
2024 REPORT

COLORADO RIVER SYSTEM CONSERVATION PILOT PROGRAM IN THE UPPER COLORADO RIVER BASIN

Prepared for:

The Upper Colorado River Commission

Prepared by:

Wilson Water Group



January 2025

Table of Contents

I.	Executive Summary	3
II.	Background	4
III.	System Conservation Pilot Program Selection Process	5
	<i>A. Evaluation Criteria and Project Recommendation</i>	<i>5</i>
	<i>B. Conserved Consumptive Use Estimates</i>	<i>6</i>
	<i>C. Compensation</i>	<i>8</i>
	<i>D. Project Verification.....</i>	<i>8</i>
IV.	2024 System Conservation Pilot Program Projects	8
	<i>A. Project Applications and Implemented Projects</i>	<i>8</i>
V.	System Conservation Pilot Program Consumptive Use End-of-Season Analysis	18
	<i>A. Approach to Calculation of End-of-Season CCU</i>	<i>18</i>
	<i>B. Discussion and Results</i>	<i>19</i>
	APPENDIX A – Timeline for 2024 Program	27

I. Executive Summary

This report summarizes the outcomes from the 2024 Upper Colorado River Basin (UCRB) System Conservation Pilot Program (SCPP). The Upper Division States (UDS) acting through the Upper Colorado River Commission (UCRC) conducted a similar program from 2015 to 2018, through a different funding framework and agreements. The 2023 and 2024 SCPP was authorized by Congress in the Federal Fiscal Year 2023 Omnibus Appropriations Bill. The authorization directed that the program be operated by the UDS acting through the UCRC. The program was funded by the Federal Inflation Reduction Act of 2022 (IRA), which provided four billion dollars to the U.S. Bureau of Reclamation (Reclamation) to mitigate the impacts of drought, primarily in the Colorado River Basin. Reclamation, through an agreement with the UCRC, allocated up to 125 million dollars for use in the SCPP. Similar to the 2015 to 2018 program, the UCRC coordinated SCPP with Reclamation and the UDS (Colorado, New Mexico, Utah, and Wyoming) water management and regulatory agencies, with support from a contractor (Wilson Water Group).

The SCPP was successfully administered in both 2023 and 2024 by the UCRC with cooperation from Reclamation, the contractor, and UDS staff. These administrative procedures included soliciting proposals from water users; reviewing proposals; ranking and selection of projects; contracting with participants; field verification of project activities; payment management and processing; and management and coordination of all activities with Reclamation. Consistent with the Reclamation agreement and authorization from Congress, the UCRC contracted with participants for conservation activities and provided payments to participants.

The 2024 SCPP generated significantly more interest and participation than the 2023 program. With assistance from the UDS and facilitation by key non-governmental organizations (NGOs), the SCPP received 122 applications, of which 110 projects were funded for an estimated conserved consumptive use (CCU) of approximately 63,630 acre-feet at a total cost of \$28,608,270.30. Projects funded spanned all four UDS and three different water sectors (Agriculture, Municipal, and Industrial). The hydrological conditions influenced the final amount of water conserved in 2024. During the 2023 program, feedback was solicited from SCPP participants, the UDS, and Reclamation on how the program functioned and the UCRC and UDS implemented changes to the 2024 program based on this feedback.

II. Background

The Colorado River, often considered the lifeline of the American Southwest, supplies water to approximately 40 million people in the seven U.S. Basin States (Arizona, California, Nevada, Colorado, Wyoming, Utah, and New Mexico) and Mexico, and to approximately 5.5 million acres of irrigated land in the Basin and adjacent areas.¹ Prolonged drought conditions over the past 20 years, coupled with an increasing supply and demand imbalance particularly in the lower basin, have stressed this valuable water system.

In 2022, water levels in both Lake Powell and Lake Mead reached historic lows, with Lake Powell dropping below 3,523 feet and Lake Mead dropping below 1,041 feet.² Moreover, three of the last 12 years of inflows into Lake Powell were less than five million acre-feet,³ and the basin experienced three of the lowest consecutive years of inflow on record from 2020 through 2022, with 2021 among one of the lowest inflow years on record.⁴ From 2020 through 2022, the combined storage of Lake Powell and Lake Mead declined from about 50 percent to 25 percent of capacity, threatening the reservoirs' ability to generate hydroelectric power and continue to make releases to downstream users.⁵ The combined storage of Lake Powell and Lake Mead at the end of water year 2024 was about 37 percent of capacity.

In June of 2022, U.S. Bureau of Reclamation Commissioner Touton called for Colorado River Basin water users to save an additional 2 to 4 million acre-feet of water, and Reclamation began analyzing alternatives to modify the current operations at Lake Powell and Lake Mead in an effort to protect the Colorado River System.⁶

In response to the Commissioner's call for action, the Upper Division States and the UCRC developed a "5-Point Plan," which included a recommendation to reauthorize and reinstate the SCPP for 2023. In December of 2022, Congress, through the 2023 Omnibus Appropriations Bill, authorized SCPP for 2023 and 2024. In January 2023, the UCRC entered into a Funding Agreement with Reclamation which provided \$125 million to the UCRC for SCPP from funding appropriated under the Inflation Reduction Act. The Funding Agreement included a Facilitation Exhibit and the System Conservation Implementation Agreement (SCIA) template. The Funding Agreement provided the opportunity for water users in the UDS in 2023 and 2024 to be compensated for temporary and voluntary reductions in water use to help mitigate the impacts of long-term drought and depleted storage in the Colorado River System.⁷ Lessons learned from the implementation of the program in 2023 were summarized by the

¹ "Near Term Colorado River Operations Revised Draft Supplemental Environmental Impact Statement". U.S. Bureau of Reclamation, October 2023. Available at: www.usbr.gov/ColoradoRiverBasin/documents/NearTermColoradoRiverOperations/20231019-Near-termColoradoRiverOperations-RevisedDraftEIS-508.pdf.

² Lake Powell and Lake Mead Pool Elevation. U.S. Bureau of Reclamation. Available at: www.usbr.gov/uc/water/hydrodata/reservoir_data/site_map.html.

