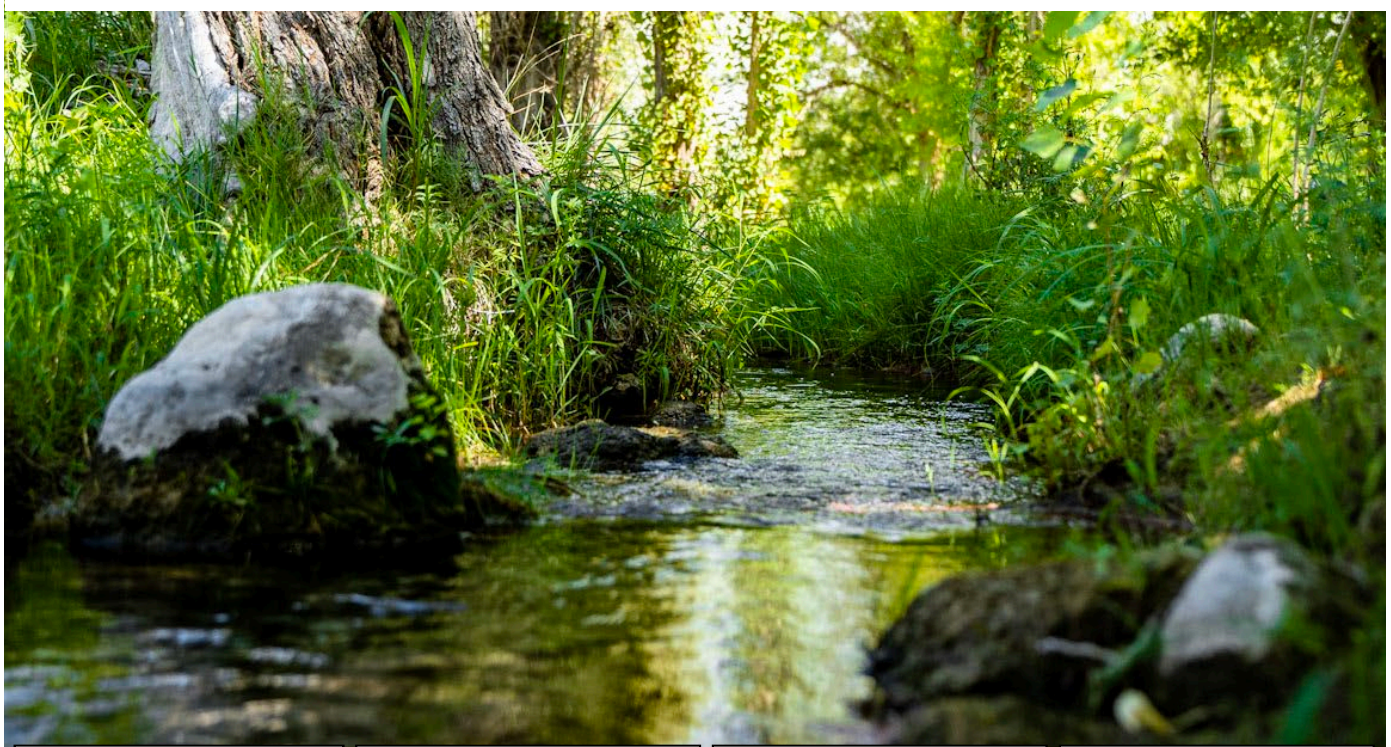
2023 Annual Report

Candidate Conservation Agreements:

Texas Hornshell Mussel (*Popenaias popeii*) and Other Covered Species



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BUREAU OF LAND MANAGEMENT

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I. INTRODUCTION

This joint report to the U.S. Fish and Wildlife Service (the Service) describes the activities conducted in 2023 under the three sister Candidate Conservation Agreements for the Texas Hornshell mussel (THM) and other covered species. Center for Environmental Health Monitoring and Management (CEHMM) administers a Candidate Conservation Agreement (CCA) for federal land and a Candidate Conservation Agreement with Assurances (CCAA) for non-federal and non-state (i.e. private) lands. The State Land Office (SLO) administers a CCAA for state trust land. The three conservation agreements are referred to collectively herein as the "CCA/As." CEHMM and the SLO jointly implement the CCA/As in cooperation with the Buruea of Land Management (BLM) and the Service through a common governance structure. Figure 1 shows the CCA/A boundary, CCA/A management zones, and land ownership. Additional resources about the CCA/As can be accessed at:

