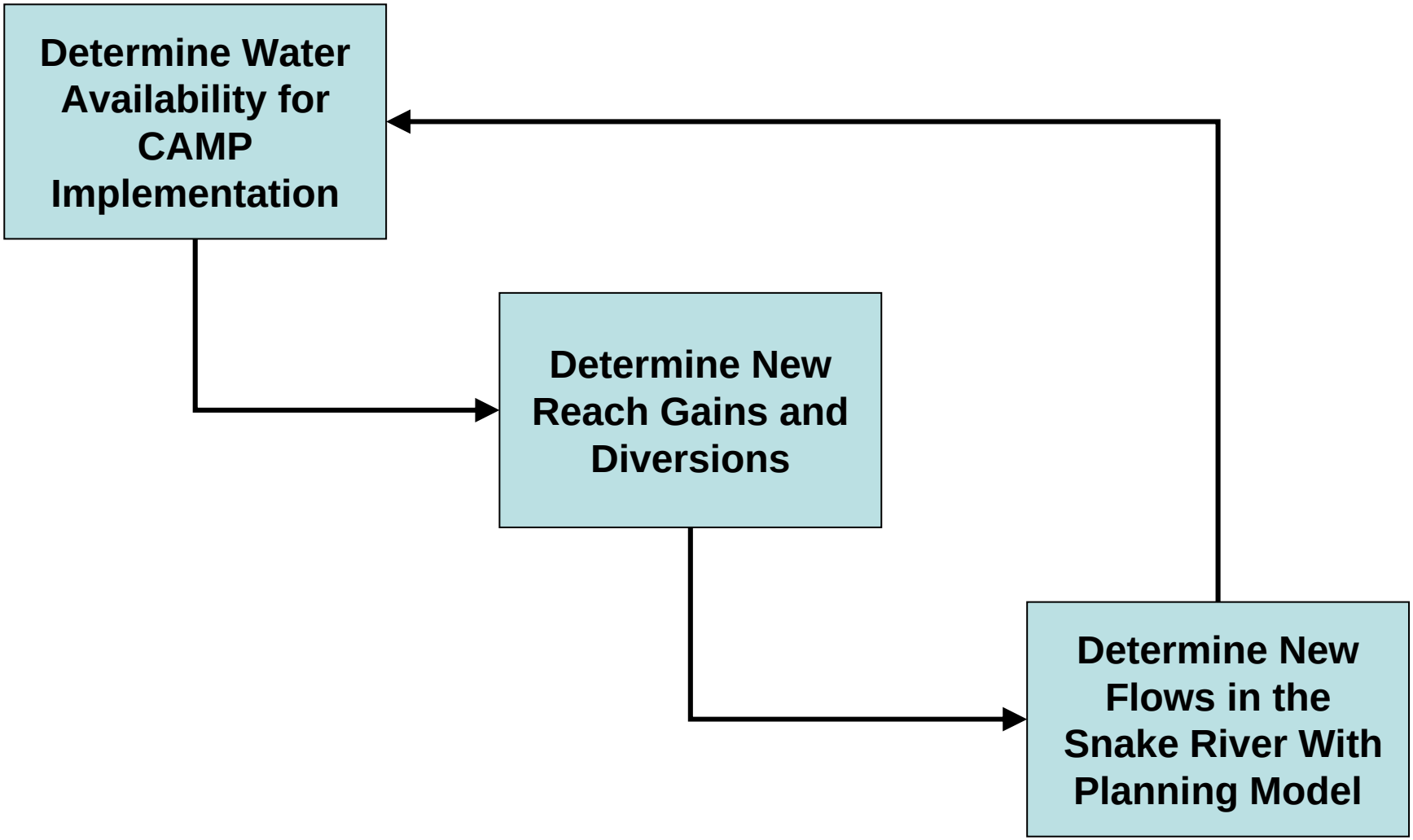
- Utilize the Eastern Snake Plain Ground Water Model, Snake River Planning Model, Recharge Water Availability Tool and spreadsheet interfaces
- Modeled years 1980 through 2005 under current management conditions
- Planning model integrates reach gains, diversions, assigned flows and reservoir storage to calculate river flows and reservoir releases
- The planning model does not calculate diversions based on priority
- Modeling was done to insure new diversions for implementation of CAMP practices did not result a shortage of water for irrigation

Modeling Procedures and Major Assumptions

- The ESPA Ground Water Model shows gains over existing flows and does not infer trends of spring discharge
- Practices were not phased in but implemented at full capacity in year one.
- Priority of Diversions were Milner, Aberdeen Springfield, Great Western and Egin.
- Data should be considered as preliminary and best understood through comparisons to a modeled base case scenario, as presented here.

Model Process

Accounting for Yearly Changes in Water Availability



Modeling Procedures and Major Assumptions

- Medium Package Targets
  - Medium Package Recharge Emphasis
    - Soft Conversions - 100,000 Acft/yr
    - Recharge - 400,000 Acft/yr
    - Demand Reduction - 100,000 Acft/yr
    - Total Package – 600,000 Acft/yr
  - Medium Package Demand Reduction Emphasis
    - Soft Conversions - 100,000 Acft/yr
    - Recharge - 150,000 Acft/yr
    - Demand Reduction - 350,000 Acft/yr
    - Total Package – 600,000 Acft/yr
- The modeling does not constitute an endorsement of any scenario or address the feasibility of any practice.

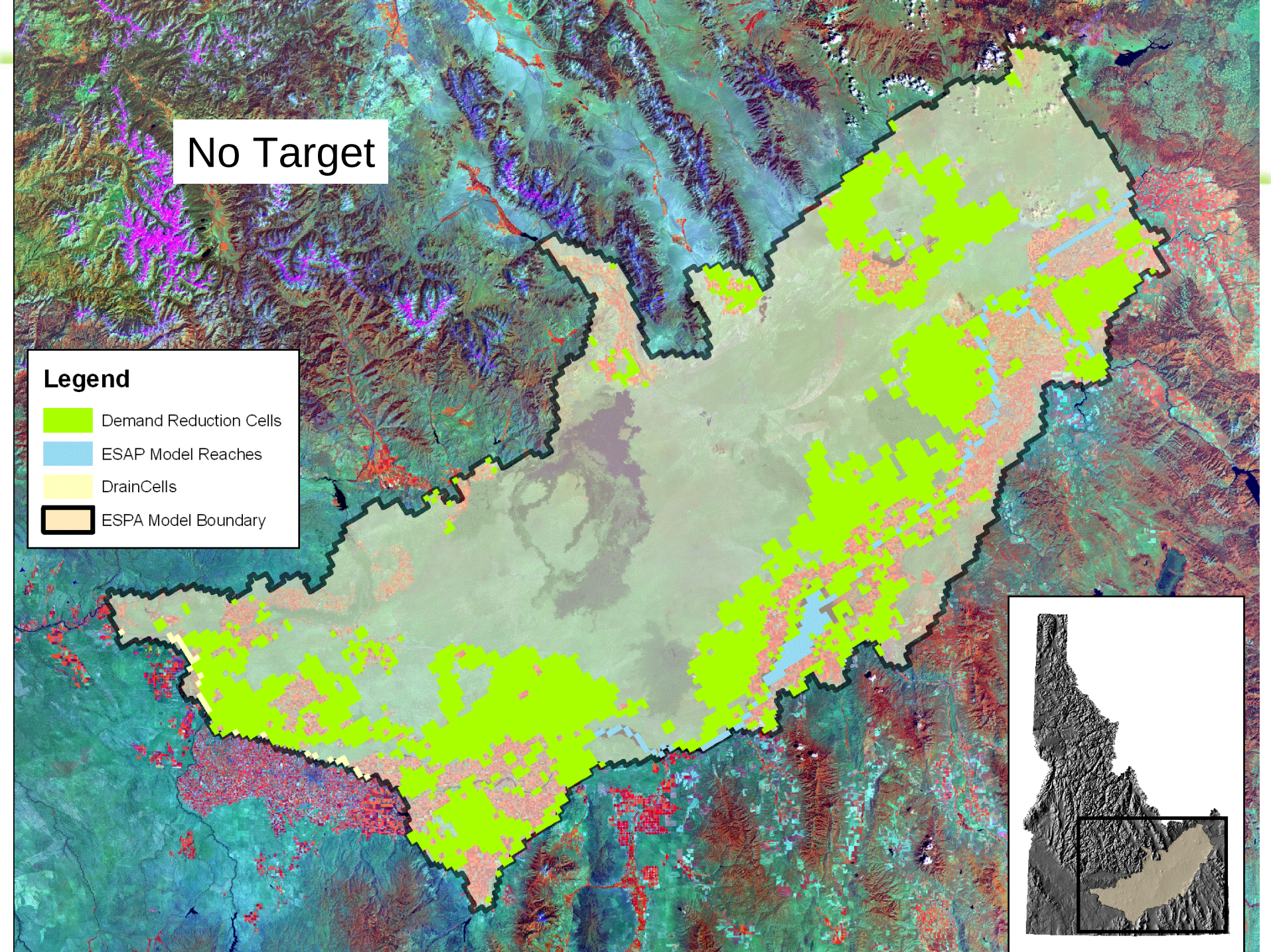
Modeling Procedures and Major Assumptions

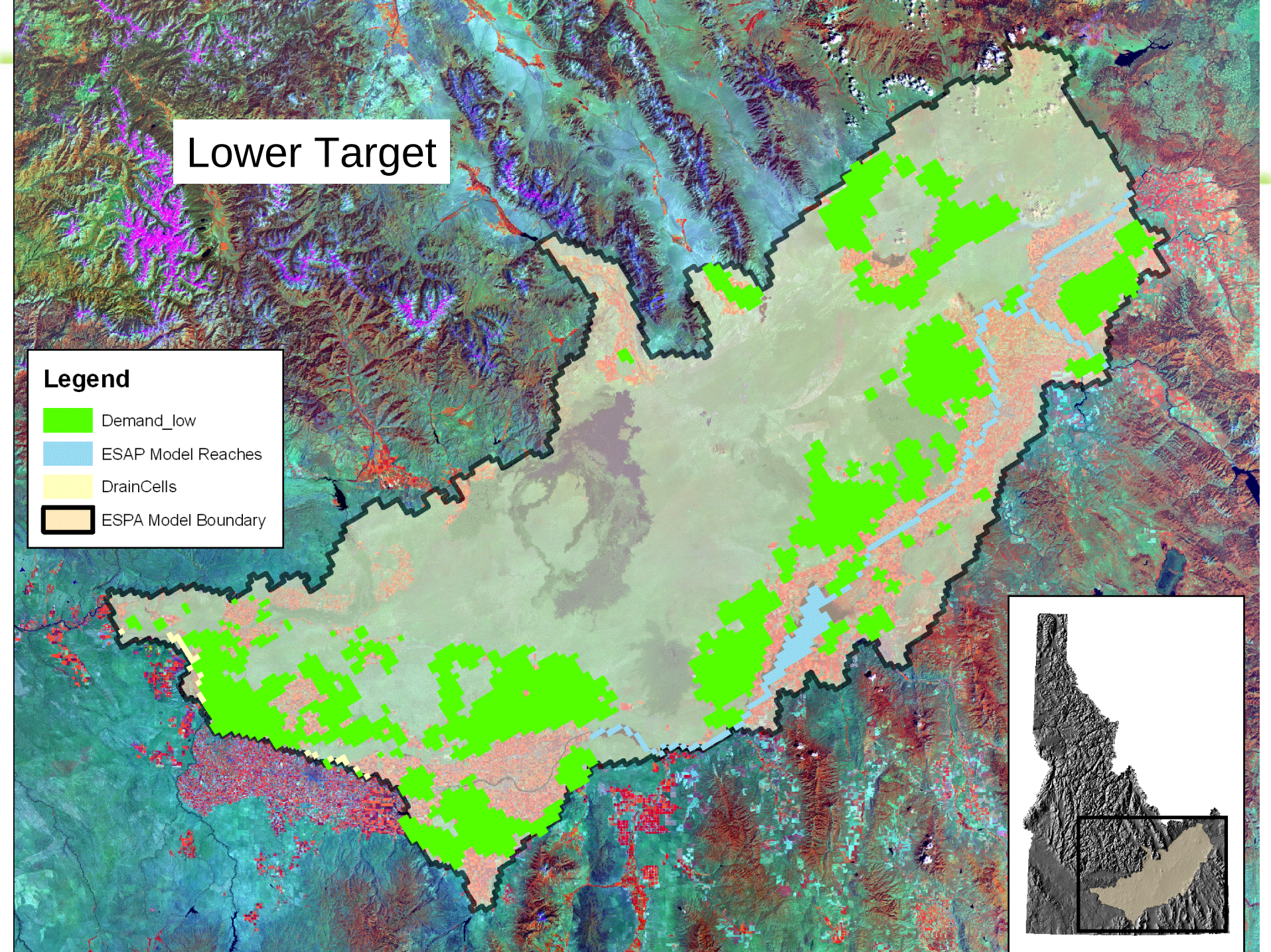
- Modeled Eight Scenarios
  - Medium Package Recharge Emphasis
    - No Target for Demand Reduction
    - Lower Target for Demand Reduction
    - Mid Target for Demand Reduction
    - Upper Target for Demand Reduction
  - Medium Package Demand Reduction Emphasis
    - No Target for Demand Reduction
    - Lower Target for Demand Reduction
    - Mid Target for Demand Reduction
    - Upper Target for Demand Reduction

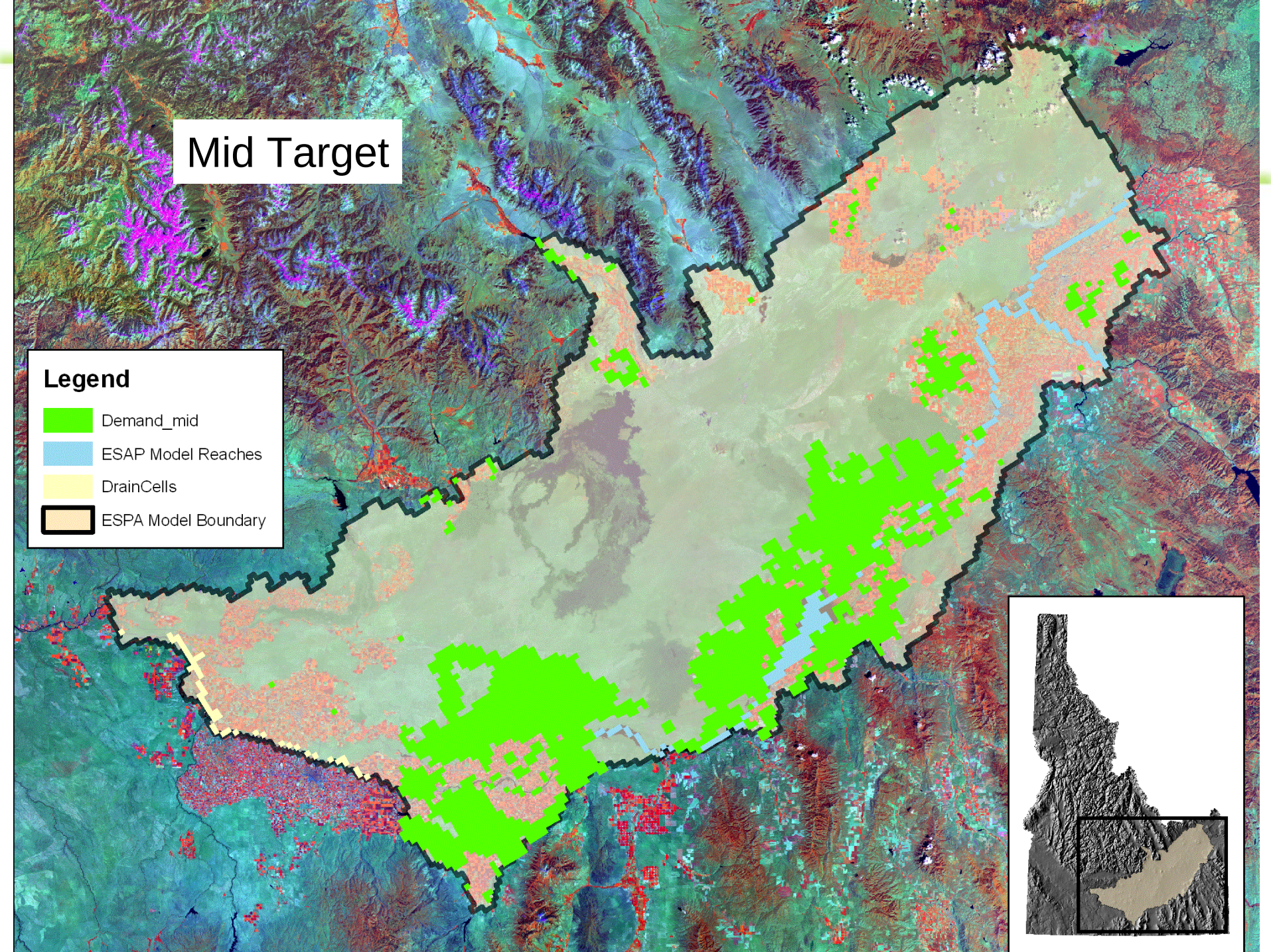
Modeling Procedures and Major Assumptions

