Appendix P

Additional CRSS Modeling Output

This Appendix contains additional supporting CRSS modeling output. Figures in this appendix consist of hydrologic information that is referenced in the Water Quality, Air Quality, Biological Resources, Cultural Resources, Electrical Power Resources, and Water Delivery Sections.
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This section contains additional CRSS modeling output referenced in the Water Quality Section.
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Colorado River Salinity Below Hoover Dam
Comparison of Action Alternatives to No Action Alternative Flow-weighted Annual Average Salinity Concentrations
Figure P-2
Colorado River Salinity Below Parker Dam
Comparison of Action Alternatives to No Action Alternative
Flow-weighted Annual Average Salinity Concentrations

- **No Action**
- **Basin States**
- **Conservation Before Shortage**
- **Water Supply**
- **Reservoir Storage**
Figure P-3
Colorado River Salinity Above Imperial Dam
Comparison of Action Alternatives to No Action Alternative
Flow-weighted Annual Average Salinity Concentrations

Salinity Concentration (mg/L)

Year

2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060
Figure P-4

Lake Powell End-of-October Elevations
Comparison of Action Alternatives to No Action Alternative
90th, 50th, and 10th Percentile Values

Water Surface Elevation (feet msl)

Year

2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060


No Action Basin States Conservation Before Shortage Water Supply Reservoir Storage

90th Percentile
50th Percentile
10th Percentile
Figure P-5
Lake Mead End-of-October Elevations
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values

- No Action
- Basin States
- Conservation Before Shortage
- Water Supply
- Reservoir Storage

90th Percentile
50th Percentile
10th Percentile

Water Surface Elevation (feet msl)
Year

1.25
1.20
1.175
1.150
1.125
1.100
1.075
1.050
1.025
1.000
0.975
2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060
Figure P-6

Lake Powell End-of-March Elevations

Comparison of Action Alternatives to No Action Alternative

90th, 50th and 10th Percentile Values

Water Surface Elevation (feet msl)

Year

No Action
Basin States Conservation Before Shortage
Water Supply
Reservoir Storage

10th Percentile
50th Percentile
90th Percentile

2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060

3,700 3,675 3,650 3,625 3,600 3,575 3,550 3,525 3,500 3,475 3,450 3,425 3,400 3,375 3,350 3,325 3,300 3,275 3,250 3,225 3,200 3,175 3,150 3,125 3,100 3,075 3,050 3,025 3,000 2,975 2,950 2,925 2,900 2,875 2,850 2,825 2,800 2,775 2,750 2,725 2,700 2,675 2,650 2,625 2,600 2,575 2,550 2,525 2,500 2,475 2,450 2,425 2,400 2,375 2,350 2,325 2,300 2,275 2,250 2,225 2,200 2,175 2,150 2,125 2,100 2,075 2,050 2,025 2,000 1,975 1,950 1,925 1,900 1,875 1,850 1,825 1,800 1,775 1,750 1,725 1,700 1,675 1,650 1,625 1,600 1,575 1,550 1,525 1,500 1,475 1,450 1,425 1,400 1,375 1,350 1,325 1,300 1,275 1,250 1,225 1,200 1,175 1,150 1,125 1,100 1,075 1,050 1,025 1,000 075 050 025 000
1

Air Quality

2 This section contains additional CRSS modeling output referenced in the Air Quality Section.
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Figure P-7
Lake Powell End-of-March Elevations
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values
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Biological and Cultural Resources

This section contains additional CRSS modeling output referenced in the Biological and Cultural Resources Section.
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Figure P-8
Lake Powell End-of-July Elevations
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values

No Action
Basin States Conservation Before Shortage Water Supply Reservoir Storage

90th Percentile
50th Percentile
10th Percentile

Water Surface Elevation (feet msl)

Year

2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060
Figure P-9
Lake Powell End-of-September Elevations
Comparison of Action Alternatives to No Action Alternative
90th, 50th, and 10th Percentile Values
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Lake Mead End-of-March Elevations
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values
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Lake Mead End-of-July Elevations Comparison of Action Alternatives to No Action Alternative 90th, 50th and 10th Percentile Values
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Lake Mead End-of-September Elevations
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values

