Monitoring Report 2017

Prepared in accordance with the

Upper Colorado River Wild & Scenic Stakeholders

Management Plan

Approved June 7, 2018

CONTENTS

Abbreviations and Acronyms

AF	Acre-feet
BLM	U.S. Bureau of Land Management
CDPHE	Colorado Department of Public Health and Environment
CWCB	Colorado Water Conservation Board
CPW	Colorado Parks and Wildlife
CROS	Coordinated Reservoir Operation
cfs	Cubic feet per second
DM	Daily Maximum
HUP	Historic Users Pool
MMI	Multi-Metric Index
MWAT	Maximum Weekly Average Temperature
ORV	Outstandingly Remarkable Values
SG	Upper Colorado River Wild and Scenic Stakeholder Group
SG Plan	Upper Colorado River Wild and Scenic Stakeholder Group Management Plan
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
W&S	Wild and Scenic

EXECUTIVE SUMMARY

The Upper Colorado River Wild & Scenic Stakeholder Group (SG) monitors and protects Outstandingly Remarkable Values (ORVs) on segments of the Colorado River from Kremmling, Colorado to about 2 miles east of Glenwood Springs. The Upper Colorado River Wild and Scenic Stakeholder Group Management Plan (SG Plan) provides the framework for the SG to operate, protect ORVs through cooperative measures, and monitor ORV Indicators and Resource Guides. The purpose of the SG Plan is to "balance permanent protection of the ORVs, certainty for the stakeholders, water project yield, and flexibility for water users." The SG Plan is currently in year 3 of a provisional period, during which time the SG will evaluate and revise the provisional ORV Indicators and Resource Guides, if necessary. The purpose of this report is to provide a summary of cooperative measures and monitoring activities conducted by the SG during W&S water year 2017, from April 1, 2017 to March 31, 2018.

During 2017, the Cooperative Measures Committee monitored streamflow and temperature in the W&S segments and participated in Historic Users Pool (HUP) calls. In support of the Recreational Floatboating ORV, reservoir releases were timed to accommodate the annual Gore Canyon Festival in August.

Monitoring activities supported evaluation of the provisional ORV Indicators and Resource Guides in the SG Plan. Failure to meet a provisional or final ORV Indicator is cause for elevation and potential termination of the plan, while Resource Guides are used to inform SG discussions. Based on the available data, the majority of ORV Indicators were met in the W&S segments in 2017 (Table 1 and 2).

However, two provisional Fishing ORV Indicators were not met at the State Bridge site. Biomass was 86 lb per acre; the provisional ORV Indicator is 90 lb per acre. Species diversity was 9, the provisional ORV Indicator is 14.

The number of usable floatboating days for Black Opportunities (4,000 to 7,400 cfs) was below the Resource Guide range in segments 4-6.During 2017, Maximum weekly average temperature (MWAT) was exceeded at the No Name temperature sites. In addition, the first year of data from the Catamount temperature site shows an exceedance of the MWAT threshold. A

complete statistical analysis as per CDPHE's 2018 Section 303(d) listing methodology and Policy Statement 06-1 has not been conducted.

The SG conducted additional monitoring related to the W&S segments to support SG decisions. This included recreational fishing and floatboating use data collected by RRC Associates and macroinvertebrate data from Grand County.

Table 1. Summary of provisional ORV Indicators in 2017.

ORV Indicator	Measure/Metric	2017 Status
Recreational Floatboating	Narrative	Not evaluated
Recreational Fishing	Quality Trout	Met
	Biomass	Not met at State Bridge
	Species	Not met at State Bridge
	TFE / CPUE	No criteria and not measured in 2017

Table 2. Summary of provisional ORV Resource Guides in 2017.

ORV Resource Guides	Measure/Metric	2017 Status
Recreational Floatboating	Useable days	Below range for Black Opportunities[a]
Recreational Fishing	Seasonal flows	Within the seasonal range of flow
Water Quality	CDPHE Standards	Macroinvertebrates listed on M&E list[b]
Temperature	DM	Met at all sites
	MWAT	Above threshold at Catamount & No Name

[a] Black Opportunities were not within range for W&S segments 4-6.
[b] CDPHE includes macroinvertebrates on Monitoring and Evaluation List from Gore Canyon to Derby Creek, which includes W&S segments 4, 5, and the top portion of 6.

INTRODUCTION

The 2012 Upper Colorado River Wild and Scenic Stakeholder Management Plan (SG Plan, or Plan) was adopted by U.S. Bureau of Land Management (BLM) and U.S. Forest Service (USFS) as a Wild and Scenic (W&S) management alternative to protect the Outstandingly Remarkable Values (ORVs) identified in the Eligibility Reports for BLM segments 4 through 7 (USFS segments 1 through 2) on over 80 miles of the Upper Colorado River (See Appendix A: Project Area Map). The purpose of the SG Plan is to "balance permanent protection of the ORVs, certainty for the Upper Colorado River Wild & Scenic Stakeholders (SG or "stakeholders"), water project yield, and flexibility for water users." Key elements of the SG Plan include provisions for protection of the ORVs and a plan for monitoring the success of the SG's efforts.

Protection of the ORVs

The SG Plan aims to protect all ORVs identified in the Wild & Scenic Eligibility Reports for W&S segments 4 through 7, while focusing on the primary streamflow-influenced recreational fishing ORVs in segments 4 through 6, and recreational floatboating ORVs in segments 4 through 7.

Long-Term Protection Measures include appropriation of CWCB instream flows, continued delivery of water to downstream demands, continued delivery to downstream senior water rights, and ongoing deliveries to the endangered fish species under the Upper Colorado River Recovery Program. The SG Plan contains provisions for addressing any material change in circumstances that undermines the value of these long-term protection measures.

Cooperative Measures strategies are voluntary strategies that are used by the SG to maintain or enhance the ORVs. Implementation will be considered annually and will be based on hydrologic conditions, forecasted needs for the ORVs and availability of voluntary cooperative measures that do not impair the ability of water providers to meet their water supply commitments using prudent operational constraints.

Monitoring Plan

The SG Plan includes provisional ORV Indicators and Resource Guides to monitor the status of the ORVs. Failure to meet criteria related to the provisional or final ORV Indicators (SG Plan, Section IV) would be cause for elevation and potential termination of the SG Plan.

ORV Indicators, which describe conditions that characterize the ORVs, are monitored to gauge whether the ORVs are being protected under the SG Plan. Provisional ORV Indicators were developed for recreational floatboating and recreational fishing.

Resource Guides include resource measures for recreational floatboating, recreational fishing, flushing flows, water quality and temperature. The Resource Guides are used as a source of information to inform SG discussions under the SG Plan. The Resource Guides are not intended to be used as a test for SG Plan success nor for use by permitting agencies or other entities as criteria for evaluating a project's effects on the ORVs.

The Monitoring Plan included in the SG Plan has an initial 3-to-5 year provisional period during which the SG will monitor, evaluate, and revise (if necessary) the provisional ORV Indicators and Resource Guides. The provisional period was triggered when BLM and USFS signed their Records of Decision (RODs) in June 2015. Consequently, the 2017 water year was the third year of the SG's provisional period.

PURPOSE

The purpose of this report is to provide a summary of cooperative measures and monitoring activities conducted by the SG in 2017. Monitoring activities include evaluation of the provisional ORV Indicators and Resource Guides, additional data collected by the SG, and a review of information collected by other entities that is pertinent to the ORVs. Based on the SG Plan, the monitoring year begins on April 1, 2017 and ends March 31, 2018.

HYDROLOGY

The SG monitors streamflow on the Colorado River to: 1) gain a general understanding of the hydrology impacting the W&S segments; 2) identify opportunities for data collection, such as

conducting additional visitor surveys during low flows; 3) identify potential issues that could be addressed by cooperative measures; and 4) evaluate Year Type and user days associated with Floatboating and Fishing ORV Resource Guides.

Three streamflow gages were available in the W&S segments in 2017 (Table 3). The SG Plan uses the Kremmling and Dotsero gages to monitor flows in the W&S segments. In addition, the SG spearheaded the installation of a new USGS gage in October of 2016 at the Catamount Bridge in W&S segment 6. This gage is currently operational for 8 months each year, from March 15th through November 15th and is used to monitor streamflow, water temperature and air temperature. However, data from the Catamount gage has not yet been included in the SG Plan at this time Figures 1,2 and 3 display the historic median daily streamflow and the average daily streamflow during the 2017 W&S Water Year.

All three hydrographs and all subsequent analyses use USGS data that was available as of 5/14/2018, this includes both approved and provisional data; the Kremmling gage data is provisional from 11/15/2017 to 3/31/2018, the Dotsero gage is provisional from 1/8/2018 to 3/31/2018, and the Catamount gage is provisional from 3/15/2018 to 3/31/2018. Values for ice affected days were filled using the average of the values on either side of the ice affected period.

Table 3. USGS gages operated in the vicinity of the W&S segments in 2017.

Number	Gage Name	Parameters	W&S Segment
09058000	Colorado River near Kremmling	Discharge & Temperature	4
09060799	Colorado River at Catamount	Discharge & Temperature	6
09070500	Colorado River near Dotsero	Discharge	7

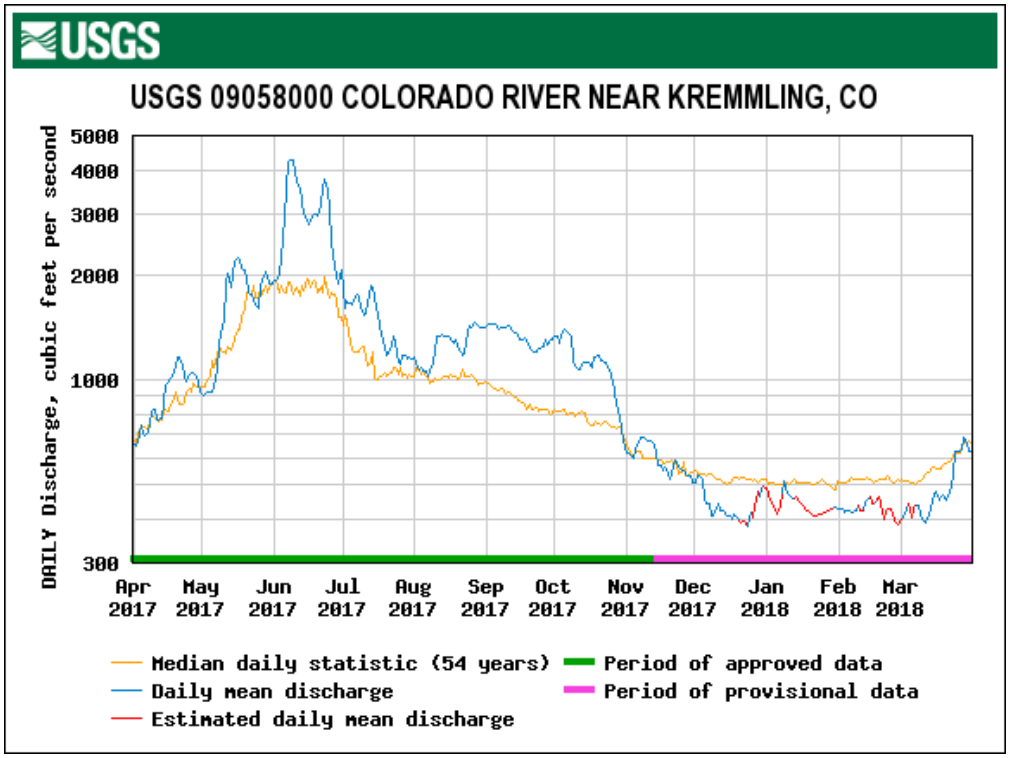


Figure 1. Daily streamflow in 2017 at the Colorado River near Kremmling, CO gage (USGS 09058000).