Targeted Demand Reductions

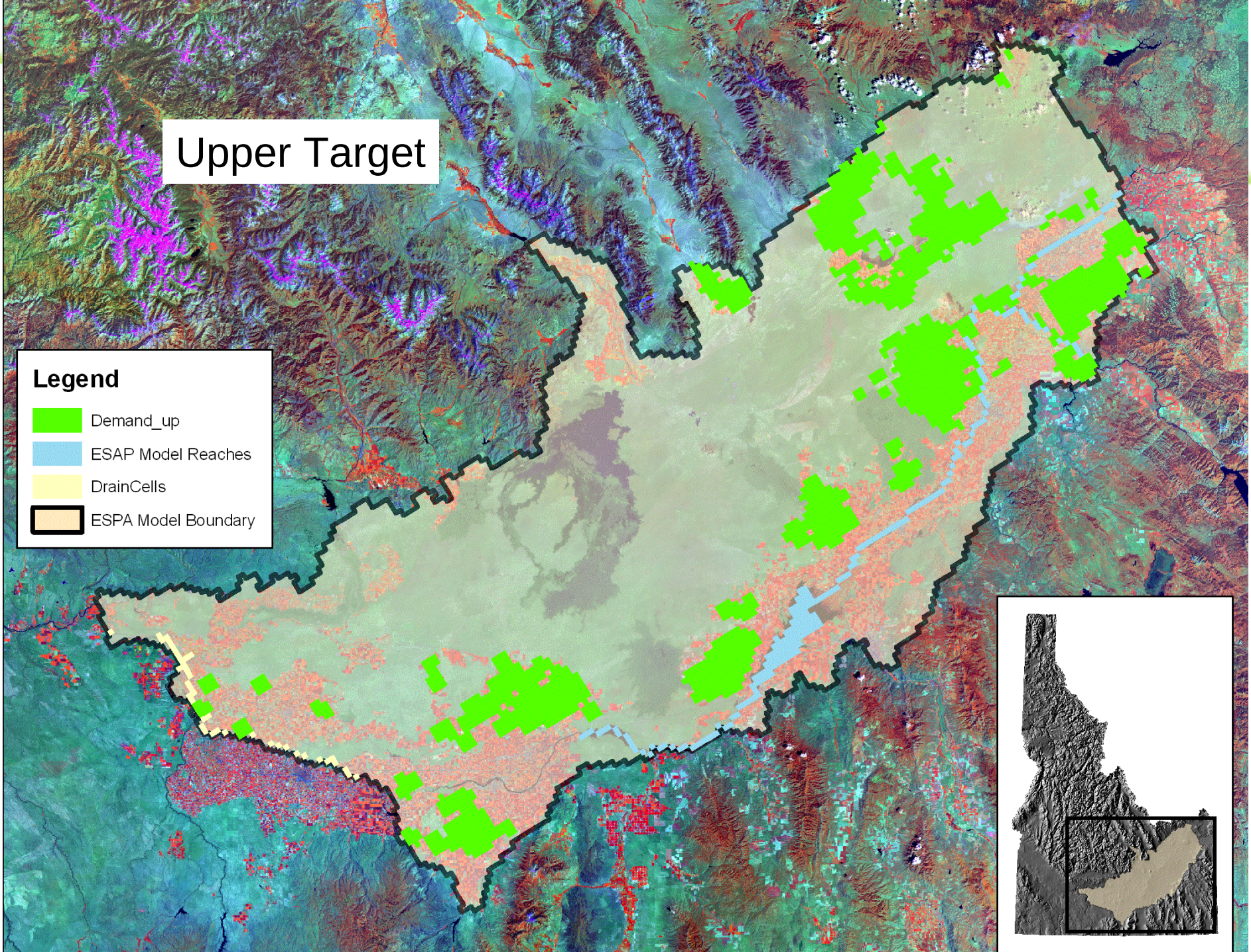
- Analysis was done to determine the impact of targeting demand reduction on the Eastern Snake River Plain
- Areas targeted were
  - Lower
  - Mid
  - Upper


No Target
Legend
Demand Reduction Cells
ESAP Model Reaches
DrainCells
ESPA Model Boundary


Lower Target
Legend
Demand_low
ESAP Model Reaches
DrainCells
ESPA Model Boundary


Mid Target
Legend
Demand_mid
ESAP Model Reaches
DrainCells
ESPA Model Boundary

Upper Target



Hydrologic Data

- Average Annual Diversions for the No Target scenarios
- Cumulative discharge graphs for the No Target scenarios
- Modeled flows at three points on the Snake River for the No Target Scenarios
- End of Month (EOM) reservoir storage for American Falls and Palisades for the No Target Scenarios
- Reach gain increases for all scenarios

Hydrologic Data

Medium Package Recharge Emphasis Average Annual Practice Application (Acft/yr)					
Demand Reduction Targets		**No Target**	**Upper Target**	**Mid Target**	**Lower Target**
	Planned				
Recharge	**400,000**	507,011	512,141	506,271	479,038
Soft Conversions	**100,000**	51,303	51,413	51,081	51,066
Wood River Recharge	***22,565**	22,565	22,565	22,565	22,565
Total Demand Reduction	**100,000**	99,633	99,683	99,633	99,633
Total	**600,000**	**680,512**	**685,802**	**679,550**	**652,302**

*Not included in 600,000 KAF total

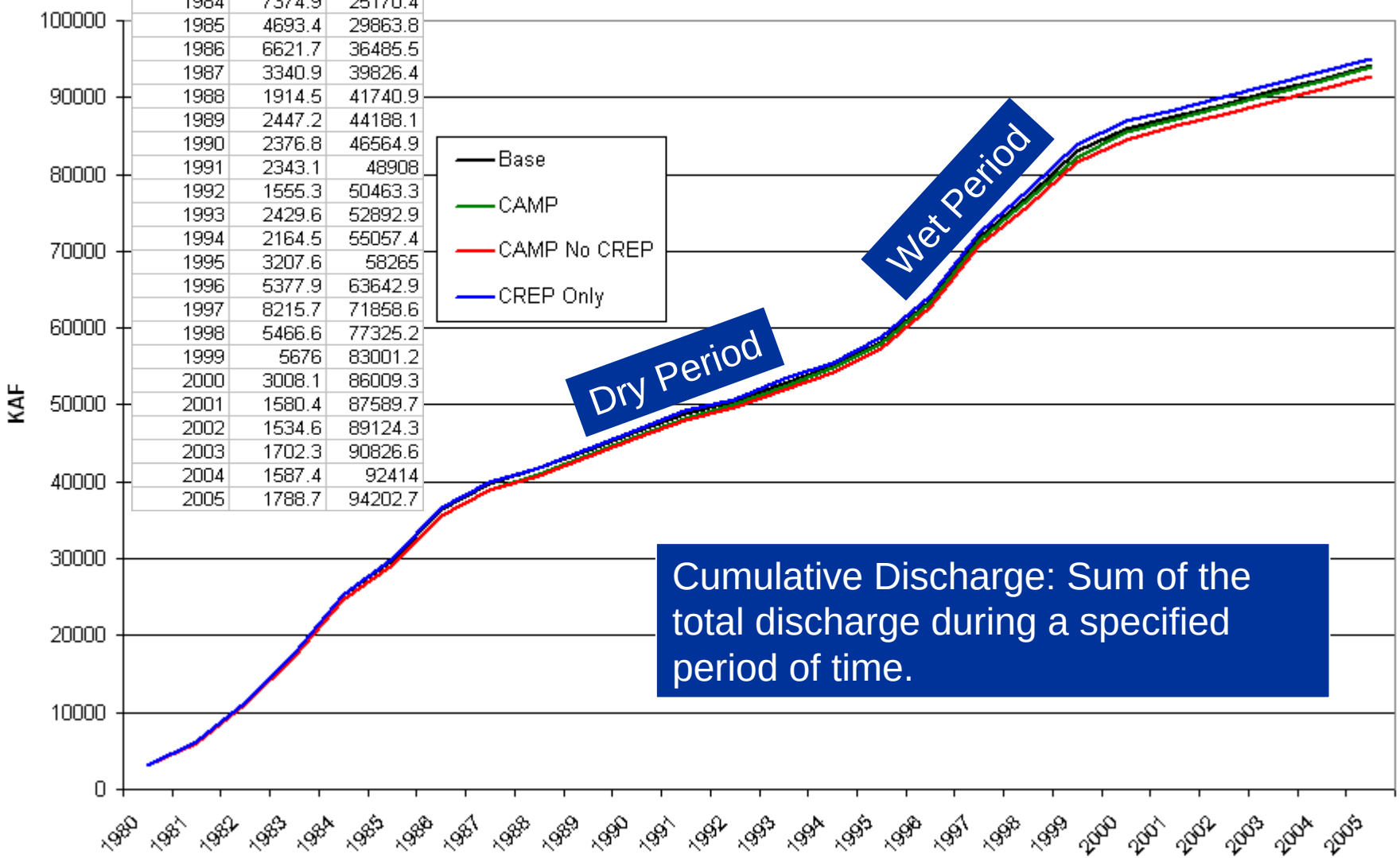
Hydrologic Data

Medium Package Demand Reduction Emphasis Average Annual Practice Application (Acft/yr)					
Demand Reduction Targets		**No Target**	**Upper Target**	**Mid Target**	**Lower Target**
	Planned				
Recharge	**150,000**	286,291	277,479	259,123	268,093
Soft Conversion	**100,000**	61,088	59,867	56,496	57,937
Wood River Recharge	***22,565**	22,565	22,565	22,565	22,565
Total Demand Reduction	**350,000**	348,715	348,715	348,715	348,715
Total	**600,000**	**718,659**	**708,625**	**686,899**	**697,310**