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<th>Reservoir Storage</th>
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<td>2060</td>
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</table>
Figure P-14
Glen Canyon Dam February Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values
Figure P-15

Glen Canyon Dam March Releases
Comparison of Action Alternatives to No Action Alternative 90th, 50th and 10th Percentile Values

No Action
Basin States
Conservation Before Shortage
Water Supply
Reservoir Storage

Year
2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060

Monthly Release (cfs)
34,000 32,000 30,000 28,000 26,000 24,000 22,000 20,000 18,000 16,000 14,000 12,000 10,000 8,000 6,000 4,000 2,000 0

90th Percentile
50th Percentile
10th Percentile
Figure P-16
Glen Canyon Dam April Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values
Glen Canyon Dam May Releases: Comparison of Action Alternatives to No Action Alternative

90th, 50th and 10th Percentile Values

- No Action
- Basin States Conservation Before Shortage
- Water Supply

Monthly Release (cfs)

Year

2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060

34,000 32,000 30,000 28,000 26,000 24,000 22,000 20,000 18,000 16,000 14,000 12,000 10,000 8,000 6,000 4,000
Figure P-18
Glen Canyon Dam June Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values
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Glen Canyon Dam July Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values
Figure P-20
Glen Canyon Dam August Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th, and 10th Percentile Values
Figure P-21
Glen Canyon Dam September Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values
Figure P-22
Glen Canyon Dam October Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values

- No Action
- Basin States
- Conservation Before Shortage
- Water Supply
- Reservoir Storage
Additional CRSS Modeling Output

Appendix P

February 2007 P-30

Draft EIS – Colorado River Interim Guidelines for
Lower Basin Shortages and Coordinated Operations
for Lake Powell and Lake Mead

Figure P-23
Glen Canyon Dam November Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values

No Action
Basin States
Conservation Before Shortage
Water Supply
Reservoir Storage

Monthly Release (cfs)

Year

2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060

34,000 32,000 30,000 28,000 26,000 24,000 22,000 20,000 18,000 16,000 14,000 12,000 10,000 8,000 6,000 4,000 2,000
Appendix P

Additional CRSS Modeling Output

Draft EIS – Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead

Figure P-24
Glen Canyon Dam December Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values

- No Action
- Basin States
- Conservation Before Shortage
- Water Supply
- Reservoir Storage

Year

Monthly Release (cfs)

2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060
Figure P-25: Comparison of Action Alternatives to No Action Alternative 90th, 50th, and 10th Percentile Values
Figure P-26
Hoover Dam February Releases
Comparison of Action Alternatives to No Action Alternative
90\textsuperscript{th}, 50\textsuperscript{th} and 10\textsuperscript{th} Percentile Values

Year

2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060

Monthly Release (cfs)

10\textsuperscript{th} Percentile
50\textsuperscript{th} Percentile
90\textsuperscript{th} Percentile

No Action
Basin States
Conservation Before Shortage
Water Supply
Reservoir Storage
Figure P-27
Hoover Dam March Releases Comparison of Action Alternatives to No Action Alternative 90th, 50th and 10th Percentile Values
Figure P-28
Hoover Dam April Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th, and 10th Percentile Values

Month Release (cfs)
No Action
Basin States
Conservation Before Shortage
Water Supply
Reservoir Storage

Year
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055
2060
20,000
17,500
15,000
12,500
10,000
7,500
5,000
Figure P-29

Comparison of Action Alternatives to No Action Alternative

90th, 50th and 10th Percentile Values

Hoover Dam May Releases

Monthly Release (cfs)

Year

Water Supply
Conservation Before Shortage
Reservoir Storage
Basin States
No Action
Figure P-30

Comparison of Action Alternatives to No Action Alternative 90th, 50th and 10th Percentile Values

Hoover Dam June Releases

Monthly Release (cfs)

Year

2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060

No Action
Basin States Conservation Before Shortage Water Supply Reservoir Storage