https://www.cehmm.org/texas-hornshell-mussel-reports

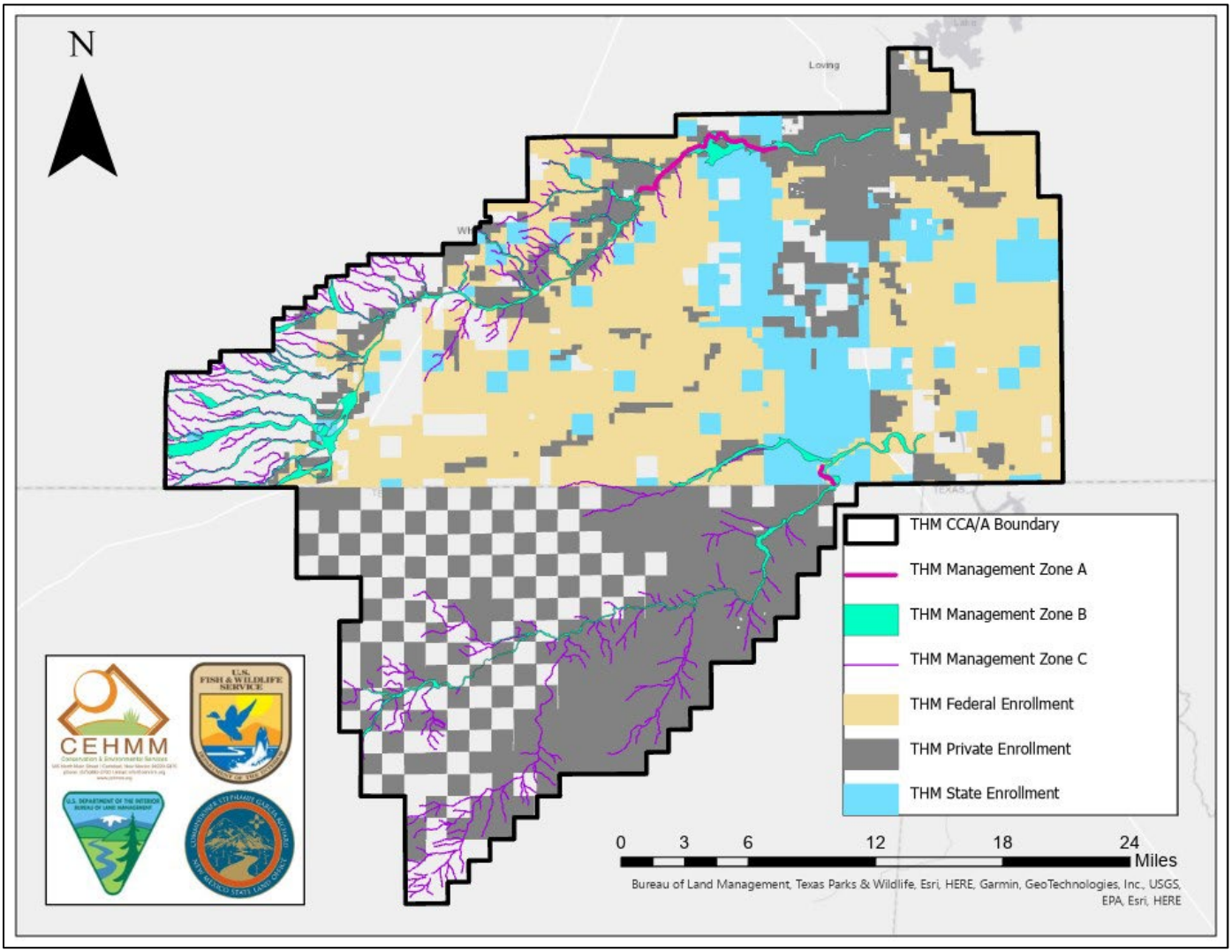


Figure 1. CCA/A Boundary, CCA/A Management Zones, and Land Ownership.

II. 2023 ENROLLMENT, PARTICIPANT CONTRIBUTIONS, AND FUNDING ALLOCATIONS

CEHMM and the SLO have issued a combined total of 103 Certificates of Inclusion (CIs) in the CCAAs for non-federal land or Certificates of Participation (CPs) for the CCAs for federal land. Fifty participants are enrolled in multiple Candidate Conservation Agreements.

CCA/A Participant and parcel acreage enrollment data for 2023 is shown in Table 1. The SLO administered 28 CIs and CEHMM administered 42 CIs and 33 CPs. The SLO had 112,284.17 acres of state trust land enrolled in its CCAA in 2023. CEHMM had 293,504.34 acres of private land enrolled in its CCAA and 391,278.49 acres of federal land enrolled in its CCA. Fifty participants are enrolled in multiple Candidate Conservation Agreements because they have a combination of land ownership types. The total amount of land enrolled in CCA/As in 2023 was 797,067.00 acres, which has remained relatively consistent throughout the six reporting years of the conservation agreements (Figure 2). Annual acreage can vary since the Participants that opted for "All Activities Enrollment" can add or remove enrolled acreage based on their current activities. The same acres can also be enrolled more than once by different Participants that are using the land for different activities; the totals therefore reflect multiple enrollments of the same parcels.

Table 1: CCA/A Enrollment in 2023.

	No. CIs	No. CPs	Acres Enrolled in CCA	Acres Enrolled in CCAA
CEHMM	42	33	391,278.49	293,504.34
SLO	28	N/A	N/A	112,284.17
TOTAL:	**70**	**33**	**391,278.49**	**405,788.51**

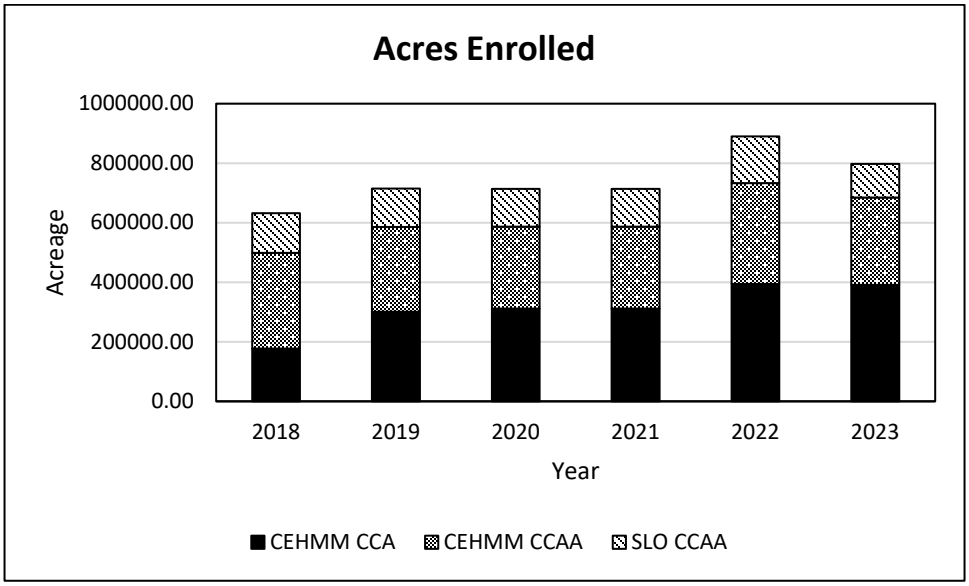


Figure 2. Acres Enrolled in Candidate Conservation Agreements from 2018 to 2023.

CEHMM and SLO establish a Habitat Conservation Fund (HCF) for each oil and gas operator that has an executed CI or CP agreement. The contribution amount is determined by the number of acres disturbed from new well locations or new surface development. Once land disturbing activities are submitted and reviewed by CEHMM or SLO conservation fees are debited from their HCF. The debited amount is determined by the management zone (as described in Appendix E) in which surface disturbing activities occur. CEHMM manages each Participating Cooperators HCF by tracking balances and debiting when appropriate.

Approximately 10 percent of the funds that are received through industry participation are allocated to overhead such as building rentals, utilities, and insurance. The remaining balance is used solely and exclusively in support of the CCA/As which include but are not limited to: planning and implementation, on-sites, projects authorized by the committees, research, enrollments and amendments, project monitoring, education and outreach, and support services (e.g. vehicles and equipment).

All of the funding contributed during 2023 came exclusively from industry Habitat Conservation Fees generated from 641.87 acres of new surface disturbances on federal, non-federal, and non-state lands, and 134.58 acres on state trust land, with a combined total of new surface disturbances in 2023 of 776.45 acres.

III. MITIGATION OF IMPACTS TO HABITAT

During 2023, CEHMM received a total of 166 notices of new surface disturbances from industry, with 641.87 acres of new surface disturbances documented (Table 2). All of these disturbances took place in Management Zone D. The SLO received a total of 21 notifications of new surface disturbances from Participants, totaling 134.58 acres of disturbance (Table 2). All of these disturbances took place in Management Zone D. CEHMM worked with the Participants to ensure all of the proper conservation measures were followed including Reasonable and Prudent Practices for Stabilization (RAPPS) and Spill Prevention Control and Countermeasure (SPCC). These practices included building water-bars, silt fences, culverts, erosion blankets, wattles, and reseeding.