*Not included in 600,000 KAF total

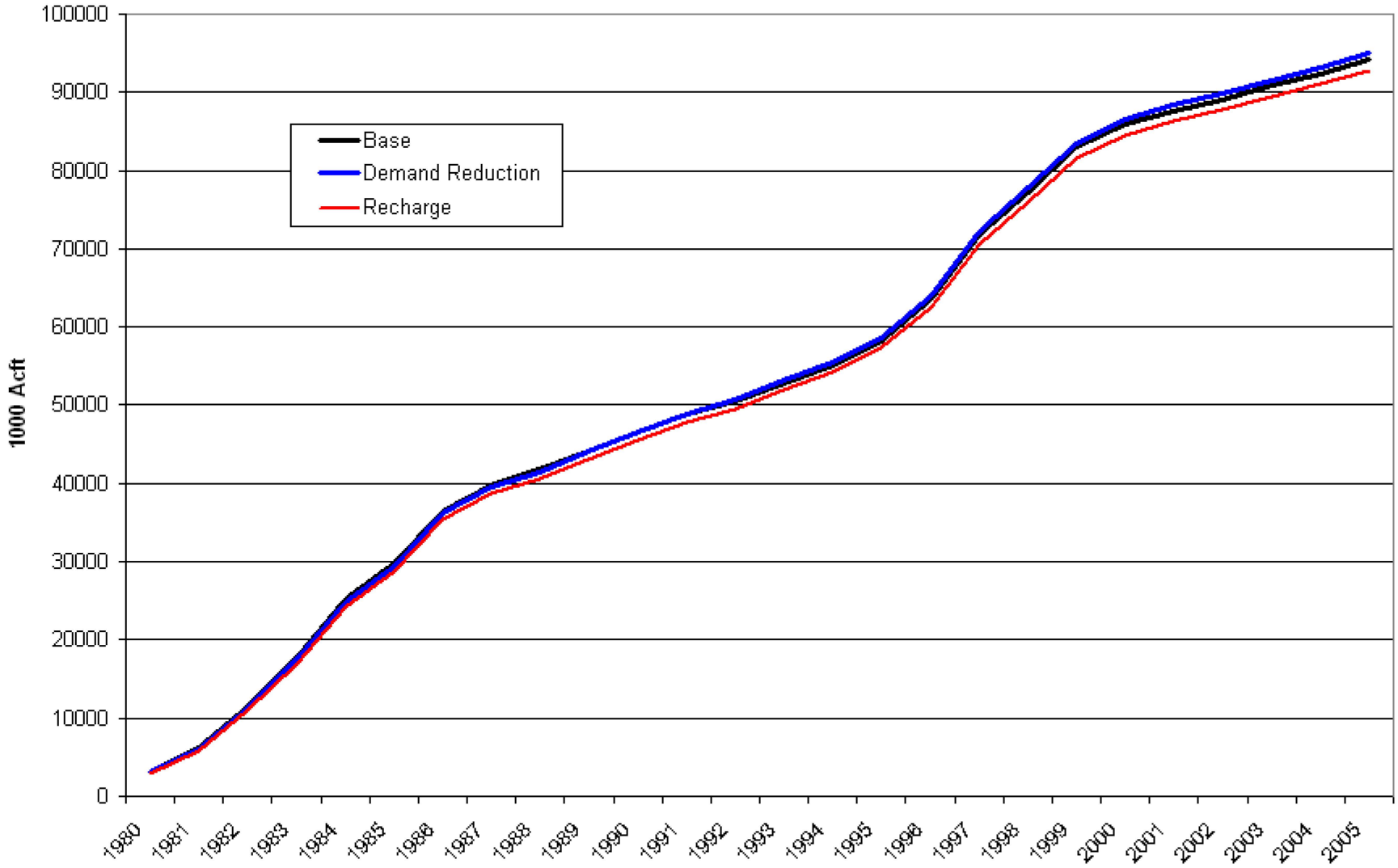
Blackfoot Cumulative Discharge

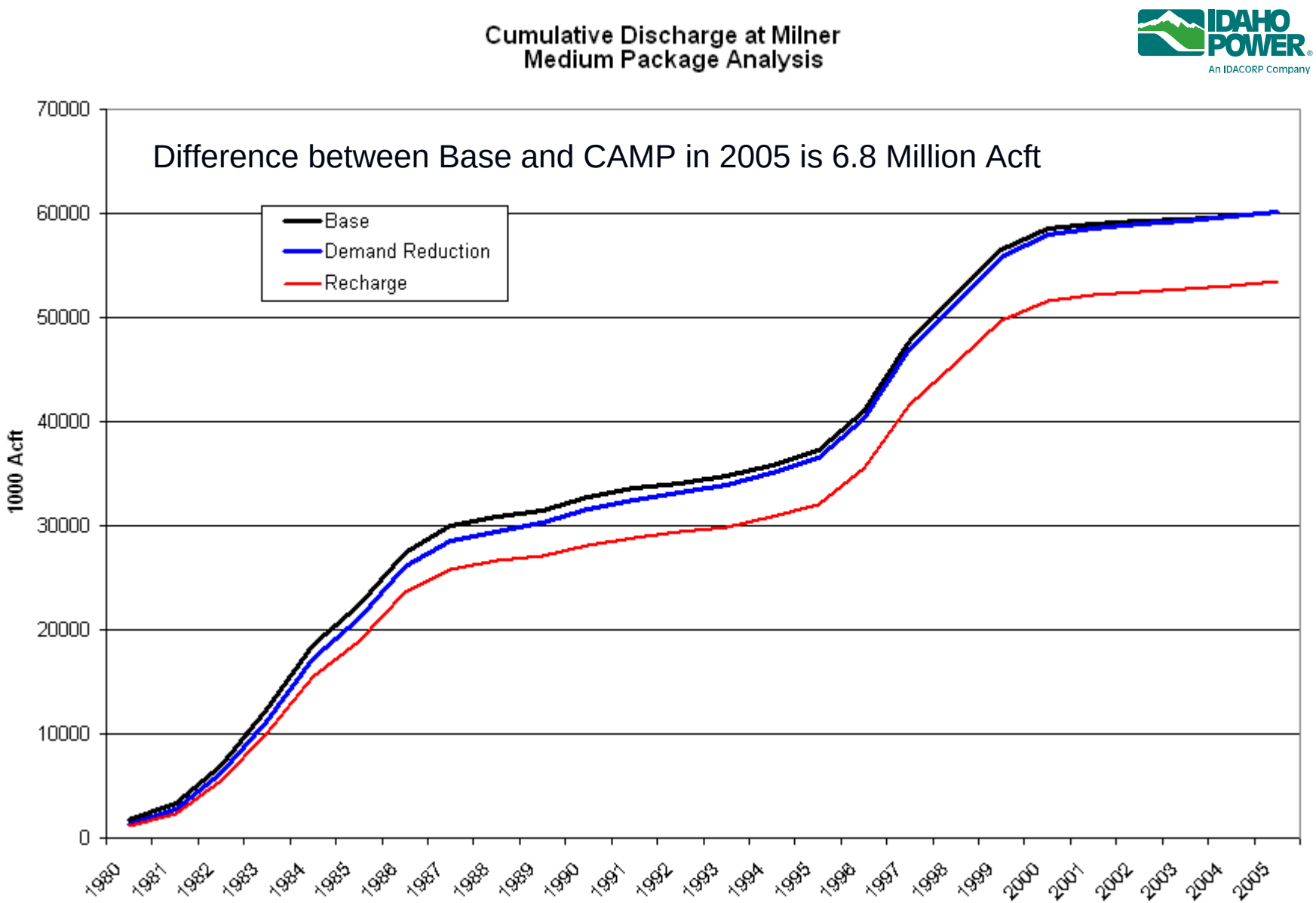
Year	Acft/year	Cumulative
1980	3171.3	3171.3
1981	2987.6	6158.9
1982	5214.5	11373.4
1983	6422.1	17795.5
1984	7374.9	25170.4
1985	4693.4	29863.8
1986	6621.7	36485.5
1987	3340.9	39826.4
1988	1914.5	41740.9
1989	2447.2	44188.1
1990	2376.8	46564.9
1991	2343.1	48908
1992	1555.3	50463.3
1993	2429.6	52892.9
1994	2164.5	55057.4
1995	3207.6	58265
1996	5377.9	63642.9
1997	8215.7	71858.6
1998	5466.6	77325.2
1999	5676	83001.2
2000	3008.1	86009.3
2001	1580.4	87589.7
2002	1534.6	89124.3
2003	1702.3	90826.6
2004	1587.4	92414
2005	1788.7	94202.7



Cumulative Discharge: Sum of the total discharge during a specified period of time.

Cumulative Discharge at Blackfoot
Medium Package Analysis




Cumulative Discharge at Milner
Medium Package Analysis
IDAHO POWER
An IDACORP Company
Difference between Base and CAMP in 2005 is 6.8 Million Acft
Base
Demand Reduction
Recharge
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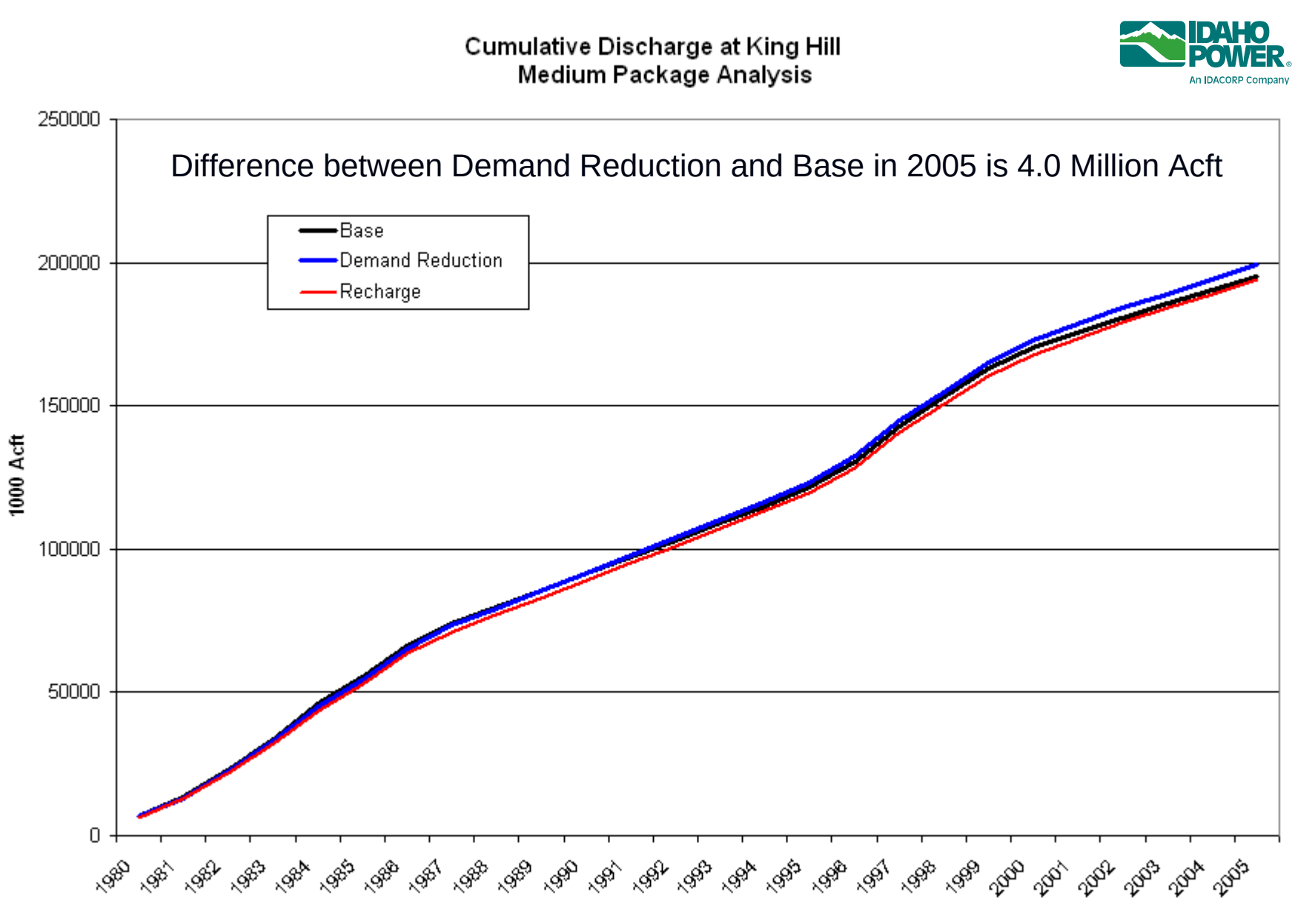
Cumulative Discharge at King Hill
Medium Package Analysis
IDAHO POWER
An IDACORP Company
Difference between Demand Reduction and Base in 2005 is 4.0 Million Acft
Base
Demand Reduction
Recharge
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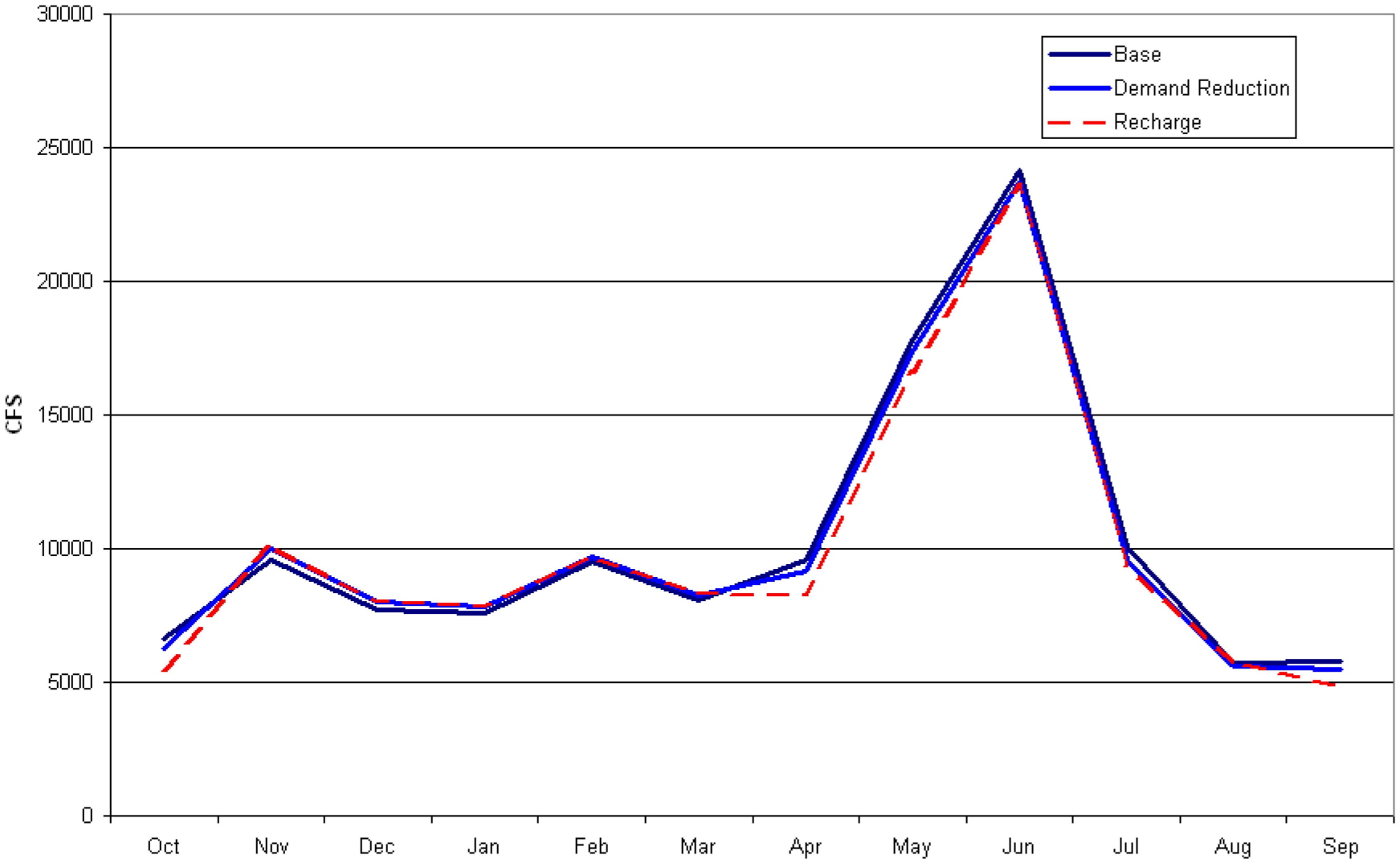
1984

