

# STATE OF COLORADO

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## Colorado Water Conservation Board

### Department of Natural Resources

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TO: Colorado Water Conservation Board Members

FROM: Ted Kowalski, Chief, Interstate, Federal & Water  
Information Section

DATE: May 3, 2013

SUBJECT: **Agenda Item 8, May 14-15, 2013 Board Meeting  
Interstate, Federal & Water Information Section –  
Colorado River Demand Depletion Projections**

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John W. Hickenlooper  
Governor

Mike King  
DNR Executive Director

Jennifer L. Gimbel  
CWCB Director

### Background

Approximately every 5-years, each Upper Division State within the Colorado River Basin (UT, WY, NM, and CO), working through the Upper Colorado River Commission (UCRC), provides estimates of their anticipated future consumptive uses of Colorado River Basin water. These projections are used primarily by the U.S. Bureau of Reclamation, to inform regular agency actions such as projecting when to bring on a new water supply or salinity control project, evaluating reservoir operations, determining likely surpluses and shortages, NEPA processes, and for conducting Western Area Power Administration power-rate studies. Other federal and public entities also sometimes use the projected demands for routine planning purposes only.

In the past, Colorado has developed its future depletion estimates by sub-basin, first evaluating the trends in the consumptive use of water over the last several years. This trend analysis has been based on the U.S. Bureau of Reclamation's Consumptive Uses and Losses Report's since 1970 and is given some weight in projecting uses into the future. In addition, these depletion estimates have typically considered maximum historic uses and other factors such as unused capacity in existing projects, reservations of water in certain sub-basins made as part of a Programmatic Biological Opinion pursuant to a Recovery Program (60,000 AF for the Yampa, 120,000 AF for the Colorado, and reservations associated with the San Juan and Gunnison River Basins) and the estimated consumptive uses from potential new uses of water, such as oil shale. This process leads to the State's future consumptive use projections provided to the UCRC. The last revision to the demand depletion projections were adopted by the UCRC in 2007. (See the attached UCRC Resolution). The 2007 future depletions table adopted by the UCRC suggests Colorado and the other Upper Division States consumptive uses will reach levels comparable to the levels estimated in the draft 2006 Hydrologic Determination sometime between 2050 and 2060.

Of course, the Upper Division States recognize that the future demands are uncertain, and this fact is reflected in the recently released Colorado River Basin Study (“the Basin Study”). In the Basin Study, the Upper Division States used a range of Upper Basin demands through a scenario planning approach. As one would expect, the 2007 demand depletion projections are bounded by the various scenarios used in the Basin Study. However, none of the demand projections should be interpreted as evidence of limits on Colorado's ability to fully develop its full apportionment under the Colorado River and Upper Colorado River Basin Compacts.

### **Recommendation**

This is an informational item only at this time. The Staff is in the process of developing recommended demand depletion projections. The Staff intends to share this developed information with the primary users of Colorado River water in order to obtain their comments and input. Once the Staff has received the input from these stakeholders, the Staff intends to bring these demand depletion projections to the Board with the goal of obtaining Board concurrence.



# UPPER COLORADO RIVER COMMISSION

355 South 400 East • Salt Lake City • Utah 84111 • 801-531-1150 • FAX 801-531-9705

## RESOLUTION OF THE UPPER COLORADO RIVER COMMISSION

December 12, 2007  
Las Vegas, Nevada

### 2007 Upper Basin Depletion Estimates

WHEREAS, the Upper Colorado River Commission supports water resource development in the Upper Colorado River Basin to enable the Upper Division States to fully develop their Compact apportionments of Colorado River water while meeting the Compact requirements at Lee Ferry; and

WHEREAS, the U.S. Bureau of Reclamation presented the Commission with a draft hydrologic determination dated May 2006 to address the proposed Navajo-Gallup Water Supply Project in New Mexico which found that at least 5.76 million acre-feet of water is available annually for use by the Upper Basin, exclusive of reservoir evaporation at Lake Powell, Flaming Gorge Reservoir and the Aspinall Unit reservoirs of the Colorado River Storage Project; and

WHEREAS, the Commission resolved in its June 5, 2006 meeting in Jackson, Wyoming that it would not object to a determination by the Secretary of the Interior that at least 5.76 million acre-feet of water is available annually for use by the Upper Basin, exclusive of reservoir evaporation at Lake Powell, Flaming Gorge Reservoir and the Aspinall Unit reservoirs of the Colorado River Storage Project; and