Table 2: New Surface Disturbances in 2023

	Wells Pads	ROWs	Other Infrastructure	Total
CEHMM				
Notifications of New Surface Disturbances	36	104	26	166
Acres Disturbed	240.00	321.80	80.07	641.87
SLO				
Notifications of New Surface Disturbances	7	14	0	21
Acres Disturbed	52.44	82.14	0.00	134.58

COMBINED				
Notifications of New Surface Disturbances	43	118	26	187
Acres Disturbed	292.44	403.94	80.07	776.45

Habitat Conservation Fees

The CCA/As contain a provision that Habitat Conservation Fees will be adjusted once yearly by CEHMM for inflation or deflation. This adjustment is based on the percent increase or decrease in the most recent year's Consumer Price Index (CPI) published by the U.S. Department of Labor, Bureau of Labor Statistics. When adjusting Habitat Conservation Fees, CEHMM refers to the annual inflation or deflation of CPI for All Urban consumers, U.S. City Average, All Items Less Food and Energy, not seasonally adjusted. Adjustments of the CPI occur on the January release date of the CPI for All Items Less Food and Energy. The All Items Less Food and Energy Index rose 5.7 percent in 2022. Details on how the adjustment is calculated can be found in Appendix E of the THM CCA/As. Appendix A of this annual report reflects the updated fees based on the January 2024 release of the CPI. These fees are the same for the THM CCA/A and SLO CCAA.

IV. 2023 COMMITTEE ACTIVITIES

CCA/A Coordinating Committee

The CCA/A Coordinating Committee (CCAACC) is an informal committee that was formed by CEHMM and the SLO, pursuant to the terms of their Memorandum of Agreement, to provide a mechanism for coordinating joint administration of the CCA/As. The CCAACC met one time in 2023 to discuss the minimum flow regime research that was presented by researchers from Auburn, Texas A&M, and Miami universities.

Joint Executive Committee

The joint Executive Committee (EC) held two conference calls in 2023 to determine project funding priorities and allocations. The EC members in 2023 were as follows:

CEHMM CCAA: Service and CEHMM

CEHMM CCA: Service, CEHMM, and BLM

SLO CCAA: Service and SLO

The EC discussed the following items at their meetings:

- Program priorities and funding allocations for projects and research
- Request for projects (RFP) development
- Desert Fish Habitat Partnership Grant
- Instream Flow Grant
- Progress on Minimum Flow Regime research

- Spills and contamination Funds

The joint EC made the following decisions in 2023:

- The EC approved the following Implementation Committee (IC) recommendations for future project priorities:
    1. Watershed health assessments/biological functional wetland assessments
    2. Long-term water quality monitoring, improved flow, water quality
    3. Restore and manage watersheds and stream habitat
    4. Erosion reduction
    5. Livestock infrastructure improvement
    6. Vehicle crossings
    7. Carlsbad irrigation dam diversion

- The EC did not approve additional funding for habitat or research projects in 2023. Instead, the EC elected to complete ongoing work while simultaneously developing RFPs to invite submissions for projects that address the CCA/A's current priorities.
- CEHMM submitted a proposal for a Desert Fish Habitat Partnership Grant to assess blue sucker and gray redhorse habitats. Funding announcements for this grant will be released in 2024. CEHMM believes this work can tie nicely into the CCA/A priorities and, if awarded, CEHMM may request matching funds if other external funds are not available.
- The EC discussed the following topics related to the Instream Flow Program:
    - The EC discussed a new contract for AMP Insights to implement projects or contracts from Instream Flow Design per the Technical Working Group's advice.
    - The EC decided to hold the Technical Working Group meeting to determine a path forward and then approach AMP if some options may be worth pursuing.
    - The EC discussed future options for the instream flow, such as water rights acquisition, outside funding partners, and projects that improve habitat.
- Matt Ramey provided an update on the status of the Minimum Flow Regime which ended in October 2023. Once the final report has been submitted, the universities will present its findings to the CCAACC.
- The EC requested to set aside funds for remediation or spills affecting the Black River. CEHMM will work to develop a proposal to present to the EC again in 2024.

Stakeholder Committee

The Stakeholder committee did not convene in 2023. CEHMM is in the process of selecting new members to fill the voting seats that make up the committee. The Stakeholder Committee is comprised of members from the following agencies and industries:

Agriculture and Ranching	Eddy County
Oil and Gas	Interstate Stream Commission
Midstream	SLO
Carlsbad Irrigation District	CEHMM
Water Withdrawers	

Implementation Committee

The IC held three conference calls in 2023 to determine project priorities, project reviews, CCA/A updates, and the Habitat Conservation Plan (HCP). The IC is comprised of members from the Service, BLM, CEHMM, SLO, and New Mexico Department of Game and Fish (NMDGF):

The IC discussed the following topics:

- CCA/A updates
- Black and Delaware river statuses
- Landscape monitoring and conservation concerns
- Grant opportunities
- Request for proposals, determination of project priorities, and RFP

The IC was kept apprised of the following CEHMM activities and occurrences:

- CCA/A program updates
- Current projects and grants that are currently in progress:
    - Instream Flow Grant
    - Minimum Flow Regime
    - Benjamin P. Duke Grant
    - Sensor Array Grant
    - eDNA
- Flow statuses for both the Black and Delaware rivers, which incorporated hydrographs of all United States Geological Survey (USGS) gages, flows in relation to the 9.3 cfs (cubic feet per second) set by the CCA/As, and monitoring visit sites on both the Black and Delaware rivers
- Events that took place on the landscape such as spills, contaminated areas, fires, and flows to aid in the protection of the THM and other covered species
- Grant applications to further develop the HCP in the future. CEHMM received the 2023 National Fish and Wildlife Foundation Pecos Watershed Conservation initiative and the 2023 USFWS Cooperative Endangered Species Fund grant for the development of the HCP. Both funding options take effect in 2024.