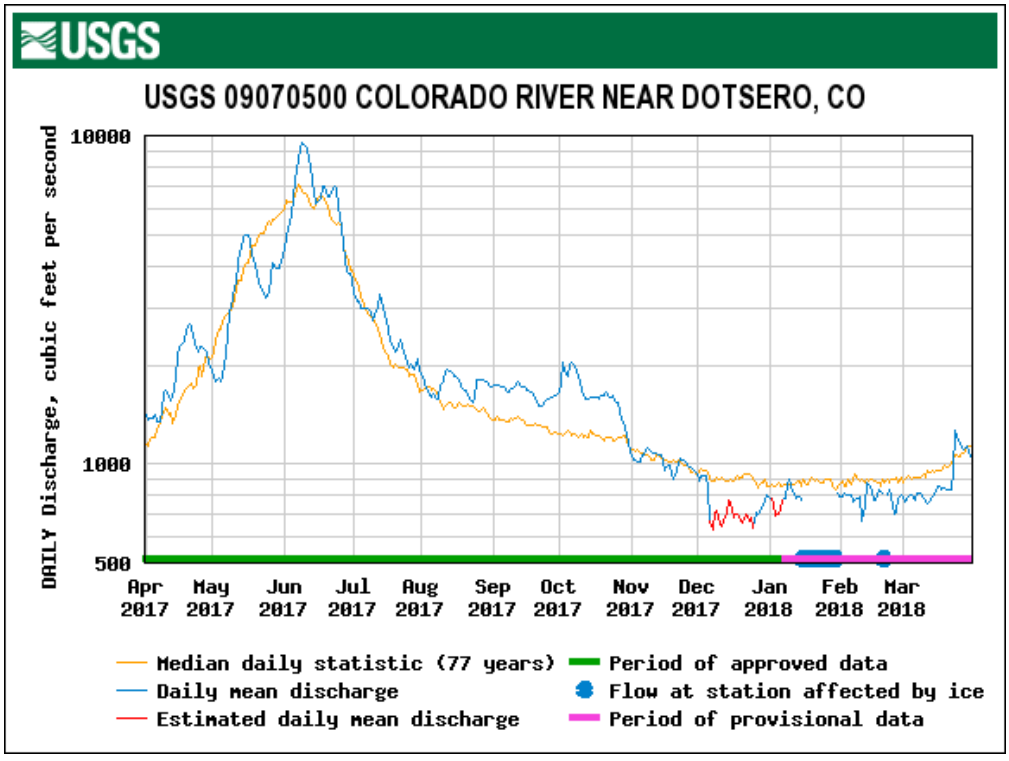


Figure 2. Daily streamflow in 2017 at the Colorado River near Dotsero, CO gage (USGS 09070500).

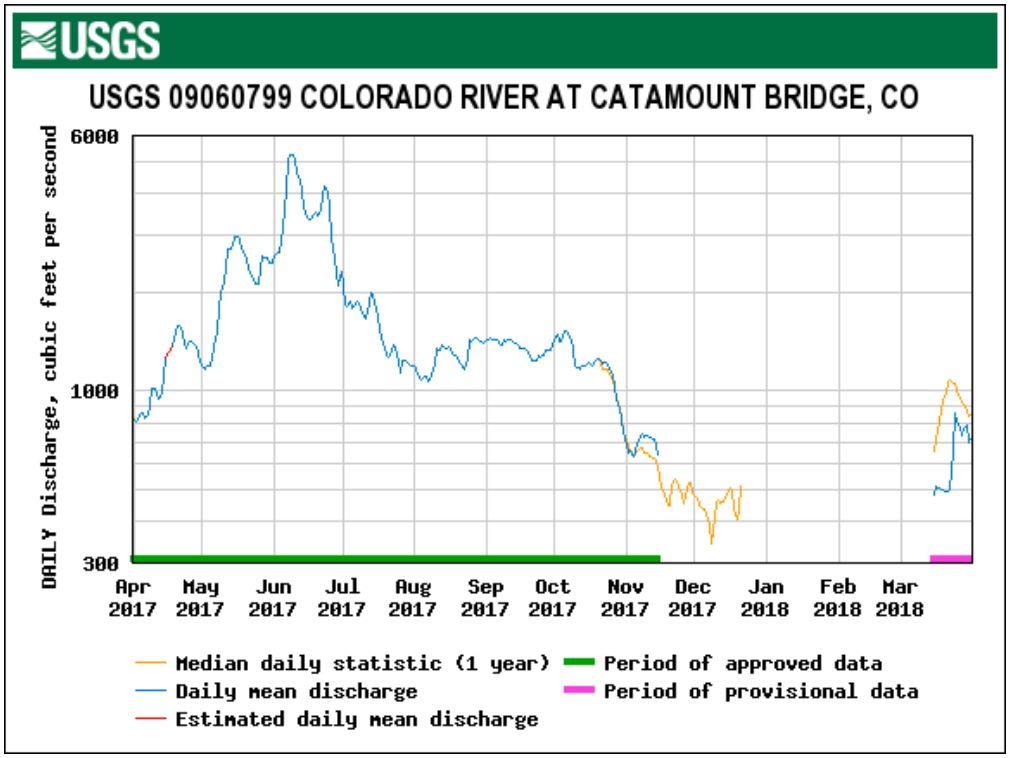


Figure 3. Daily streamflow in 2017 at the Colorado River at Catamount Bridge, CO gage (USGS 09060799).

CROS Operations

During the 2017 season a successful Coordinated Reservoir Operation (CROS) occurred which increased peak flows in the 15-mile reach of the Colorado River to improve fish habitat for species protected under the Endangered Species Act (Figures 4 and 5). The CROS operation also created higher peak flows in all the W&S segments as releases from participating upstream CROS reservoirs passed through the segments.

CROS program releases to increase the peak flow in the 15-mile reach of the Colorado River began on June 3, 2017 and continued throughout the week. The reservoirs participating in CROS released a total of approximately 35,735 acre-feet, of this total approximately 31,633 acre-feet passed through the W&S segments.

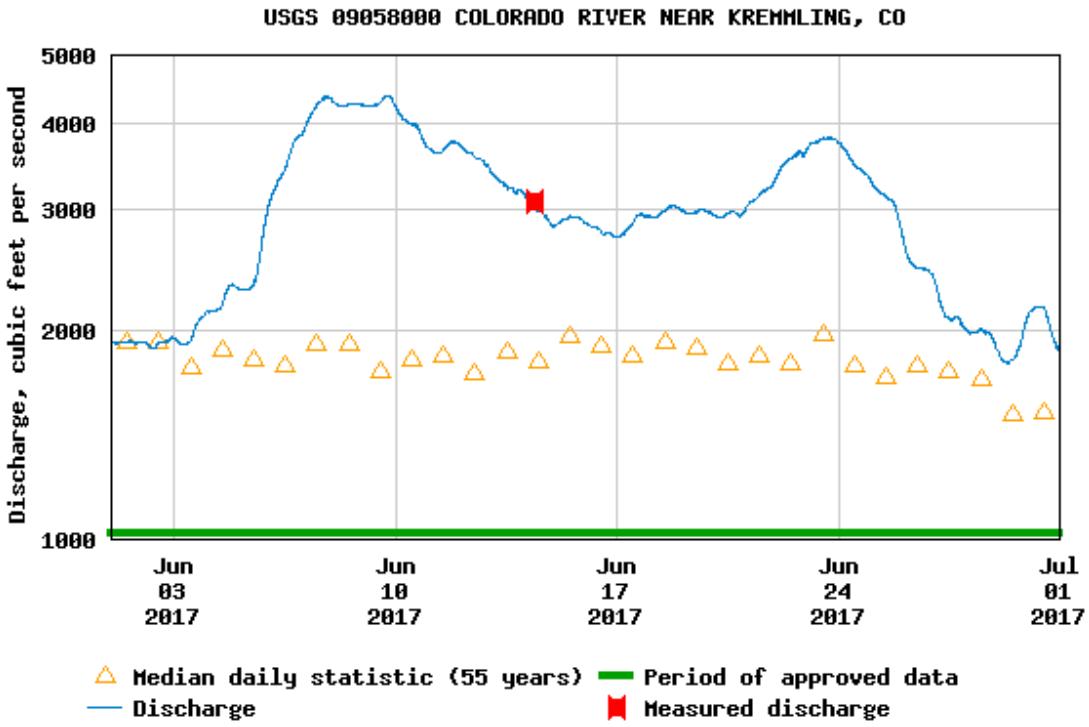


Figure 4. Hydrograph showing peak flows during CROS operations on the Colorado River near Kremmling (USGS 09058000).

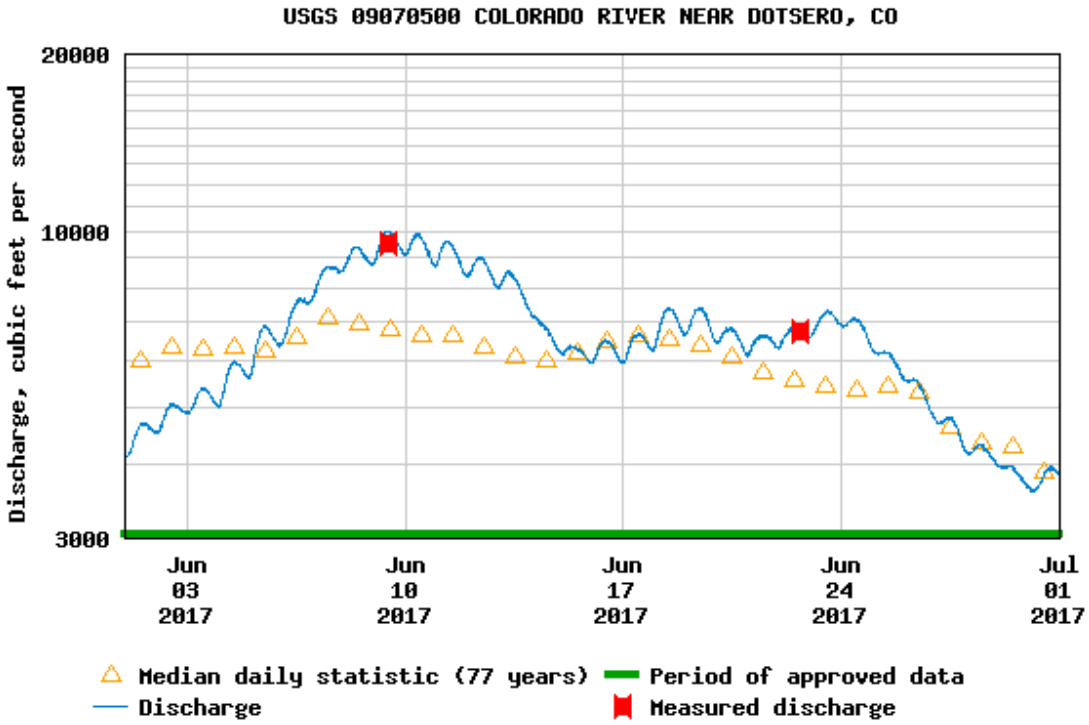


Figure 5. Hydrograph showing peak flows during the CROS operations on the Colorado River near Dotsero, CO (USGS 09070500).

The hydrographs also show the flows at the Kremmling gauge moving into the Floatboating Resource Guides for Black Opportunities (flows above 4000 cfs) for about four days, and flows at the Dotsero gage moving above the upper bound of the Black Opportunity level (8600 cfs) for about five days as a result of the CROS operations. This created some Black Opportunity usable days at Kremmling (Wet Typical year) that may not have been possible without the additional releases for the CROS operation. It also created flows in excess of the Floatboating Resource Guide levels at Dotsero.

YEAR TYPE DETERMINATION

The SG Plan calls for evaluating annual flow volumes and categorizing flow volumes by "Year Type" (

Table 4). The actual Year Type is based on total annual flow volumes measured at the Kremmling and Dotsero gages from April 1st through March 31st. In addition, the SG evaluates the predicted Year Type based on the Colorado River Basin Forecast Center April 1 Water Supply Forecast (Table 5). The April 1 prediction uses a table based on undepleted forecasted flows in the SG Plan to predict the Year Type. The April 1 prediction in 2017 estimated that the undepleted flows would be 940,000 acre feet for Kremmling and 1,450,000 acre feet at Dotsero (Table 6). Based on these volumes the predicted flows at both Kremmling and Dotsero were "Wet Typical."

In 2017, the total actual annual flow volume at the Kremmling gage was 790,942 acre feet and the total volume at the Dotsero gage was 4,441,231 acre feet (red indicates values based on provisional data as discussed in the Hydrology section, see Table 6). Consequently, these segments are ranked in the "Wettest 25%" and "Wet Typical" categories, respectively. It is worth noting that 4 of 6 years since 2012 have been classified as Wettest 25% or Wet Typical, this is partly due to the Year Type classification which is based on Denver Water's PACSM model that simulates water projects that have not been constructed at this time.

Table 4. SG Plan Year Type classification for W&S segments 4-6 and segment 7. This table is based on data from Denver Water's PACSM future modeled hydrology for 1947-1991.[1]

Year Type	Segment 4-6 Kremmling Gage AF	Segment 7 Dotsero Gage AF
Wettest 25%	>769,500	>1,519,500
Wet Typical	525,000-769,500	1,234,000-1,519,500
Dry Typical	454,500-525,500	1,029,500-1,234,000
Driest 25%	<454,000	<1,029,500

Table 5. April 1 Forecast predicted Year Type classification.

Year Type	Segment 4-6 Kremmling Gage AF	Segment 7 Dotsero Gage AF
Wettest 25%	>1,007,000	>1,757,500
Wet Typical	812,500-1,007,000	1,362,500-1,757,500
Dry Typical	607,000-812,500	1,007,000-1,362,500
Driest 25%	<607,000	<1,007,000

Table 6. Summary of April 1 flow predictions, actual flow volumes, and actual Year Type from 2012 through 2017 for all W&S segments.

Year	Segment 4 – 6 Kremmling Gage			Segment 7 Dotsero Gage		
	April 1 Prediction	Actual AF	Actual Type	April 1 Prediction	Actual AF	Actual Type
2012	Driest 25%	409,202	Driest 25%	Driest 25%	733,813	Driest 25%
2013	Driest 25%	514,947	Dry Typical	Driest 25%	1,107,862	Dry Typical
2014	Wettest	1,207,240	Wettest 25%	Wettest	2,170,163	Wettest
2015	Dry Typical	1,074,052	Wettest 25%	Dry Typical	1,744,867	Wettest
2016	Wet Typical	855,898	Wettest 25%	Dry Typical	1,565,560	Wettest
2017	Wet Typical	790,942	Wettest 25%	Wet Typical	1,441,231	Wet Typical

Red indicates values based on provisional data as discussed in the Hydrology section.