WHEREAS, Secretary of the Interior Dirk Kempthorne approved the hydrologic determination on May 23, 2007; and

WHEREAS, the Bureau of Reclamation uses Upper Division States' estimates of depletions in its modeling of Colorado River system operations; and

WHEREAS, the Upper Division States have revised their estimates of depletions based upon the hydrologic determination approved May 23, 2007; and

WHEREAS, the Upper Division States recognize the use of these revised depletion estimates for planning and river operations purposes, but also recognize that these estimates may be changed in the future based upon new assumptions or information; and

WHEREAS, these revised estimates of depletions do not constitute an interpretation of, nor shall anyone construe them as interpreting or in any manner limiting or constraining, Upper Colorado River Basin Compact apportionments.

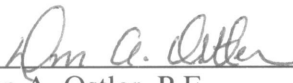
NOW THEREFORE, BE IT RESOLVED that the Upper Colorado River Commission does not object to the use of the attached December 2007 projected estimates of Upper Basin depletions for planning purposes and water supply studies within the Colorado River Basin.

BE IT FURTHER RESOLVED, that this resolution be transmitted to the Regional Director, Upper Colorado Region of the Bureau of Reclamation in Salt Lake City, Utah and as appropriate to other Federal, state and congressional officials who may need to use these depletion estimates.

#### CERTIFICATE

I, Don A. Ostler, Executive Director and Secretary of the Upper Colorado River Commission, do hereby certify that the above resolution was adopted by the Upper Colorado River Commission at its regular meeting on December 12, 2007 in Las Vegas, Nevada.

WITNESS my hand this 12<sup>th</sup> day of December, 2007.

  
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Don A. Ostler, P.E.  
Executive Director and Secretary  
Upper Colorado River Commission

**Upper Colorado River Division States**  
**Current and Future Depletion Demand Schedule**  
**UPPER BASIN TOTALS**  
**December 12, 2007**  
**(Units: 1000 acre-feet)**

Schedule B

ITEM	YEAR						
	2001-2005	2010	2020	2030	2040	2050	2060+
<b>CURRENT</b>							
Agriculture-Irr & Stock	2735	2735	2735	2735	2735	2735	2735
Municipal/Domestic	123	123	123	123	123	123	123
Energy/Industrial	231	231	231	231	231	231	231
Minerals	46	46	46	46	46	46	46
Export	1033	1033	1033	1033	1033	1033	1033
Other (WY-Environmental Projects)	2	2	2	2	2	2	2
Reservoir Evaporation	167	167	167	167	167	167	167
<b>TOTAL CURRENT</b>	<b>4337</b>	<b>4337</b>	<b>4337</b>	<b>4337</b>	<b>4337</b>	<b>4337</b>	<b>4337</b>
<b>ANTICIPATED</b>							
Agriculture-Irr & Stock	0	160	228	258	260	266	269
Municipal/Domestic	0	83	108	113	119	123	125
Energy/Industrial	0	62	83	103	107	116	119
Minerals	0	15	32	55	59	62	63
Export	0	131	183	250	312	322	322
Ute Indian Settlement (UT)	0	0	10	40	80	105	105
Reservoir Evaporation	0	6	11	18	18	18	18
<b>TOTAL ANTICIPATED</b>	<b>0</b>	<b>457</b>	<b>655</b>	<b>837</b>	<b>955</b>	<b>1012</b>	<b>1021</b>
<b>POTENTIAL</b>							
Agriculture-Irr & Stock	0	1	15	20	27	42	35
Municipal/Domestic	0	2	3	3	4	17	18
Energy/Industrial	0	0	0	52	52	52	52
Minerals	0	2	3	5	6	7	7
Export	0	0	10	20	30	40	50
Reservoir Evaporation	0	3	3	3	3	3	3
<b>TOTAL POTENTIAL</b>	<b>0</b>	<b>8</b>	<b>34</b>	<b>103</b>	<b>122</b>	<b>161</b>	<b>165</b>
<b>TOTAL</b>	<b>4337</b>	<b>4802</b>	<b>5026</b>	<b>5277</b>	<b>5414</b>	<b>5510</b>	<b>5523</b>
2007 Hydro-Det. Amount (UB Share) <sup>3</sup>	5710	5710	5710	5710	5710	5710	5710
Remaining Available	1373	908	684	433	296	200	187
Percent Unused(%)	24	16	12	8	5	4	3

Note 1: This depletion schedule does not attempt to interpret the Colorado River Compact, the Upper Colorado River Basin Compact, or any other element of the "Law of the River." This schedule should not be construed as an acceptance of any assumption that limits the Upper Colorado River Basin's depletion.