The IC discussed the following items at their meetings:

- The IC and EC jointly developed new project priorities for the THM program and will be developing an RFP to address specific projects that are needed to further assist the CCA/A program and protect the species. The RFP priorities list is below.
    - Watershed health assessments/biological functional wetland assessments
    - Long-term water quality monitoring, improved flow, and improved water quality
    - Restore and manage watersheds and stream habitat
    - Erosion reduction
    - Livestock infrastructure improvement
    - Vehicle crossings

    - Carlsbad irrigation dam diversion
    - Trash removal projects
- The IC discussed the Desert Fish Habitat Partnership Grant that was developed to assess blue sucker and gray redhorse habitats. Funding announcements for this grant will be released in 2024, and if the application is selected, the EC and IC will meet to review matching contributions.
- The IC reviewed one project proposal in 2023.
    - The IC requested additional information prior to voting on the project. The project has been updated and will be sent out for review and voting at the beginning of 2024.
- The IC and CEHMM discussed the possibility of pursuing a WaterSMART grant that is due in April 2024. WaterSMART grants require a nonfederal cost share of 25 percent to 50 percent in which THM funds could potentially be utilized. The cost share amount is undetermined at this time. If the grant is awarded the amount will be determined at that time. WaterSMART grants also require state or federal agency partnership to develop a grant proposal, so CEHMM extended the invite to the IC in our third meeting asking if anyone would like partner on the grant. Shortly after the IC meeting, Emily Wirth and Lisa Henne discussed partnering on the WaterSMART grant, and the SLO agreed to partner with CEHMM. The IC also started to brainstorm on a proposal based on the Instream Flow recommendations and the RFP priorities.

Participant Meeting

CEHMM held a THM program Participant meeting on November 14, 2023, and the following items were discussed:

- Program overview of the THM CCA/A
- Current projects
- Current research
- Partnership presentation
- Future goals for the CCA/A program

Technical Working Group

The Instream Flow Technical Working Group was convened in 2023 to provide input on the design of an instream flow program for the Black River. Participants included representatives from CEHMM, the SLO, the Service, the NMDGF, the New Mexico Interstate Stream Commission, the National Audubon Society, The Nature Conservancy, and the researchers conducting flow requirement studies from Texas A&M, Auburn, and Miami universities. The meetings were facilitated by AMP Insights, who developed the Instream Flow Initiative and Design Program.

V. OUTREACH

In March 2023, CEHMM presented to middle school students at Lovington Public Schools, with the goal of educating them about food webs and population dynamics. The presentation included an overview of food webs, as well as the relationships between species, and how the covered species under CEHMM's CCA/A programs

relate to these topics. Also in March, CEHMM attended the New Mexico Environment Department (NMED) Northern Wetlands roundtable to hear about projects, regulatory updates, and environmental efforts taking place in New Mexico.

In April, CEHMM staff attended the Freshwater Conservation Society conference in Portland, Oregon. The five-day conference highlighted the latest research and conservation efforts for mussels both in the U.S. and abroad. A number of researchers, professors, and graduate students presented their work during the conference. CEHMM also had the chance to attend university presentations featuring projects funded by the CCA/A program.

In May, CEHMM conducted a site tour of the THM CCA/A covered area for SLO and BLM staff (Figure 3). The tour consisted of various stops along the Black River depicting important habitats for the THM and other covered species. This also served to provide insight regarding flow dynamics in the Black River. Also, while on the tour, CEHMM staff gave an impromptu 20-minute presentation to a fifth-grade class from Texas that was visiting the Black River Church Camp.

Figure 3. SLO and BLM Tour of Blue Springs

In August, U.S. Congressman Gabe Vasquez joined CEHMM out in the field to discuss ongoing cooperative conservation efforts through CEHMM's CCAA/A programs.

In September, CEHMM presented to North Carolina State University freshman about the CCA/A programs and conservation efforts that are taking place concerning the THM and other covered species.

In December, CEHMM delivered a presentation at the NMED's Southern Wetlands Roundtable, covering the CCA/A program and Auburn University's minimum flow regime research.

VI. SPECIES MONITORING

In October, CEHMM assisted the NMDGF in their annual fish population survey along the Black River. Fish populations were surveyed using numerous sampling methods, including trammel nets and electroshocking (Figure 4). The fish that were caught were weighed, measured, and then released back into the river.

Figure 4. CEHMM Staff Assisting NMDGF with Annual Host Fish Surveys.

At various points throughout the year, CEHMM staff assisted the NMDGF and Miami University in monitoring and inspecting data loggers being used for THM population studies on the Black River.

VII. RIVER MONITORING

Black River Monitoring

The CCA/A temporarily set a minimum flow goal of 9.3 cubic feet per second (cfs) at the Malaga gage on the Black River. This was done while awaiting the development of a revised flow requirement for the THM CCA/A by October 2024. Since the CCA/A took effect in 2017, CEHMM has been monitoring the daily average flow at existing USGS flow gages in the Black River at Malaga (USGS 08405500[1]) and Blue Springs (USGS 08405450[2]) (Figure 5). At the beginning of the program's implementation, the CCA/A program partners agreed that the two existing gages did not provide sufficient information about flows within the occupied reach. Therefore, they determined that installing additional gages should be a priority. In 2019, CEHMM, the SLO, and the Service agreed to install two new USGS gages in the Black River. The USGS installed one gage at Harkey Crossing (USGS 08405400[3]) and the second gage below Blue Springs (USGS 08405350[2]) (Figure 5). The specific goal for the below Blue Springs and Harkey gages is to report low flow streamflow (less than 3.0 cfs). The gage at Harkey Crossing also collects water quality parameters within the occupied reach, including temperature, dissolved oxygen, conductivity, and salinity. CEHMM staff set flow alarms that provide email notices on the river's status and alert us to monitor it when flows reach critically low levels (less than 3.0 cfs). Participants in the CCA/A who withdraw water from or near the Black River are also notified so they can implement any pumping curtailment conservation measures contained in their CIs and CPs. CEHMM sent three curtailment notices in 2023. CEHMM staff also visually inspect the Black River to monitor river conditions. During 2023, CEHMM staff visually inspected the Black River 46 times to monitor flow and overall river health.

[1] https://waterdata.usgs.gov/nm/nwis/uv?site_no=08405500
[2] https://waterdata.usgs.gov/nm/nwis/uv/?site_no=08405450
[2] https://waterdata.usgs.gov/nm/nwis/uv/?site_no=08405450
[3] https://waterdata.usgs.gov/nm/nwis/uv/?site_no=08405400