[1] The Hydrology Study Group memo from 1/23/2017 contains detailed information about development of this table.

2017 COOPERATIVE MEASURES

At each meeting of the Cooperative Measures Committee, the group discussed options and explored cooperative measures that might be needed and available on the Colorado River. During 2017, the group focused on flows in the Colorado River. Representatives from the W&S Cooperative Measures Committee participated in the Coordinated Reservoir Operation Program (CROS) and Historic User Pool (HUP) weekly calls between May and October to provide input to some of the operations being discussed on the Colorado River. During one of the weekly HUP calls, a discussion around flows for the annual Gore Canyon Festival occurred. Details concerning this event are explained below.

GORE CANYON FESTIVAL

Flow conditions on the Upper Colorado in August are primarily influenced by upstream reservoir operations and downstream calls. In late August, wetter-than-normal basin conditions, plus the favorable storage conditions in upper basin reservoirs, allowed water managers to adjust reservoir releases to improve flow conditions in the 15-Mile reach. As the Gore Canyon Festival weekend approached, however, discussions began of Shoshone Powerplant placing a call on the river. The Shoshone Powerplant call would move Colorado-Big Thompson trans-basin diversions out of priority. During a separate HUP call, it was arranged to have the call placed on the Colorado River the morning of the Gore Canyon Festival, on August 26th instead of August 25th. Reclamation started the 100 cfs increased release from Green Mountain the morning of the 26th, allowing time for the Gore Canyon Downriver Race (one event within the Gore Canyon Festival) to occur before the increased flows arrived later that day. The short delay in the call prevented additional water in the Colorado River, which would have forced organizers to cancel the Gore Canyon Downriver Race.

With the coordination between the HUP users and the Gore Fest coordinators, the flows dropped to 1,410cfs Friday and Saturday during the start of the Gore Canyon Festival. By Sunday flows were at 1,500cfs at the Kremmling gage. The remaining events, including freestyle

kayak competition at the Gore Canyon Whitewater Park (Pumphouse), and Stand-up Paddle Board competitions, continued without problem.

2017 MONITORING RESULTS

The Monitoring Committee assembled or collected information necessary to evaluate the provisional ORV Indicators and Resource Guides. During 2017, the SG conducted the following activities:

- Determined recreational floatboating usable days and recreational seasonal flows by year type.
- Assessed fish biosurvey data collected by Colorado Parks and Wildlife (CPW).
- Evaluated temperature at 5 sites based on USGS and BLM temperature gages.
- Continued development of the visitor survey database and analysis with RRC Associates.
- Reviewed available macroinvertebrate data as supporting information for SG.

RECREATIONAL FLOATBOATING

ORV Indicators for Recreational Floatboating

The SG Plan has a provisional ORV Indicator for recreational floatboating which applies to the Upper Colorado River from the top of Gore Canyon to No Name in Glenwood Canyon. The current ORV Indicator is the following narrative standard:

> "Protect the existing range and quality of the outstanding floatboating opportunities. This narrative standard does not imply mirroring any specific hydrology."

The intent of the SG is to develop and incorporate objective criteria into the final ORV Indicators for recreational floatboating. The Ad-Hoc Floatboating Committee continued to work towards this goal based in part on recreational survey work conducted by RRC Associates. This work is summarized in the Additional Monitoring section.

Resource Guides for Recreational Floatboating

Resource Guides for recreational floatboating are based on assessing the number of usable days at different flow rates depending on the Year Type determined by W&S segment.

W&S Segment 4-6

Floatboating Resource Guides for W&S segments 4-6 are shown in Table 7. In 2017, there were 179 total usable days in these segments during the floatboating season (April 1 - September 30), which was above the range of usable days for a Wettest year based on the provisional Resource Guide. The breakdown of usable days was 70 days in the "Green Opportunities" category (lower than the median), 106 usable days in the "Blue Opportunities" category (higher than the median), and 3 days in the "Black Opportunities" category (lower than the minimum), Table 8. Provisional Resource Guides for the number of usable days in these segments were within the range or exceeded except for "Black Opportunities" in 2017. Figure 6 illustrates mean daily streamflow and the provisional range of floatboating opportunities in these segments during the 2017 floatboating season.

Table 7. Floatboating provisional Resource Guide for number of usable days in segments 4-6 - minimum (median) maximum

Year Type	Total Usable Days	Green Opportunities 700-1,300 cfs	Blue Opportunities 1,300-4,000 cfs	Black Opportunities 4,000-7,000 cfs
Wettest 25%	115 (161) 180	38 (74) 121	39 (72) 79	4 (22) 28
Wet Typical	120 (153) 169	68 (108) 119	19 (57) 79	0 (0) 5
Dry Typical	74 (115) 141	69 (106) 127	0 (14) 33	0 (0) 0
Driest 25%	62 (80) 96	53 (73) 87	0 (1) 25	0 (0) 0

Table 8. Summary of usable days in W&S segments 4-6 from 2012 through 2017.

Year	Year Type	Total Usable Days	Green Opportunities 700-1,300 cfs	Blue Opportunities 1,300-4,000 cfs	Black Opportunities 4,000-7,000 cfs
2012	Driest 25%	103	103	0	0
2013	Dry Typical	89	83	6	0
2014	Wettest	180	50	106	24
2015	Wettest	179	95	58	26
2016	Wettest	170	101	57	12
2017	Wettest	179	70	106	3*

* Indicates that this number of usable days was below the provisional Resource Guide range.

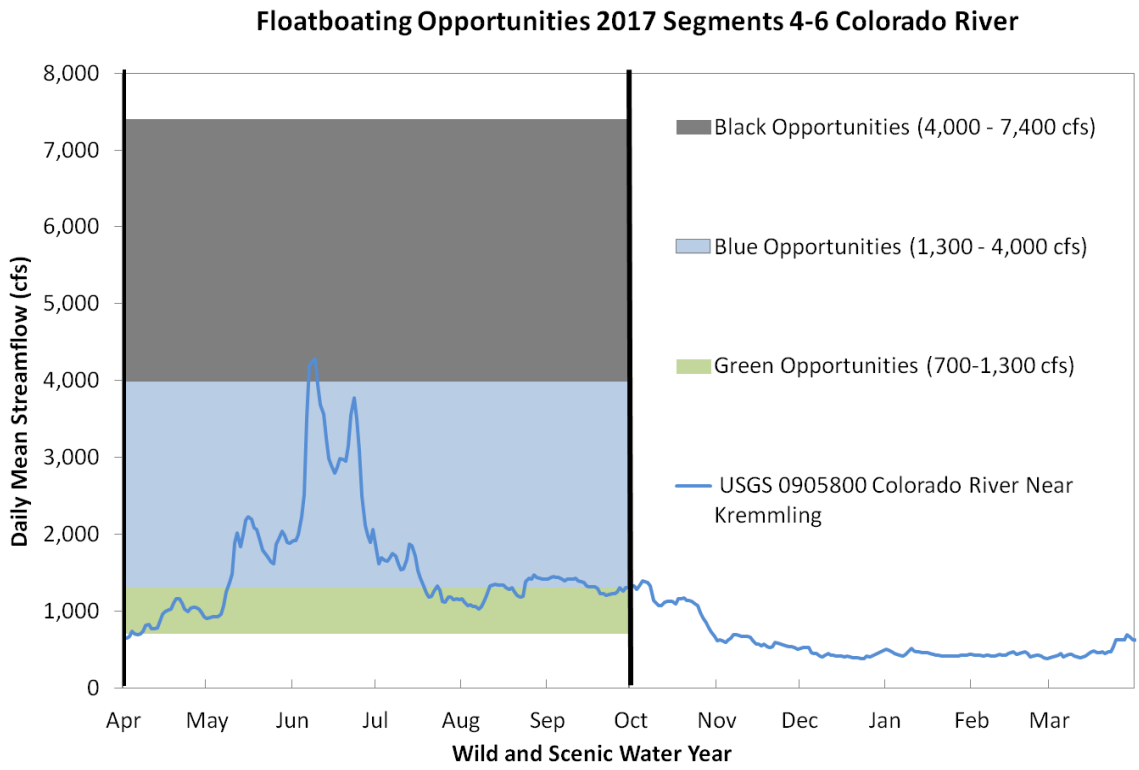


Figure 6. Hydrograph from the Colorado River near Kremmling, CO gage (USGS 0905800) demonstrating the floatboating opportunities in 2017 in W&S segments 4-6.

W&S Segment 7

The provisional Resource Guides for W&S segment 7 are shown in Table 9. In 2017, there were 179 total usable days in this segment during the floatboating season (April 1 - September 30), which again was above the range of usable days for a Wet Typical year in the provisional Resource Guide. The breakdown included 64 usable days in the "Green Opportunities" category (lower than the median), 97 usable days in the "Blue Opportunities" category (higher than the median), and 18 usable days in the "Black Opportunities" category (higher than the median) (Table 10). Figure 7 illustrates mean daily streamflow and the provisional range of floatboating opportunities in this segment during the 2017 floatboating season.

Table 9. Floatboating provisional Resource Guide for number of usable days in segment 7 - minimum (median) maximum.

Year Type	Total Usable Days	Green Opportunities 1,200/1250-1,800 cfs	Blue Opportunities 1,800-5,500 cfs	Black Opportunities 5,500-8,600 cfs
Wettest 25%	120 (156) 169	33 (57) 83	49 (68) 77	21 (29) 42
Wet Typical	126 (164) 172	44 (68) 102	39 (75) 110	1 (13) 33
Dry Typical	138 (161) 178	75 (86) 121	40 (61) 91	0 (2) 11
Driest 25%	136 (159) 177	88 (126) 137	10 (32) 63	0 (0) 6

Table 10. Summary of usable days in W&S segment 7 from 2012 through 2017.

Year	Year Type	Total Usable Days	Green Opportunities 1,200/1250-1,800 cfs	Blue Opportunities 1,800-5,500 cfs	Black Opportunities 5,500-8,600 cfs
2012	Driest 25%	136	131	5*	0
2013	Dry Typical	152	94	57	1
2014	Wettest	158	34	96	28
2015	Wettest	179	95	58	26
2016	Wettest	165	86	54	25
2017	Wet Typical	179	64	97	18

* Indicates that this number of days was below the provisional Resource Guide range.

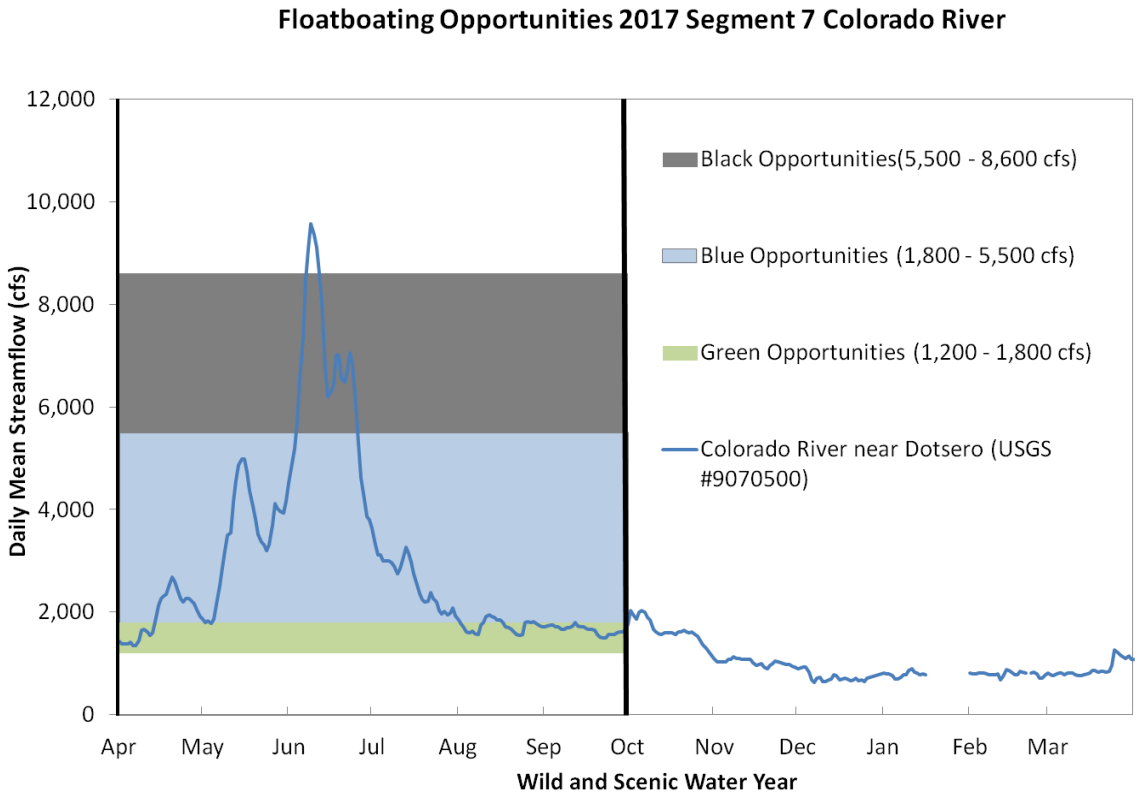


Figure 7. Hydrograph from the Colorado River near Dotsero, CO gage (USGS 09070500) demonstrating the floatboating opportunities in 2017 in W&S segment 7.