Note 2: This depletion schedule is for planning purposes only. This estimate does not constitute an endorsement of the Bureau of Reclamation's 2007 Hydrologic Determination and should not be construed as in any way limiting the Upper Division States use of Colorado River water in accordance with the Commission's Resolution of 6/5/06.

Note 3: The yield determined in the 2007 Hydrologic Determination excluding shared CRSP evaporation. The numbers in this row reflect 50,000 ac-ft apportioned for use in Arizona.

**Upper Colorado River Division States  
Current and Future Depletion Demand Schedule  
STATE OF COLORADO**

Schedule B

December 12, 2007  
(Units: 1000 acre-feet)

ITEM	YEAR						
	2001-2005	2010	2020	2030	2040	2050	2060+
<b>CURRENT</b>							
Agriculture-Irr & Stock	1500	1500	1500	1500	1500	1500	1500
Municipal/Domestic	77	77	77	77	77	77	77
Energy/Industrial	87	87	87	87	87	87	87
Minerals	26	26	26	26	26	26	26
Export	705	705	705	705	705	705	705
Reservoir Evaporation	86	86	86	86	86	86	86
<b>TOTAL CURRENT</b>	<b>2481</b>	<b>2481</b>	<b>2481</b>	<b>2481</b>	<b>2481</b>	<b>2481</b>	<b>2481</b>
<b>ANTICIPATED</b>							
Agriculture-Irr & Stock	0	49	49	52	52	54	57
Municipal/Domestic	0	76	81	82	82	85	86
Energy/Industrial	0	57	64	73	73	77	80
Minerals	0	7	17	32	32	32	32
Export	0	122	142	162	182	182	182
Reservoir Evaporation	0	2	2	2	2	2	2
<b>TOTAL ANTICIPATED</b>	<b>0</b>	<b>313</b>	<b>355</b>	<b>403</b>	<b>423</b>	<b>432</b>	<b>439</b>
<b>POTENTIAL</b>							
Agriculture-Irr & Stock	0	1	5	5	12	27	20
Municipal/Domestic	0	1	1	1	1	13	13
Energy/Industrial	0	0	0	0	0	0	0
Minerals	0	0	0	1	2	2	2
Export	0	0	0	0	0	0	0
Reservoir Evaporation	0	0	0	0	0	0	0
<b>TOTAL POTENTIAL</b>	<b>0</b>	<b>2</b>	<b>6</b>	<b>7</b>	<b>15</b>	<b>42</b>	<b>35</b>
<b>TOTAL</b>							
<b>TOTAL</b>	<b>2481</b>	<b>2796</b>	<b>2842</b>	<b>2891</b>	<b>2919</b>	<b>2955</b>	<b>2955</b>
Share of 2007 Hydro-Det Amount (5.76maf) <sup>3</sup>	2955	2955	2955	2955	2955	2955	2955
Remaining Available	474	159	113	64	36	0	0
Percent Unused(%)	16	5	4	2	1	0	0

Note 1: This depletion schedule does not attempt to interpret the Colorado River Compact, the Upper Colorado River Basin Compact, or any other element of the "Law of the River." This schedule should not be construed as an acceptance of any assumption that limits the Upper Colorado River Basin's depletion.

Note 2: This depletion schedule is for planning purposes only. This estimate does not constitute an endorsement of the Bureau of Reclamation's 2007 Hydrologic Determination and should not be construed as in any way limiting the Upper Division States use of Colorado River water in accordance with the Commission's resolution of 6/5/06.

Note 3: The yield determined in the 2007 Hydrologic Determination excluding shared CRSP evaporation. The numbers in this row reflect 50,000 ac-ft apportioned to Arizona.