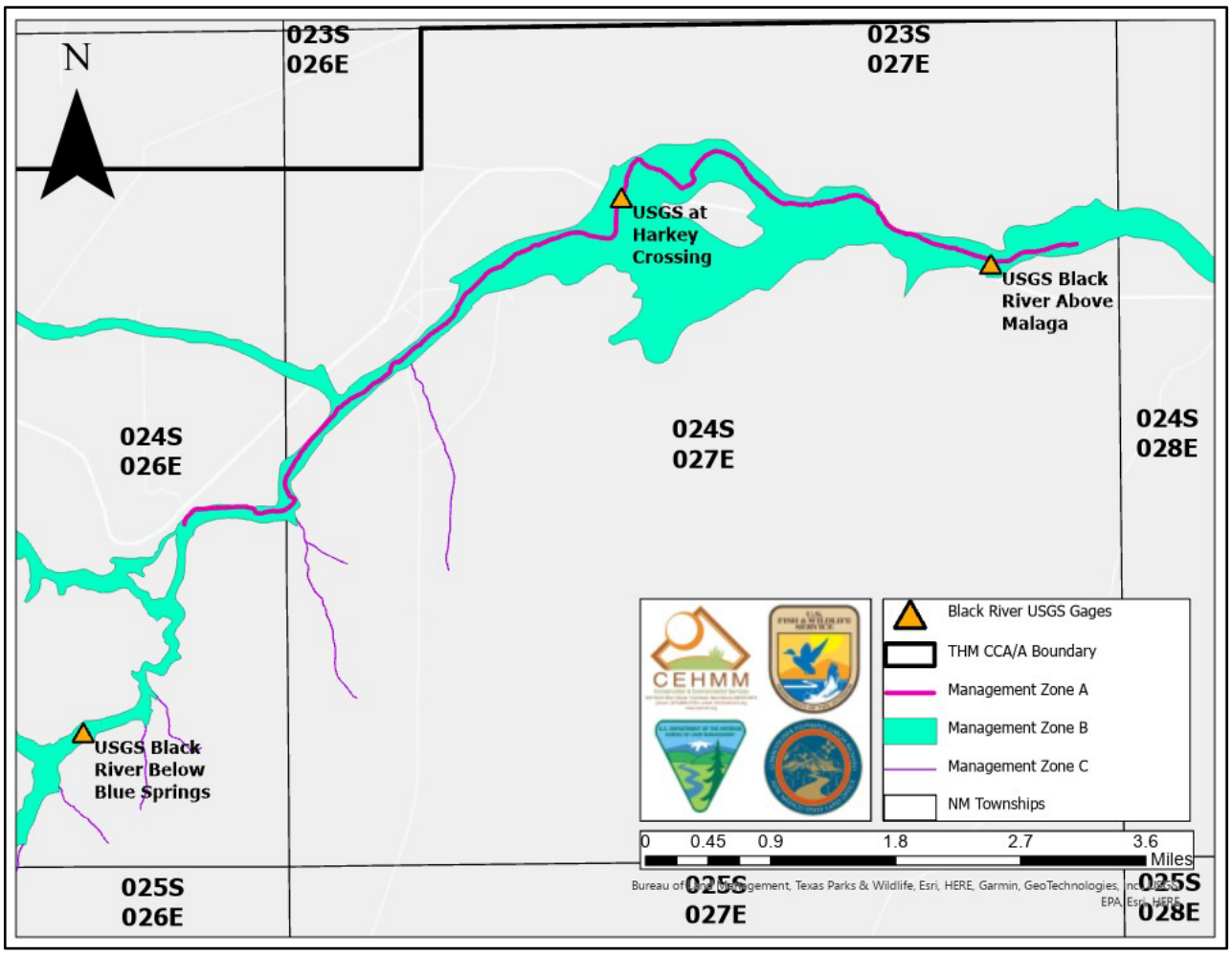


Figure 5. Map of USGS Stream Gage Locations Used by the CCA/A Program.

During 2023, the mean daily discharge (volume of flow) in the Black River at the Malaga gage was below the interim minimum flow threshold of 9.3 cfs for most of the year, except for a brief period in September. Flows also dropped below 3.2 cfs during short periods in May and June, and during a prolonged period from July to August (Figure 6). Each month had at least twenty days during which flows were below 9.3 cfs (Figure 7).

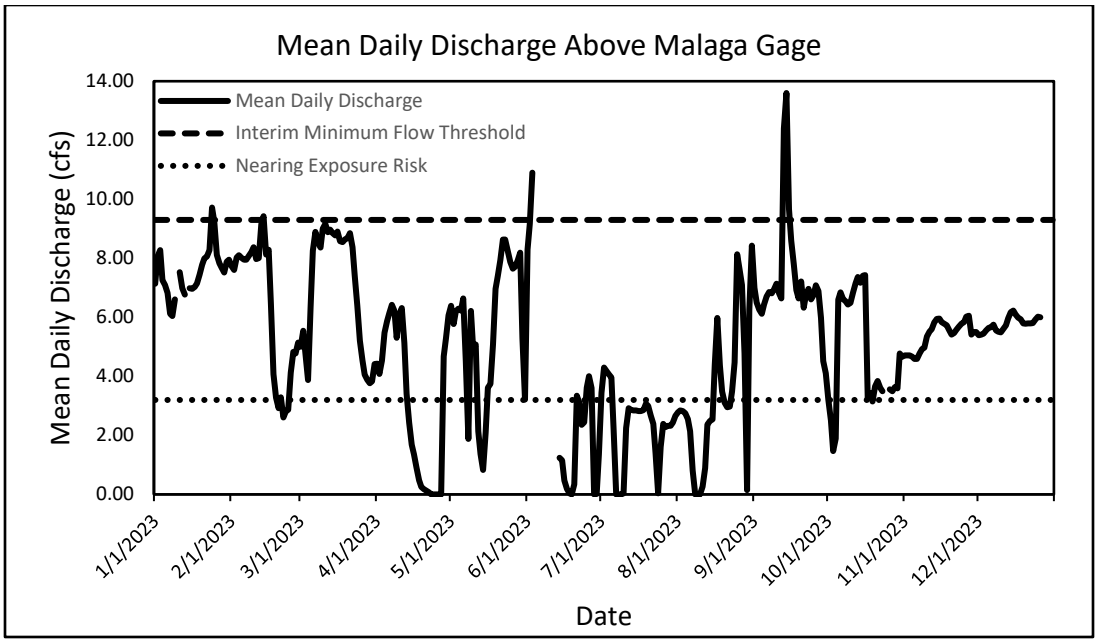


Figure 6. Mean Daily Discharge (cfs) for the Black River Above Malaga Gage (USGS 08405500) from January 1, 2023, to December 31, 2023.