³ "Lake Powell Unregulated Inflow" for 2012-2023 period. U.S. Bureau of Reclamation. Available at: www.usbr.gov/uc/water/crsp/studies/images/PowellForecast.png.

⁴ "Near Term Colorado River Operations Revised Draft Supplemental Environmental Impact Statement", *supra* Note 1.

⁵ "Near Term Colorado River Operations Revised Draft Supplemental Environmental Impact Statement", *supra* Note 1.

⁶ U.S. Department of the Interior Press Release. August 2022 Available at: <https://www.doi.gov/pressreleases/interior-department-announces-actions-protect-colorado-river-system-sets-2023>

⁷ "Final SCPP Funding Agreement". UCRC, January 2023. Available at: www.ucrccommission.com/wp-content/uploads/2023/04/Final-SCPP-Funding-Agreement-Executed-Jan-6-2023.pdf.

UCRC and are included in the 2023 SCPP Report⁸. During a UCRC Special Meeting in September 2023, the UCRC Commissioners agreed to conduct the SCPP program in 2024 and implement the recommended improvements to the program from the 2023 lessons learned process. Results from the implementation of the 2024 SCPP projects in the Upper Basin are provided below. A summary of the timeline followed for the 2024 SCPP program is attached as Appendix A.

III. System Conservation Pilot Program Selection Process

A. Evaluation Criteria and Project Recommendation

Evaluation criteria were developed and identified in the Funding Agreement between Reclamation and the UCRC and were shared as part of the solicitation and outreach to potential SCPP participants. The UCRC, UDS, and Reclamation staff members participated in the evaluation process. Evaluation criteria included:

- A history of recent consumptive use of Colorado River water by the project proponent
- Adherence of the proposal to the requirements of the Funding Agreement Facilitation Exhibit and request for proposals
- Prioritization of projects that are likely to mitigate impacts of the ongoing drought
- Diversity of location and type of conservation measures, including consideration of multiple benefits
- The relative size of the project in terms of acre-feet of water that may be conserved
- The comparative ease or difficulty of implementing the project, including the proposed verification plan for the project
- The amount of time required for the project to generate conserved consumptive use
- Permitting requirements and approvals, if any
- For non-fixed price proposals, the amount of the proposed price per acre-foot and a justification for the proposed price

During the special meeting of the UCRC on September 21st, 2023, the UDS acting through the UCRC agreed to move forward with a narrowed SCPP in 2024. Along with the evaluation criteria above, projects also needed to meet at least one of the following criteria:

- Help inform remaining questions regarding the feasibility of potential future Demand Management Storage Agreement (DMSA) programs, or
- Support water conservation innovation and local drought Resiliency.

UCRC added a requirement in 2024 for potential applicants to work with the contractor prior to submitting an application. This change was implemented based on lessons learned from 2023. The pre-application meeting allowed the UCRC, with the help of the contractor, to ensure potential applications were feasible and that the potential applicant had a recent history of beneficial consumptive use of the water for the purpose described meeting the goal of saving time for both the potential applicant and the UCRC. After applications were submitted, Reclamation reviewed project applications to assure

⁸ 2023 System Conservation Pilot Program Report Available at: http://www.ucrccommission.com/wp-content/uploads/2024/06/2023_SCPP_Report_June2024.pdf

compliance with the National Environmental Policy Act and projects that may have a federal nexus. The UDS did a red flag review and checked for potential water rights issues. The UDS and the UCRC then held a meeting to review and recommend projects for consideration for implementation based on the evaluation criteria. The UCRC Commission, at its meeting on March 4, 2024, directed UCRC staff to finalize and execute the recommended project SCIAAs.

B. Conserved Consumptive Use Estimates

SCPP participants were compensated based on an average CCU value estimated for their project. These estimates were required in the application and were typically developed by WWG using the standard approach outlined below. Implementing lessons learned from 2023, WWG worked with the applicants and provided estimates of CCU for agricultural and storage forbearance projects prior to the application submittals. This both assured a consistent approach was followed for all projects and eliminated the need for applicants to hire separate consultants. In addition, because CCU was known prior to the application, this process greatly reduced changes to the initial submittals.

WWG utilized the eeMETRIC methodology accessed through the OpenET platform⁹ to estimate the historical average CCU for agricultural projects. This method was adopted for interstate irrigated agriculture consumptive use estimates by the UCRC¹⁰ and was consistently used across the four states to estimate CCU savings for projects that included full fallowing, partial fallowing, or crop switching. Annual consumptive use from eeMETRIC, available for 2016 through 2023, was used as the basis for estimating historical average consumptive use from irrigation supplies and associated potential CCU savings. This recent period generally hydrologic variability and includes wet, dry, and average hydrologic year types. In addition, it includes hot and cool irrigation season temperatures and wet and dry irrigation season rainfall patterns. The average consumptive use for the period 2016 through 2023 was determined to be a reasonable estimate of CCU for the 2024 SCPP. If a participant included the same field(s) in 2023 and 2024, only the period from 2016 through 2022 was used. The following summarizes the consistent method used to estimate CCU by project type.

- **Agriculture - Full Season Fallow**

- Using OpenET, download monthly 2016 to 2023 eeMETRIC actual ET (i.e. consumptive use) data for each SCPP project field.
- To account for consumptive use from precipitation, download monthly 2016 to 2023 eeMETRIC actual ET data for a nearby non-irrigated area. The non-irrigated area was a vegetated area near the project field that, based on the best information available, does not receive irrigation. The non-irrigated area was in the same general area of the project field(s), but the distance between the irrigated and non-irrigated fields was influenced by the type of land around the project field. There was no standard size for the non-irrigated area, however a large enough area was chosen to produce accurate numbers from the satellite based eeMETRIC. Note that if the project field(s) were deemed sub-

⁹ "OpenET Methodologies". OpenET. Available at: openetdata.org/methodologies/

¹⁰ Upper Colorado River Commission Adoption Resolution for eeMETRIC and related Consumptive Use Estimation Methods: <http://www.ucrccommission.com/reports-studies/>.

irrigated from nearby fields or riparian areas, a non-irrigated area that was also sub-irrigated was chosen. The area chosen was chosen based on professional judgement, with input from the UDS staff.

