



Colorado River Salinity Control Program

State of Colorado
Salinity Control Unit Summary
Fiscal Year (FY) 2023



United States Department of Agriculture

Natural Resources Conservation Service

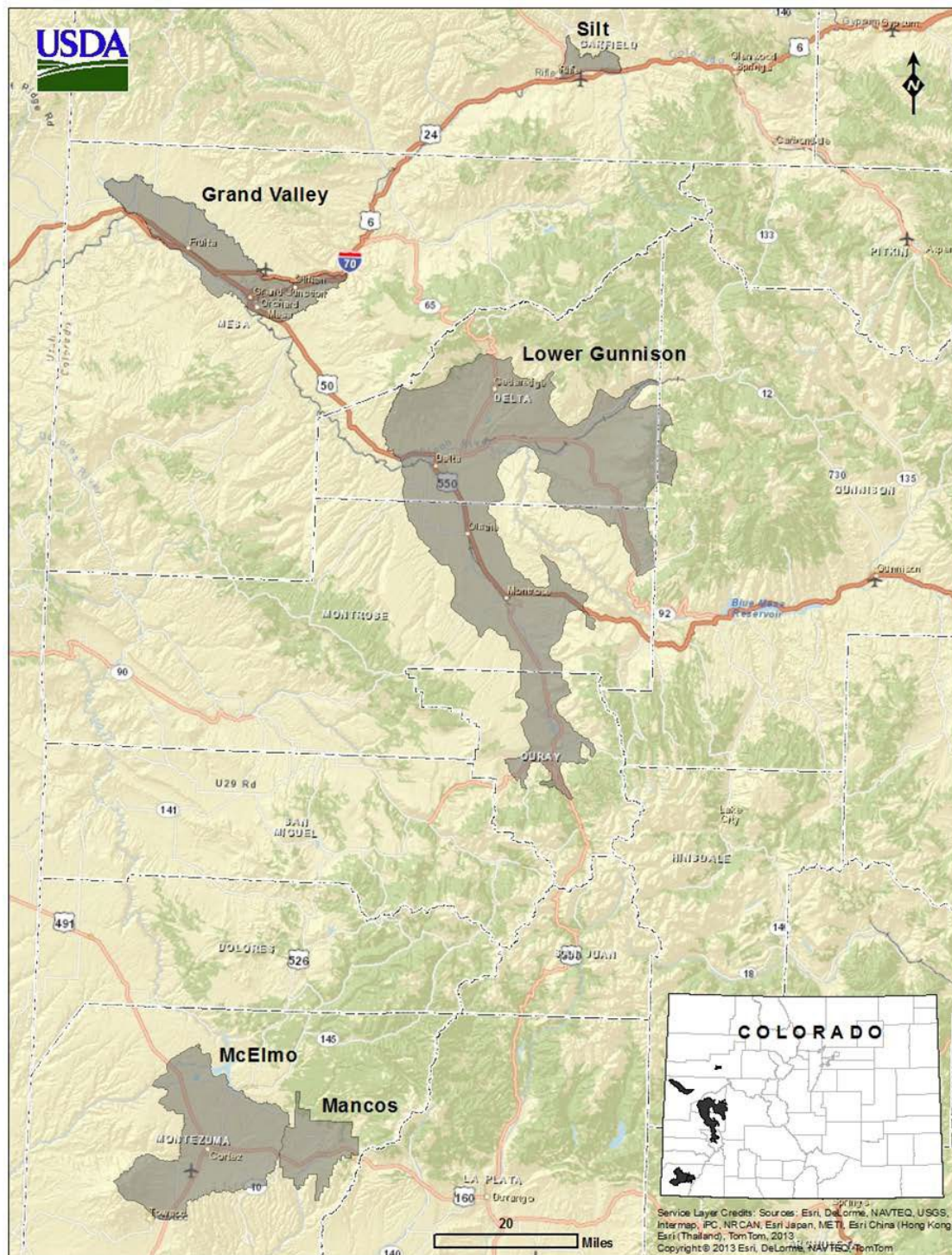
Colorado River Salinity Control Program Overview