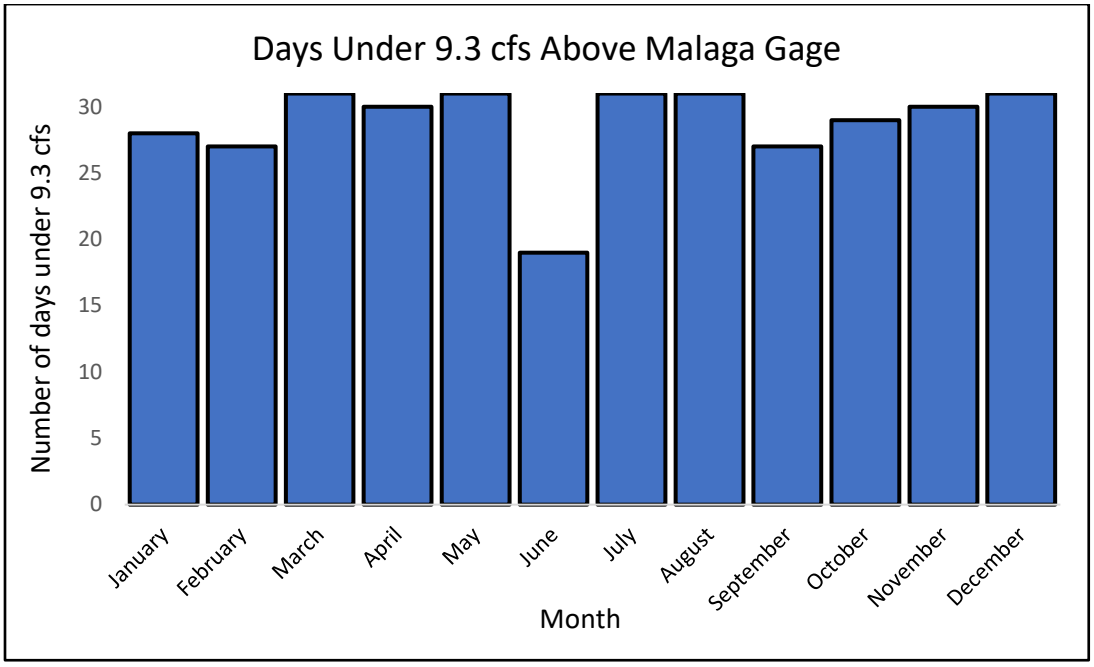


Figure 7. Number of Days Per Month with Flow Under 9.3 cfs.

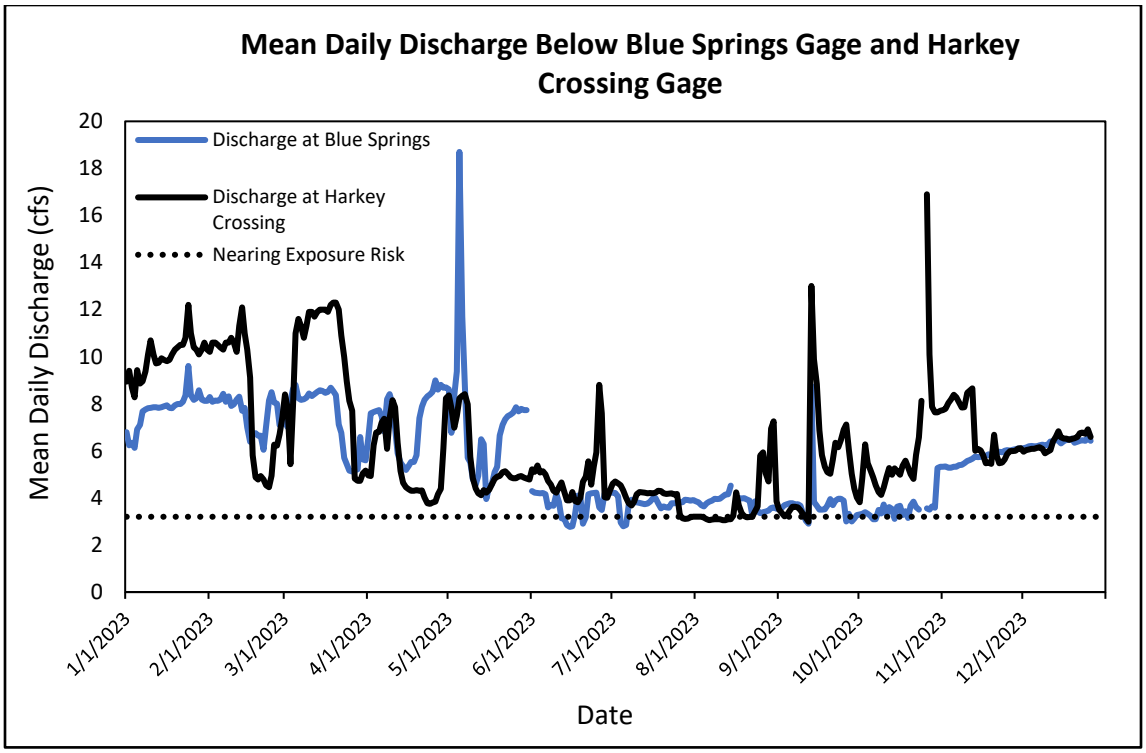


Figure 8. Mean Daily Discharge (cfs) for the Black River Below Blue Springs Gage USGS 08405350) and at Harkey Crossing Gage (USGS 08405400) from January 1, 2023, to December 31, 2023.

These gages report low flow streamflow (less than 3.0 cfs) and do not have an established temporary minimum flow goal (Figure 8). CEHMM monitors and records the provisional instantaneous USGS gage readings and calculates monthly average, maximum, and minimum flow data (Table 3). The SLO is developing a stand-alone report that analyzes historical flows on the Black River and the volume of water that would have been required to maintain flows above the incremental thresholds, as well as the seasonal timing of when additional flows would have been needed. The SLO report will be provided to the Instream Flow Technical Working Group by October 2024.

Table 3: Monthly Average, Minimum Daily Average, and Maximum Stream Flow in the Black River Calculated by CEHMM using USGS Instantaneous Provisional Stream Gage Readings.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Black River (USGS 08405500 Black River Above Malaga)												
Average Flow	7.53	6.37	7.01	3.10	5.64	2.78	2.35	3.32	7.17	4.83	5.40	5.77
Min - Daily Average	**6.04**	**2.61**	**3.77**	**0.00**	**0.83**	**0.00**	**0.00**	**0.00**	**4.10**	**1.47**	**4.59**	**5.39**
Max - Daily Average	9.72	9.43	9.17	6.42	8.64	10.90	4.30	8.43	13.60	7.43	6.05	6.23
Black River (USGS 08405400 Black River at Harkey Crossing)												
Average Flow	9.99	8.39	9.67	5.41	5.58	4.85	4.01	3.79	5.28	6.09	6.78	6.39
Min - Daily Average	**8.28**	**4.45**	**5.04**	**3.75**	**4.12**	**3.81**	**3.11**	**3.05**	**2.99**	**3.82**	**5.45**	**5.89**
Max - Daily Average	12.20	12.10	12.30	8.24	8.41	8.80	4.70	7.26	13.00	16.90	8.66	6.91
Black River (USGS 08405350 Black River Below Blue Springs)												
Average Flow	7.81	7.61	7.41	7.35	7.17	3.75	3.73	3.80	3.74	3.58	5.73	6.36
Min - Daily Average	**6.13**	**6.05**	**5.12**	**5.19**	**3.95**	**2.77**	**2.80**	**3.28**	**2.91**	**3.09**	**5.28**	**6.14**
Max - Daily Average	9.61	8.49	8.80	8.99	18.70	4.23	4.21	4.52	8.76	5.32	6.10	6.60

Delaware River Monitoring

The lack of flow in past years prompted CEHMM to start monitoring the flows of the Delaware River on a routine basis using a USGS gage (USGS 08408500[4]) and visual inspections. The Delaware River stopped flowing for 228 days in 2023. CEHMM personnel conducted 31 site visits in 2023 and took photographs to visually document flow. For this report, we selected a representative photo from each month to show typical flow conditions for that month. Flows in the Delaware (Figure 9) were lower in 2023 compared to 2022 (see 2022 annual report).