- Subtract the consumptive use from the non-irrigated field from the consumptive use of the project fields to estimate the historical consumptive use from irrigation supplies.
- Calculate an average value of historical consumptive use from irrigation supplies over the eight-year period; this average value was used as the CCU estimate for the SCPP participant's SCIA.
- **Agriculture - Split Season Fallow**
 - The same approach as described for full season fallow was used, except the consumptive use was only estimated for the fallow period.
 - For fields that were to be irrigated before the start of the fallow period, water stored in the soil zone due to irrigation before the start of fallowing was estimated, as the crop would continue consuming that water during the fallow period. The estimated consumptive use from the soil storage was subtracted from the total CCU. Available soil moisture was calculated as available water content from the USDA Soil Survey¹¹ multiplied by the root zone depth. A standard root zone depth was used for all projects.
- **Agriculture - Crop Switching**
 - The same approach as described for full season fallow was used to estimate the field historical consumptive use from irrigation water supplies.
 - To estimate potential conservation compared to the historically crop grown, a ratio of what the lower water use crop could potentially consume compared to the what the current crop could potential consume (both based on a full irrigation supply) was estimated. The ratio was then applied to the field average historical consumptive use from irrigation supplies. Potential consumptive use for both the historic crop and the lower water use crop was calculated using the single crop coefficient method described in FAO-56¹².
- **Reservoir Storage Forbearance**
 - The historical yield of the reservoir shares included in SCPP was estimated based on available records. This value was then reduced by an efficiency factor to account for both transit and irrigation efficiency losses that would have occurred if the water had been leased to an agricultural user. The transit and irrigation losses were based on professional judgment considering the type of irrigation application practices and whether the canal/ditch was dirt, lined, or piped.
- **Municipal and Industrial**
 - The amount of estimated savings was based on user-supplied information and discussion with UDS staff.

¹¹ United States Department of Agriculture Soil Survey Website. Available At: <https://websoilsurvey.nrcs.usda.gov/app/>

¹² Crop evapotranspiration – Guidelines for computing crop water requirements – FAO Irrigation and drainage paper 56. Available At: <https://www.fao.org/4/X0490E/x0490e00.htm>

C. Compensation

Based on lessons learned from the SCPP in 2023, a different approach was used for compensation in 2024 based on project type and by state. Prior to the 2024 application opening on October 27, 2023, Reclamation provided the UCRC a fixed price per acre-foot of CCU for agricultural and storage forbearance projects. The fixed prices by state and project type were determined through an independent economic assessment Reclamation performed based on local crop pricing. No prices were set for the highly variable municipal and industrial project types throughout the basin, and the applicants were asked to provide a cost justification. Three of the four municipal and industrial project application cost justifications were determined to be reasonable by Reclamation. Reclamation rejected one of the municipal projects asserting the price was too high.

Table 1 Table 1 - Reclamation's Fixed Price per Acre-Foot of CCU shows Reclamation's fixed price per acre-foot by state and project type.

Table 1 - Reclamation's Fixed Price per Acre-Foot of CCU

Project Type/Operation/Crop	Colorado	Utah	Wyoming	New Mexico
Agricultural*	\$509.00	\$506.00	\$492.00	\$300.00
Reservoir Storage Forbearance	\$150.00	\$150.00	\$150.00	\$150.00

* Projects that crossed a state border were given the higher of the two states price per acre-foot.

D. Project Verification

The UCRC, UDS staff, and WWG worked with the selected project participants or their representatives to establish project-specific Verification Plans that were included in the final contracts between the participants and the UCRC. The primary focus of each Verification Plan outlined procedures to *verify and document* that the applicant performed the conservation measures and complied with the schedule and actions in their contract.

Each Verification Plan was tailored to site-specific conditions and available measuring and control devices, primarily flumes or other diversion measurement devices at river or farm headgates. The primary methods for verifying full or partial season fallowing included field site visits and review of remote sensing satellite data using the Normalized Difference Vegetation Index (NDVI) to assess that water was not being applied. Site visits and remote sensing were also used to verify the projects that switched from a higher to a lower water use crop. Reservoir storage forbearance and municipal and industrial projects relied on accounting to verify that the agreed-upon conservation action was completed. A standard approach was used for site visits that included photographic documentation of the water delivery points and the participating fields.

IV. 2024 System Conservation Pilot Program Projects

A. Project Applications and Implemented Projects

There was more interest and participation in SCPP by water users across the UDS in 2024 compared to 2023 and the previous programs. Focused outreach from representatives of Colorado Ag Water Alliance,

Trout Unlimited, and The Nature Conservancy, plus word of mouth from 2023 participants, helped generate agricultural water user interest in key areas of Colorado, Utah, and Wyoming.

Table 2 provides an overview of the number of applications received and the number of projects implemented in each state. Figure 1 reflects the spatial range of the implemented projects across the states, including the number of implemented projects by sub-basin. For comparison, the total number of implemented projects in 2023 was 64.

Table 2 – Project Applications and Implemented Projects by State

	Colorado	New Mexico	Utah	Wyoming*	Total
Project Applications	50	1	31	40	122
Implemented Projects	46	1	31	32	110

*Includes projects extending across the Colorado/Wyoming border

There were several reasons that project applications did not result in implemented projects, including failure to meet eligibility requirements; administration/operation complexity for implementation; no or limited water savings; and concerns regarding compensation for conserved water.

Table 3 highlights the project categories implemented in 2024 by state. No irrigation water was applied to the enrolled full-season fallow project fields for the duration of the irrigation season. No irrigation water was applied during a specified period of the irrigation season (e.g., June 1 through September 30) for split-season fallow projects. The crops grown on the enrolled fields were switched to crops that consumed less water (e.g., alfalfa to triticale) for the crop switching projects. A limited amount of irrigation was applied for deficit irrigation projects. Agricultural Combination projects included some combination of full season fallow, split season fallow, deficit irrigation and crop switching. For storage forbearance projects, conserved water was held in the reservoirs, either for the full year as carry-over for next season, or until it could be released when it would likely not be picked up by downstream users, generally after the irrigation season. For the municipal and industrial projects, water typically used for municipal and industrial purposes was left in the stream or reservoir and recorded and accounted to reflect the reduction in use.