The Water Quality Act of 1965 (Public Law 89-234), as amended by the Federal Water Pollution Control Act of 1972, mandated efforts to maintain water quality standards in the United States (U.S.). Congress enacted the Colorado River Basin Salinity Control Act (PL 93-320) in June 1974. Title I of the Act addresses the United States' commitment to Mexico and provided means for the U.S. to comply with provisions of Minute 242. Title II of the Act created a water quality program for salinity control in the U.S. Primary responsibility was assigned to the Secretary of Interior and the U.S. Bureau of Reclamation (USBR). U.S. Department of Agriculture (USDA) was instructed to support USBR's program with its existing authorities.

The USDA-Natural Resources Conservation Service (NRCS), formerly USDA-Soil Conservation Service (SCS), both herein referenced as NRCS, initiated a program to make a variety of irrigation improvements to reduce deep percolation and on-farm ditch seepage to reduce the salt load potential to the Colorado River. Salinity control projects were initiated in Colorado starting with the Grand Valley Unit in 1979, Lower Gunnison Unit in 1988, McElmo Creek Unit in 1989, Mancos Valley Unit in 2004, and Silt Unit in 2005. The NRCS irrigation improvement work included piping or lining irrigation ditches and small laterals and improving the on-farm irrigation systems. In 2010, the Salinity Control Forum recommended the NRCS approve designated salinity control funding for small individual projects in catchments within the Colorado River Basin, but outside of the designated salinity control units to utilize salinity funds not used in the designated units. The Out-of-Project Area Tier 2 individual irrigation improvement projects are funded based on their predicted salinity control benefit calculated using U.S. Geological Survey (USGS) **SP**atially Referenced Regression **O**n **W**atershed (SPARROW) water quality analysis.

The Salinity Control Act amendment of 1984 (PL 98-569) mandates implementation of "measures to replace incidental fish and wildlife values foregone" resulting from irrigation improvements within project units. In 2012 the U.S. Fish and Wildlife Service (USFWS) approved a policy change to allow replacement of wildlife habitat on a 1:1 acreage basis with a wildlife acreage target of 2 percent of acres treated with salinity controls. NRCS continues to promote wildlife habitat replacement and will continue to monitor and evaluate the extent and quality of wildlife habitat. A case study to demonstrate the type of project NRCS are contracting is included in Appendix A. Annual and cumulative statistics for wildlife habitat are given below in **Table 2: Salinity Wildlife Habitat Replacement**.

Colorado River Salinity Control Program Project Areas



Project Achievement Summary

The Grand Valley Unit has reached its goal for acres treated. The remaining units are all above 65 percent of the acres treated goal and three of the remaining four basins are greater than 65 percent of the goal for tons of salt removed (**Table 1: Colorado Project Summary FY 2023**).

Overall, within the Colorado Project area, more than 76 percent or 141,986 acres of cropland have been treated as we work towards the goal of 187,550 acres treated. Our estimated salt removal is at 81 percent or 314,385 tons of the 389,930 tons goal.

Our wildlife replacement acres show that in most project areas we are on pace to meet or exceed the established acreage goal or two percent of the overall project area acres treated (**Table 2, Colorado Wildlife Summary FY 2023**).