10th Percentile
50th Percentile
90th Percentile
Figure P-31

Hoover Dam July Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values
Figure P-32
Hoover Dam August Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th, and 10th Percentile Values

Monthly Release (cfs)

No Action
Basin States
Conservation Before Shortage
Water Supply
Reservoir Storage

Year
2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060

20,000 17,500 15,000 12,500 10,000 7,500 5,000 2050 2045 2040 2035 2030 2025 2020 2015 2010 2005
Figure P-33

Hoover Dam September Releases Comparison of Action Alternatives to No Action Alternative 90th, 50th and 10th Percentile Values
Figure P-35
Hoover Dam November Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values

[Graph showing monthly releases (cfs) from 2005 to 2060, with lines indicating No Action, Basin States, Conservation Before Shortage, Water Supply, and Reservoir Storage.]
Figure P-36
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values
Figure P-37: Davis Dam January Releases Comparison of Action Alternatives to No Action Alternative 90th, 50th and 10th Percentile Values

- No Action
- Basin States
- Conservation Before Shortage
- Water Supply
- Reservoir Storage

10th Percentile
50th Percentile
90th Percentile

Monthly Release (cfs)

Year

2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060
Figure P-38

Davis Dam February Releases

Comparison of Action Alternatives to No Action Alternative

90th, 50th, and 10th Percentile Values
Figure P-39
Davis Dam March Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th, and 10th Percentile Values

10th Percentile
50th Percentile
90th Percentile

No Action
Basin States
Conservation Before Shortage
Water Supply
Reservoir Storage
Figure P-40
Davis Dam April Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values

Monthly Release (cfs)

No Action
Basin States
Conservation Before Shortage
Water Supply
Reservoir Storage

Year
2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060

20,000 19,000 18,000 17,000 16,000 15,000 14,000 13,000 12,000 11,000 10,000 9,000 8,000 7,000 6,000
Additional CRSS Modeling Output

Appendix P

February 2007 P-48

Draft EIS – Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead

Figure P-41
Davis Dam May Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th, and 10th Percentile Values

90th Percentile
50th Percentile
10th Percentile

Month Release (cfs)
Year

2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060

No Action
Basin States
Conservation Before Shortage
Water Supply
Reservoir Storage
Figure P-42

Comparison of Action Alternatives to No Action Alternative

90th, 50th and 10th Percentile Values

Baseline States
Conservation Before Shortage
Water Supply
Reservoir Storage

No Action

Monthly Release (cfs)

Year
Figure P-43
Davis Dam July Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values

Monthly Release (cfs)

No Action
Basin States
Conservation Before Shortage
Water Supply
Reservoir Storage

Year
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055
2060

20,000
19,000
18,000
17,000
16,000
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Figure P-44
Davis Dam August Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values

No Action
Basin States
Conservation Before Shortage
Water Supply
Reservoir Storage
Davis Dam September Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th, and 10th Percentile Values

Figure P-45
Figure P-46
Davis Dam October Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values
Figure P-47: Davis Dam November Releases Comparison of Action Alternatives to No Action Alternative 90th, 50th and 10th Percentile Values
Figure P-48
Davis Dam December Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values

- No Action
- Basin States
- Conservation Before Shortage
- Water Supply
- Reservoir Storage

<table>
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</table>

Monthly Release (cfs)
Figure P-49
Parker Dam January Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values

Monthly Release (cfs)

No Action
Basin States
Conservation Before Shortage
Water Supply
Reservoir Storage

Year
2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060


Figure P-50
Parker Dam February Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th, and 10th Percentile Values

[Diagram with various data points and lines indicating water release values over time for different scenarios.]
Figure P-51: Parker Dam March Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values

| Year | No Action | Basin States Conservation Before Shortage Water Supply Reservoir Storage |
|------|-----------|-------------------------------------------------|-----------------------------|
| 2005 |           |                                                 |                             |
| 2010 |           |                                                 |                             |
| 2015 |           |                                                 |                             |
| 2020 |           |                                                 |                             |
| 2025 |           |                                                 |                             |
| 2030 |           |                                                 |                             |
| 2035 |           |                                                 |                             |
| 2040 |           |                                                 |                             |
| 2045 |           |                                                 |                             |
| 2050 |           |                                                 |                             |
| 2055 |           |                                                 |                             |
| 2060 |           |                                                 |                             |
Figure P-52
Parker Dam April Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values