Blackfoot
Comparison of Base and Medium Packages

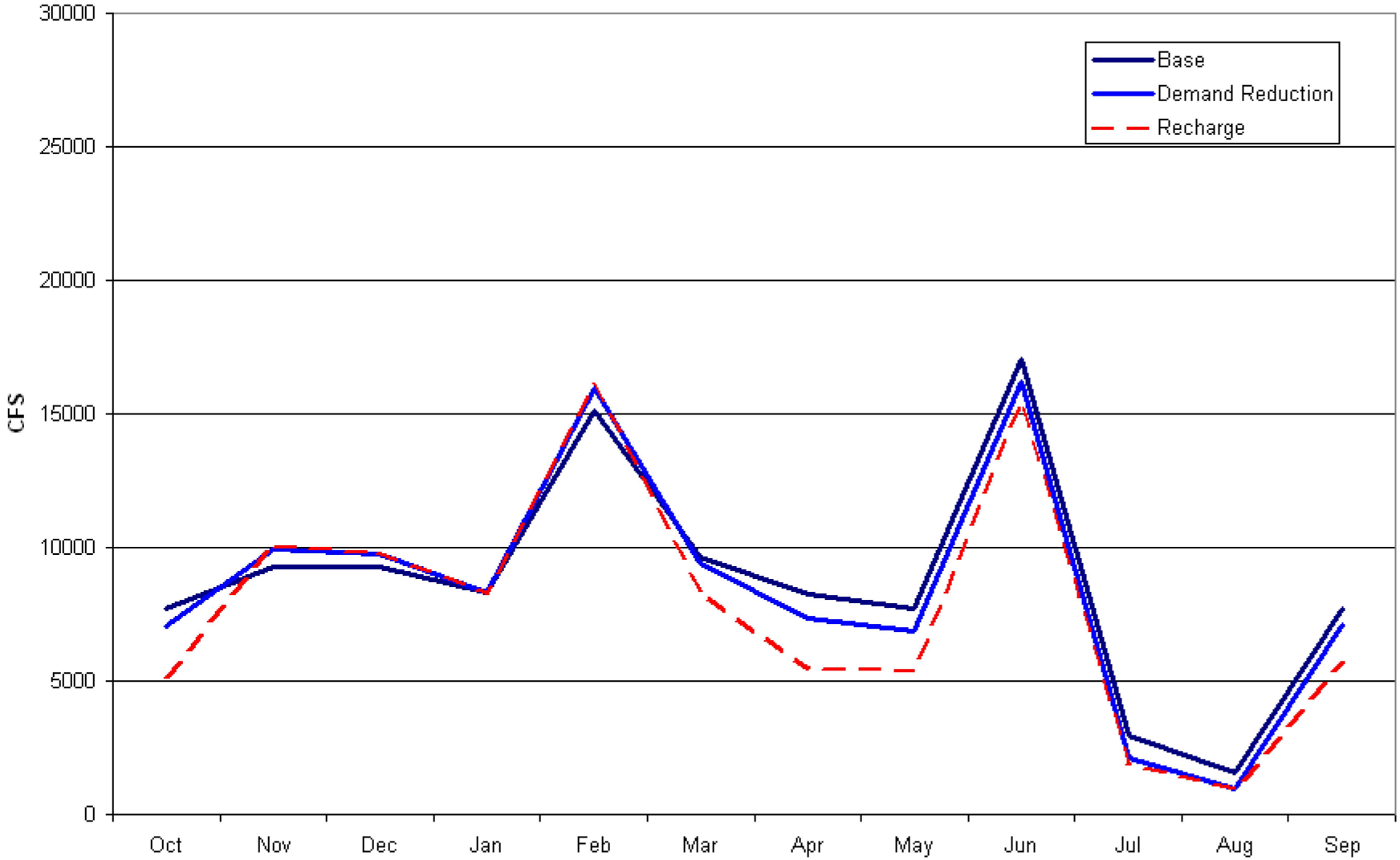
IDAHO POWER
An IDACORP Company



1984

Milner
Comparison of Base and Medium Packages

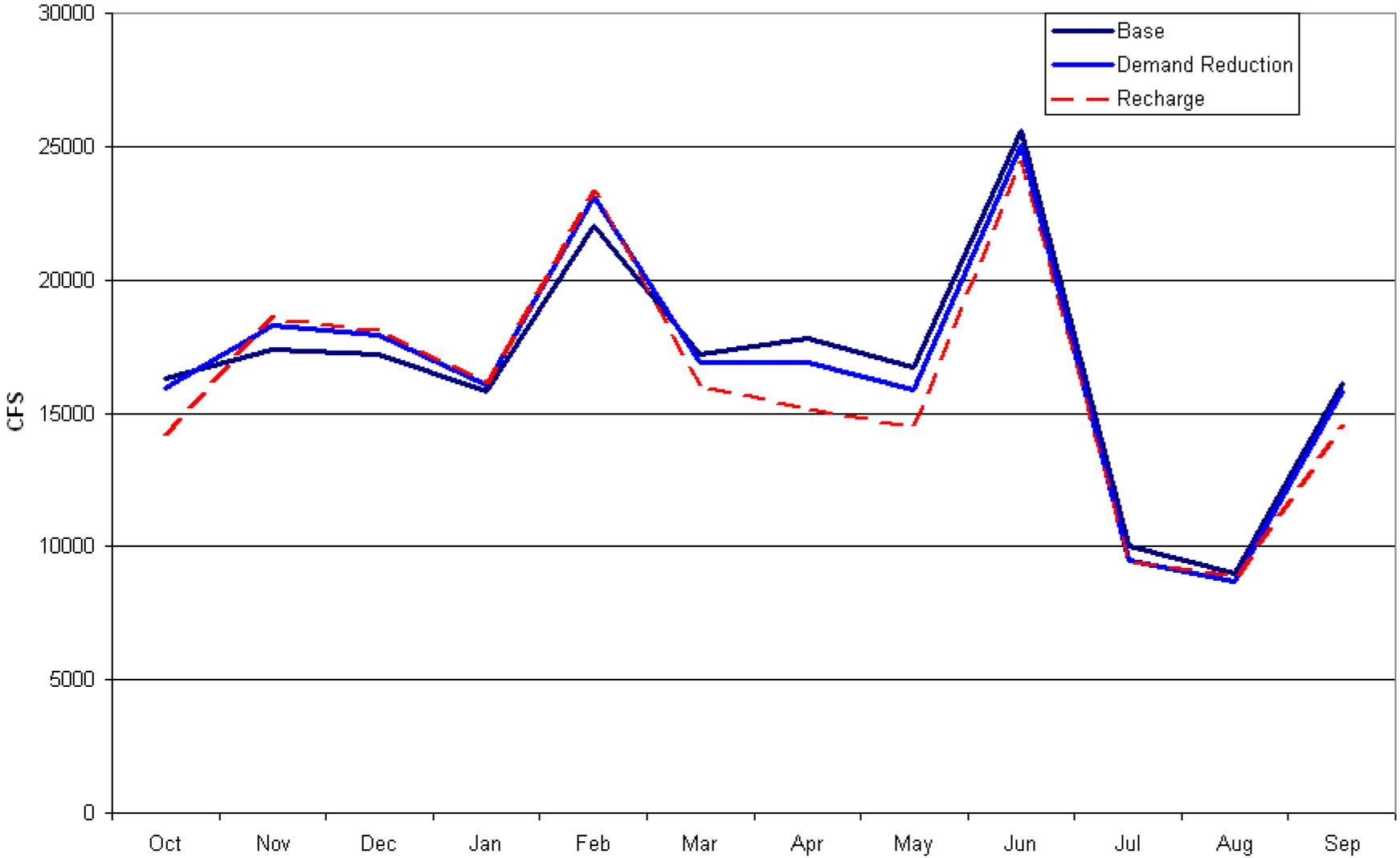
IDAHO POWER
An IDACORP Company



1984

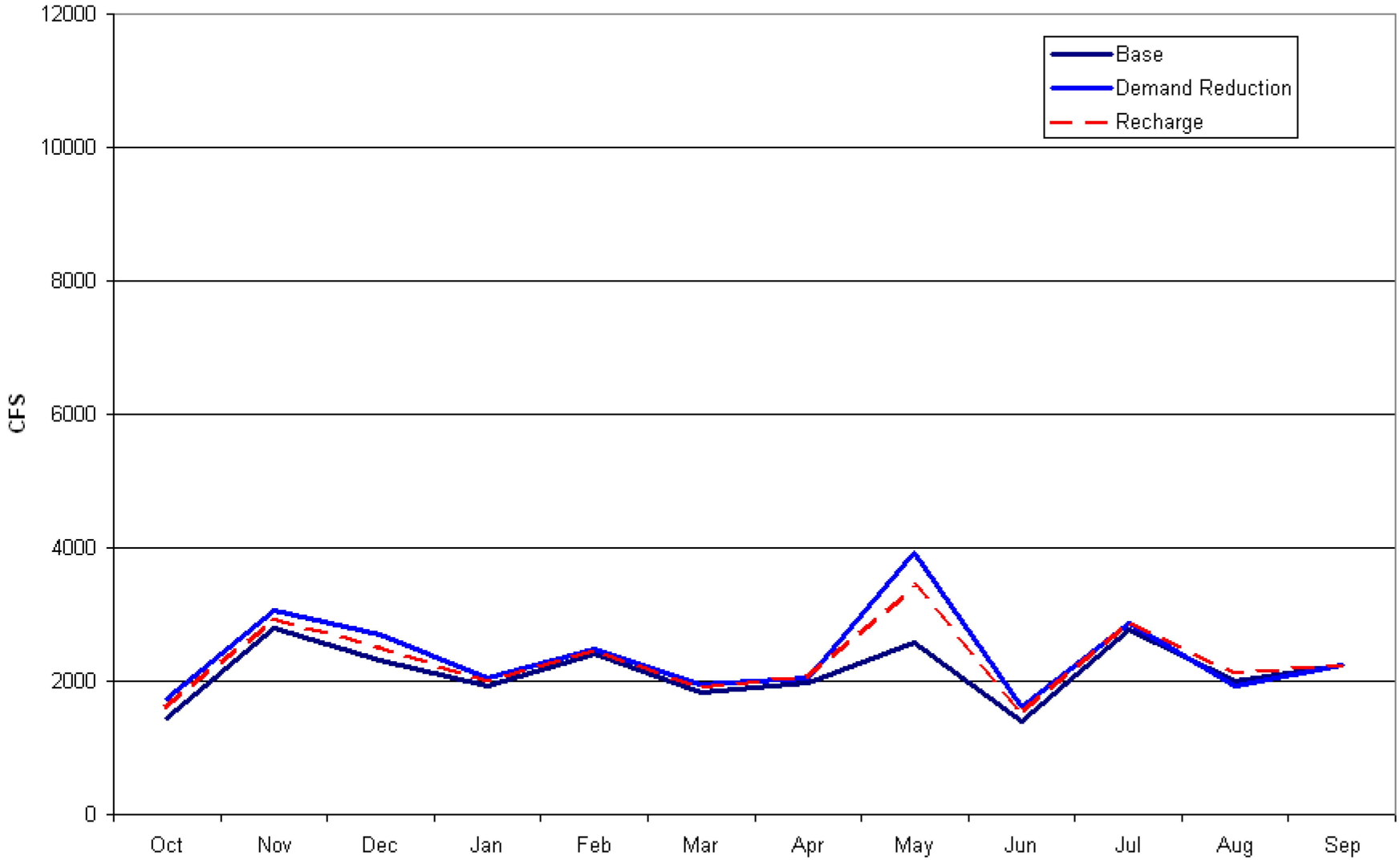
King Hill
Comparison of Base and Medium Packages