Table 1: Colorado Project Summary FY 2023

Project Area	Project Starting Year	Goaled Treatment (Acres)	FY 2023 Treated (Acres)	Estimated FY 2023 Cumulative Cropland Treated (Acres)	Treated Acres Applied to Total Project Acre Treatment Goal (Percent)	Goaled Treatment (Tons)	Estimated FY 2023 Salt to be Treated (Tons)	Estimated FY 2023 Cumulative Treated (Tons)	Estimated Treated Tons of Total Project Tons Treatment Goal (Percent)
Grand Valley – Completed	1979	42,800	0	43,391	101%	132,000	0	144,795	110%
Lower Gunnison	2005	115,000	166	74891	65%	196,000	519	129186	66%
McElmo Creek	2004	21,550	69	18640	86%	46,000	141	33281	72%
Mancos Valley	1989	5,400	47	3191	69%	11,940	30	4528	38%
Silt	1988	2,800	0	1873	89%	3,990	0	2595	65%
Out-of-Project Area Tier 2	2010	NA	99	5603	NA	NA	129	6465	NA

Wildlife Habitat Replacement

The Salinity Control Act requires voluntary replacement of wildlife habitat values foregone because of irrigation improvements within the designated project units. In 2012, the **USFWS** approved a policy change to allow replacement of wildlife habitat on a 1:1 acreage basis with a wildlife acreage target of 2 percent of acres treated with salinity controls.

NRCS Colorado will continue to promote and work with landowners to promote wildlife habitat replacement. We have several contracts with wildlife practices scheduled in future years. However, due to a continued decrease in staffing, monitoring will be limited and only completed when resources are available.

Table 2: Colorado Wildlife Summary FY 2023

Project Area	Project Starting Year	Cumulative Replacement Habitat Applied and Maintained (Acres)	Replacement Habitat Current Goal (Acres)	Replacement Wildlife Habitat Current Surplus or Deficit (Acres)	Replacement Habitat in FY 2023 Contracts (Acres)	Current Potential Habitat Deficit (Acres)	Replacement Habitat Acres Applied and Maintained to Total Project Acres Goal (Percent)
Grand Valley – Completed	1979	1261	1206	55	0	0	104%
Lower Gunnison	2005	2703	1448	1255	63.8	0	187%
McElmo Creek	2004	287	370	-83	2	-61	77%
Mancos Valley	1989	107	63	52	0	0	170%
Silt	1988	25	37	-12	0	-11	67%

Economic Impacts

The regional economic impact of the salinity program has been studied and reported in previous monitoring and evaluation reports. The salinity program is assumed to impact the region much the same as it has in the past.