Monthly Release (cfs)

Year

No Action
Basin States
Conservation Before Shortage
Water Supply
Reservoir Storage

10th Percentile
Figure P-53
Parker Dam May Releases
Comparison of Action Alternatives to No Action Alternative
90\(^{th}\), 50\(^{th}\) and 10\(^{th}\) Percentile Values

- No Action
- Basin States
- Conservation Before Shortage
- Water Supply
- Reservoir Storage

<table>
<thead>
<tr>
<th>Year</th>
<th>10(^{th}) Percentile</th>
<th>50(^{th}) Percentile</th>
<th>90(^{th}) Percentile</th>
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<td>9,000</td>
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<tr>
<td>2015</td>
<td>6,000</td>
<td>8,000</td>
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<tr>
<td>2020</td>
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<td>9,000</td>
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<td>16,000</td>
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</tbody>
</table>
Figure P-54

Parker Dam June Releases

Comparison of Action Alternatives to No Action Alternative 90th, 50th and 10th Percentile Values

- Monthly Release (cfs)
- No Action
- Basin States Conservation Before Shortage
- Water Supply
- Reservoir Storage
Figure P-55
Parker Dam July Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values

No Action
Basin States Conservation Before Shortage Water Supply Reservoir Storage

10th Percentile
50th Percentile
90th Percentile

Year
2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060

Monthly Release (cfs)
15,000 14,000 13,000 12,000 11,000 10,000 9,000 8,000 7,000 6,000 5,000 4,000 3,000 2,000 1,000 0
Figure P-56: Comparison of Action Alternatives to No Action Alternative 90th, 50th, and 10th Percentile Values
Figure P-57
Parker Dam September Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values

Monthly Release (cfs)

No Action
Basin States Conservation Before Shortage Water Supply Reservoir Storage

Year

2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060

2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060
Figure P-58
Parker Dam October Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values

- No Action
- Basin States
- Conservation Before Shortage
- Water Supply
- Reservoir Storage

Monthly Release (cfs)

2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060

Year

4000 5000 6000 7000 8000 9000 10000 11000 12000 13000 14000 15000
Figure P-59
Parker Dam November Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values
Figure P-60
Parker Dam December Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values

Monthly Release (cfs)

No Action
Basin States
Conservation Before Shortage
Water Supply
Reservoir Storage

Year

2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060
Figure P-61
Excess Flows Below Morelos Diversion Dam Comparison of Action Alternatives to No Action Alternative Probability of Occurrence

<table>
<thead>
<tr>
<th>Year</th>
<th>Probability of Occurrence</th>
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<td>50%</td>
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<td>30%</td>
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</tr>
<tr>
<td>2055</td>
<td>0%</td>
</tr>
<tr>
<td>2060</td>
<td>0%</td>
</tr>
</tbody>
</table>
Figure P-62
Colorado River at Lees Ferry
50th Percentile Temperatures
Upper and Lower Bound

- Upper Bound
- Lower Bound

No Action
Basin States/Conservation Before Shortage

Upper Bound
Lower Bound

Water Supply
Reservoir Storage
Figure P-63
Colorado River Below Little Colorado River Confluence
50th Percentile Temperatures
Upper and Lower Bound

Temperature (°C)

Date

Jan Mar May Jul Aug Oct Dec

Upper Bound

Lower Bound

No Action
Basin States/Conservation Before Storage

Water Supply
Reservoir Storage

Upper Bound

Lower Bound
Figure P-64
Colorado River Near Diamond Creek
50th Percentile Temperatures
Upper and Lower Bound

- No Action
- Basin States/Conservation Before Storage
- Upper Bound
- Lower Bound

- Water Supply
- Reservoir Storage
- Upper Bound
- Lower Bound
Figure P-65
Colorado River at Lees Ferry
10th Percentile Temperatures
Upper and Lower Bound