IDAHO POWER
An IDACORP Company



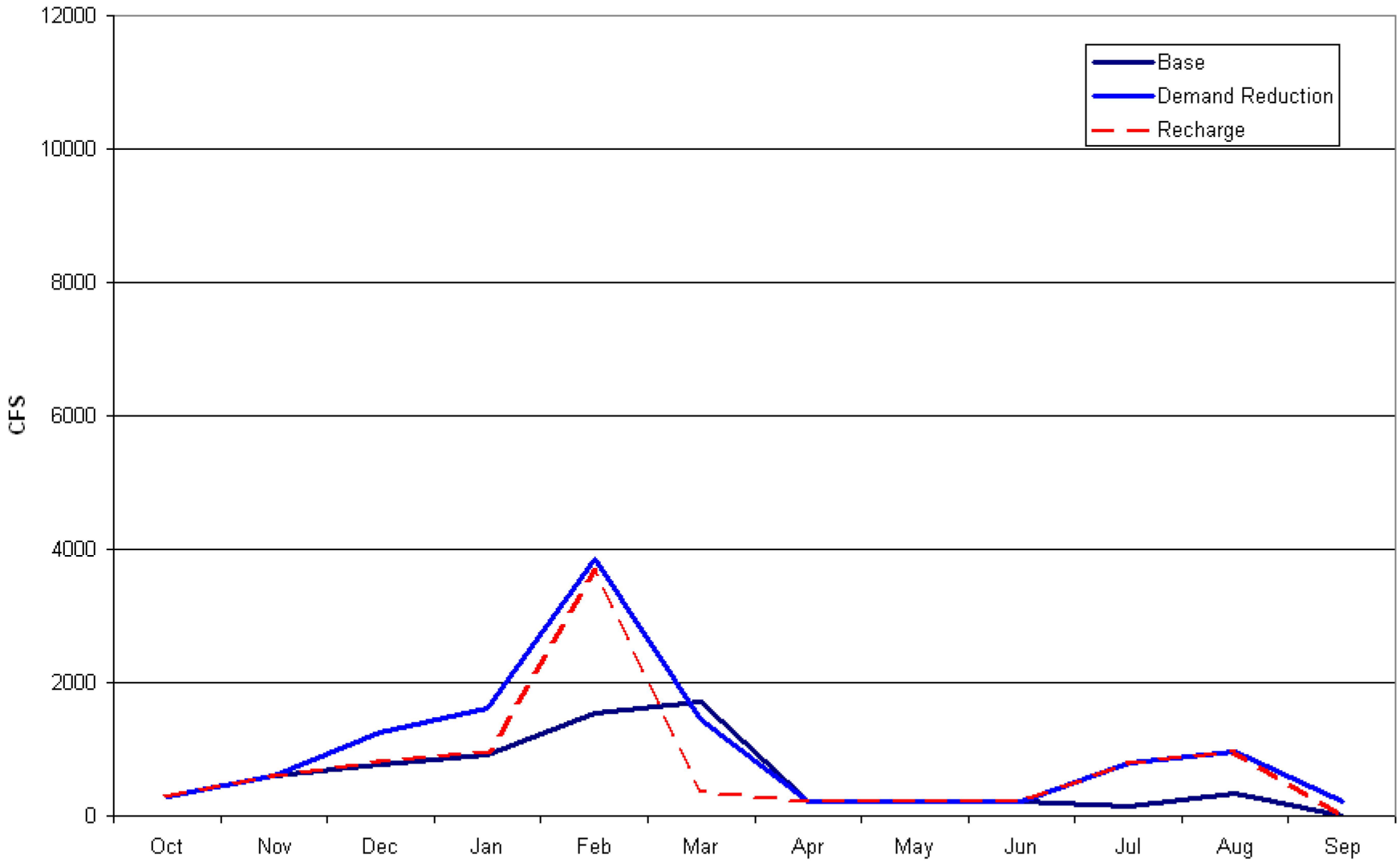
1992

Blackfoot
Comparison of Base and Medium Packages



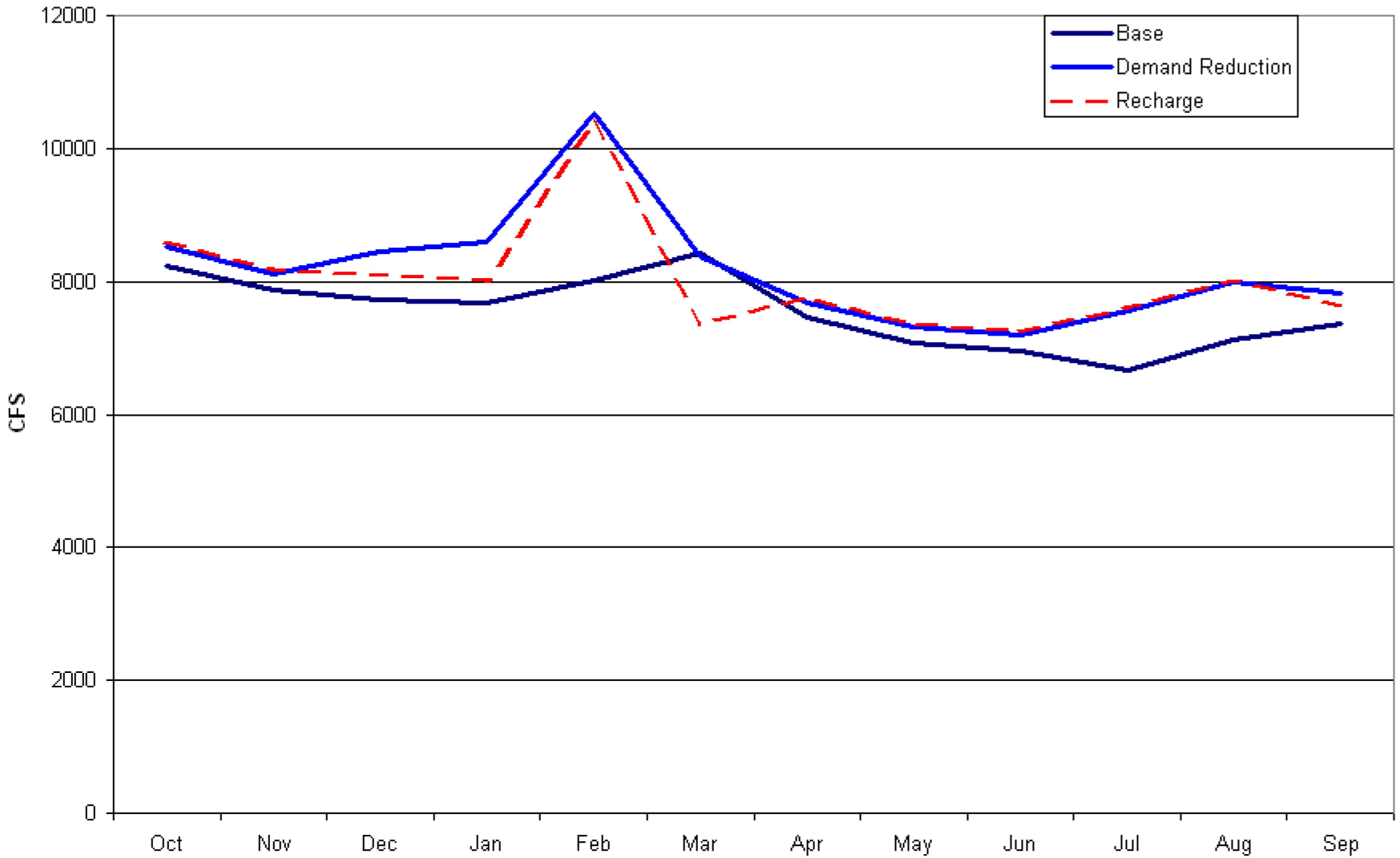
1992

Milner
Comparison of Base and Medium Packages



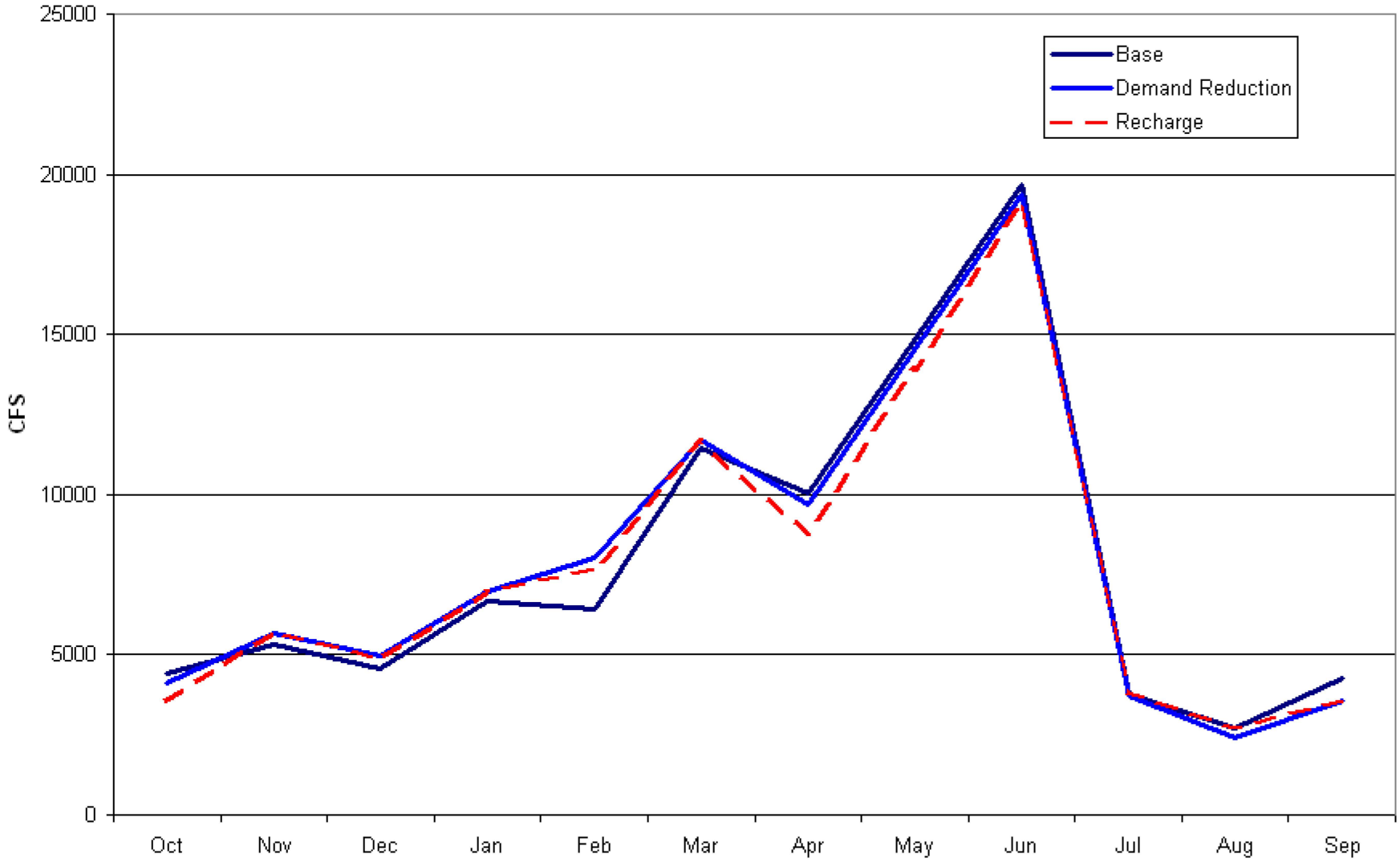
1992

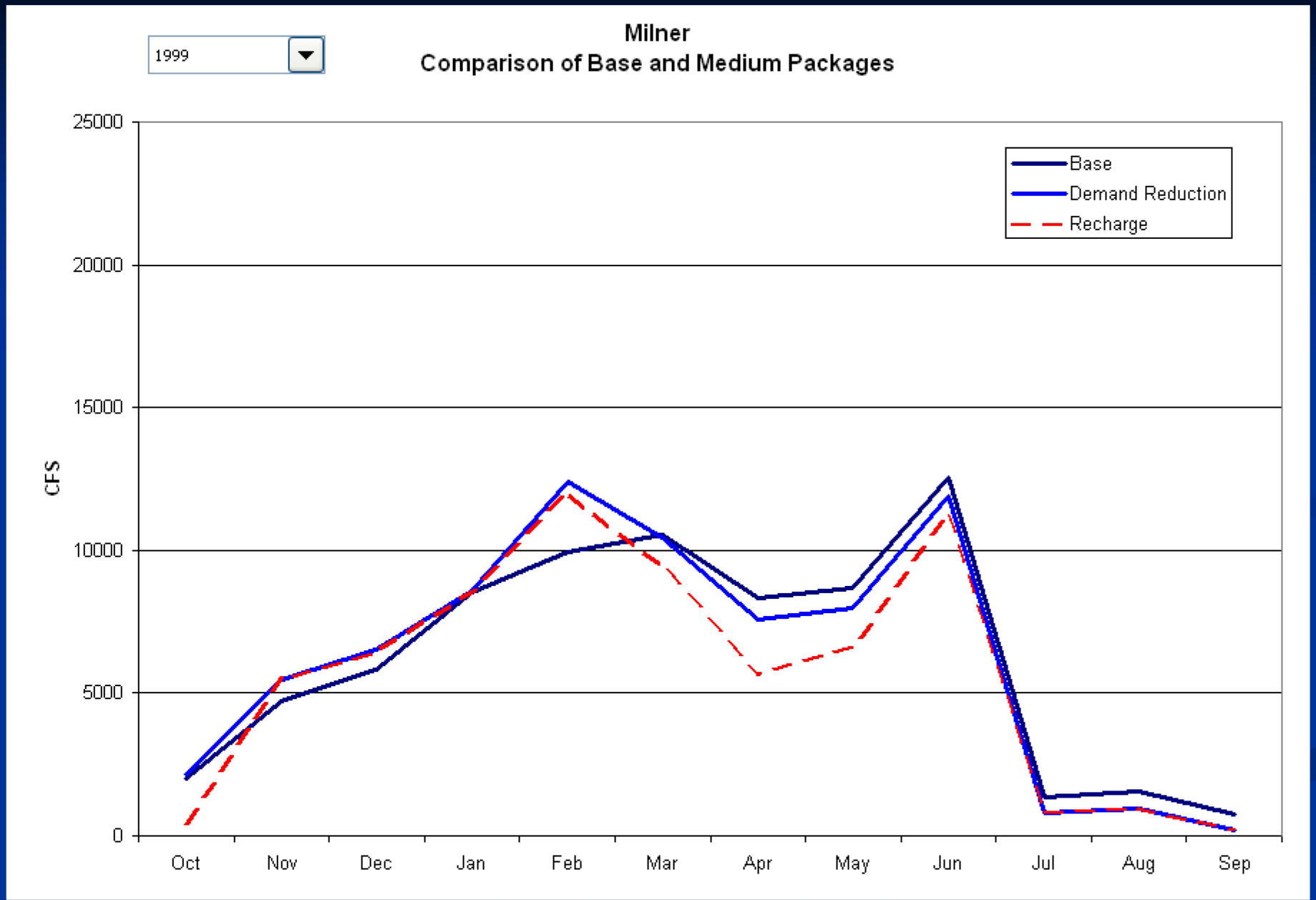
King Hill
Comparison of Base and Medium Packages



1999

Blackfoot
Comparison of Base and Medium Packages




1999
Milner
Comparison of Base and Medium Packages
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Demand Reduction
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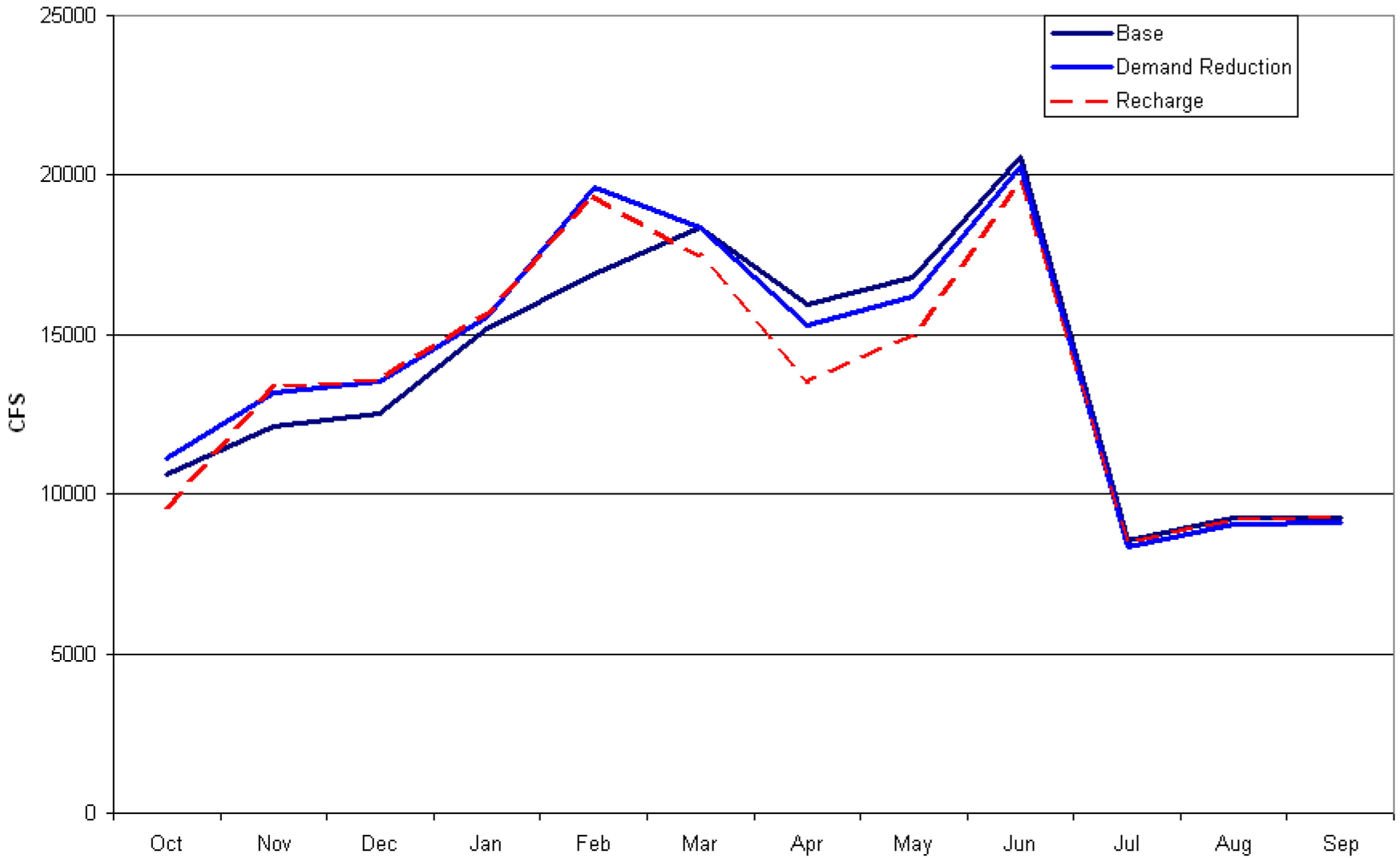
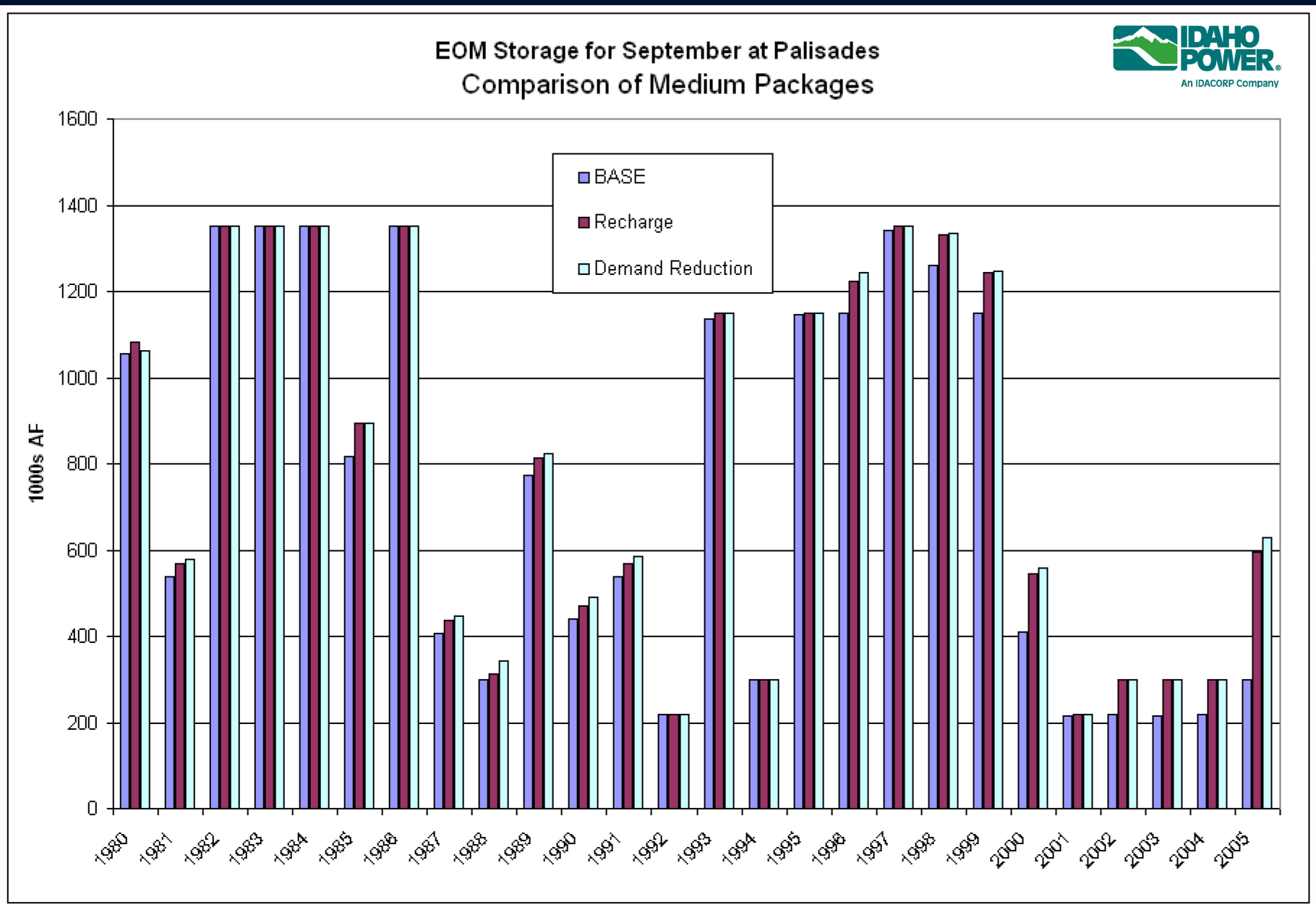
Sep