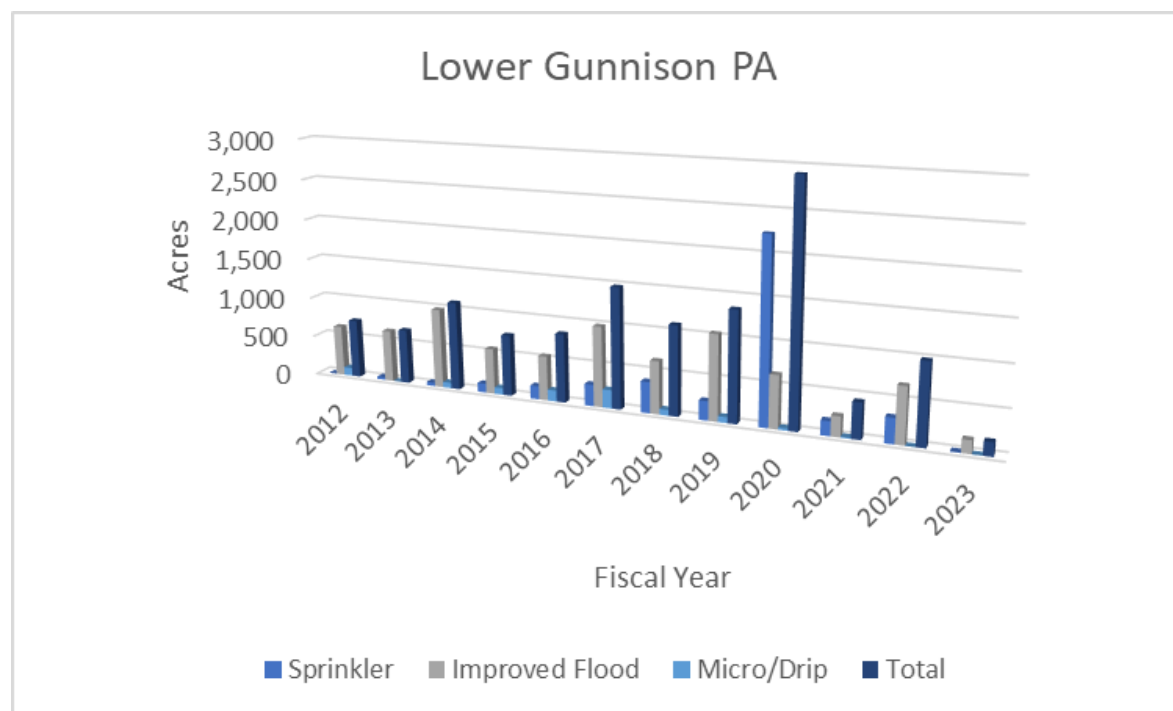
Colorado Salinity Unit Progress Reports

The Grand Valley (Completed Project) has achieved the irrigation treatment acreage goal and exceeded the planned ton goal primarily due to additional higher efficiency levels of on farm irrigation system improvements and a much larger amount of near farm irrigation delivery system improvements than were anticipated when the original project plan was developed. The amortized cost per ton for the Grand Valley Unit often is typically higher due to the cost of these high efficiency precision application irrigation systems. The Grand Valley Unit has a current habitat replacement goal of 1,206 acres. There are currently 1,261 acres of suitable replacement habitat applied and maintained and a large portion is on Colorado State Parks and Wildlife land. Since the on-farm irrigation improvement project is essentially complete, the project area should meet or exceed the total habitat replacement goal when all the current active habitat contracts are completed.

The Lower Gunnison Project has achieved 65 percent of the acreage treatment goal and has achieved 66 percent of the ton reduction goal primarily due to a higher efficiency level of irrigation system improvement and additional treatment of near farm irrigation delivery systems treated as part of the NRCS on farm program. The original project goal was to treat 135,000 acres of irrigated cropland. However extensive urban, sub-urban, and small acreage residential development has occurred in the project area, reducing the predicted number of acres needing treatment and eligible for the NRCS farm oriented financial assistance programs, to the current level of 115,000 acres. Given the tons reported are tracking ahead of the acres treated, it is still expected the original 196,000 ton per year salinity reduction goals will be achieved even with the reduction in acres treated. The Lower Gunnison Unit wildlife habitat replacement acres applied and maintained is concurrent with the irrigated acres treated to date and the unit has enough additional acres applied and in active contracts they should remain concurrent for the foreseeable future.