Table 3 – Types of Projects Implemented

Project Type	Colorado	New Mexico	Utah	Wyoming*	Total
Full Season Fallow	20	1	19	15	55
Split Season Fallow	4			9	13
Crop Switching	10				
Deficit Irrigation	1		2		
Agricultural Combination	10		3	5	18
Storage Forbearance	1		5	2	8
Municipal & Industrial			2	1	3
Total	46	1	31	32	110

*Includes projects extending across the Colorado/Wyoming border

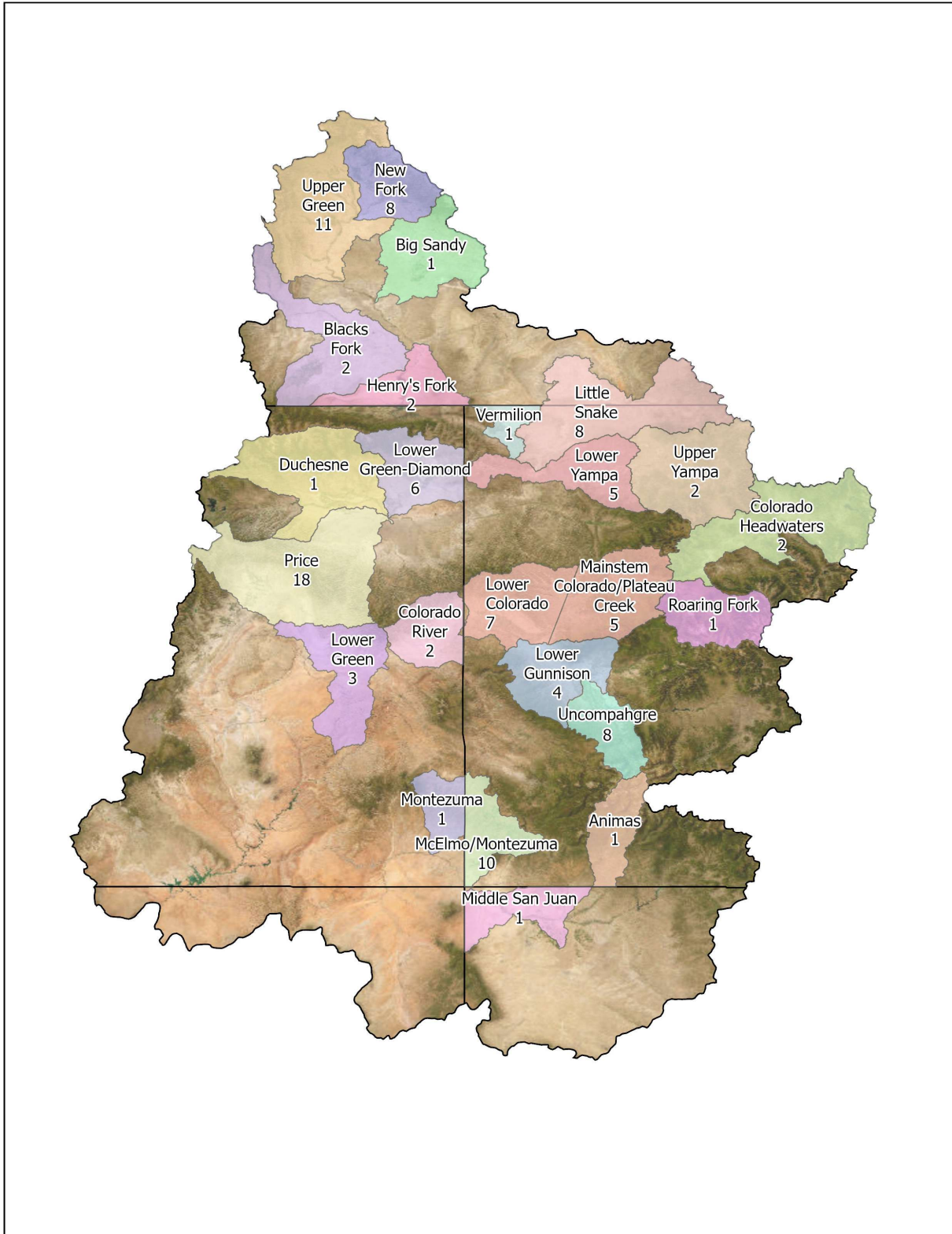


Figure 1 – Implemented SCPP Projects by Sub-Basin

Table 4 through show the contracted CCU estimates and associated compensation for each state. Based on the contracted CCU estimates, a total of \$28,608,270.30 was paid to water users in the UDS to conserve 63,631 acre-feet of water through SCPP in 2024.

Table 4 – Contracted Conserved Consumptive Use (CCU) and Associated Compensation in Colorado

Tributary	Project Type	Acreage	Contracted CCU (AF)	Price Per AF	Total Compensation
Plateau Creek	Split Season Fallow	96	97	\$ 509.00	\$ 49,373.00
Colorado River	Full Season Fallow	276	486	\$ 509.00	\$ 247,272.20
Dolores River	Crop Switch	367	545	\$ 509.00	\$ 277,160.68
Colorado River	Full Season Fallow	626	741	\$ 509.00	\$ 377,016.30
Uncompahgre River	Agricultural Combination	795	547	\$ 509.00	\$ 278,372.10
Surface Creek	Split Season Fallow	58	71	\$ 509.00	\$ 36,139.00
Colorado River	Agricultural Combination	389	807	\$ 509.00	\$ 410,508.50
Colorado River	Agricultural Combination	189	173	\$ 509.00	\$ 88,057.00
Dolores River	Agricultural Combination	1,732	2,172	\$ 509.00	\$ 1,105,649.80
Uncompahgre River	Agricultural Combination	544	582	\$ 509.00	\$ 296,034.40
Colorado River	Agricultural Combination	233	377	\$ 509.00	\$ 191,893.00
Yampa River	Agricultural Combination	131	139	\$ 509.00	\$ 70,496.50
Yampa River	Storage Forbearance	N/A	119	\$ 150.00	\$ 17,910.00
Colorado River	Deficit Irrigation	41	92	\$ 509.00	\$ 46,777.10
Yampa River	Full Season Fallow	92	104	\$ 509.00	\$ 52,885.10
Yampa River	Split Season Fallow	153	78	\$ 509.00	\$ 39,600.20
Surface Creek	Full Season Fallow	63	94	\$ 509.00	\$ 47,947.80
Dolores River	Crop Switch	126	114	\$ 509.00	\$ 58,270.32
Dolores River	Crop Switch	82	81	\$ 509.00	\$ 41,432.60
Dolores River	Crop Switch	77	81	\$ 509.00	\$ 41,025.40
Dolores River	Crop Switch	54	67	\$ 509.00	\$ 34,255.70
Dolores River	Crop Switch	68	87	\$ 509.00	\$ 44,435.70
Dolores River	Crop Switch	66	67	\$ 509.00	\$ 33,950.30