1999

King Hill
Comparison of Base and Medium Packages




EOM Storage for September at Palisades
Comparison of Medium Packages
IDAHO POWER
An IDACORP Company
BASE
Recharge
Demand Reduction
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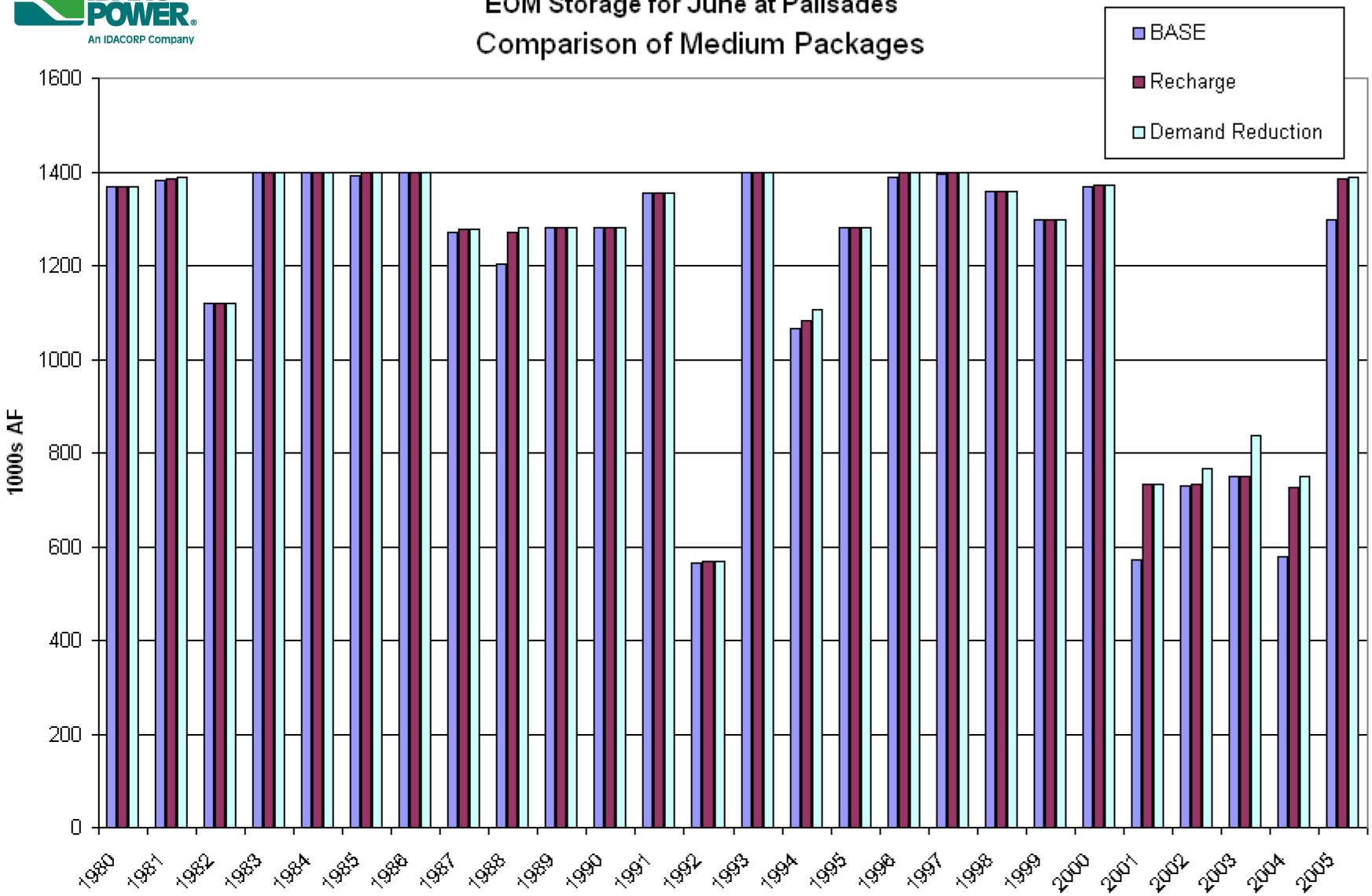
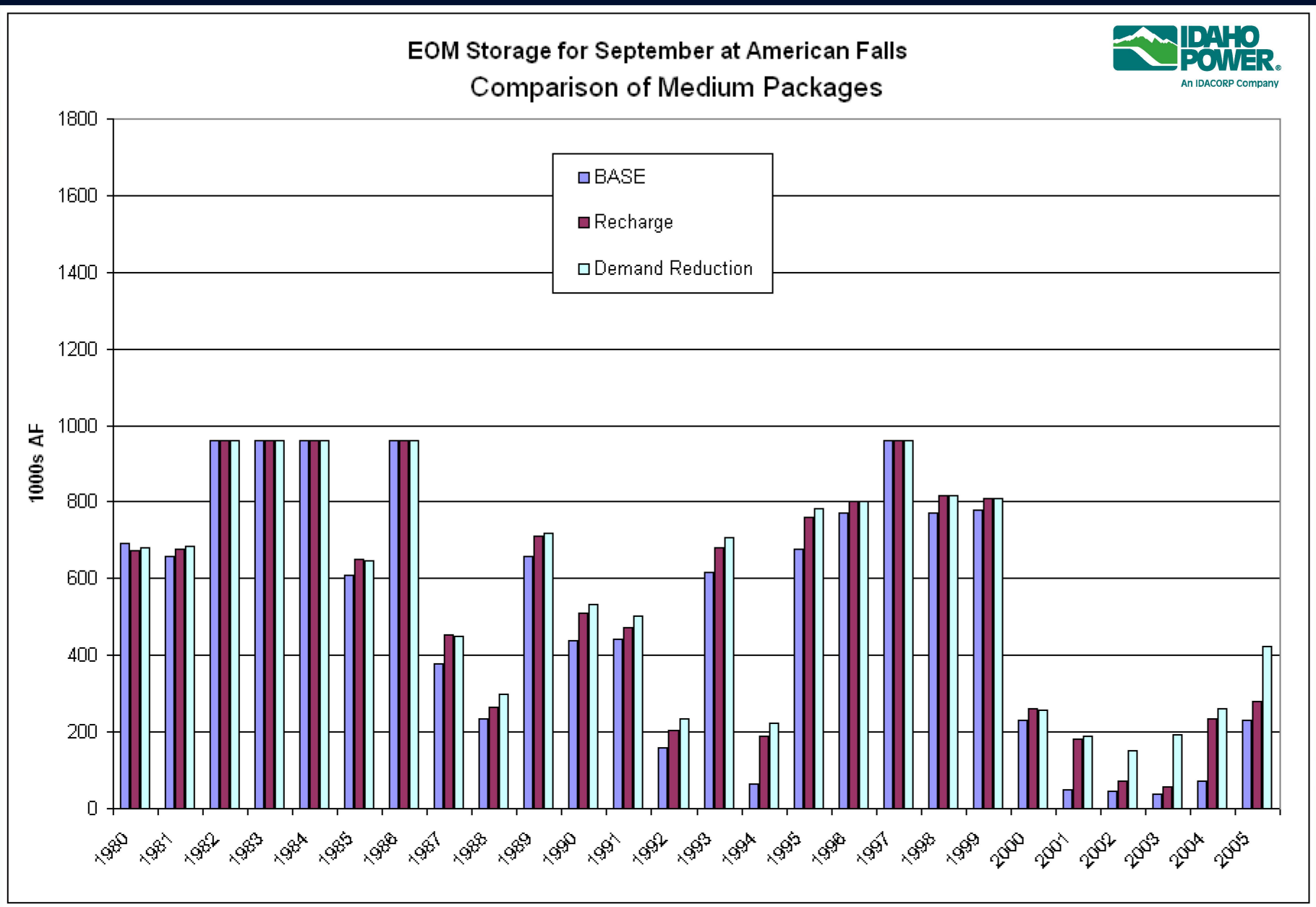
IDAHO POWER
An IDACORP Company

EOM Storage for June at Palisades
Comparison of Medium Packages




EOM Storage for September at American Falls
Comparison of Medium Packages
IDAHO POWER
An IDACORP Company
1000s AF
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Demand Reduction
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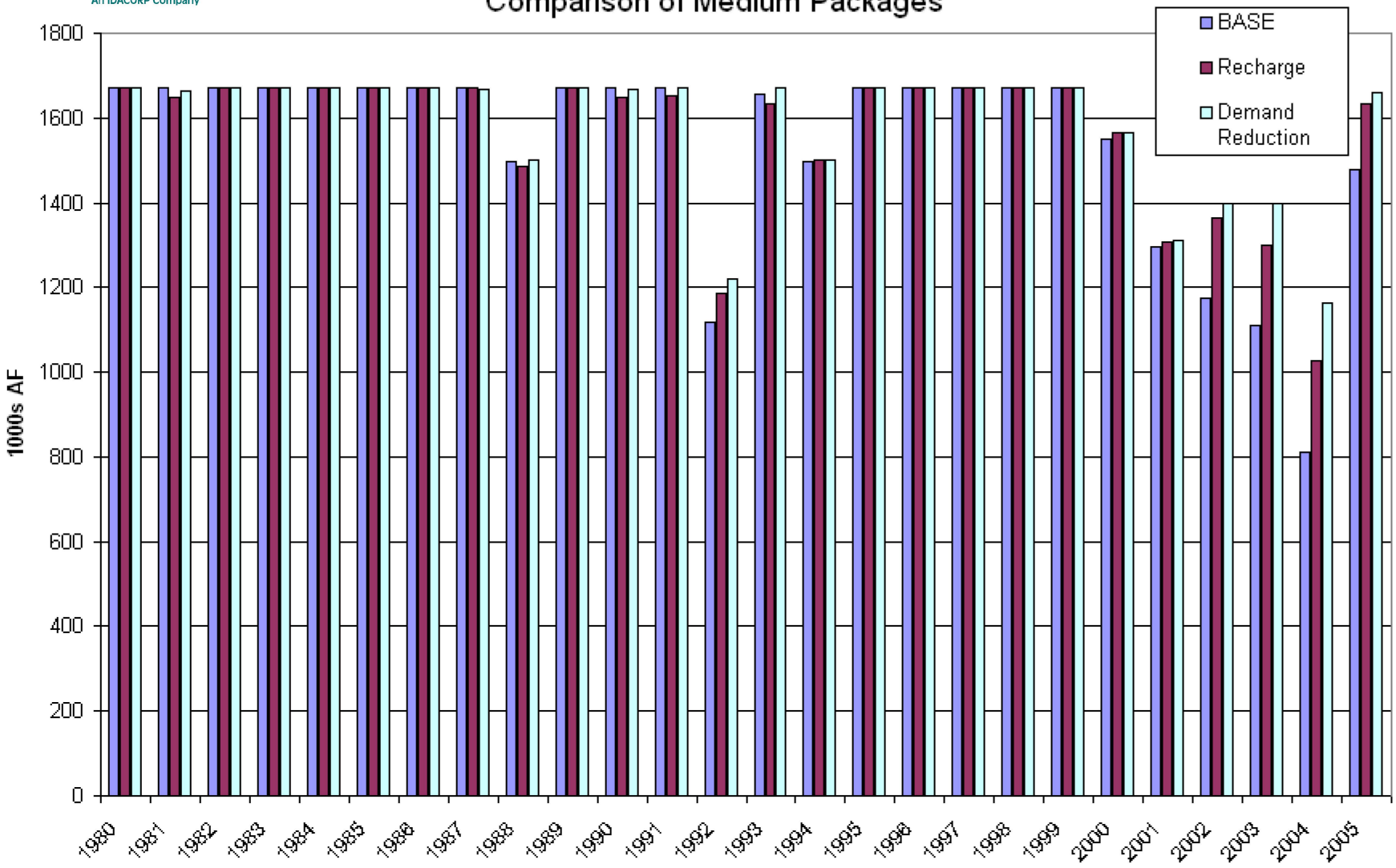
IDAHO POWER
An IDACORP Company

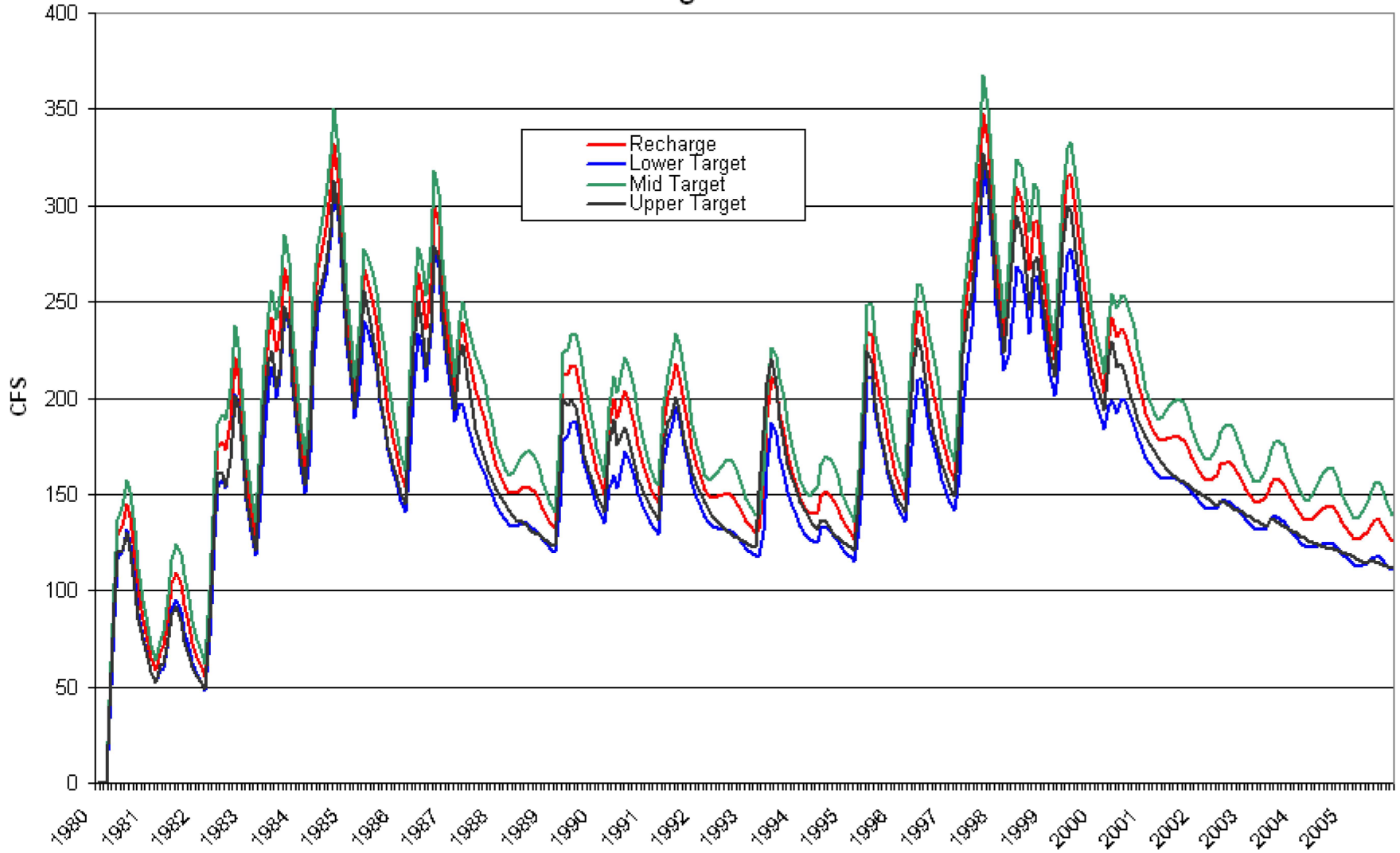
EOM Storage for May at American Falls

Comparison of Medium Packages



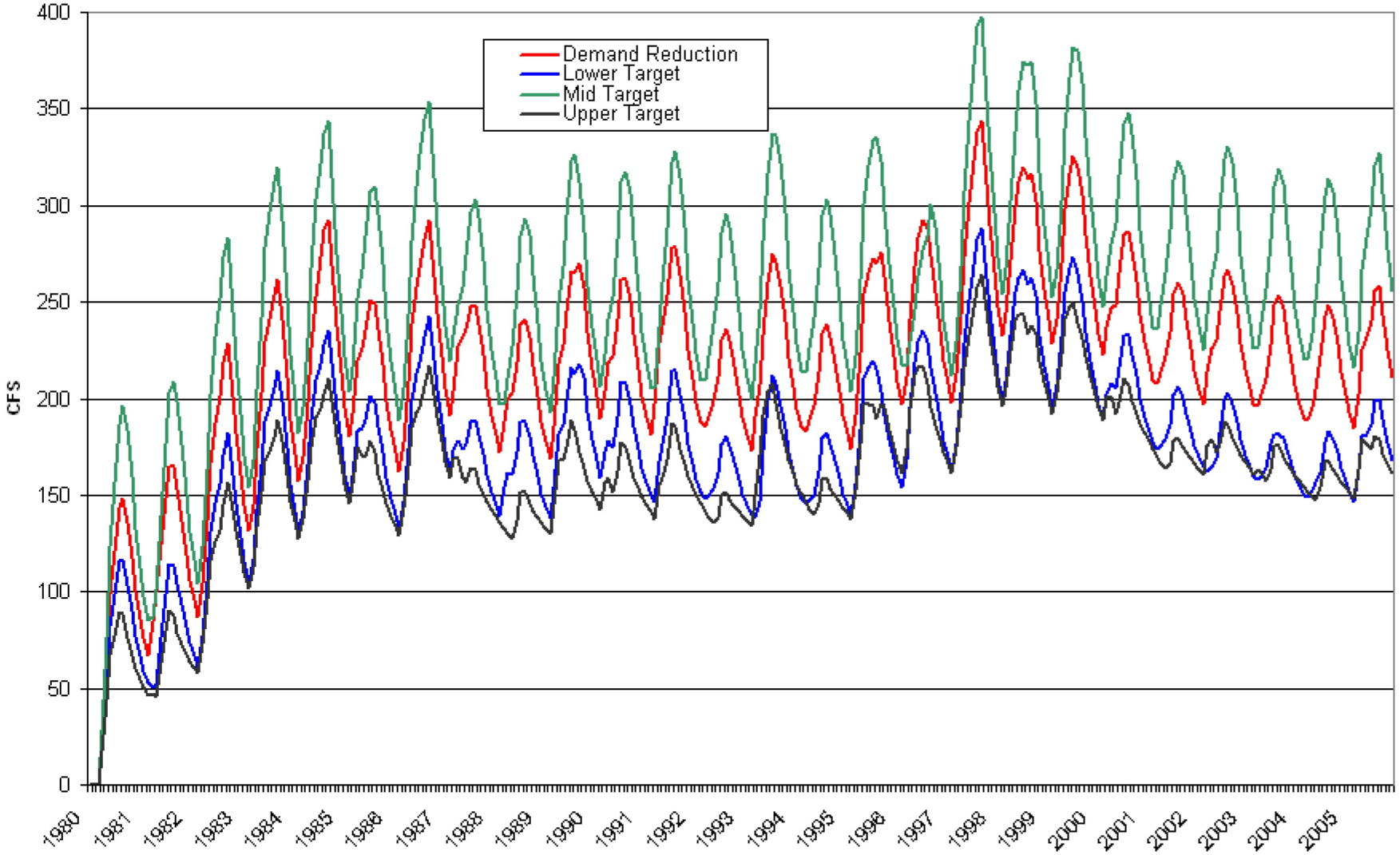
Blackfoot to Neeley - Increases in Spring Discharge