Current Year

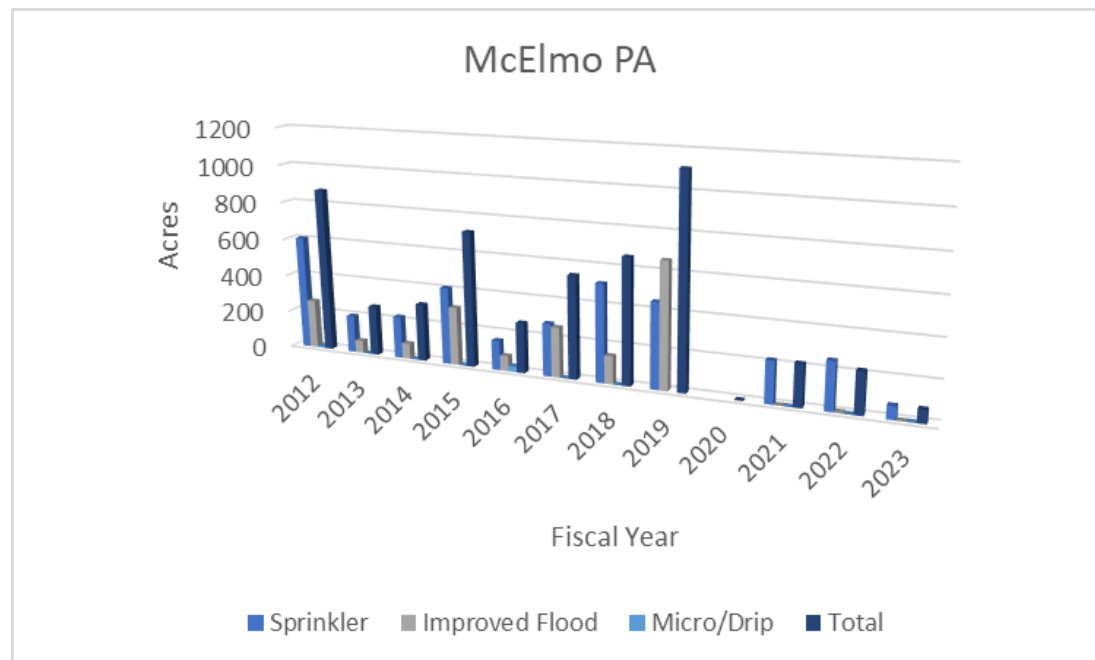
During FY 2023, NRCS obligated 34 contracts. These contracts cover 1,257 acres, reducing 869 tons of salt annually at an estimated cost of \$232/ton of salt saved anticipated through these contracts. Cumulative through FY 2023 NRCS has treated 74,891 acres (65 percent of the project goal), controlling 129,186 tons of salt annually.



The McElmo Creek Project has achieved 86 percent of the acreage treatment goal, and the project is at 72 percent of the salinity reduction goal due primarily to a higher percentage of the lower efficiency flood irrigation improvements, rather than the anticipated level of the higher efficiency sprinkler irrigation system improvements. The ratio of lower efficiency to higher efficiency systems is reducing the net level of salinity reduction achieved by the on-farm treatment. In addition, an adjustment to the predicted salinity loading reduction from each type of improvement was made to assure the unit could not over report the net salinity reduction benefits. The result of the adjustment in the salinity loading rate resulted in a smaller number of tons reported for each individual project. The unit is lagging in the concurrent habitat replacement due to the results of a field analysis to track the habitat projects applied, and to determine if the applied projects met suitable salinity replacement habitat. The data collected during the field review resulted in a reduction in the number of acres confirmed as applied and maintained from what was previously reported. Some of the smaller habitat projects had not been maintained and some of the earlier projects could not be tracked through the administrative record to determine if the project as applied and maintained, still met suitable replacement habitat requirements. The current acreage number reflects suitable wildlife habitat replacement projects that are still in place, being maintained, and can be tracked. Additional analysis may still confirm other previously reported habitat acres are being maintained as suitable salinity habitat replacement projects.