RECREATIONAL FISHING

ORV Indicators for Recreational Fishing

The SG Plan includes provisional ORV Indicators for Recreational Fishing which apply to the Upper Colorado River from Gore Canyon to Red Dirt Creek (Table 11). The SG monitors these provisional ORV Indicators based on the results of fish population surveys (biosurveys) conducted by CPW. CPW annually conducts biosurveys on established two-mile reaches within W&S segments 5 and 6. These survey reaches include: Radium, State Bridge, Catamount and Lyons Gulch (Appendix B contains a map of CPW sample sites). Generally, biosurveys are conducted annually between April 15 and May 15 on two reaches, alternating years between the four survey reaches. CPW monitors fish abundance, density, biomass, and presence/absence of species at each location. The data is then reported to the W&S

Stakeholders identifying density of Quality Trout[2], trout biomass, and species present (or Species Diversity) in W&S segments 5 and 6.

The results from CPW biosurveys from 2010 – 2017 are summarized in Table 12. The 2017 biosurveys were conducted in the Radium and State Bridge reaches. Between 2010 and 2015, data reported was for brown trout populations only; however, starting in 2016 estimates were recalculated to include brown trout and rainbow trout together because the ORV Indicators do not distinguish among trout species. The revised Quality Trout and Biomass estimates for the biosurvey reaches between 2010 and 2015 are reported in the current table. Any comparisons made between this 2017 report and reports previous to 2016 must take this change into consideration.

Quality Trout Evaluation

In 2017, CPW estimated 66 trout over 14 inches per acre in the Radium reach and 33 trout over 14 inches per acre in the State Bridge reach. These numbers exceeded the provisional ORV Indicators for Quality Trout (24 fish per acre) by 175% and 38%, respectively.

Biomass Evaluation

In 2017, CPW trout biomass estimates were 173 pounds per acre in the Radium reach and 86 pounds per acre in the State Bridge each. The Radium reach exceeded the provisional ORV Indicator for Biomass (90 lb per acre) by 92%. The State Bridge reach Biomass estimate fell below the provisional ORV Indicator by 4 pounds per acre; however, this estimate was not statistically different from the ORV indicator value.

Species Diversity

Species Diversity is total determined by the number of species present during the biosurvey. In 2017, CPW captured nine (9) different species of fish at the State Bridge Site, which is five less

[2] The SG Plan contemplates using # of quality trout per acre vs CPW's units (# of quality fish per mile).

than the SG's provisional ORV Indicator of 14 species of fish. Table 13 lists species caught by CPW in W&S segments from 2010 – 2017 and indicates the species captured in 2017.

Total Fishing Effort (TFE) and Catch Per Unit Effort (CPUE)

The SG Plan does not specify values for TFE and CPUE, but indicates that values are to be determined in the provisional period. Angler intercept surveys were not performed during 2017. However, RRC Associates continued to explore the data generated by angler intercept surveys and coordinated with CPW to consider the relationships between biosurvey data and RRC's data. In addition, RRC continued to assist the SG in interpreting the available data on TFE and CPUE. This assistance will continue as the SG considers refining the ORV Indicators during the provisional period.

Table 11. Provisional ORV Indicators for recreational fishing in W&S segments 4-6.

Type	Name	Current level (if available)
Fishery	Quality Trout	24 fish over 14" per acre
Fishery	Biomass	90 pounds per acre
Fishery	Species Diversity (SD)	14 species of fish
Recreational Fishing	Total Fishing Effort (TFE)	TBD
Recreational Fishing	Catch/Unit Effort (CPUE)	TBD

Table 12. Summary of CPW biosurvey data collected in 2010 – 2017[a]. Shading indicates unmet provisional ORV Indicators.

Sampling Metric	ORV	2010	2011	2012	2013	2014[b]	2015	2016	2017
Radium (Segment 5)									
Trout Quality (# > 14"/acre)	24	44	60	49	52	-	65	-	66
Biomass (lbs/acre)	90	121	143	155	164	-	145	-	173
Species Diversity (# present)	14	12	14	15	14	-	11	-	7
CPUE (annual average)	TBD	-	-	-	0.73	0.93	0.53	-	-
Number of samples		-	-	-	166	191	80	-	-
State Bridge (Segment 6)									
Trout Quality (# > 14"/acre)	24	-	-	-	52[c]	-	23	31	33
Biomass (lbs/acre)	90	-	-	-	172[c]	-	71	74	86
Species Diversity (# present)	14	-	-	-	11[c]	-	8	7	9
CPUE (annual average)	TBD	-	-	-	0.94	0.74	0.67	-	-
Number of samples		-	-	-	34	75	99	-	-
Catamount (Segment 6)									
Trout Quality (# > 14"/acre)	24	-	18	-	19	-	22	-	-
Biomass (lbs/acre)	90	-	57	-	57	-	50	-	-
Species Diversity (# present)	14	-	7	-	12	-	8	-	-
CPUE (annual average)	TBD	-	-	-	-	1.25	0.93	-	-
Number of samples		-	-	-	-	24	60	-	-
Two Bridges (Segment 6)									
CPUE (annual average)	TBD	-	-	-	-	-	0.56	-	-
Number of samples		-	-	-	-	-	47	-	-

[a] Data in this table in previous reports included only brown trout; all years shown in this table have been revised to include both brown and rainbow trout.
[b] High water prevented CPW from conducting biosurveys in the W&S segments in 2014.
[c] CPW determined the biosurvey data collected at State Bridge in 2013 was imprecise. An additional biosurvey was performed in this survey reach in 2016.

Table 13. Fish species captured from 2010 – 2017 in the W&S segments 5 & 6. Species captured in 2017 at State Bridge are indicated below. Invasive indicates undesirable non-native species.

Fish	Class	Endemic Status	2017
Colorado Cutthroat Trout	Coldwater fish	Native	
Rainbow Trout	Coldwater Sportfish	Introduced	X
Rainbow/Cutthroat Hybrid	Undefined		
Brown Trout	Coldwater Sportfish	Introduced	X
Brook Trout	Coldwater Sportfish	Introduced	
Kokanee Salmon	Coldwater Sportfish	Introduced	
Lake Trout	Coldwater Sportfish	Introduced	
Bluehead Sucker	Non-game	Native	X
Flannelmouth Sucker	Non-game	Native	X
Mountain Whitefish	Coldwater Sportfish	Introduced	X
Speckled Dace	Non-game	Native	
Mottled Sculpin	Non-game	Native	X
White Sucker	Non-game	Invasive	X
White/Longnose hybrid	Undefined		
White/Flannel hybrid	Undefined		
Longnose Sucker	Non-game	Invasive	X
Bluehead-Longnose Hybrid*	Undefined		X

Resource Guides for Recreational Fishing

The provisional Resource Guides shown in Table 14 represent the seasonal ranges of flow for the Recreational Fishing ORV in W&S segments 4, 5 and 6. Since the effective date of the SG Plan, the SG has agreed to use the mid-point value as a reference flow and compare it to the 5-year rolling average each season for purposes of discussion under the SG Plan.[3]

[3] During the provisional period, the 5-year rolling average will include data from the previous 4 years.

Table 14. Provisional Resource Guides for Recreational Fishing in W&S segments 4-6.

Season	Number of Days in	Months	Seasonal Fish Flow Range and midpoint, cfs
1	91	April, May, June	800-1000 900 midpoint
2	92	July, August, September	600-1000 800 midpoint
3	61	October, November, December	400-800 600 midpoint
4	121	January, February, March	400-600 500 midpoint

Calculations of the seasonal average flow and rolling 5-year average flows are based on daily mean discharge data from April 1, 2017 to March 31, 2018 at the Kremmling gage (USGS 09058000). These calculations included use of provisional data as discussed in the Hydrology section.

Figure 8 provides a comparison of 5-year average seasonal flows at the Kremmling gage to the W&S provisional Resource Guides between 2012 and 2017. In all but one case, the 5-year average streamflows exceed the mid-point value of the seasonal flow ranges for each season. The exception is the 2012 average flow of 434 cfs during Season 4, which falls within the target flow range, but below the midpoint of 500 cfs.

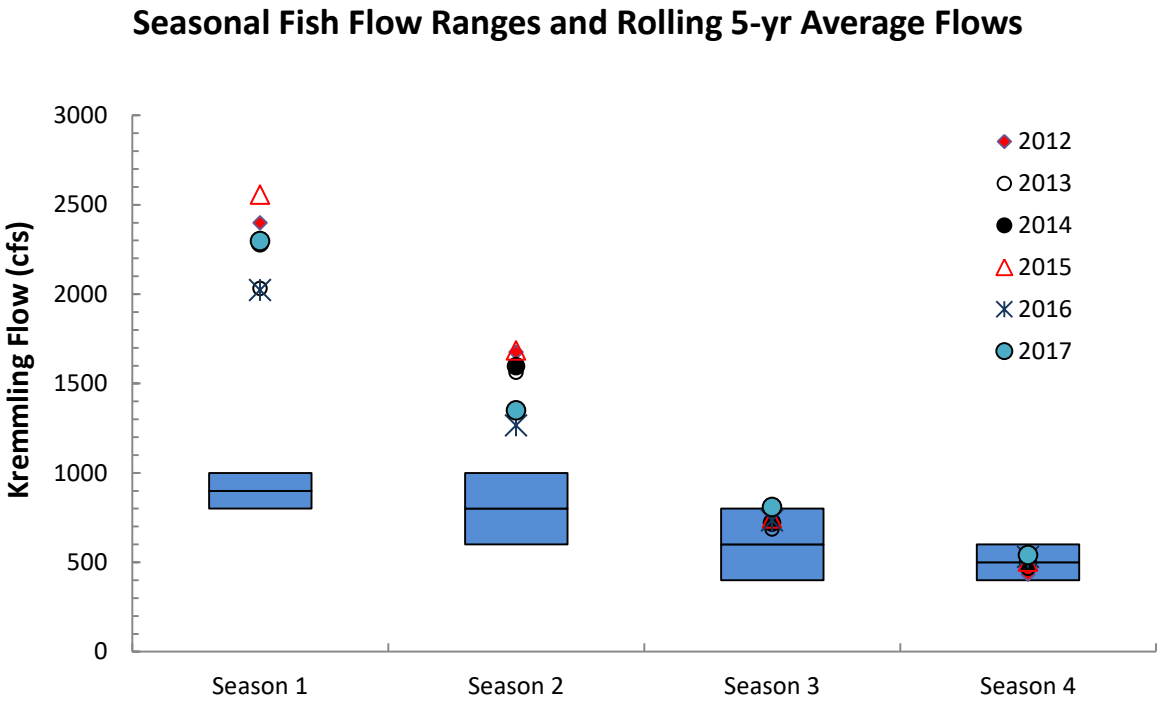


Figure 8. 5-year average streamflows for 2012 - 2017 compared to W&S provisional Resource Guides Recreational Fishing (blue boxes). This analysis includes provisional data as discussed in the Hydrology section.

Flushing Flows

In addition to Seasonal Fish Flows, the SG Plan includes "Flushing Flows" as a provisional Resource Guide for the Fishing ORV. During the provisional period, the SG has negotiated the following provisional Resource Guide for a periodic high flow: "A daily average flow of at least 2,000 cfs maintained for three consecutive days with a frequency of occurrence of once in two years on average." Table 15 summarizes "Flushing Flow" results from 2012 through 2017 based on the Colorado River near Kremmling, CO gage (USGS 09058000).

Table 15. Peak streamflow and flushing flow metrics based on the Colorado River near Kremmling gage (USGS 09058000).

Year	Year Type	Peak Streamflow	2,000 cfs for 3 consecutive days	Number of days above 2,000 cfs
2012	Driest 25%	1,280	No	0
2013	Dry	1,750	No	0
2014	Wettest 25%	7,830	Yes	99
2015	Wettest 25%	7,860	Yes	76
2016	Wettest 25%	4,830	Yes	58
2017	Wettest 25%	4,380	Yes	32

WATER QUALITY

The SG Plan adopted CDPHE's water quality standards as provisional Resource Guides for W&S segments 4 - 7:

> "The [provisional] Resource Guides for water quality are the CDPHE water quality standards for cold water aquatic life and recreation uses for the portion of the stream segment that CDPHE has designated COUCUC03 Mainstem of the Colorado River from the outlet of Granby Reservoir to the confluence with the Roaring Fork River that is within the Wild & Scenic segments 4 - 7."