- No Action
- Basin States/Conservation Before Shortage

Upper Bound

Lower Bound

Temperature (°C)

Date

Reservoir Storage
Water Supply

Upper Bound

Lower Bound
Figure P-66
Colorado River Below Little Colorado River Confluence
10th Percentile Temperatures
Upper and Lower Bound

Date
Jan Mar May Jul Aug Oct Dec
Temperature (°C)
0 5 10 15 20 25
No Action
Basin States/Conservation Before Shortage
Upper Bound
Lower Bound

Date
Jan Mar May Jul Aug Oct Dec
Temperature (°C)
0 5 10 15 20 25 30
Water Supply
Reservoir Storage
Upper Bound
Lower Bound
Figure P-67
Colorado River Near Diamond Creek
10th Percentile Temperatures
Upper and Lower Bound

[Graph showing temperature trends with 10th percentile values for different scenarios.
Upper bound and lower bound are indicated for each scenario.
Dates range from January to December.
Temperature values from 0 to 30°C are displayed.
Scenarios include No Action, Basin States/Conservation Before Shortage, Water Supply, and Reservoir Storage.
]
Figure P-68
Colorado River at Lees Ferry
Under No Action Alternative
Min and Max Temperature Bounds

- Upper Bound
- Lower Bound

Water Temperature (°C)

Jan  Mar  May  Jul  Sep  Nov

10% Trace
50% Trace
90% Trace
Figure P-69
Colorado River Below Little Colorado River Confluence
Under No Action Alternative
Min and Max Temperature Bounds

Water Temperature (°C)

10% Trace
50% Trace
90% Trace

Upper Bound
Lower Bound

Jan Mar May Jul Sep Nov
Time

Mar
Jul
Sep
Nov
0 5 10 15 20 25 30

0 25 50 75 100 125 150 175 200

Figure P-70
Colorado River Near Diamond Creek Under No Action Alternative Min and Max Temperature Bounds

Water Temperature (°C)

10% Trace
50% Trace
90% Trace

Upper Bound
Lower Bound

Time
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

0
5
10
15
20
25
30
Figure P-71
Colorado River at Lees Ferry
Under Basin States and Conservation Before Shortage Alternative
Min and Max Temperature Bounds

Time
Jan Mar May Jul Sep Nov

Water Temperature (°C)
0 5 10 15 20 25 30

10% Trace
50% Trace
90% Trace

Upper Bound
Lower Bound
Appendix P

Additional CRSS Modeling Output

Figure P-72

Colorado River Below Little Colorado River Confluence Under Basin States and Conservation Before Shortage Alternative Min and Max Temperature Bounds

Water Temperature (°C)

10% Trace
50% Trace
90% Trace

Upper Bound
Lower Bound
Figure P-73
Colorado River Near Diamond Creek
Under Basin States and Conservation Before Shortage Alternative
Min and Max Temperature Bounds

- 10% Trace
- 50% Trace
- 90% Trace

Water Temperature (°C)

Jan | Mar | May | Jul | Sep | Nov
---|---|---|---|---|---
Upper Bound
Lower Bound
Figure P-74
Colorado River at Lees Ferry
Under Water Supply Alternative
Min and Max Temperature Bounds

- Upper Bound
- Lower Bound

Water Temperature (°C)

10% Trace
50% Trace
90% Trace
Figure P-75: Colorado River Below Little Colorado River Confluence Under Water Supply Alternative Min and Max Temperature Bounds

Water Temperature (°C)

10% Trace
50% Trace
90% Trace

Upper Bound
Lower Bound

Jan Mar May Jul Sep Nov

Time

Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

0 5 10 15 20 25 30
Figure P-76
Colorado River Near Diamond Creek Under Water Supply Alternative Min and Max Temperature Bounds

Water Temperature (°C)

10% Trace
50% Trace
90% Trace

Upper Bound
Lower Bound

0 5 10 15 20 25 30
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov

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Figure P-77
Colorado River at Lees Ferry
Under Reservoir Storage Alternative
Min and Max Temperature Bounds

Water Temperature (°C)