Recharge Scenario



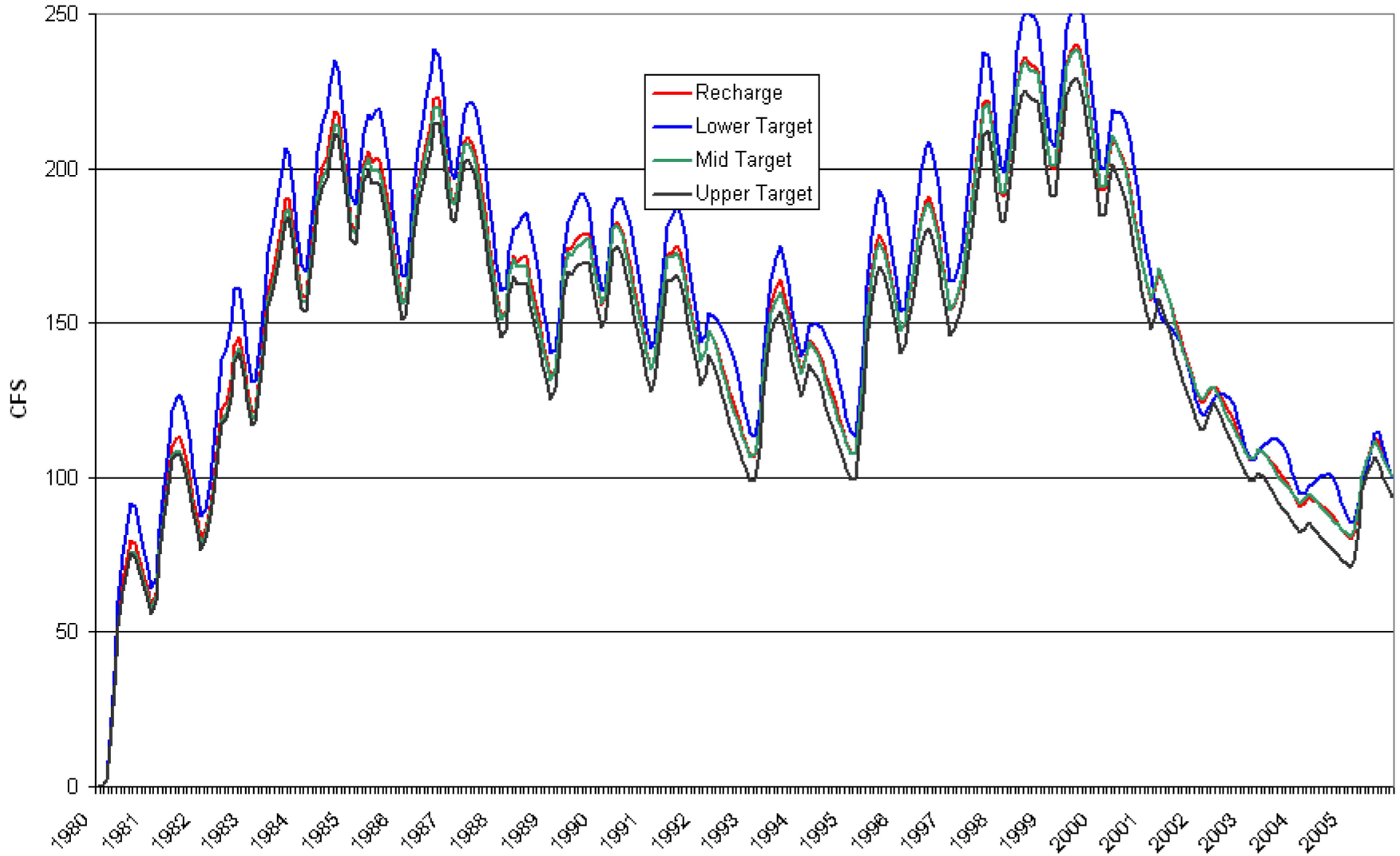
Blackfoot to Neeley - Increases in Spring Discharge

Demand Reduction



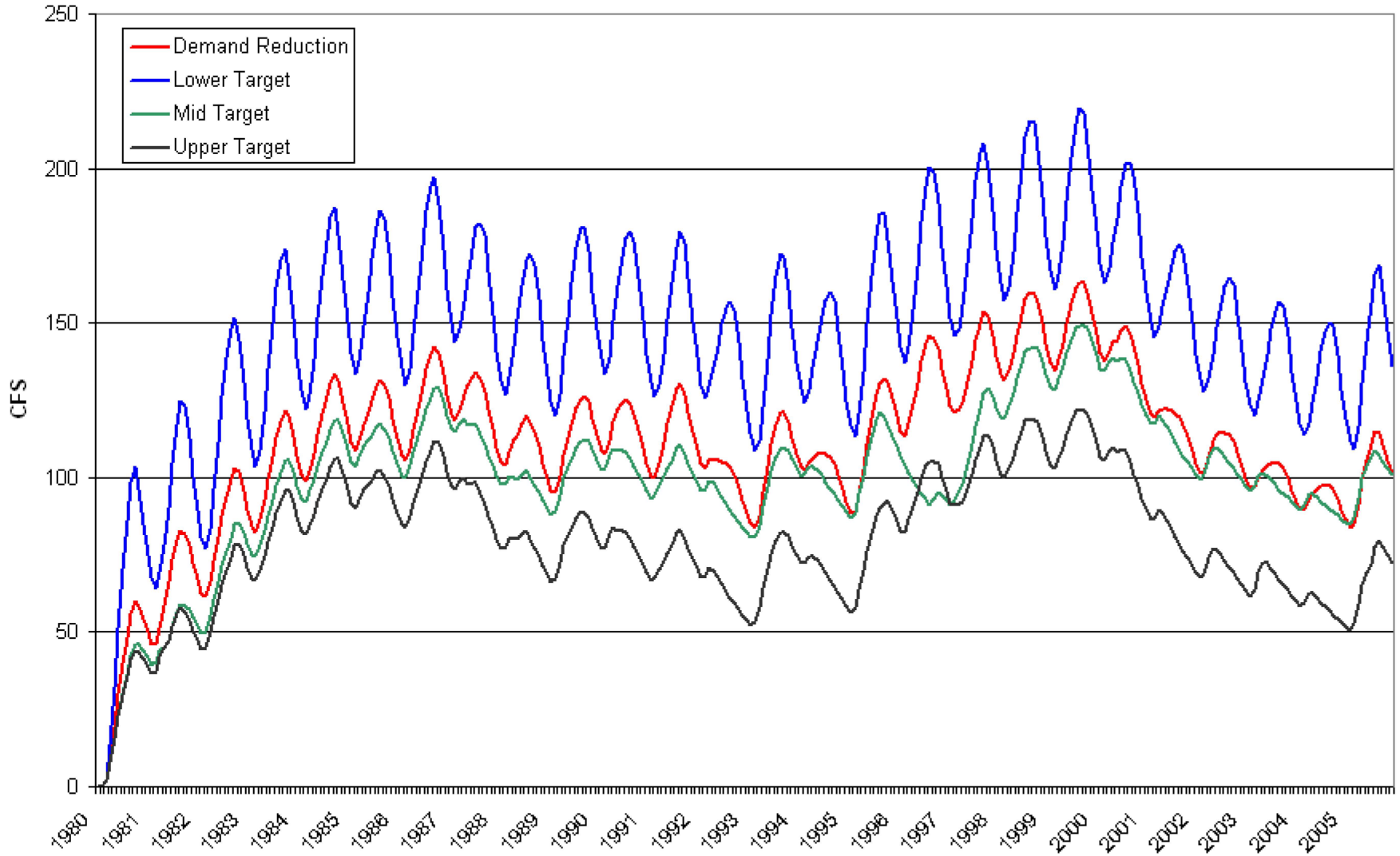
Devils Washbowl to Buhl - Increase in Spring Discharge