These standards are specified in CDPHE's *Regulation #33 - Classifications and Numeric Standards for Upper Colorado River Basin and North Platte River*.

Colorado's Section 303(D) List of Impaired Waters and Monitoring and Evaluation List (Regulation #93 – 5 CCR 1002-93), effective March 2, 2018 lists W&S segment COUCUC03_D (Gore Canyon to Derby Creek, W&S segments 4, 5, and the top of 6) on the Monitoring & Evalution list for macroinvertebrates and impaired for temperature, and Segment COUCUC03_E (Derby Creek to the confluence with the Roaring Fork River, W&S segments 6 and 7) as impaired for temperature. Regulation # 93 was updated January 8, 2018. A discussion of macroinvertebrates occurs in the "Additional Monitoring" section below. Appendix A shows the W&S segments and Derby Creek .

Water Temperature

The provisional Resource Guide for water temperature is based on CDPHE's standard for segment COUCUC03[4], which is classified as a Cold Stream Tier II. According to current regulations, temperature shall maintain a normal pattern of diurnal and seasonal fluctuations with no abrupt changes and shall have no increase in temperature of a magnitude, rate, and duration deemed deleterious to resident aquatic life.[5] Table 1 shows the currently adopted

[4] Colorado Department of Public Health and Environment, Water Quality Control Commission 5 CCR 1002-31, September 30, 2017.
[5] Colorado Department of Public Health and Environment, Water Quality Control Commission 5 CCR 1002-33, September 30, 2017.

numeric temperature standards for the Upper Colorado River Basin. Attainment of chronic temperature standards is based on a Maximum Weekly Average Temperature (MWAT), which is defined as a seven day moving average. Attainment of the acute temperature standard is based on a Daily Maximum (DM), which is defined as the highest two-hour average water temperature in a given 24-hour period. Temperature data are evaluated against numerical standards for chronic (MWAT) and acute (DM) seasonal maxima.

Table 1. CDPHE numeric temperature standards for Cold Stream Tier II.

Temperature Tier	Tier Code	Species Expected	Applicable Months	Temperature Standard (°C) MWAT	DM
Cold Stream Tier II	CS-II	All other cold-water species*	April - October	18.3	23.9
			November - March	9.0	13.0

*All other cold-water species includes brown trout and rainbow trout.

The Monitoring Committee has been collecting and reviewing water temperature data within the W&S segments since 2012. Prior to 2017, the Monitoring Committee collected water temperature readings at five locations using TidbiT data collectors. These five TidbiT sites were not measured in 2017; however, previously collected data is archived in the Water Information Library and Unified Reference (WILbUR) database maintained by the Grand County Water Information Network (GCWIN). These data are accessible on GCWIN's database website www.wilbur.gcwin.org.

In 2017 the Monitoring Committee compiled water temperature from three real time temperature USGS stations along with two BLM temperature sites located on the Colorado River at Pumphouse and Radium (Table 17). The data was analyzed utilizing the temperature macro4.5v application developed by CDPHE. A complete statistical analysis as per CDPHE's 2018 Section 303(d) listing methodology and Policy Statement 06-1 has not been conducted.

Table 17. Temperature stations and responsible entities.

Temperature Station	Entity
Colorado River Near Kremmling (09058000)	USGS
COR-Pumphouse	BLM
COR-Radium	BLM
Colorado River at Catamount Bridge, CO (09060799)	USGS
Colorado River Above Glenwood Springs, CO (09071750), aka "No Name"	USGS

The 2017 temperature data shows a downstream warming trend through W&S segments 4 through 7. Figures 9 and 10 depict the MWAT and DM for all temperature sites monitored within W&S segments 4-7 during 2017.

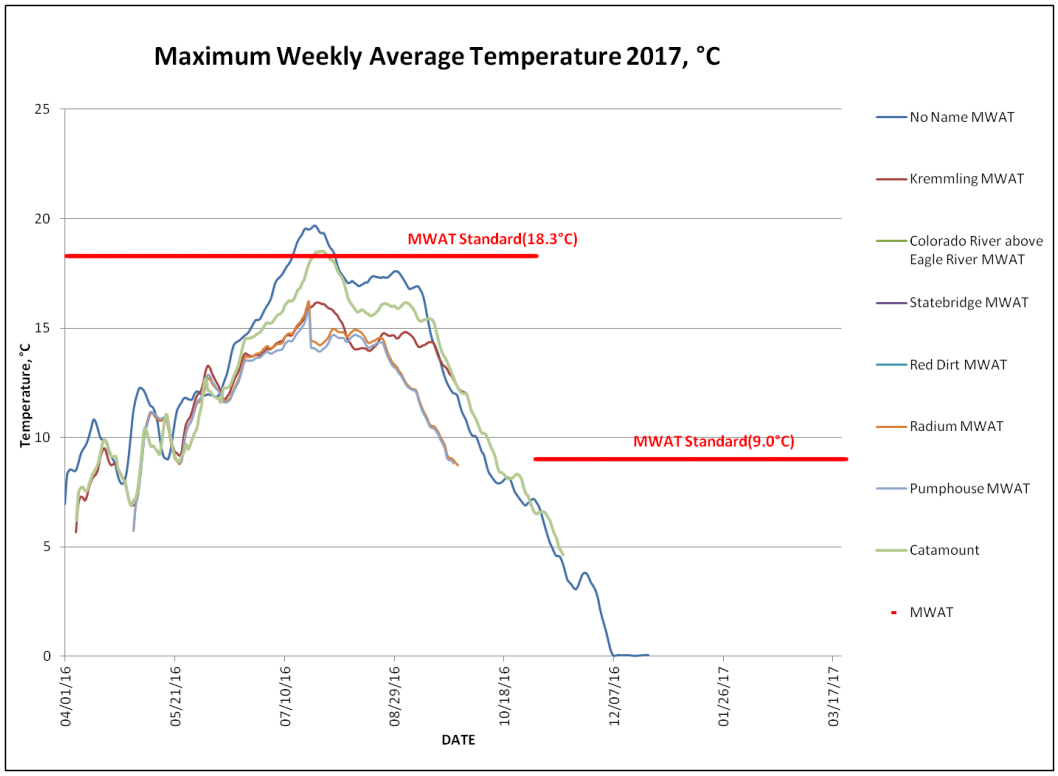


Figure 9. Maximum weekly average temperatures (MWAT) in 2017 and the applicable CDPHE summer and wintertime standards.

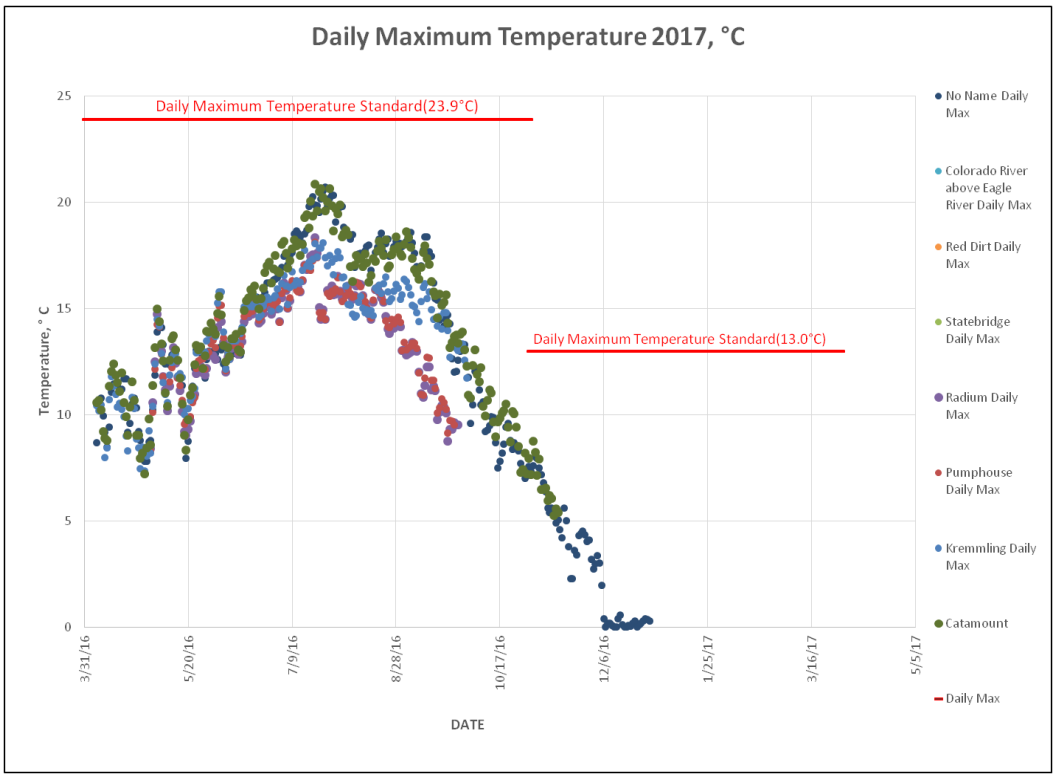


Figure 10. Measured daily maximum (DM) temperatures in 2017 and applicable CDPHE summertime and wintertime standards.

Based on the review of state temperature standards, the Colorado River above Glenwood Springs (No-Name) and the Colorado River at Catamount (Catamount Bridge) temperature sites both reported excursions above the MWAT temperature standard of 23.9°C (75°F) during the summer season. A complete statistical analysis as per CDPHE's 2018 Section 303(d) listing methodology and Policy Statement 06-1 has not been conducted. Based on the available data, no MWAT temperature issues occurred during the winter season based on the available data. No DM summer or winter season excursions were reported at sites within the W&S segments in 2017. MWAT exceedances between 2013-2017 are shown in Table 6.

Table 2. MWAT exceedances at W&S temperature sites from 2013 – 2017.

Temperature Site	W&S	2013	2014	2015	2016	2017
Kremmling	4	x				-
Pumphouse	4/5	x				-
Radium	5	x				-
State Bridge	5/6	x				-
Catamount [6]	6					x
Red Dirt	6	x		x	x	-
CO River above Eagle[7]	6/7	x	x			-
No Name[8]	7	x	x	x	x	x

ADDITIONAL MONITORING

Fishing and Floatboating User Surveys

In 2013, the SG retained RRC Associates (RRC) to develop and conduct fishing and floatboating surveys (intercept surveys) at river access sites within the W&S segments, with the understanding that the data collected from these surveys would be used to inform management decisions. Following that initial developmental season, RRC completed intercept surveys between 2013 and 2015 (RRC, 2014; RRC, 2015; RRC, 2016). Because flow conditions in 2016 and 2017 were not dissimilar from 2013 and 2015 (comparatively high flows), RRC's research did not include intercept surveys in 2016 and 2017.

The goals of RRC's 2016 - 2017 research included:

a) to advance the pilot effort to establish baseline measures and methods that will be used to guide research and associated policy decisions in the future
b) to continue to evaluate existing data including intercept survey results from 2013-2015,

[6] The Catamount temperature monitoring site was activated in 2016.

[7] The "Colorado River above Eagle" site is sometimes referred to as the Dotsero temperature site.

[8] The "No Name" temperature site is formally known as USGS Gage 09071750 "Colorado River above Glenwood Springs, CO.

c) to refine methods for warehousing and accessing that data.

The SG is using the results of RRC's multi-year efforts to assist in refining the provisional ORV Indicators and Resource Guides in the SG Plan.

In 2017 RRC's work program focused on a series of tasks including: creating a new survey program designed to permit benchmarking of data over time, obtaining additional vehicle count information, evaluating commercial data from multiple years including 2016, combining those data with intercept results from previous years (2013 to 2015), and creating new methods for sharing data among stakeholders. RRC has continued to assist the SG by organizing data on the Tableau platform (go to: http://rrcinteractive.squarespace.com/) and working to create tools for warehousing data now and into the future. In addition, select summary graphs are presented in Appendix D. The following are some key elements of the 2017 program.

1. Interest Group and Private User Surveys

RRC developed and conducted a web-based survey program that was fielded through cooperative efforts with American Whitewater. It was the first of several potential surveys designed to collect input from user groups. The purpose of this effort was to assess whether such surveys could provide a cost-effective benchmark of river conditions. This type of survey can be repeated in future years to develop longitudinal evaluations of the river experience by a diverse set of river users' experience that can be used to support management decisions by the SG and land management agencies.

2. Wade Fishing Surveys – Special Angler Survey

In 2017 a special effort was made to collect surveys from wade anglers above the Pumphouse Recreation Area. The purpose of this effort was to collect data from these individuals using survey questions comparable to those asked of anglers during intercept surveys conducted from 2013 to 2015. After multiple days of having an interviewer at the Pumphouse foot trail to interview upstream wade anglers with very few anglers encountered, a decision was made to utilize the existing steel kiosk located along the footpath north of the Pumphouse parking area to implement a self-reporting survey. Signs were posted at the kiosk to encourage participation, and survey forms were placed in a water proof container that is a part of the kiosk to allow exiting anglers to report their experience. The survey used an abbreviated set of

questions to measure fish caught and hours fished by date; these are survey-based metrics that are being discussed for a potential angling ORV measure. Specifically, the form requested that anglers report their hours fished and fish caught TFE and CPUE (Total Fishing Effort and Catch per Unit Effort). Data from the surveys were analyzed and the survey responses were compared to results obtained from anglers who float as obtained downstream in Segments 5 and 6.