10% Trace
50% Trace
90% Trace

Upper Bound
Lower Bound

Jan Mar May Jul Sep Nov

0 5 10 15 20 25 30
Figure P-78
Colorado River Below Little Colorado River Confluence
Under Reservoir Storage Alternative
Min and Max Temperature Bounds

10% Trace
50% Trace
90% Trace

Upper Bound
Lower Bound
Figure P-79
Colorado River Near Diamond Creek Under Reservoir Storage Alternative Min and Max Temperature Bounds

- Lower Bound
- Upper Bound

Water Temperature (°C)

0 5 10 15 20 25 30
Jan Mar May Jul Sep Nov

10% Trace
50% Trace
90% Trace
Figure P-80

Glen Canyon Dam Releases Temperatures
Comparison of Action Alternatives to No Action Alternative 90th Percentile Upper and Lower Bounds for Release Temperatures

Water Temperature (°C)

No Action Upper
No Action Lower
CBS and Basin States Upper
CBS and Basin States Lower
Water Supply Upper
Water Supply Lower
Reservoir Storage Upper
Reservoir Storage Lower

Month
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Water Temperature (°C)
7.5 8 8.5 9 9.5 10 10.5 11 11.5 12
Figure P-81

Glen Canyon Dam Release Temperatures
Comparison of Action Alternatives to No Action Alternative
50th Percentile Upper and Lower Bounds for Release Temperatures

Water Temperature (°C)

No Action Upper
No Action Lower
CBS and Basin States Upper
CBS and Basin States Lower
Water Supply Upper
Water Supply Lower
Reservoir Storage Upper
Reservoir Storage Lower

Month

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Figure P-82

Comparison of Action Alternatives to No Action Alternative 10\textsuperscript{th} Percentile Upper and Lower Bounds for Release Temperatures

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<thead>
<tr>
<th>Month</th>
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<tbody>
<tr>
<td>No Action Upper</td>
<td>No Action Lower</td>
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<tr>
<td>CBS and Basin States Upper</td>
<td>CBS and Basin States Lower</td>
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<tr>
<td>Water Supply Upper</td>
<td>Water Supply Lower</td>
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<tr>
<td>Reservoir Storage Upper</td>
<td>Reservoir Storage Lower</td>
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Figure P-83
Glen Canyon Dam Release Temperatures
No Action Alternative
Upper and Lower Bounds for Release Temperatures

Water Temperature (°C)

Month

January  February  March  April  May  June  July  August  September  October  November  December
Appendix P

Figure P-84

Glen Canyon Dam Release Temperatures
Conservation Before Shortage and Basin States Alternative
Upper and Lower Bounds for Release Temperatures

Water Temperature (°C)

Month

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

10% Upper
10% Lower
50% Upper
50% Lower
90% Upper
90% Lower
Figure P-85
Glen Canyon Dam Release Temperatures
Water Supply Alternative
Upper and Lower Bounds for Release Temperatures

Water Temperature (°C)

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

10% Upper
10% Lower
50% Upper
50% Lower
90% Upper
90% Lower
Figure P-86
Glen Canyon Dam Release Temperatures
Reservoir Storage Alternative
Upper and Lower Bounds for Release Temperatures
Figure P-87

Comparison of Action Alternatives to No Action Alternative 90th Percentile Upper and Lower Bounds for Release Temperatures

Hoover Dam Release Temperatures

Water Temperature (°C)

No Action Upper
No Action Lower
CBS and Basin States Upper
CBS and Basin States Lower
Water Supply Upper
Water Supply Lower
Reservoir Storage Upper
Reservoir Storage Lower
Figure P-88: Comparison of Action Alternatives to No Action Alternative 50th Percentile Upper and Lower Bounds for Release Temperatures.