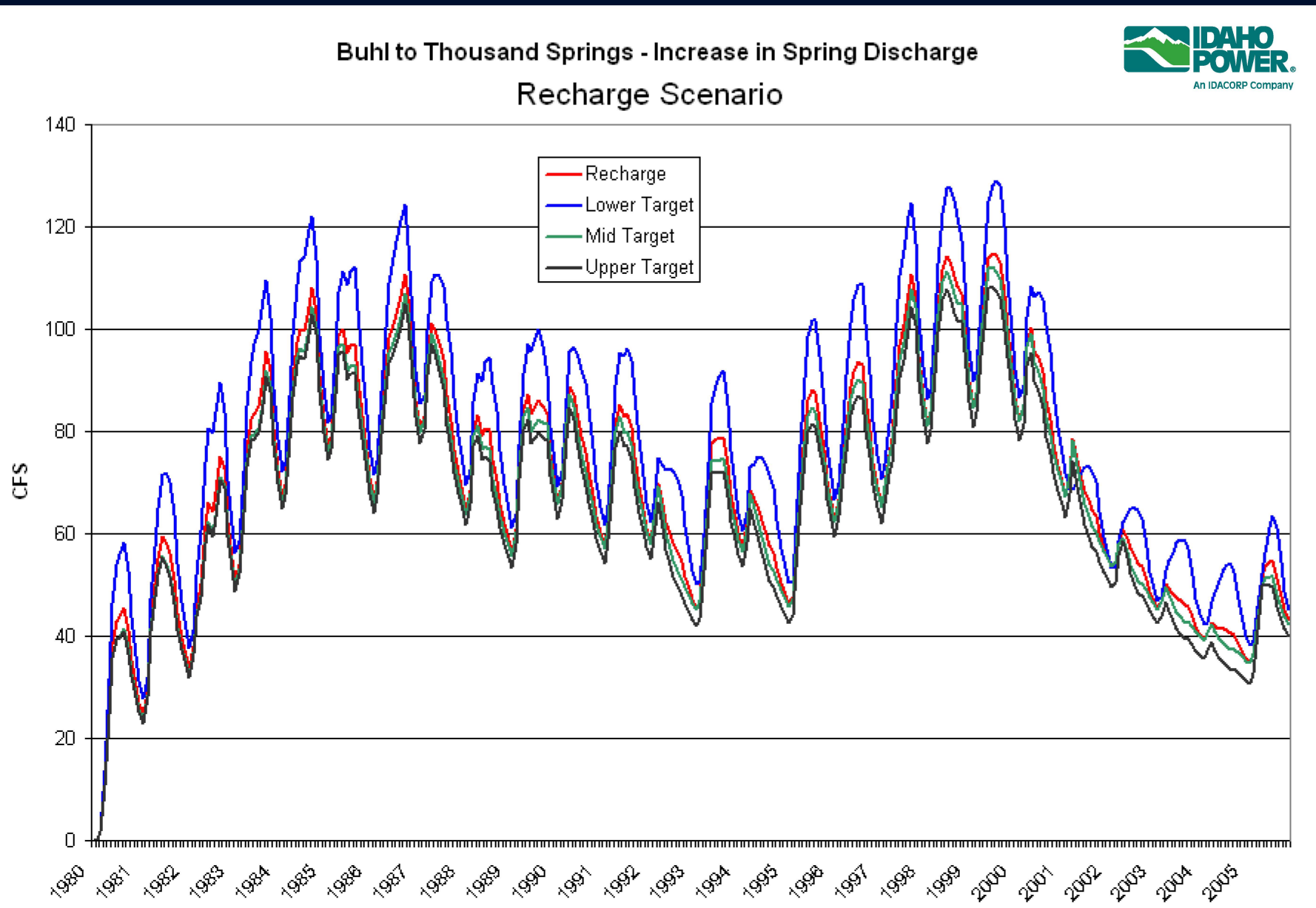
Recharge Scenario



Devils Washbowl to Buhl - Increase in Spring Discharge

Demand Reduction




Buhl to Thousand Springs - Increase in Spring Discharge
Recharge Scenario
IDAHO POWER
An IDACORP Company
Recharge
Lower Target
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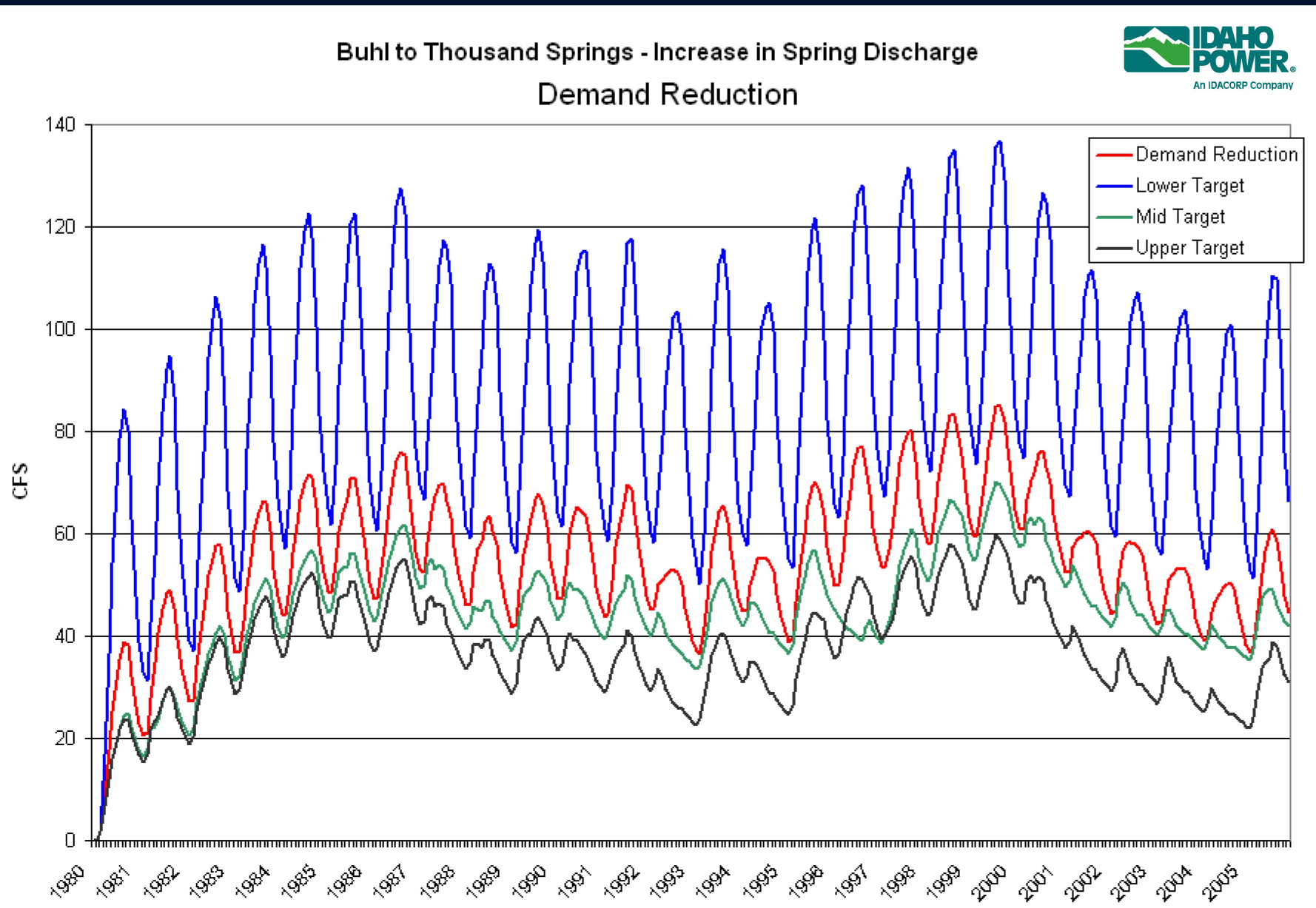
Buhl to Thousand Springs - Increase in Spring Discharge
Demand Reduction
IDAHO POWER
An IDACORP Company
CFS
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Demand Reduction
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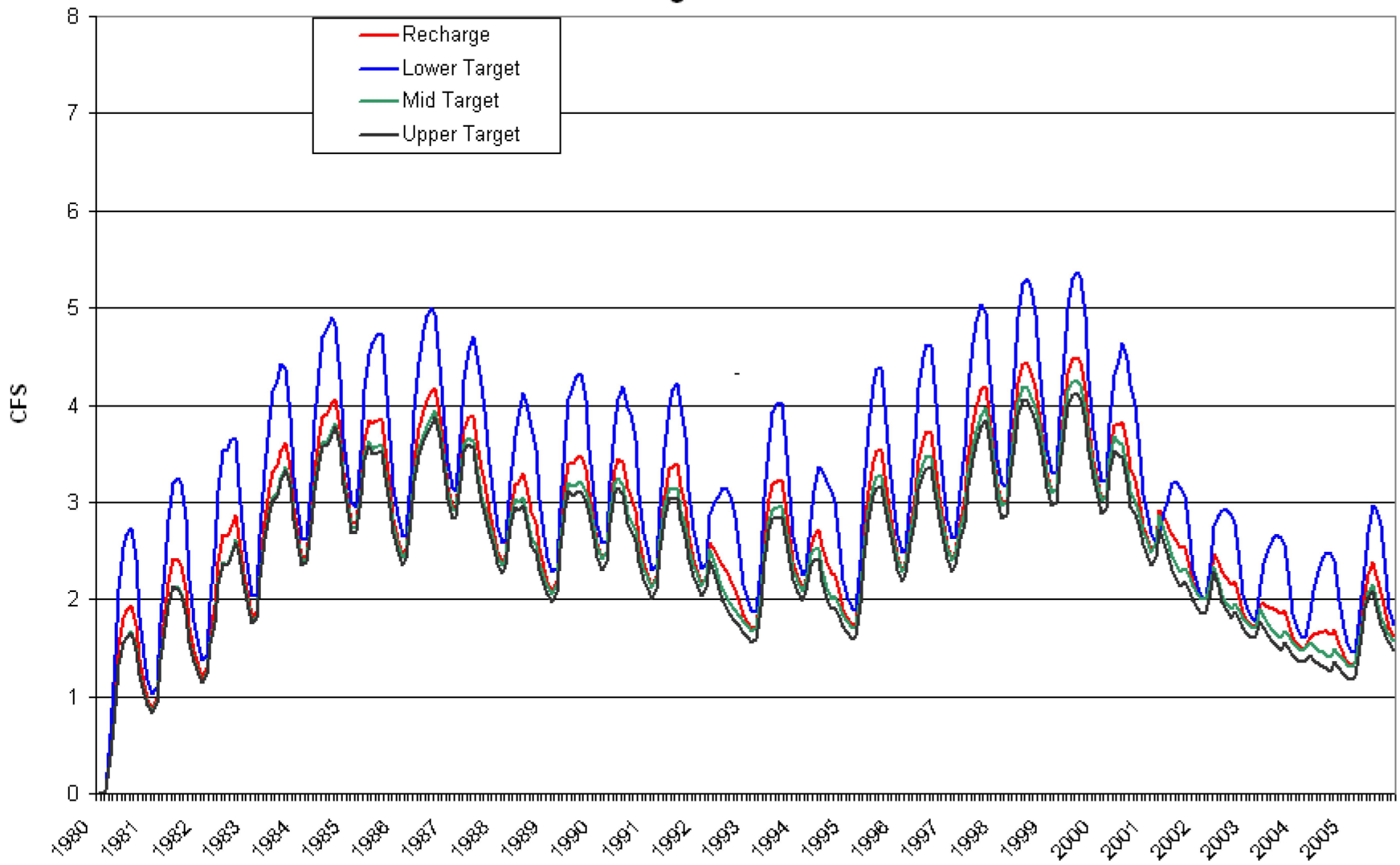
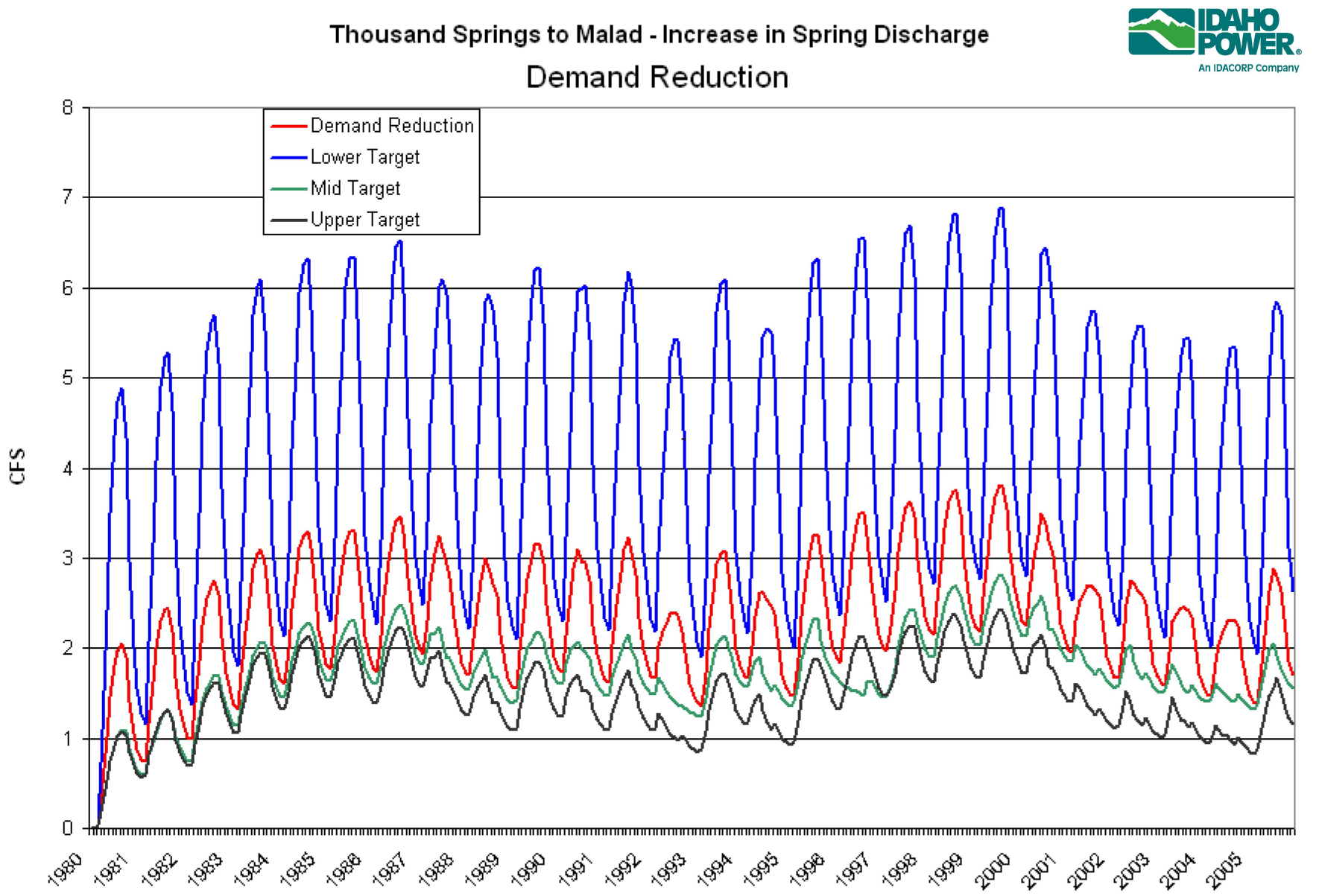
Thousand Springs to Malad - Increase in Spring Discharge

Recharge Scenario




Thousand Springs to Malad - Increase in Spring Discharge
Demand Reduction
IDAHO POWER
An IDACORP Company
Demand Reduction
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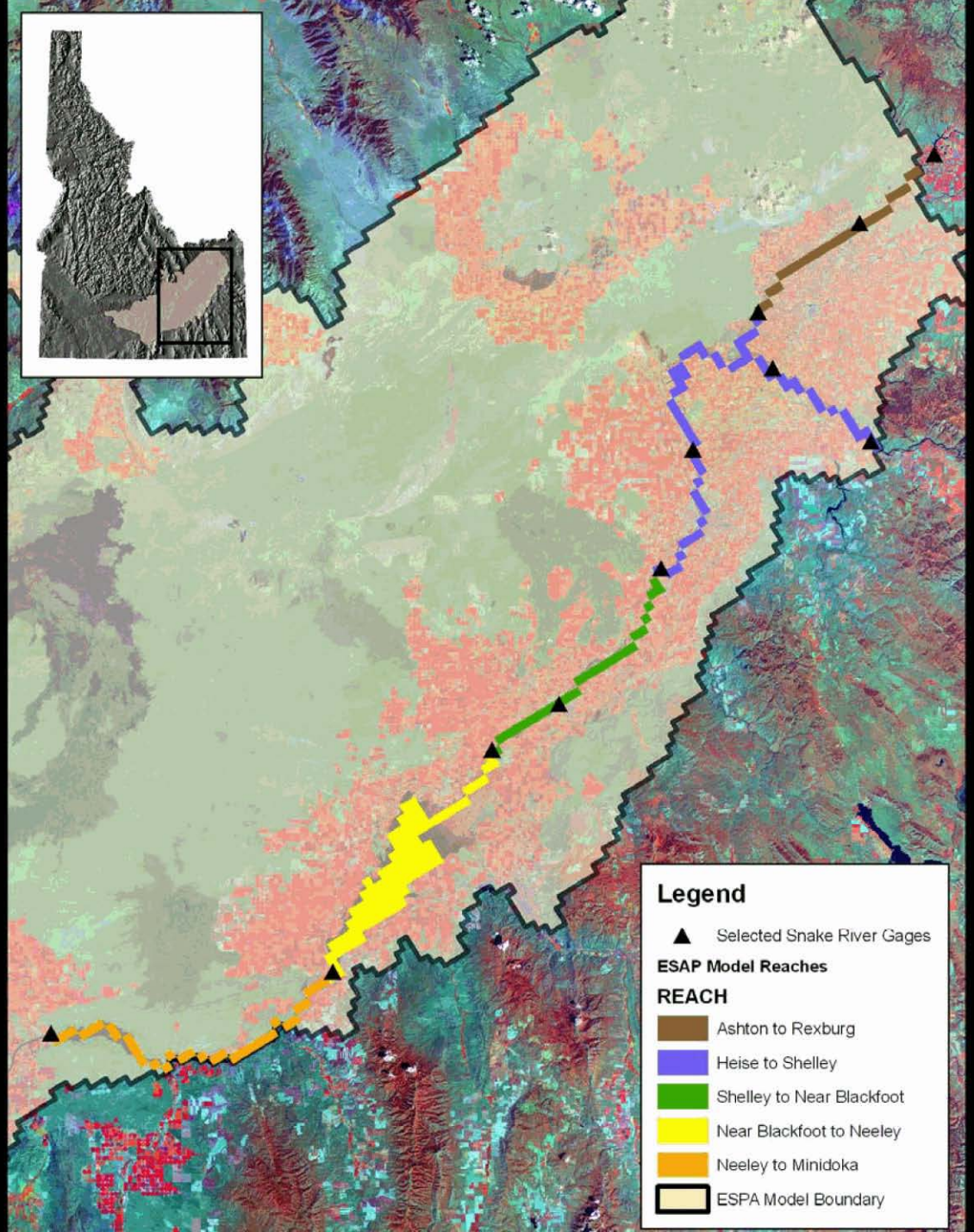
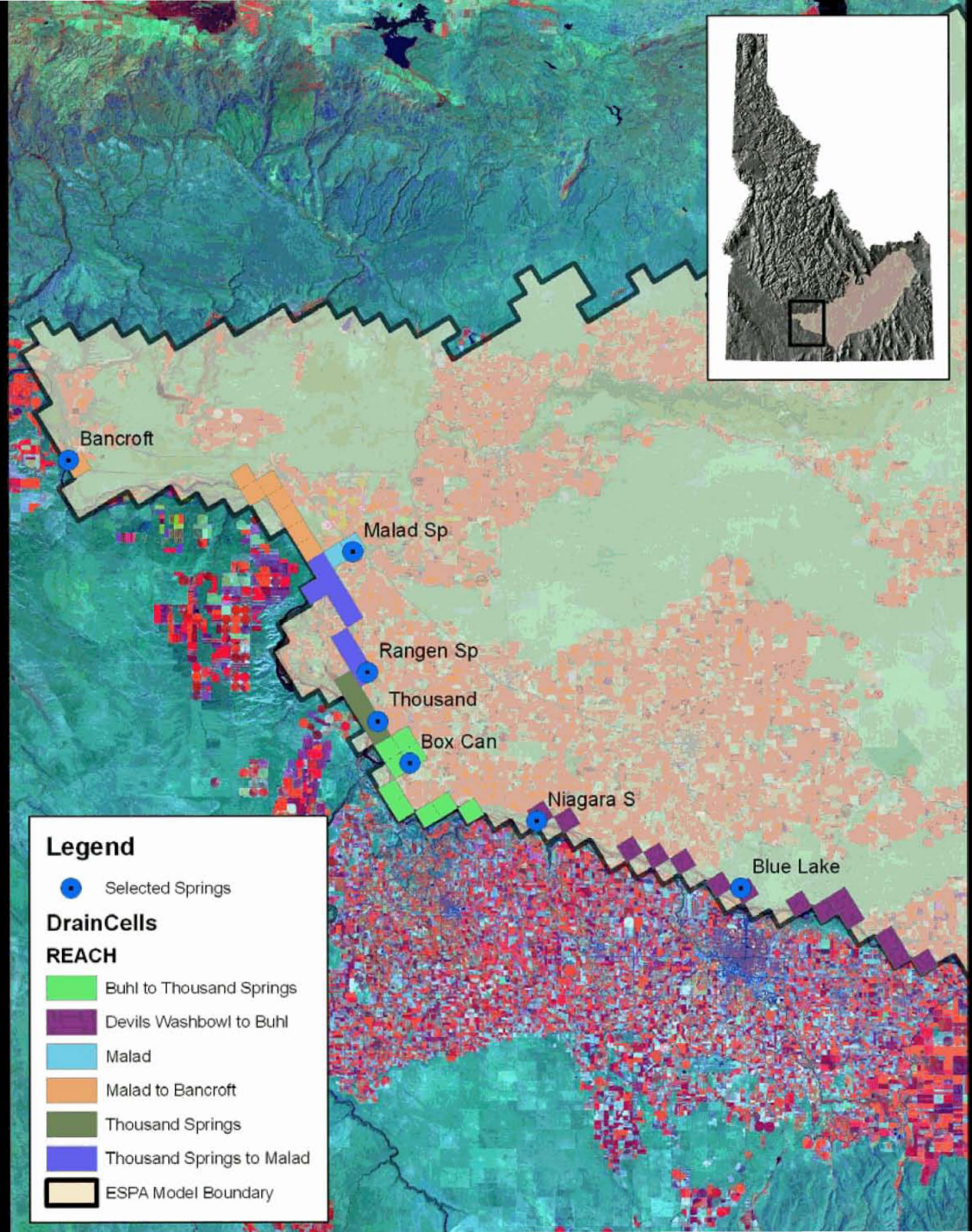
Questions?

Preliminary CAMP Modeling Results Medium Packages

Fish and Wildlife Sub-Committee


Legend
Selected Snake River Gages
ESAP Model Reaches
REACH
Ashton to Rexburg
Heise to Shelley
Shelley to Near Blackfoot
Near Blackfoot to Neeley
Neeley to Minidoka
ESPA Model Boundary


Bancroft
Malad Sp
Rangen Sp
Thousand
Box Can
Niagara S
Blue Lake
Legend
Selected Springs
DrainCells
REACH
Buhl to Thousand Springs
Devils Washbowl to Buhl
Malad
Malad to Bancroft
Thousand Springs
Thousand Springs to Malad
ESPA Model Boundary