This self-reporting technique resulted in 103 completed surveys obtained between July 1 and October 15, 2018. (Note, some additional survey log data was collected in late October/early November and was not included in the analysis. The calculated TFE was 4.0 hours fished per reported angler and the CPUE was 1.4. This is higher than results reported by floating anglers when surveys were conducted, 2013 to 2015.

3. Commercial Data

RRC tabulated 2016 commercial data as reported by outfitters to the Kremmling and Colorado River BLM offices, and USFS. Commercial outfitters typically report their river use on a daily basis to the agencies. Some of these reports are provided in digital form, other reports required data entry by RRC staff. These reports have been obtained since 2013 and RRC has aggregated the available data into a master file that permits commercial user groups, both floatboating and angling, to be analyzed by date, party size, craft type, and location of launch and takeout. The availability of commercial data has historically lagged each year, resulting in RRC obtaining 2016 data in 2017/18, and 2017 data only becoming available late in 2018.

4. Vehicle Counters Program

Five vehicle counters were placed at various sites in Segments 5 and 6 for the 2017 season. These units were monitored and downloaded periodically from May through October. The counters included four enhanced capacity MetroCount units, as well as a fifth unit similar to those used by the BLM, which require frequent on-site readings to get detailed results. 2017 vehicle count information was incorporated into the Master file and is available on a daily as well as hourly basis for the period during which counters were in place. The Vehicle Counters provide a source of information that can support additional analysis describing visitation patterns and relative volumes of visitors, year over year and by day of week. The results from these analyses are summarized in graphs presented in Appendix D. However, it should be

recognized that the graphs provide an overview representation, further analysis is suggested in order to fully understand patterns of visitation.

5. Tabulation of Fee Envelope Data

RRC coordinated pickups of 2017 BLM private fee envelopes organized by collection site and gathered data from a sampling of approximately 4,000 envelopes. The envelope data provide a unique source of information portraying private river users, which are not represented by the commercial visitation log data. The records show home zip codes of fee payees, as well as date, and activities at fee sites. In 2017, for the first time, the fee envelopes were collected by geographic location and this information was tabulated (Pumphouse, Radium, etc.) The resulting data were consolidated into the Master file and several representations of findings from 2017 are presented in the Appendix. These include data summarizing geography of origin for visitors paying fees, as well as reported activities.

6. River Ranger Data

Data collected by River Rangers at the Shoshone and Grizzly locations in Segment 7 were tabulated. These interviewers are overseen by the US Forest Service and are funded through a program supported by the outfitters. The data has been shared with the SG on a cooperative basis and is compiled in Tableau format to permit various analyses. The data set represents fieldwork collected and reported on a daily basis and as such, it represents a valuable portrayal of Segment 7 user patterns. The 2017 findings are summarized in Appendix D along with results from previous years (2014- 2016). The River Ranger data can be segmented and explored as requested by SG members.

7. Data Management and SG Support

RRC conducted a number of other activities including warehousing and management of SG data, sharing data in Tableau dashboard format, and analysis and visualization. RRC continued participation in SG and Committee work as requested. In 2017 a new document, Intercept Survey Research Protocols was developed by RRC and the Floatboating Committee to guide future survey research and to ensure that methods are documented and can be replicated over time. RRC's contributions were intended to: advance the pilot effort to establish baseline measures and methods that will be used to guide research in the future, and continue to evaluate existing data, and refine methods for accessing that data, to assist with the SG's

efforts to refine the provisional ORV Indicators and Resource Guides for recreational fishing and floatboating. Raw data and research results were shared and discussed with the SG and committees in a variety of settings.

Macroinvertebrates

Throughout 2017, the Fishing Ad-Hoc Committee continued to discuss the pros and cons of monitoring macroinvertebrate populations as part of the W&S long-term monitoring program; however, macroinvertebrate sampling was not conducted under the SG Plan in 2017. The SG did collect macroinvertebrate samples at 4 sites in 2016 using a modified field protocol, and analyzed it using the National Aquatic Monitoring Center (NAMC) protocol. These results became available in 2017.[9]

Grand County collected macroinvertebrate data at the Pumphouse site in 2017 (for more information on this program see Appendix C). These samples were collected and analyzed using NAMC protocols. Due to high flows during the optimal sample collection window, the Pumphouse sample was collected in late October, which may result in a different outcome than samples collected earlier in the fall.

Available MMI results for the SG and Grand County macroinvertebrate datasets are shown in Table 7. MMI scores are normalized to 100, with impairment indicated below 42, attainment above 52. For scores in between 42 and 52, the Shannon Diversity Index (SDI) must be above 2.4, and the Hilsenhoff Biotic Index (HBI) must be less than 5.4 for the site to be in attainment[10]. At State Bridge in 2016, the MMI was 46.1, requiring consideration of the SDI and HBI. The SDI was 2.9, which is greater than 2.4, so State Bridge did attain the aquatic life standard in 2016. This analysis is based on MMI version 3.0, which at the time was not calibrated for large rivers.

[9] Macroinvertebrate samples were also collected by the SG in 2015 but not analyzed.

[10] *Aquatic Life Use Attainment: Methodology to Determine Use Attainment for Rivers and Streams Policy Statement 10-1,* Colorado Department of Public Health and Environment, October 12, 2010

Table 3. MMI scores collected at 5 locations in the W&S segments between 2015 through 2017.

	MMI Score				
Year	**Pumphouse[11]**	**Radium**	**State Bridge**	**Above Catamount**	**Below Red Dirt Creek**
2015[12]	53.7	-	-	-	-
2016	73.9	55.2	46.1	76.2	70.8
2017[13]	60.1	-	-	-	-

[11] Due to high flows during the optimal sample collection window, the Pumphouse sample is collected in late October, which may result in a different outcome than samples collected earlier in the fall.

[12] This sample was collected following construction of the whitewater feature at Pumphouse.

[13] Field personnel changed at the Pumphouse site in 2017 which may have affected the MMI score at this location.

REFERENCES

Colorado Department of Public Health and Environment Water Quality Control Commission, REGULATION NO. 33 - CLASSIFICATIONS AND NUMERIC STANDARDS FOR UPPER COLORADO RIVER BASIN AND NORTH PLATTE RIVER (PLANNING REGION 12) 5 CCR 1002-33, Effective 9/30/2017, https://www.colorado.gov/pacific/sites/default/files/33_2017%2809%29.pdf

Colorado Department of Public Health and Environment Water Quality Control Commission, REGULATION NO. 31 - THE BASIC STANDARDS AND METHODOLOGIES FOR SURFACE WATER 5 CCR 1002-31, Effective 1/31/2018. https://www.sos.state.co.us/CCR/GenerateRulePdf.do?ruleVersionId=7455&fileName=5%20CCR%201002-31

Colorado Department of Public Health and Environment Water Quality Control Commission, Aquatic Life Use Attainment Methodology to Determine Use Attainment for Rivers and Streams. Policy Statement 10-1, Approved August 7, 2017. Expires December 31, 2020. https://www.colorado.gov/pacific/sites/default/files/Policy%2010-1_Appendices.pdf

Garrison, M., and V. Lee, 2017, Colorado River, 2017 COLORADO RIVER RECOVERY PROGRAM FY 2017 ANNUAL REPORT, http://www.coloradoriverrecovery.org/documents-publications/work-plan-documents/arpts/2017/isf/C-14%2012C%20CROS%20FY17.pdf

RRC Associates, Inc., 2014, Upper Colorado River Wild & Scenic Stakeholder Group, 2013 Pilot Study - Final Results.

RRC Associates, Inc., 2015, Upper Colorado River Wild & Scenic Stakeholder Group, 2014 Pilot Study - Final Results

RRC Associates, Inc., 2016, Upper Colorado River Wild & Scenic Stakeholder Group, 2015 Pilot Study and 3 year provisional period summary.