Hoover Dam Release Temperatures

Water Temperature (°C)

No Action Upper
No Action Lower
CBS and Basin States Upper
CBS and Basin States Lower
Water Supply Upper
Water Supply Lower
Reservoir Storage Upper
Reservoir Storage Lower

Month

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Water Temperature (°C)
Figure P-89

Hoover Dam Release Temperatures

Comparison of Action Alternatives to No Action Alternative
10th Percentile Upper and Lower Bounds for Release Temperatures

Water Temperature (°C)

No Action Upper
No Action Lower
CBS and Basin States Upper
CBS and Basin States Lower
Water Supply Upper
Water Supply Lower
Reservoir Storage Upper
Reservoir Storage Lower

Month

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Figure P-90
Hoover Dam Release Temperatures
No Action Alternative
Upper and Lower Bounds for Release Temperatures

Water Temperature (°C)

Month

January
February
March
April
May
June
July
August
September
October
November
December

10% Upper
10% Lower
50% Upper
50% Lower
90% Upper
90% Lower
Figure P-92: Hoover Dam Release Temperatures
Upper and Lower Bounds for Release Temperatures

Water Temperature (°C)

Month

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

10% Upper
10% Lower
50% Upper
50% Lower
90% Upper
90% Lower
Figure P-93
Hoover Dam Release Temperatures
Reservoir Storage Alternative
Upper and Lower Bounds for Release Temperatures

Water Temperature (°C)

Month

January
February
March
April
May
June
July
August
September
October
November
December

10% Upper
10% Lower
50% Upper
50% Lower
90% Upper
90% Lower
Electrical Power Resources

This section contains additional CRSS modeling output referenced in the Electrical Power Resources Section.
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Figure P-94

Glen Canyon Powerplant Annual Energy Production

Comparison of Action Alternatives to No Action Alternative

90th, 50th and 10th Percentile Values

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Figure P-95

Comparison of Action Alternatives to No Action Alternative

90th, 50th and 10th Percentile Values

Hoover Powerplant Annual Energy Production

Energy (GWh)

Year
Figure P-96

Davis Powerplant Annual Energy Production Comparison of Action Alternatives to No Action Alternative 90th, 50th and 10th Percentile Values

No Action Basin States Conservation Before Shortage Water Supply Reservoir Storage 90th Percentile 50th Percentile 10th Percentile
Figure P-97

Parker Powerplant Annual Energy Production Comparison of Action Alternatives to No Action Alternative 90th, 50th, and 10th Percentile Values

[Graph showing energy production over time for different scenarios, with markers for 90th, 50th, and 10th percentiles for No Action, Basin States Conserved, and Water Supply and Reservoir Storage.]
Figure P-98
Lake Powell End-of-July Water Elevtions
Comparison of Action Alternatives to No Action Alternative
50th and 10th Percentile Values

Water Surface Elevation (feet msl)

Year


50th Percentile
10th Percentile

No Action
Conservation Before Shortage
Water Supply
Reservoir Storage
Basin States
Additional CRSS Modeling Output

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Figure P-99

Lake Mead End-of-December Water Elevations Comparison of Action Alternatives to No Action Alternative 5th and 10th Percentile Values

Water Surface Elevation (feet msl)
Figure P-100
Headgate Rock Dam Annual Releases
Comparison of Action Alternatives to No Action Alternative
90th, 50th and 10th Percentile Values

10th Percentile

50th Percentile

90th Percentile

No Action
Basin States
Conservation Before Shortage
Water Supply
Reservoir Storage
Figure P-101
Headgate Rock Dam Annual Releases
Comparison of Action Alternatives to No Action Alternative
Average Values

Year
2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060

Annual Release (af)
6,900,000 6,700,000 6,500,000 6,300,000 6,100,000 5,900,000 5,700,000 5,500,000
Figure P-102

Headgate Rock Powerplant Annual Energy Production
Comparison of Action Alternatives to No Action Alternative

90th, 50th and 10th Percentile Values
Figure P-103
Headgate Rock Powerplant Annual Energy Production Comparison of Action Alternatives to No Action Alternative Average Values

- No Action
- Basin States Conservation Before Shortage
- Water Supply
- Reservoir Storage

Year
2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060

Annual Energy (MWh)
90,000 88,000 86,000 84,000 82,000 80,000 78,000 76,000 74,000 72,000 70,000 68,000 66,000 64,000 62,000