[4] https://waterdata.usgs.gov/nwis/uv?08408500


January 2023


February 2023


March 2023


April 2023


May 2023


June 2023

Figure 9. A Photographic Timeline of the Delaware River from January 2023 to December 2023.

VIII. COMPLIANCE MONITORING

The CCA/As require CEHMM and the SLO to submit an annual compliance verification to the Service for each enrolled Participant. CEHMM performed the compliance monitoring for all of the CCA/As. In 2023, CEHMM's CCA/A compliance monitoring included inspection for failure to submit new surface disturbances and inspection for SPCC or RAPPS compliance, if applicable. CEHMM performed field surveys and also utilized New Mexico Oil Conservation Division (NMOCD) data and BLM right-of-way data.

IX. AWARDED GRANTS

Sensor Array Study – In 2021, CEHMM proposed a project to the National Fish and Wildlife Federation (NFWF) to establish a sensor array within the occupied reach of the Black River in southeastern New Mexico. The NFWF awarded the grant in 2022. This funding requires an in-kind matching contribution of $197,227.80, which was approved by both the IC and EC. In September 2022, CEHMM staff initiated this project through the installation of data loggers. To do so, staff selected three pools within the occupied range of the Black River. One dissolved oxygen and temperature logger, two pressure and temperature loggers, and one barometric reference logger were installed for each pool. These water quality data loggers will allow CEHMM to monitor and better understand the water quality conditions within the occupied reach for the THM. Through this, CEHMM will be able to further monitor and gain data to determine if, when, and for what period of time the environmental conditions are unfavorable for the THM. Twice during 2023 CEHMM analyzed and compiled the data extracted from the loggers. This information will continue to be analyzed and compared with subsequent data to form a comprehensive picture of the water parameters the THM's experience and note distinctions between occupied and unoccupied habitats. The results of this data collection are expected to provide key insights to the environmental gradients among microhabitats, especially as we prepare for further climate-driven variation.

Environmental Education Exhibit – In April 2022, CEHMM submitted a proposal to the Carlsbad Community Foundation for the Benjamin P. Duke Memorial Grant to fund the creation of environmental education exhibits. The Carlsbad Community Foundation awarded the grant in June of 2022. This funding requires an in-kind contribution from the CCA/A program for up to $5,000, which was approved by both the IC and the EC. The environmental exhibits will address aquatic species of concern in the lower Pecos River Drainage, educating the public and fostering knowledge and appreciation of the species, ultimately promoting the well-being of wildlife and their habitats. CEHMM met with the BLM to determine placement for the signs at Cottonwood Day Use Area and installed the bases. In December 2023, CEHMM approved the final proofs for the education exhibits, and they will be installed in January 2024.

CEHMM/SLO Instream Flow Program Initiative for the Texas Hornshell Mussel – In 2020, CEHMM and the SLO partnered on a proposal to the NFWF to fund the development of an instream flow program to protect the endangered THM and other at-risk species in the Black and Delaware rivers. The NFWF awarded the grant in 2021. This funding requires an in-kind matching contribution from the CCA/A program, and in 2021, the EC set aside $250,000.00 for the match. Some or all of the match is being provided through in-kind contributions from the SLO and CEHMM, but the set-aside amount ensures the matching fund requirement is met. The EC also

approved the issuance of a contract with a consulting firm that specializes in the development of market-based instream flow programs.

The overall objective of the initiative is to provide instream flow for the THM in the Black and Delaware rivers. This may be achieved through the purchase or lease of water rights, or through alternative mechanisms such as forbearance agreements or strategies that make water available for instream flow during otherwise dry periods or when high flows are needed for life history requirements. The first expected outcome of the grant will be the execution of one or more short-term (three to five-year) agreements. At a minimum, these agreements will facilitate sufficient flow in the Black River to prevent the existing THM population from being extirpated by lack of water. In the meantime, long-term solutions will be developed. The second expected outcome of the project will be the development of a framework for a long-term plan and budget for maintaining stream flows in the Black and Delaware rivers. The framework will include multiple options such as outright purchase of water rights, long-term forbearance agreements, or other mechanisms to reduce diversion from the rivers.

In 2022, AMP Insights worked with CEHMM and the SLO to convene the Instream Flow Technical Working Group and hold the kick-off meeting for the Instream Flow Project. The meeting consisted of introductions, a project overview, the presentation of water transaction and instream flow background information, a discussion of data gaps and needs for the Black River, and general discussions regarding the overall project. AMP Insights also worked with CEHMM, the SLO, and the Instream Flow Technical Working Group to develop an Initial Needs and Conditions (ICNA) document for the Black River. The ICNA provided the starting point for program design by analyzing existing demographic, economic, legal, policy, and hydrologic conditions and other factors that will be critical in making decisions about how to develop and operate an instream flow program. Additionally, AMP Insights worked with CEHMM, the SLO, and the Instream Flow Technical Working Group to develop a Preliminary Design document for the Black River. The Preliminary Design provided a starting point for programmatic actions to support an instream flow program. The Preliminary Design also provided guidance on possible pilot transactions that were in 2022 to inform development of a final program design. In November 2022, AMP Insights visited the CEHMM Carlsbad office for a site tour of the Black and Delaware river basins. This provided further understanding of the landscape and water diversion effects on river flows which will help to construct the Final Water Transaction Program Design. AMP Insights submitted the Instream Flow Initiative and Design for the Black River in February 2023. AMP, CEHMM, and the SLO held a virtual meeting to review the document and provide feedback and comments before being finalized. In April 2023, AMP Insights presented their findings on the Instream Flow Initiative and Design to the Instream Flow Working Group. CEHMM and the SLO are working on the next steps for this grant.