Current Year

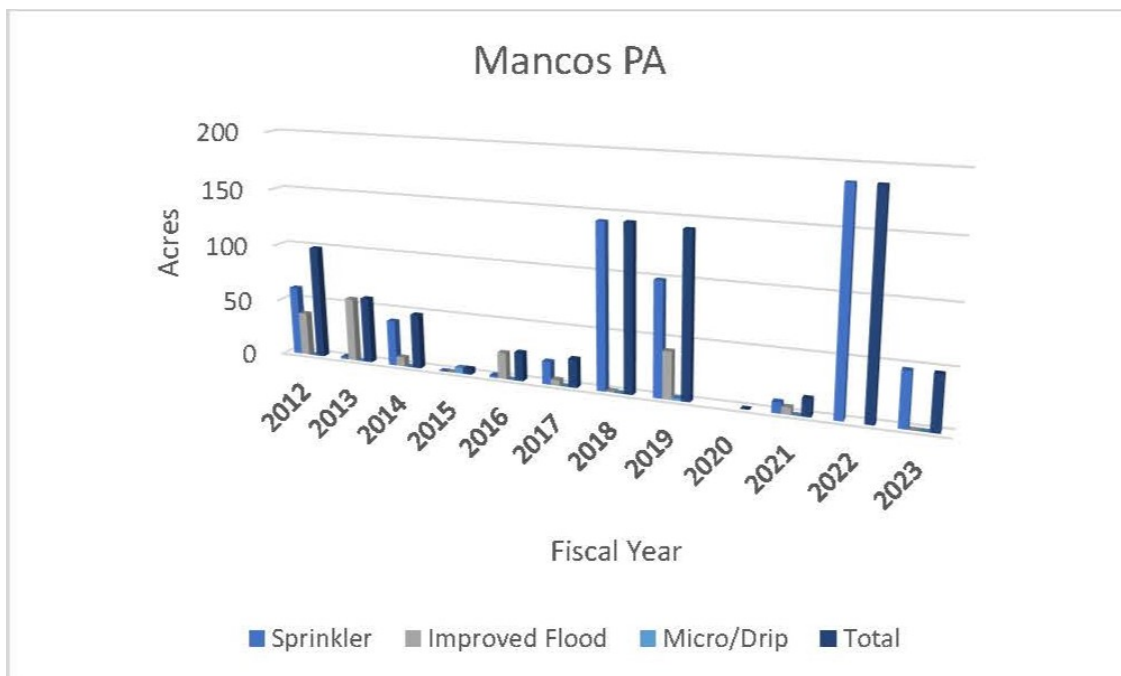
During FY 2023, NRCS obligated 14 contracts. These contracts cover 231 acres, reducing 231 tons of salt annually at an estimated cost of \$210/ ton of salt saved anticipated though these contracts. Cumulative through FY 2023 NRCS has treated 18,640 acres (86 percent of the project goal), controlling 33,281 tons of salt.



The Mancos Valley Project is at 69 percent of the acreage treatment goal but is at 38 percent of the salinity ton reduction goal due primarily to a lower amount of off farm irrigation delivery treatments reported than was originally anticipated. Several of the irrigation delivery systems in the area have applied for financial assistance through various USDI, USDA, and other funding assistance programs however they have not competed successfully for the limited funds due to the relatively lower salinity loading rate in this small project area. With the limited amount of irrigation delivery improvement funding, both the off farm and near farm irrigation delivery salinity reporting is lagging net project goals, and the lack of successful funding applications for irrigation delivery system improvements will likely continue to affect the number of on farm applications. If additional funding for the off-farm delivery is not available, it is unlikely the unit will reach full implementation goals in the foreseeable future. The project exceeds the concurrent habitat replacements goals significantly, and most likely will have enough salinity replacement habitat projects in place to meet full project implementation goals if all the acres are eventually treated. The proximity of this project to the McElmo Creek unit could provide additional replacement habitat values for both areas in the future if needed.