**Upper Colorado River Division States  
Current and Future Depletion Demand Schedule**

Schedule B

**STATE OF NEW MEXICO**

December 12, 2007

(Units: 1000 acre-feet)

ITEM	YEAR						
	2001-2005	2010	2020	2030	2040	2050	2060+
<b>CURRENT</b>							
Agriculture-Irr & Stock	243	243	243	243	243	243	243
Municipal/Domestic	12	12	12	12	12	12	12
Energy/Industrial	51	51	51	51	51	51	51
Minerals	1	1	1	1	1	1	1
Export	105	105	105	105	105	105	105
Reservoir Evaporation	29	29	29	29	29	29	29
<b>TOTAL CURRENT</b>	<b>441</b>	<b>441</b>	<b>441</b>	<b>441</b>	<b>441</b>	<b>441</b>	<b>441</b>
<b>ANTICIPATED</b>							
Agriculture-Irr & Stock	0	89	130	150	150	150	150
Municipal/Domestic	0	5	22	25	29	29	29
Energy/Industrial	0	4	6	7	7	7	7
Minerals	0	0	0	0	0	0	0
Export	0	0	9	12	15	15	15
Reservoir Evaporation	0	0	0	0	0	0	0
<b>TOTAL ANTICIPATED</b>	<b>0</b>	<b>98</b>	<b>167</b>	<b>194</b>	<b>201</b>	<b>201</b>	<b>201</b>
<b>POTENTIAL</b>							
Agriculture-Irr & Stock	0	0	0	0	0	0	0
Municipal/Domestic	0	0	0	0	0	0	0
Energy/Industrial	0	0	0	0	0	0	0
Minerals	0	0	0	0	0	0	0
Export	0	0	0	0	0	0	0
Reservoir Evaporation	0	0	0	0	0	0	0
<b>TOTAL POTENTIAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TOTAL</b>	<b>441</b>	<b>539</b>	<b>608</b>	<b>635</b>	<b>642</b>	<b>642</b>	<b>642</b>
Share of 2007 Hydro-Det Amount (5.76 maf) <sup>3</sup>	642	642	642	642	642	642	642
Remaining Available	201	103	34	7	0	0	0
Percent Unused	31	16	5	1	0	0	0

Note 1: This depletion schedule does not attempt to interpret the Colorado River Compact, the Upper Colorado River Basin Compact, or any other element of the "Law of the River." This schedule should not be construed as an acceptance of any assumption that limits the Upper Colorado River Basin's depletion.

Note 2: This depletion schedule is for planning purposes only. This estimate does not constitute an endorsement of the Bureau of Reclamation's 2007 Hydrologic Determination and should not be construed as in any way limiting the Upper Division States use of Colorado River water in accordance with the Commission's resolution of 6/5/06.

Note 3: The yield determined in the 2007 Hydrologic Determination excluding shared CRSP evaporation. The numbers in this row reflect 50,000 ac-ft apportioned for use in Arizona.

**Upper Colorado River Division States  
Current and Future Depletion Demand Schedule**

Schedule B

**STATE OF UTAH  
December 12, 2007  
(Units: 1000 acre-feet)**

ITEM	YEAR						
	2001-2005	2010	2020	2030	2040	2050	2060+
<b>CURRENT</b>							
Agriculture-Irr & Stock	591	591	591	591	591	591	591
Municipal/Domestic	25	25	25	25	25	25	25
Energy/Industrial	45	45	45	45	45	45	45
Minerals	0	0	0	0	0	0	0
Export	207	207	207	207	207	207	207
Reservoir Evaporation (Non CRSP)	19	19	19	19	19	19	19
<b>TOTAL CURRENT</b>	<b>887</b>	<b>887</b>	<b>887</b>	<b>887</b>	<b>887</b>	<b>887</b>	<b>887</b>
<b>ANTICIPATED</b>							
Agriculture-Irr & Stock	0	18	30	34	36	40	40
Municipal/Domestic	0	1	3	4	5	6	6
Energy/Industrial	0	1	4	6	10	15	15
Ute Indian Settlement	0	0	10	40	80	105	105
Minerals	0	0	0	0	0	0	0
Export	0	0	21	61	100	110	110
Reservoir Evaporation	0	0	0	0	0	0	0
<b>TOTAL ANTICIPATED</b>	<b>0</b>	<b>20</b>	<b>68</b>	<b>145</b>	<b>231</b>	<b>276</b>	<b>276</b>
<b>POTENTIAL</b>							
Agriculture-Irr & Stock	0	0	0	0	0	0	0
Municipal/Domestic	0	0	0	0	0	0	0
Energy/Industrial	0	0	0	0	0	0	0
Minerals	0	0	0	0	0	0	0
Export	0	0	0	0	0	0	0
Reservoir Evaporation	0	0	0	0	0	0	0
<b>TOTAL POTENTIAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TOTAL</b>	<b>887</b>	<b>907</b>	<b>955</b>	<b>1032</b>	<b>1118</b>	<b>1163</b>	<b>1163</b>
Share of 2007 Hydro-Det Amount (5.76 maf) <sup>3</sup>	1313	1313	1313	1313	1313	1313	1313
<b>REMAINING AVAILABLE</b>	<b>426</b>	<b>406</b>	<b>358</b>	<b>281</b>	<b>195</b>	<b>150</b>	<b>150</b>
Percent Unused	32	31	27	21	15	11	11