Tributary	Project Type	Acreage	Contracted CCU (AF)	Price Per AF	Total Compensation
Dolores River	Crop Switch	73	79	\$ 509.00	\$ 40,211.00
Dolores River	Crop Switch	120	139	\$ 509.00	\$ 70,598.30
Dolores River	Crop Switch	128	115	\$ 509.00	\$ 58,280.50
Colorado River	Full Season Fallow	112	215	\$ 509.00	\$ 109,485.90
Colorado River	Full Season Fallow	61	158	\$ 509.00	\$ 80,472.90
Plateau Creek	Full Season Fallow	67	153	\$ 509.00	\$ 78,029.70
Yampa River	Full Season Fallow	95	65	\$ 509.00	\$ 33,085.00
Roaring Fork	Full Season Fallow	52	48	\$ 509.00	\$ 24,482.90
Colorado River	Full Season Fallow	709	386	\$ 509.00	\$ 196,723.41
Plateau Creek	Full Season Fallow	49	66	\$ 509.00	\$ 33,629.63
Colorado River	Agricultural Combination	357	755	\$ 509.00	\$ 384,040.50
Yampa River	Full Season Fallow	119	213	\$ 509.00	\$ 108,213.40
Vermillion Creek	Full Season Fallow	364	428	\$ 509.00	\$ 218,055.60
Uncompahgre River	Full Season Fallow	76	132	\$ 509.00	\$ 67,152.37
Uncompahgre River	Full Season Fallow	98	184	\$ 509.00	\$ 93,757.80
Uncompahgre River	Split Season Fallow	51	29	\$ 509.00	\$ 14,557.40
Surface Creek	Agricultural Combination	144	116	\$ 509.00	\$ 59,044.00
Uncompahgre River	Agricultural Combination	497	776	\$ 509.00	\$ 394,729.50
Florida River	Full Season Fallow	46	39	\$ 509.00	\$ 19,851.00
Colorado River	Full Season Fallow	240	568	\$ 509.00	\$ 288,908.40
Uncompahgre River	Full Season Fallow	804	1,387	\$ 509.00	\$ 705,728.50
Plateau Creek	Full Season Fallow	402	367	\$ 509.00	\$ 186,803.00
Gunnison River	Full Season Fallow	42	103	\$ 509.00	\$ 52,427.00
Total			14,239		\$ 7,204,730.41

Table 5 - Contracted Conserved Consumptive Use (CCU) and Associated Compensation in New Mexico

Tributary	Project Type	Acreage	Contracted CCU (AF)	Price Per AF	Total Compensation
San Juan River	Full Season Fallow	2,987	4,933	\$ 300.00	\$ 1,479,900.00

Table 6 - Contracted Conserved Consumptive Use (CCU) and Associated Compensation in Utah

Tributary	Project Type	Acreage	Contracted CCU (AF)	Price Per AF	Total Compensation
Green River	Full Season Fallow	438	924	\$ 506.00	\$ 467,696.00
Green River	Full Season Fallow	479	1,073	\$ 506.00	\$ 542,715.00
Green River	Deficit Irrigation	98	111	\$ 506.00	\$ 56,166.00
Price River	Full Season Fallow	68	74	\$ 506.00	\$ 37,595.80
Green River	Full Season Fallow	670	1,645	\$ 506.00	\$ 832,370.00
Green River	Full Season Fallow	966	1,981	\$ 506.00	\$ 1,002,386.00
Price River	Storage Forbearance	N/A	380	\$ 150.00	\$ 57,000.00
Ashley Creek	Agricultural Combination	68	71	\$ 506.00	\$ 35,723.60
Price River	Industrial	N/A	480	\$ 150.00	\$ 72,000.00
Price River	Full Season Fallow	51	105	\$ 506.00	\$ 53,130.00
Price River	Storage Forbearance	N/A	105	\$ 150.00	\$ 15,705.00
Price River	Full Season Fallow	238	531	\$ 506.00	\$ 268,838.00
Price River	Full Season Fallow	317	559	\$ 506.00	\$ 282,752.80
Price River	Full Season Fallow	433	1,052	\$ 506.00	\$ 532,110.00
Green River	Full Season Fallow	4,173	7,191	\$ 506.00	\$ 3,638,696.60
Price River	Full Season Fallow	550	556	\$ 506.00	\$ 281,487.80
Colorado River	Deficit Irrigation	353	531	\$ 506.00	\$ 268,737.00
Price River	Agricultural Combination	58	116	\$ 506.00	\$ 58,493.60

Tributary	Project Type	Acreage	Contracted CCU (AF)	Price Per AF	Total Compensation
Price River/Nine Mile Creek	Full Season Fallow	78	87	\$ 506.00	\$ 44,123.00
Price River	Full Season Fallow	132	294	\$ 506.00	\$ 148,966.40
Colorado River	Full Season Fallow	92	131	\$ 506.00	\$ 66,437.80
Price River	Full Season Fallow	88	145	\$ 506.00	\$ 73,319.40
Green River	Agricultural Combination	138	251	\$ 506.00	\$ 127,208.00
Montezuma Creek	Full Season Fallow	82	134	\$ 506.00	\$ 67,702.80
Price River	Storage Forbearance	N/A	626	\$ 150.00	\$ 93,900.00
Price River	Municipal	N/A	1,059	\$ 150.00	\$ 158,820.00
Price River	Storage Forbearance	N/A	78	\$ 150.00	\$ 11,640.00
Mud Creek	Full Season Fallow	129	113	\$ 506.00	\$ 57,380.40
Price River	Full Season Fallow	40	72	\$ 506.00	\$ 36,330.80
Green River	Full Season Fallow	445	798	\$ 506.00	\$ 403,686.80
Ashley Creek	Storage Forbearance	N/A	1,078	\$ 150.00	\$ 161,700.00
Total			22,351		\$ 9,954,818.60