APPENDICES

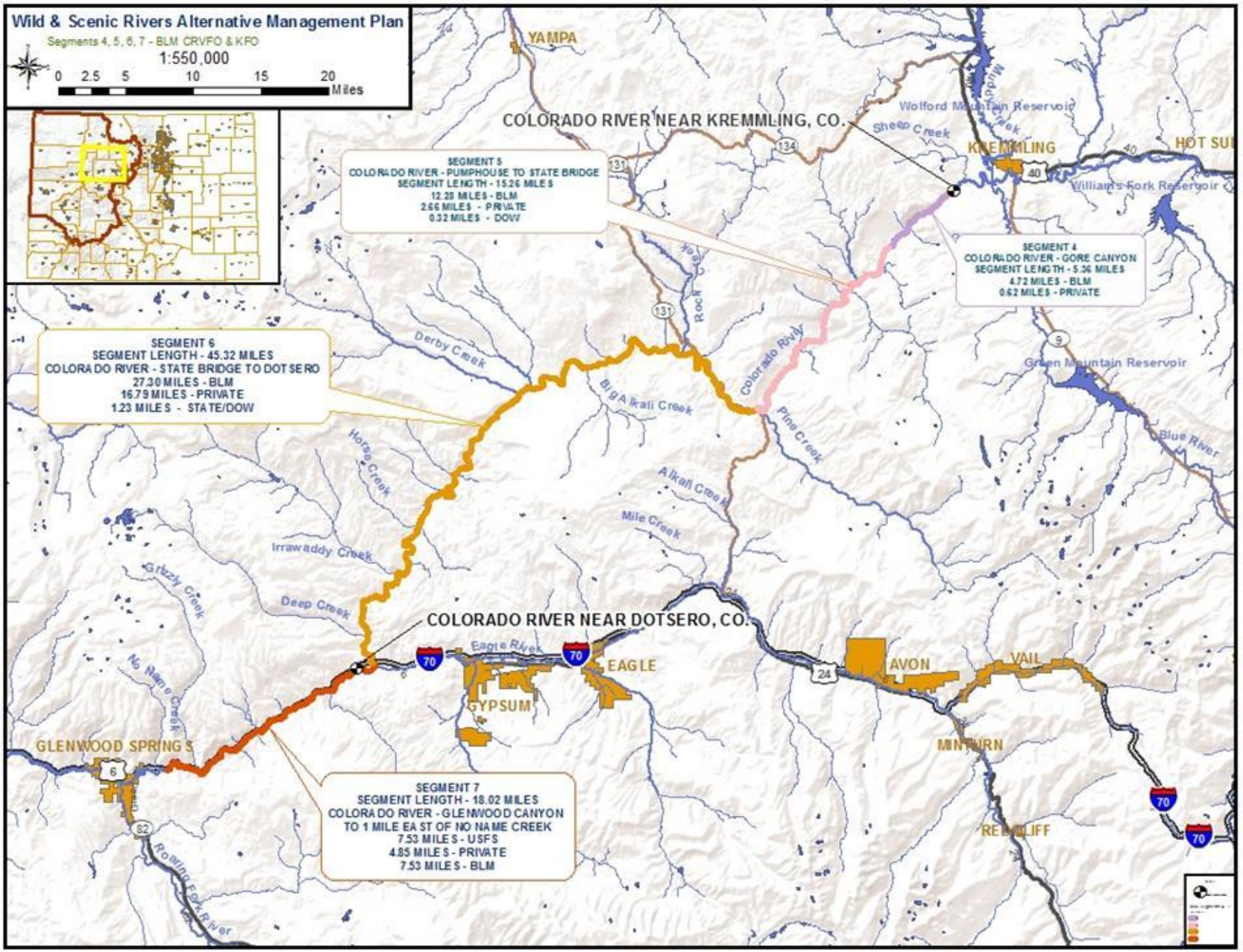
Appendix A: Project Area Map

Appendix B: CPW Biosurvey Sample Sites

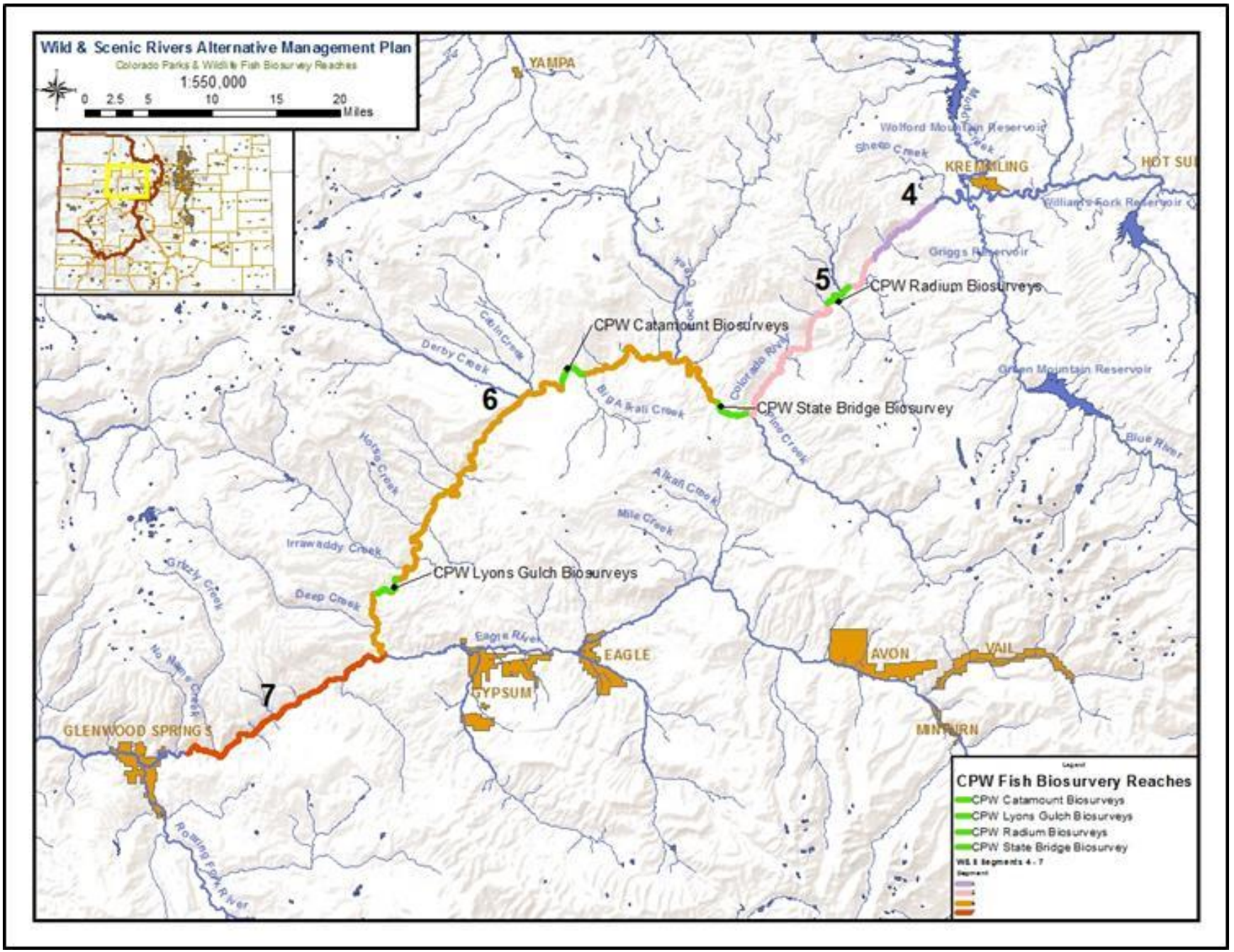
Appendix C: Monitoring by Other Entities

Appendix D: RRC Selected Summary Graphs

APPENDIX A: PROJECT AREA MAP



APPENDIX B: CPW BIOSURVEY SAMPLE SITES



APPENDIX C: MONITORING BY OTHER ENTITIES

U.S. Bureau of Land Management

The U.S. Bureau of Land Management (BLM) conducts various monitoring activities on the W&S segments. Currently, the BLM supports two water temperature monitoring locations, collects additional vehicle counter data at select locations, and has paid for operating and maintenance costs of the Catamount gage. In addition, the BLM conducts monitoring to support other non-flow related ORVs such as bald eagles, river otters, riparian vegetation, and noxious weeds.

Colorado Parks and Wildlife

In addition to their annual biosurveys, CPW is also conducting research on Giant Stonefly (*Pteronarcys californica*) and Mottled Sculpin *(Cottus bairdii)* sampling methods at the Pumphouse Recreation Site. The SG is monitoring progress on these efforts and may include results or parameters from these and/or other studies in future reports.

Grand County

In 2015, Grand County initiated macroinvertebrate monitoring at the Gore Canyon Whitewater Feature at Pump House (WWF) as required by special condition number 4 of the U.S. Army Corps of Engineers (USACE) Permit No. SPK-2013-00580, issued November 6, 2014.

Data collected through Grand County's program are analyzed using the Colorado Water Quality Control Division's Multi Metric Index (MMI) to assess compliance with Colorado's aquatic life standard. Additional standard metrics are computed to provide a complete assessment of the macroinvertebrate community. Sampling methods are consistent with these objectives.

Grand County's monitoring activities during 2017 represented the third year in five years of required monitoring under Grand County's Clean Water Act Section 404 permit for the Whitewater Park. Grand County will discontinue this effort after 2019.

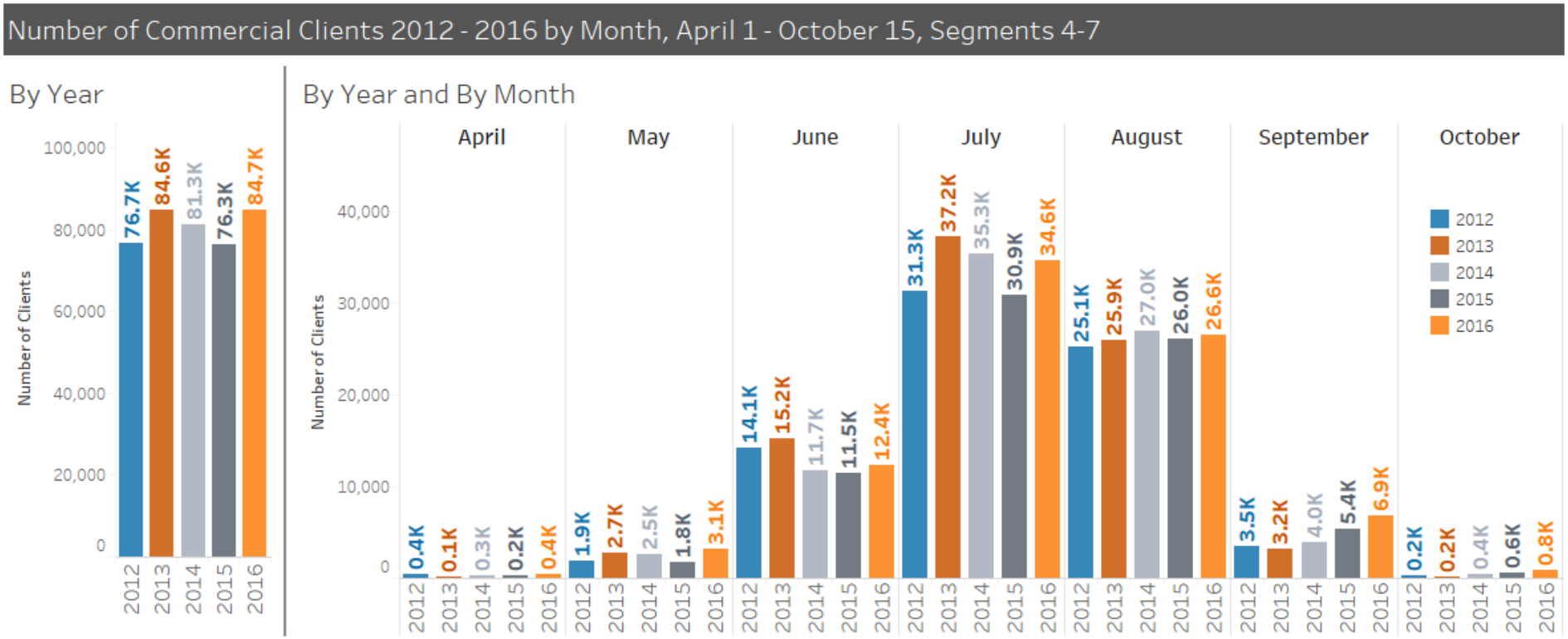
Colorado Department of Public Health and Environment (CDPHE)

Colorado Department of Public Health and Environment's (CDPHE) Environmental Data Unit endeavors to collect scientifically sound water quality monitoring data on behalf of the Division's Clean Water Program. CDPHE maintains a system of statewide stream water quality monitoring sites for collecting chemical, physical and biological data. Each year sites are added

in a specific focus basin to collect additional data in support of future basin wide rulemaking hearings conducted by the Water Quality Control Commission.

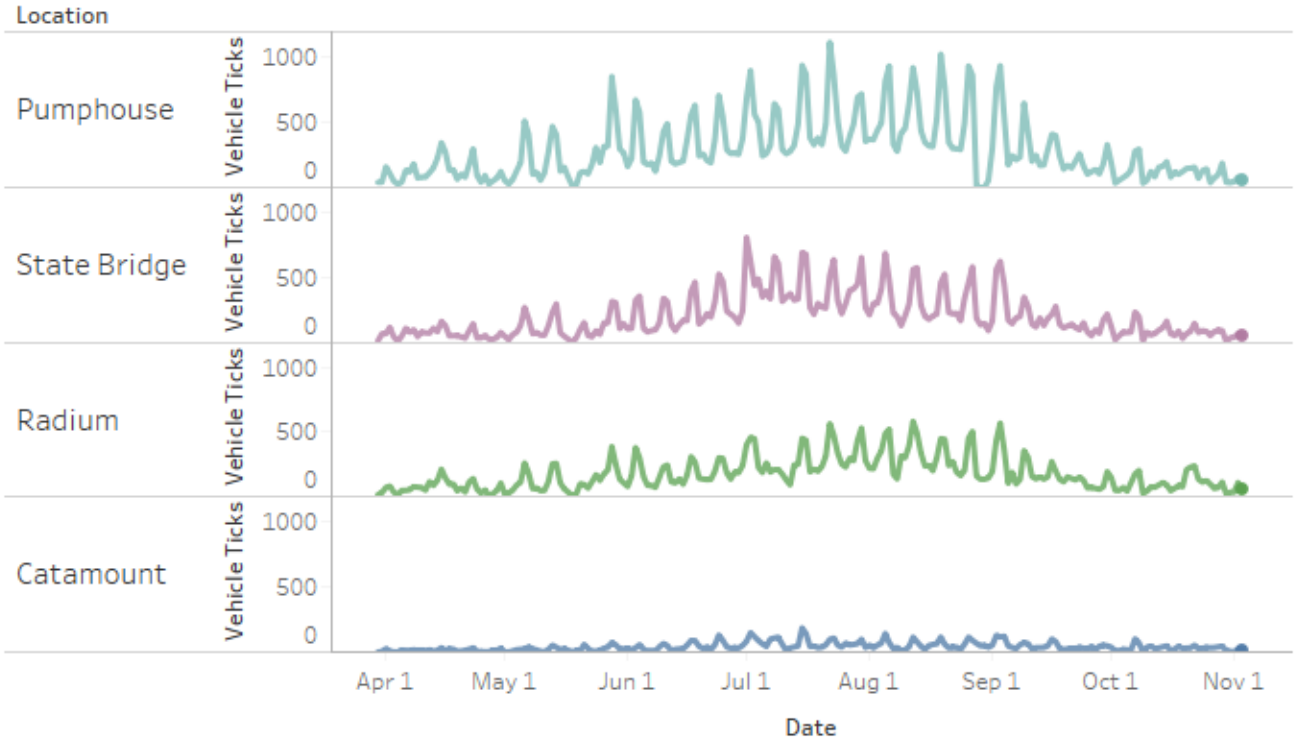
CDPHE's data and information is chiefly used in the development and revisions of standards and criteria or performing assessments that determine attainment of Colorado's water quality standards and criteria, including reporting the status of water quality across Colorado. The SG relies on CDPHE's monitoring and assessment efforts to evaluate the provisional Water Quality Resource Guide for W&S segments 4-7.