Note 1: This depletion schedule does not attempt to interpret the Colorado River Compact, the Upper Colorado River Basin Compact, or any other element of the "Law of the River." This schedule should not be construed as an acceptance of any assumption that limits the Upper Colorado River Basin's depletion.

Note 2: This depletion schedule is for planning purposes only. This estimate does not constitute an endorsement of the Bureau of Reclamation's 2007 Hydrologic Determination and should not be construed as in any way limiting the Upper Division States use of Colorado River water in accordance with the Commission's resolution of 6/5/06.

Note 3: The yield determined in the 2007 Hydrologic Determination excluding shared CRSP evaporation. The numbers in this row reflect 50,000 ac-ft apportioned for use in Arizona.



**Upper Colorado River Division States  
Current and Future Depletion Demand Schedule  
STATE OF WYOMING**

Schedule B

**December 12, 2007  
(Units: 1000 acre-feet)**

ITEM	YEAR						
	2001-2005	2010	2020	2030	2040	2050	2060+
<b>CURRENT</b>							
Agriculture-Irr & Stock	401	401	401	401	401	401	401
Municipal/Domestic	9	9	9	9	9	9	9
Energy/Industrial	48	48	48	48	48	48	48
Minerals	19	19	19	19	19	19	19
Export	16	16	16	16	16	16	16
Reservoir Evaporation	33	33	33	33	33	33	33
Other	2	2	2	2	2	2	2
<b>TOTAL CURRENT</b>	<b>528</b>	<b>528</b>	<b>528</b>	<b>528</b>	<b>528</b>	<b>528</b>	<b>528</b>
<b>ANTICIPATED</b>							
Agriculture-Irr & Stock	0	4	19	22	22	22	22
Municipal/Domestic	0	1	2	2	3	3	4
Energy/Industrial	0	0	9	17	17	17	17
Minerals	0	8	15	23	27	30	31
Export	0	9	11	15	15	15	15
Reservoir Evaporation	0	4	9	16	16	16	16
<b>TOTAL ANTICIPATED</b>	<b>0</b>	<b>26</b>	<b>65</b>	<b>95</b>	<b>100</b>	<b>103</b>	<b>105</b>
<b>POTENTIAL</b>							
Agriculture-Irr & Stock	0	0	10	15	15	15	15
Municipal/Domestic	0	1	2	2	3	4	5
Energy/Industrial	0	0	0	52	52	52	52
Minerals	0	2	3	4	4	5	5
Export	0	0	10	20	30	40	50
Reservoir Evaporation	0	3	3	3	3	3	3
<b>TOTAL POTENTIAL</b>	<b>0</b>	<b>6</b>	<b>28</b>	<b>96</b>	<b>107</b>	<b>118</b>	<b>130</b>
<b>TOTAL</b>							
<b>TOTAL</b>	<b>528</b>	<b>560</b>	<b>621</b>	<b>719</b>	<b>735</b>	<b>750</b>	<b>763</b>
Share of 2007 Hydro-Det Amount (5.76maf) <sup>3</sup>	799	799	799	799	799	799	799
Remaining Available	271	239	178	80	64	49	36
Percent Unused	34	30	22	10	8	6	5

Note 1: This depletion schedule does not attempt to interpret the Colorado River Compact, the Upper Colorado River Basin Compact, or any other element of the "Law of the River." This schedule should not be construed as an acceptance of any assumption that limits the Upper Colorado River Basin's depletion.

Note 2: This depletion schedule is for planning purposes only. This estimate does not constitute an endorsement of the Bureau of Reclamation's 2007 Hydrologic Determination and should not be construed as in any way limiting the Upper Division States use of Colorado River water in accordance with the Commission's resolution of 6/5/06.

Note 3: The yield determined in the 2007 Hydrologic Determination excluding shared CRSP evaporation. The numbers in this row reflect 50,000 ac-ft apportioned for use in Arizona.