Table 7 - Contracted Conserved Consumptive Use (CCU) and Associated Compensation in Wyoming

Tributary	Project Type	Acreage	Contracted CCU (AF)	Price Per AF	Total Compensation
Pine Creek	Full Season Fallow	88	109	\$ 492.00	\$ 53,628.00
Willow Creek	Full Season Fallow	716	705	\$ 492.00	\$ 346,860.00
Willow Creek	Storage Forbearance	N/A	1,433	\$ 150.00	\$ 214,950.00
Middle Piney Creek	Full Season Fallow	59	57	\$ 492.00	\$ 28,191.60
Little Snake	Split Season Fallow	357	261	\$ 492.00	\$ 128,510.40
Henrys Fork	Full Season Fallow	157	191	\$ 492.00	\$ 93,972.00
Henrys Fork	Full Season Fallow	145	201	\$ 492.00	\$ 98,892.00
Pine Creek	Full Season Fallow	90	59	\$ 492.00	\$ 29,224.80
North and South Piney Creek	Agricultural Combination	1,225	524	\$ 492.00	\$ 257,808.00
Big Sandy Creek	Split Season Fallow	148	220	\$ 492.00	\$ 108,190.80
South Piney Creek	Split Season Fallow	442	279	\$ 492.00	\$ 137,268.00
LaBarge and Fish Creek	Agricultural Combination	1,503	1,576	\$ 492.00	\$ 775,244.40
Fontenelle Creek	Agricultural Combination	295	207	\$ 492.00	\$ 102,040.80
Middle and South Piney Creek	Full Season Fallow	2,777	2,656	\$ 492.00	\$ 1,306,752.00
South Piney Creek	Split Season Fallow	1,123	514	\$ 492.00	\$ 252,888.00
North Piney Creek	Agricultural Combination	1,330	1,075	\$ 492.00	\$ 528,900.00
Little Snake	Municipal	N/A	1,000	\$ 163.00	\$ 163,000.00
Pine Creek	Full Season Fallow	590	856	\$ 492.00	\$ 421,152.00
North Piney Creek	Full Season Fallow	333	280	\$ 492.00	\$ 137,858.40
North and Middle Piney Creek	Agricultural Combination	1,929	1,040	\$ 492.00	\$ 511,876.80
Cottonwood Creek	Full Season Fallow	2,044	1,650	\$ 492.00	\$ 811,800.00

Tributary	Project Type	Acreage	Contracted CCU (AF)	Price Per AF	Total Compensation
Pine Creek	Full Season Fallow	61	78	\$ 492.00	\$ 38,326.80
Blacks Fork	Full Season Fallow	705	610	\$ 492.00	\$ 300,218.40
Pine Creek	Split Season Fallow	73	47	\$ 492.00	\$ 23,271.60
Pine and Duck Creek	Full Season Fallow	2,196	3,175	\$ 492.00	\$ 1,561,854.00
Blacks Fork	Storage Forbearance	N/A	405	\$ 150.00	\$ 60,750.00
Little Snake River*	Split Season Fallow	283	338	\$ 509.00	\$ 172,042.00
Little Snake River*	Split Season Fallow	155	35.91	\$ 509.00	\$ 18,278.19
Little Snake River*	Split Season Fallow	640	100.9	\$ 509.00	\$ 51,358.10
Little Snake River*	Full Season Fallow	277	600.5	\$ 509.00	\$ 305,654.50
Little Snake River*	Split Season Fallow	1419.6	1053.3	\$ 509.00	\$ 536,129.70
Little Snake River*	Full Season Fallow	384	770	\$ 509.00	\$ 391,930.00
Total			22,108		\$ 9,968,821.29

*Project extending across the Colorado/Wyoming border

V. System Conservation Pilot Program Consumptive Use End-of-Season Analysis

A. *Approach to Calculation of End-of-Season CCU*

This section summarizes the approach used by WWG to estimate CCU at the end of the growing season for SCPP projects in 2024. As summarized in Section III above, SCPP participants were compensated based on an average historical CCU value for their project as estimated through a series of analyses. After the 2024 projects were completed, WWG estimated CCU based on the actual hydrological and climate conditions in 2024. The end-of-season CCU did not impact compensation but was used to understand more about potential water savings under different project types, locations, and hydrologic year types.

WWG performed the end-of-season analyses using the same methods used to estimate the average CCU for determination of compensation to understand how conditions experienced during the 2024 project period compared to the average conditions from 2016 through 2023. Because the enrolled fields were either not fully irrigated or not irrigated at all in 2024, consumptive use savings for 2024 were estimated based on comparisons to nearby irrigated “reference fields”. The following summarizes the approaches used for each project type to estimate end-of-season CCU for 2023.

- **Agricultural Projects**
 - Using OpenET, download monthly 2024 eeMETRIC actual ET (i.e., consumptive use) data for each SCPP project field and the nearby non-irrigated area. Note that the same non-irrigated area was used for this analysis as was used during the average historical consumptive use estimate.
 - Estimate 2024 consumptive use for the project field by subtracting the 2024 non-irrigated consumptive use from the 2024 project field consumptive use.
 - Identify a nearby field growing the same “pre-2024” crop (i.e., reference field) and use OpenET to download monthly 2024 data. Calculate the 2024 consumptive use from irrigation supplies by subtracting the consumptive use from the non-irrigated area.
 - The nearby fields were selected based on professional judgement with the goal for the field to have been irrigated similarly to the enrolled field’s historical practices and to assure the selected field was a large enough for the calculation of consumptive use from eeMETRIC.
 - Determine the estimated water conserved by subtracting the consumptive use of the participating field from the consumptive use of the reference field.
- **Reservoir Storage Forbearance**
 - Using records provided by the entity operating the reservoir and any available state data, determine the yield of the reservoir shares included in SCPP for 2024. Reduce that value by the same efficiency factor used in the initial CCU analysis to account for both transit and irrigation efficiency losses that would have occurred if the water had been leased to an agricultural user in 2024.
- **Municipal and Industrial**

- Relied on user-supplied accounting and worked with UDS staff to verify the 2024 CCU.