APPENDIX D: RRC SELECTED SUMMARY GRAPHS

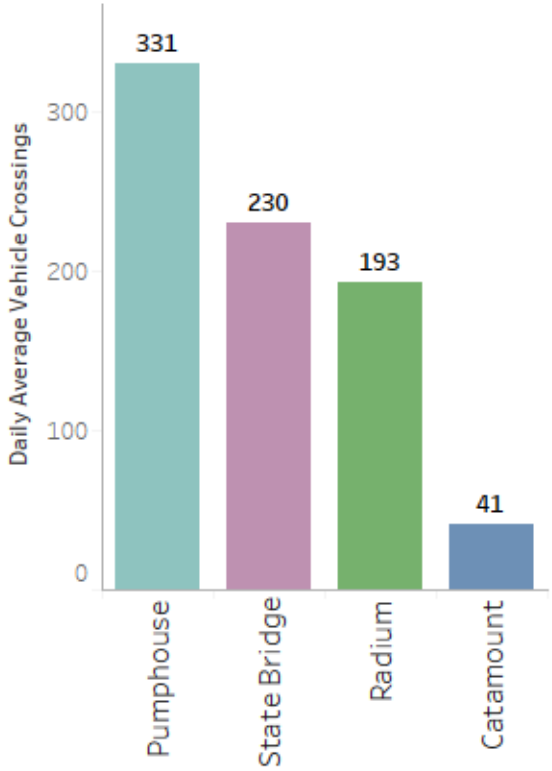


2017 Vehicle Traffic by Location

2017 Daily Vehicle Crossings March 30 - Nov. 3



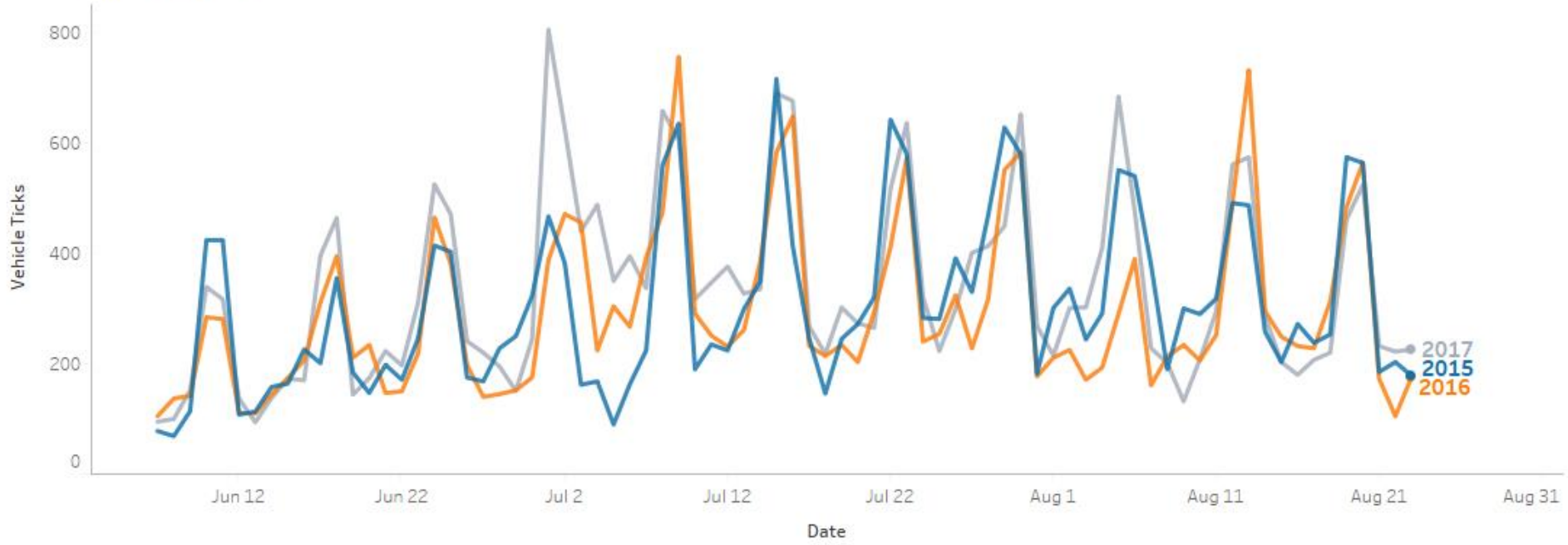
Avg. Daily Crossings



State Bridge Year Over Year

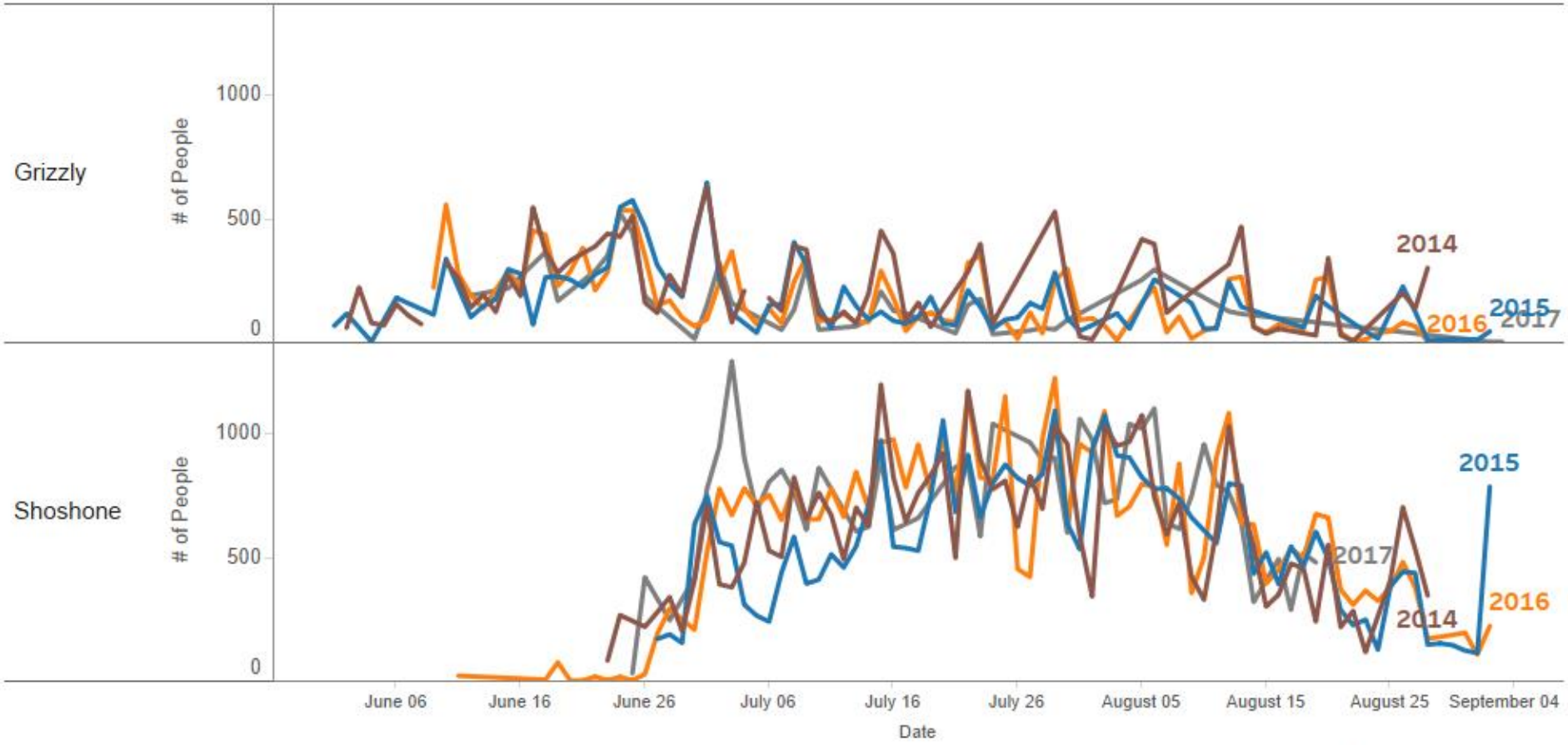
Daily Vehicle Traffic June 7 - Aug. 23

Dates Aligned by Day of Week

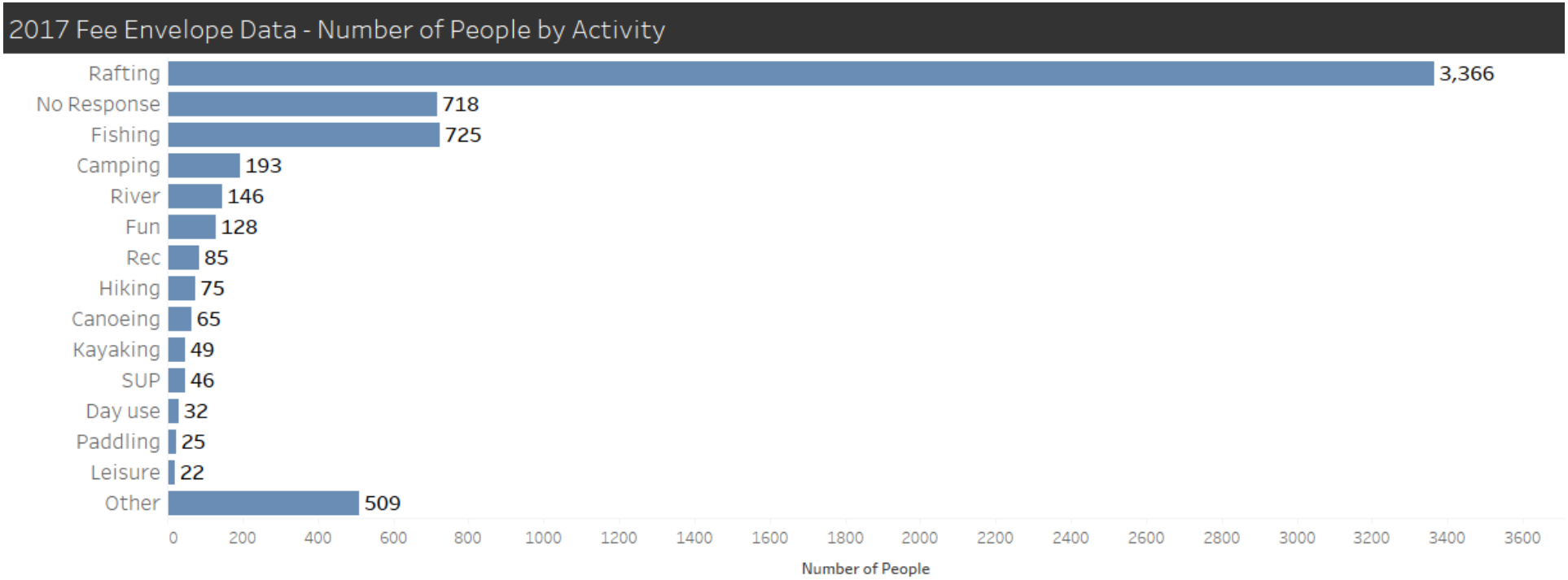


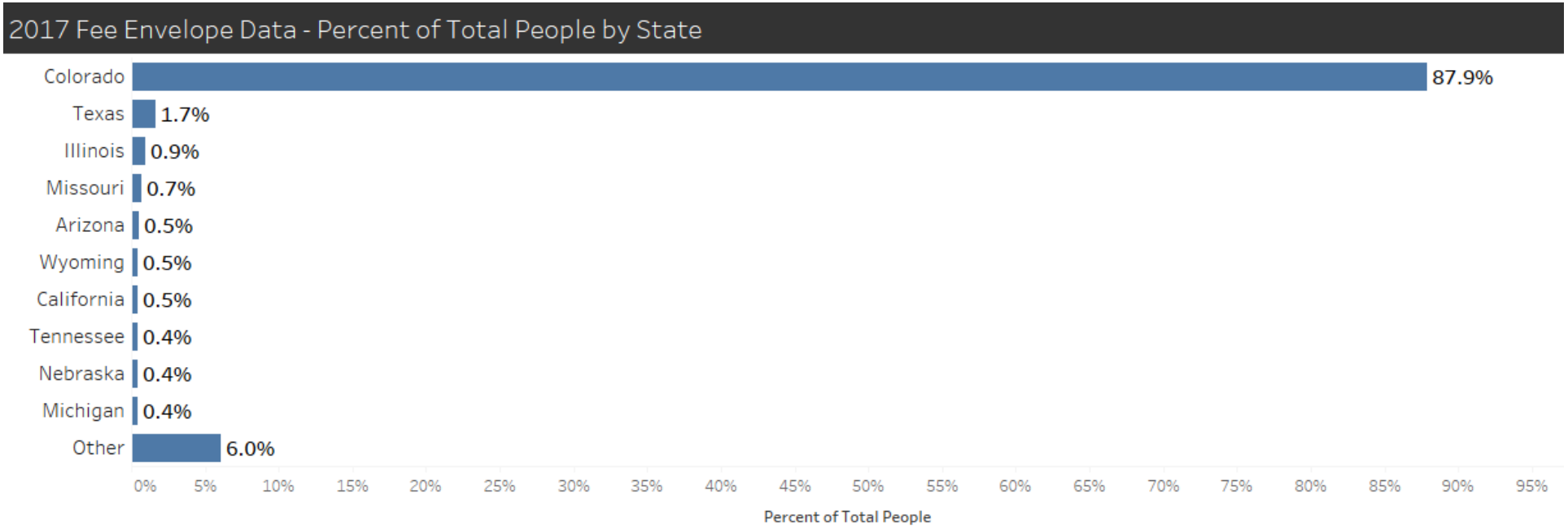
River Ranger (USFS) Observation Data
Shoshone and Grizzly 2014-2017

Note - This graph is for summary purposes only. More detailed analysis is possible by location, time of season, etc.



*Dates aligned by weekday


2017 Fee Envelope Data - Number of People by Activity
Rafting
No Response
Fishing
Camping
River
Fun
Rec
Hiking
Canoeing
Kayaking
SUP
Day use
Paddling
Leisure
Other
3,366
718
725
193
146
128
85
75
65
49
46
32
25
22
509
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
Number of People


2017 Fee Envelope Data - Percent of Total People by State
Colorado
87.9%
Texas
1.7%
Illinois
0.9%
Missouri
0.7%
Arizona
0.5%
Wyoming
0.5%
California
0.5%
Tennessee
0.4%
Nebraska
0.4%
Michigan
0.4%
Other
6.0%
0%
5%
10%
15%
20%
25%
30%
35%
40%
45%
50%
55%
60%
65%
70%
75%
80%
85%
90%
95%
Percent of Total People

2017 Fee Envelope Data - Percent of Total In-State Visitors by County