Current Year

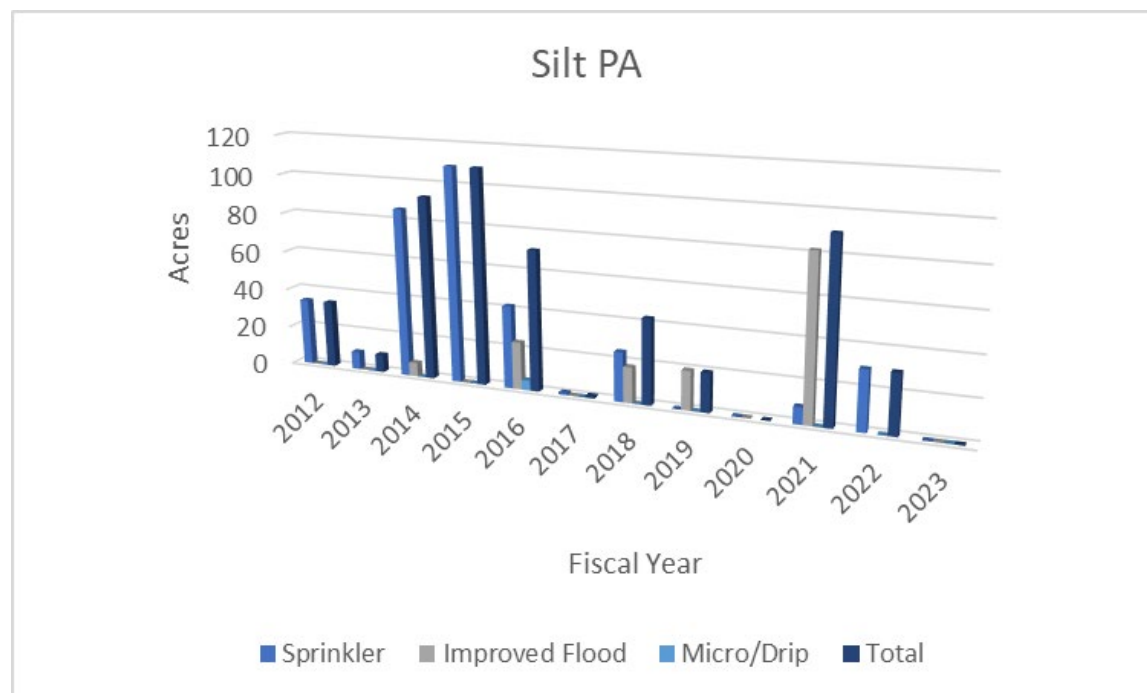
During FY 2023, NRCS obligated 1 contract. This contract covered 3 acres, reducing 3 tons of salt annually at an estimated cost of \$173/ ton of salt saved anticipated through these contracts. Cumulative through FY 202 NRCS has treated 3,191 acres (69 percent of the project goal), controlling 4,528 tons of salt annually.



The Silt Project acreage and salinity reduction goals are tracking closely together at 89 percent and 65 percent respectively, and it is not known at this time how many additional irrigated acres may be treated. The number of applicants continues to be low and in 2023 with only 2 being approved for funding. There is still considerable recreational and other rural-urban development. Some of the parcels are being split into smaller units and there has been a significant change in land ownership from agriculture to hobby type farms and smaller irrigated fields. Many of the urban type landowners may not meet NRCS program eligibility and/or may not be interested in making irrigation improvements or need the financial assistance if they do make an improvement. The project is on pace to meet the concurrent habitat replacement goal of 37 acres, and most likely will have enough salinity replacement habitat projects in place to meet full project implementation goal of 50 acres. The final habitat replacement goal may need to be adjusted with an additional biological assessment if the project does not achieve the predicted irrigation improvement goals.