Using a nearby reference field provides a comparative method to estimate water savings for agricultural projects; however, it is important to note that the reference field may not actually be representative of the amount of water the participating field could have used. The reference field could have a more senior or junior water right, or the reference field could have different (better or worse) irrigation practice methods than the participating field. Although there are pros and cons to using a reference field for end-of-season CCU calculations, this approach was determined to be appropriate, as it can be used in all four states and is consistent with the approach used for determining initial CCU estimates.

B. Discussion and Results

Table 8 through 11 summarize the contracted and compensated CCU and the end-of-season CCU estimates for each project. It is important to note that, in all cases, the participant completed the required conservation activities. For agricultural projects, irrigation water deliveries were reduced consistent with the conservation activities and SCIAs. In some cases, the end of season CCU is less than the contracted CCU. Climate conditions (temperature and precipitation) and water supply in any given year are extremely variable and unlikely to be “the average” from 2016 to 2023; therefore, variation in average estimated CCU and actual CCU is to be expected. The following are considerations when evaluating estimated annual CCU versus contract CCU. The overall CCU for 2024 was less than the average estimated CCU derived based on the 2016 to 2023 period:

- In general, the Upper Colorado River Basin experienced above average precipitation (rain and snowfall) in the spring of 2024. According to the Natural Resource Conservation Service Snow and Monitoring Climate Office, on May 31, 2024 the basin as a whole had a snow water equivalent that was 136 percent of the median¹³. Note that when more of the crop demand is met from precipitation, less irrigation water is required, resulting in less CCU savings.
- Irrigation water from adjacent/nearby fields, both from surface runoff and shallow groundwater returns, impacted some of the participating fields due to more available water for irrigation than in a dryer year.
- A few participants removed vegetation and disked their fields, but OpenET still indicated some consumptive use on these fields. These fields were typically smaller, and it is possible that the estimates from OpenET could have been influenced by the well-irrigated fields around the disked fields.

The overall UCRB savings were higher than the contracted amount for 2024. Colorado, Utah, and New Mexico had total savings greater than the contracted amount. Wyoming had savings less than the contracted amount, but only by around 10 percent. Most projects showed water savings compared to nearby reference fields. Full Season Fallow and Crop Switching typically had CCU similar to the contracted savings. Split Season Fallow and Deficit Irrigation fields were more dependent on field location. Fields that were near riparian areas or adjacent to heavily irrigated fields typically did not show

¹³ Natural Resources Conservation Service Snow and Climate Monitoring. Available at: <https://www.nrcs.usda.gov/resources/data-and-reports/snow-and-climate-monitoring-predefined-reports-and-maps>

the contracted savings, whereas fields that were further away from riparian areas and/or not surrounded by heavily irrigated areas achieved contract savings. Due to the average hydrologic year, reservoir shares in reservoir storage forbearance projects generally resulted in full allocation per share.

Table 8 – End of Season Conserved Consumptive Use (CCU) Comparison in Colorado

Tributary	Project Type	Acreage	Contracted Estimated CCU (AF)	End of Season Estimated CCU (AF)
Plateau Creek	Split Season Fallow	96	97	105
Colorado River	Full Season Fallow	276	486	365
Dolores River	Crop Switch	367	545	525
Colorado River	Full Season Fallow	626	741	430
Uncompahgre River	Agricultural Combination	795	547	390
Surface Creek	Partial Season Fallow	58	71	6
Colorado River	Agricultural Combination	389	807	666
Colorado River	Agricultural Combination	189	173	154
Dolores River	Agricultural Combination	1,732	2,172	3,823
Uncompahgre River	Agricultural Combination	544	582	136
Colorado River	Agricultural Combination	233	377	222
Yampa River	Agricultural Combination	131	139	67
Yampa River	Storage Forbearance	N/A	119	119
Colorado River	Deficit Irrigation	41	92	68
Yampa River	Full Season Fallow	92	104	75
Yampa River	Partial Season Fallow	153	78	23
Surface Creek	Full Season Fallow	63	94	37
Dolores River	Crop Switch	126	114	262
Dolores River	Crop Switch	82	81	124
Dolores River	Crop Switch	77	81	117
Dolores River	Crop Switch	54	67	101
Dolores River	Crop Switch	68	87	112
Dolores River	Crop Switch	66	67	66
Dolores River	Crop Switch	73	79	80
Dolores River	Crop Switch	120	139	184

Tributary	Project Type	Acreage	Contracted Estimated CCU (AF)	End of Season Estimated CCU (AF)
Dolores River	Crop Switch	128	115	263
Colorado River	Full Season Fallow	112	215	168
Colorado River	Full Season Fallow	61	158	57
Plateau Creek	Full Season Fallow	67	153	56
Yampa River	Full Season Fallow	95	65	95
Roaring Fork	Full Season Fallow	52	48	62
Colorado River	Full Season Fallow	709	386	475
Plateau Creek	Full Season Fallow	49	66	237
Colorado River	Agricultural Combination	357	755	565
Yampa River	Full Season Fallow	119	213	6
Vermillion Creek	Full Season Fallow	364	428	351
Uncompahgre River	Full Season Fallow	76	132	134
Uncompahgre River	Full Season Fallow	98	184	161
Uncompahgre River	Partial Season Fallow	51	29	49
Surface Creek	Agricultural Combination	144	116	76
Uncompahgre River	Agricultural Combination	497	776	709
Florida River	Full Season Fallow	46	39	40
Colorado River	Full Season Fallow	240	568	254
Uncompahgre River	Full Season Fallow	804	1,387	1,675
Plateau Creek	Full Season Fallow	402	367	774
Gunnison River	Full Season Fallow	42	103	64
Total			14,239	14,530

Table 9 - End of Season Conserved Consumptive Use (CCU) Comparison in New Mexico

Tributary	Project Type	Acreage	Contracted Estimated CCU (AF)	End of Season Estimated CCU (AF)
San Juan	Full Season Fallow	2,987	4,933	5,596