Current Year

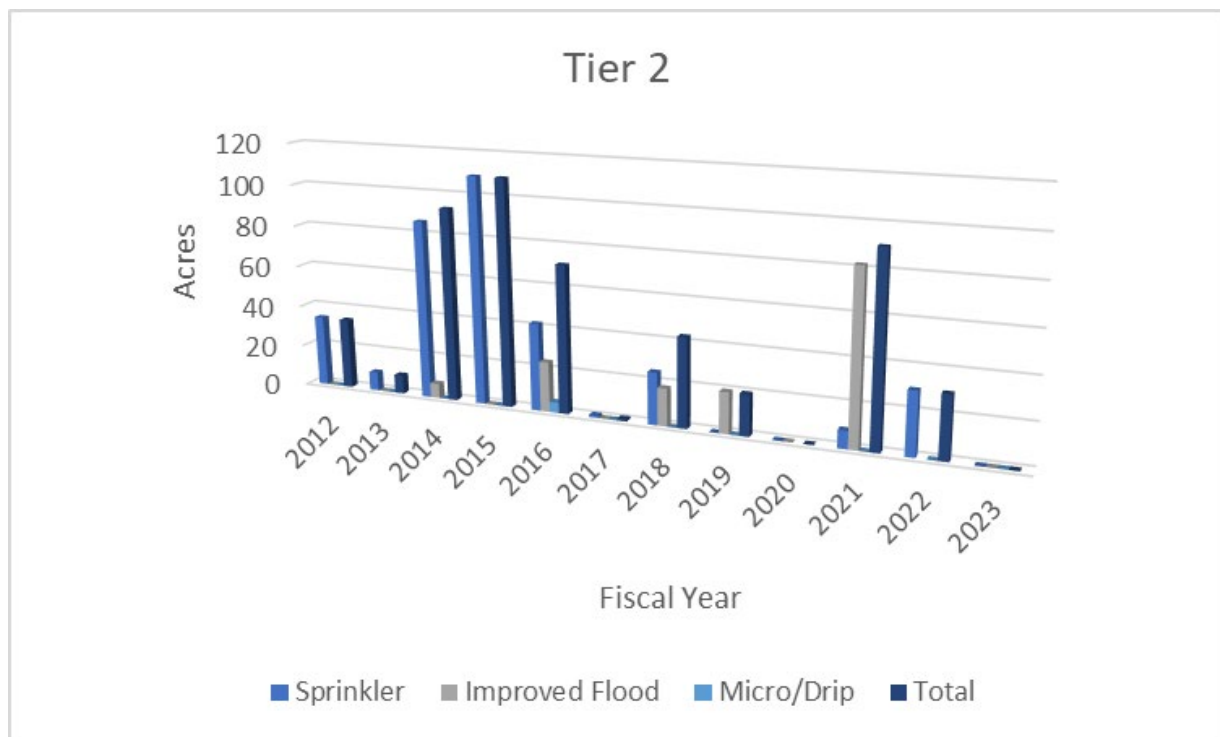
During FY 2023, NRCS obligated 2 contracts. These contracts cover 18 acres, reducing 6 tons of salt annually at an estimated cost of \$784/ ton of salt saved anticipated through these contracts. Cumulative through FY 2023 NRCS has treated 1,873 acres (89 percent of the project goal), controlling 2,595 tons of salt annually.



Out of Project Area (OPA) or Tier 2 utilizes small amounts of designated salinity funding to cost-share individual irrigation improvement projects within the Colorado River basin outside of designated salinity control units to accomplish additional salinity control. The OPA projects provide a way to achieve extra salinity control benefits with funds un-used within the designated salinity control units. The USDI- Geological Survey, SPARROW attributes model provides salt loading by catchment and was used to determine uniform agricultural salt loading data for all basins within the Colorado River drainage. The SPARROW model salt loading rates for catchments within the upper Colorado River Basin and the offered level of irrigation system improvement are used to predict a salt loadreduction for each individual project. The OPA projects selected continue to offer a very cost-effective way to accomplish additional salinity control to help supplement program goals.

Current Year

During FY 2023, NRCS obligated 10 contracts. These contracts cover 211 acres, reducing 532 tons of salt annually at an estimated cost of \$117/ ton of salt saved anticipated through these contracts. Cumulative through FY 2023 NRCS has treated 5,603 acres, controlling 6,464 tons of salt annually.



Contact Information

This report is limited in scope. For additional information on the Colorado River Salinity Control Program, visit:

Natural Resources Conservation Service web site: <https://www.nrcs.usda.gov/programs-initiatives/colorado-river-basin-salinity-project>

Bureau Reclamation web site: www.usbr.gov/uc/progact/salinity

Colorado River Salinity Control Forum web site: <http://coloradoriversalinity.org/>

For additional Monitoring and Evaluation reports, search the internet under “USDA Monitoring & Evaluation Reports for Salinity Projects.”

For other information, please contact:

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NRCS Colorado offices within the Salinity Area are in the following communities: Glenwood Springs, Grand Junction, Delta, Montrose, and Cortez. Other offices may be involved in the Out of Project Area contracts.

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