Table 10 - End of Season Conserved Consumptive Use (CCU) Comparison in Utah

Tributary	Project Type	Acreage	Contracted Estimated CCU (AF)	End of Season Estimated CCU (AF)
Green River	Full Season Fallow	438	924	928
Green River	Full Season Fallow	479	1,073	785
Green River	Deficit Irrigation	98	111	0
Price River	Full Season Fallow	68	74	134
Green River	Full Season Fallow	670	1,645	1,148
Green River	Full Season Fallow	966	1,981	1,353
Price River	Storage Forbearance	N/A	380	380
Ashley Creek	Agricultural Combination	68	71	0
Price River	Industrial	N/A	480	480
Price River	Full Season Fallow	51	105	91
Price River	Storage Forbearance	N/A	105	105
Price River	Full Season Fallow	238	531	403
Price River	Full Season Fallow	317	559	598
Price River	Full Season Fallow	433	1,052	277
Green River	Full Season Fallow	4,173	7,191	11,027
Price River	Full Season Fallow	550	556	1,256
Colorado River	Deficit Irrigation	353	531	825
Price River	Agricultural Combination	58	116	57

Tributary	Project Type	Acreage	Contracted Estimated CCU (AF)	End of Season Estimated CCU (AF)
Price River/Nine Mile Creek	Full Season Fallow	78	87	87
Price River	Full Season Fallow	132	294	159
Colorado River	Full Season Fallow	92	131	164
Price River	Full Season Fallow	88	145	174
Green River	Agricultural Combination	138	251	262
Montezuma Creek	Full Season Fallow	82	134	38
Price River	Storage Forbearance	N/A	626	626
Price River	Municipal	N/A	1,059	1,059
Price River	Storage Forbearance	N/A	78	78
Mud Creek	Full Season Fallow	129	113	2
Price River	Full Season Fallow	40	72	31
Green River	Full Season Fallow	445	798	852
Ashley Creek	Storage Forbearance	N/A	1,078	1,078
Total			22,351	24,455

Table 11 - End of Season Conserved Consumptive Use (CCU) Comparison in Wyoming

Tributary	Project Type	Acreage	Contracted Estimated CCU (AF)	End of Season Estimated CCU (AF)
Pine Creek	Full Season Fallow	88	109	78
Willow Creek	Full Season Fallow	716	705	581
Willow Creek	Storage Forbearance	N/A	1,433	1,433
Middle Piney Creek	Full Season Fallow	59	57	39
Little Snake	Partial Season Fallow	357	261	323
Henrys Fork	Full Season Fallow	157	191	109
Henrys Fork	Full Season Fallow	145	201	95
Pine Creek	Full Season Fallow	90	59	93
North and South Piney Creek	Agricultural Combination	1,225	524	528
Big Sandy Creek	Partial Season Fallow	148	220	271
South Piney Creek	Partial Season Fallow	442	279	183
LaBarge and Fish Creek	Agricultural Combination	1,503	1,576	989
Fontenelle Creek	Agricultural Combination	295	207	309
Middle and South Piney Creek	Full Season Fallow	2,777	2,656	2,820
South Piney Creek	Partial Season Fallow	1,123	514	180
North Piney Creek	Agricultural Combination	1,330	1,075	716
Little Snake	Municipal	N/A	1,000	1,000
Pine Creek	Full Season Fallow	590	856	483
North Piney Creek	Full Season Fallow	333	280	459
North and Middle Piney Creek	Agricultural Combination	1,929	1,040	1,752
Cottonwood Creek	Full Season Fallow	2,044	1,650	1,710

Tributary	Project Type	Acreage	Contracted Estimated CCU (AF)	End of Season Estimated CCU (AF)
Pine Creek	Full Season Fallow	61	78	81
Blacks Fork	Full Season Fallow	705	610	1,079
Pine Creek	Partial Season Fallow	73	47	0
Pine and Duck Creek	Full Season Fallow	2,196	3,175	1,111
Blacks Fork	Storage Forbearance	N/A	405	400
Little Snake River*	Partial Season Fallow	283	338	146
Little Snake River*	Partial Season Fallow	155	36	20
Little Snake River*	Partial Season Fallow	640	101	443
Little Snake River*	Full Season Fallow	277	601	508
Little Snake River*	Partial Season Fallow	1,420	1,053	1,787
Little Snake River*	Full Season Fallow	384	770	250
Total			22,108	19,977

*Project extended across the Colorado/Wyoming border

APPENDIX A

Upper Colorado River Basin System Conservation Pilot Program (SCPP) Timeline for 2024 Program

September 2023 – UDS, acting through UCRC at a UCRC Special Meeting, agreed to move forward with a narrowed System Conservation Pilot Program (SCPP) in 2024.

October 2023 – 2024 SCPP applications opened and the UCRC hosted an informational kickoff webinar to introduce SCPP and the 2024 application and review process.

November – December 2023 – UDS and UCRC held follow up information webinars and WWG worked with applicants to apply.

December 2023 – 2024 SCPP Applications closed.

December 2023 to February 2024 - UDS did a red flag review of the applications for conformance with State water management policies and eligibility criteria. Reclamation reviewed applications for National Environmental Policy Act compliance and projects that may have a federal nexus.

February 2024 – UCRC staff, UDS staff, Reclamation staff met in person, in Utah to evaluate projects and determine which projects are acceptable and should be presented to the Commission for consideration of approval.

March 2024 – UDS and UCRC staff recommend projects to move forward for consideration – UDS, acting through the UCRC at a UCRC Special Meeting, direct the UCRC to move forward with recommended projects.

April 2024 – UDS and Reclamation give their final approvals and SCIAs are executed.

April – June 2024 – Initial payments provided to SCPP participants, per their SCIAs

May – October 2024 – Monitoring and verification (monthly reviews consisting of a mix of in-person visits by UDS, UCRC, and WWG staff, and remote-sensing analysis)

November 2024 – Closeout reviews and development of final verification reports with each report reviewed by staff for the UDS, the UCRC, and Reclamation

October – December 2024 – Final payments provided to SCPP participants, per verification and their SCIAs

January – March 2025 – Preparation of 2024 SCPP review and report to Reclamation