Rio Grande Cooter Research on Delaware River – Ivana Mali, who had previously worked at Eastern New Mexico University, accepted a new job at North Carolina State University (NCSU) in 2022. She resubmitted the grant application to NFWF through NCSU.CEHMM, the Service, the NMDGF, and NCSU partnered on a proposal to survey for Rio Grande river cooter (*Pseudemys gorzugi*) in at least three unique locations on the Delaware River, with a high intensity trap effort that is comparable to the recent surveys on the Black River. CEHMM, with approval from the IC and EC, is contributing $20,000 for the proposed research which leverages a productive collaborative team who will be examining the river to understand the current occurrence and population composition at one of the least surveyed sites of its assumed distribution. The product of the proposed

work will provide much needed information on species distribution and habitat preferences, which are an essential part of implementing sound management practices for species protection. This grant was originally proposed in 2021 and was awarded by the NFWF in May of 2022. Due to personnel issues, NCSU requested an extension on the grant and was required to resubmit the grant proposal to the NFWF in the fall of 2022. Researchers from NCSU visited the Delaware River in June 2023 for one week to complete high intensity trapping efforts in three different locations. The survey methods consisted of installing 40- 60 hoop nets by hand in the Delaware River. CEHMM staff assisted in trapping, marking, documenting, and releasing the captured turtles and fish. These surveys will help provide data that is crucial to the federal species status assessment for the Rio Grande river cooter in New Mexico and provide much needed information on species distribution and abundance. These are essential for implementing sound management practices for species protection. This will also assist in any future conservation efforts on the Delaware River. In 2024 NCSU will work on reporting their findings and complete any additional site visits prior to completing the study.

X. FUNDED OR COMPLETED PROJECTS

Enrollees, universities, government agencies, and others may submit project proposals to the IC for funding consideration. CEHMM personnel work closely with enrollees to develop project proposals. The IC, which prioritizes each proposal using evaluation criteria developed by the team, includes biologists from CEHMM, the Service, the BLM, the SLO, Texas Parks and Wildlife Department (TPWD), and the NMDGF. The IC meets quarterly, via telephone, video conferencing, or in person, and votes on proposed projects as they are received. A full list of projects funded by the CCA/As can be found in Table 4 and ongoing or completed projects in Appendixes B-D.

Table 4: CCA/A Projects *** Indicates project is complete**

Project	Date Funded	Completion Date	Amt Funded	Units	Description
*DM Erosion Control	9/19/19	8/21/19	$4,771.99	1 Acre	Installed silt fencing and filter sock to prevent erosion and sediment loading into Zone A of the Black River. This project was funded using CCAA funds.
*Black River Salt Cedar Spraying	9/19/19	12/5/20	$12,000.00	46 Acres	Hand treatment of salt cedar on the Black River from John D. Forehand crossing downriver. Hand treatment of salt cedar to allow native flora the opportunity to become reestablished. This project was completed by the Carlsbad Soil and Water Conservation District.
*River Flow Regime Requirements Study	9/19/20 amended 12/19/20	9/8/23	$358,005.00	Black River	This project is both a research and technical assistance project. The research involves determining streamflow and in situ conditions necessary for the THM to survive and thrive in the Black River by examining lethal and sublethal thermal, hypoxia, and salinity thresholds and by collecting and assessing in-stream water-quality conditions.
*Black River (Rio Grande River Cooter Study)	12/1/19	1/31/21	$75,000.00	Riparian Area of Black River	CEHMM and ENMU accomplished the following: (1) identified nesting grounds at various stretches of the Black River, (2) confirmed the peak of the nesting season, (3) studied the daily nesting activity (i.e., diurnal vs. nocturnal nesting behavior), (4) characterized nesting substrate, (5) identified nest distance from the water's edge, and (6) quantified nest success and nest predation.
*Black River Wetlands Action Plan	3/24/20	9/15/21	$4,669.81	Black River Watershed	The Wetlands Action Plan (WAP) was designed to specifically address wetland and riparian resources within the boundary of the Black River Watershed. The WAP goals are to assess wetlands/riparian resources in their watershed and to develop ways to protect, restore, and create local wetlands.
*Flume Draw Erosion Control	8/12/20	2/12/22	$2,912.18	3 Acres	CEHMM installed 16 erosion control fences at the headwaters of Flume Draw. In its entirety, this completed project will positively affect the whole drainage.

Project	Date Funded	Completion Date	Amt Funded	Units	Description
*Environmental DNA Assay Development	8/12/20	12/27/23	$22,480.00	eDNA microsatellite	This project developed environmental DNA (eDNA) assays for the THM, gray redhorse, and blue sucker and completed preliminary eDNA-based surveys for these species.
Davis Riparian Restoration	8/12/20	TBD	$4,194.91	10 Acres of Vegetation Restoration	Planting native trees and shrubs to help support bank stabilization and restore riparian function back to the habitat. The project area will encompass approximately 10 acres along the banks of the Black River.
*Beard Black River Erosion Control	8/12/20	6/24/21	$5,291.00	3 to 5 Acres	CEHMM installed 18 erosion control structures. These span areas with 1) highest erosion due to bare soils, 2) small indentations where water can speed up, and 3) areas where erosion is already occurring.
Bounds Riparian Restoration	8/12/20	TBD	$6,241.00	13 Acres of Vegetation Restoration	Planting native trees and shrubs to help support bank stabilization and restore riparian function back to the habitat. The project area will encompass approximately 13 acres along the banks of the Black River. .
*USGS Stream Flow Gages	9/1/20	8/31/21	$77,005.00	2 USGS Gages in Black River	Operation, maintenance, and calibration of two USGS stream flow gages in the Black River.
*USGS Stream Flow Gages	9/1/21	8/31/22	$77,005.00	2 USGS Gages in Black River	Operation, maintenance, and calibration of two USGS stream flow gages in the Black River.
Population Monitoring Program for THM	6/2/22 to 5/31/25	TBD	$149,987.00	Black River	Develop methods for estimating the size of the THM population in the Black River and employ these methods for long-term monitoring of this essential population of mussels.

XI. CONSERVATION MEASURE VIOLATIONS

As the administrators of the CCA/A, CEHMM and the SLO have the responsibility to provide formal notification to Participants if it is discovered that any of the conservation measures listed in their CIs and CPs are not being implemented. A Conservation Measure Violation (CMV) is a formal notification to Participants of the failure to implement conservation measure(s). It is similar to an Incident of Non-Compliance (INC) that the BLM issues to operators that do not meet the conditions of use on their respective operations. If a CMV is issued, CEHMM and the SLO will work with Participants to remedy the violation in relation to the specific conservation measure that is not being applied. No fine or penalty is involved with a CMV; however, if three CMVs are issued in a 12-month period, Participants risk termination of their CPs and/or CIs. Due to diligent planning, consultation with CEHMM and the SLO, and an understanding of the purpose of the CCA/A, no CMVs were issued in 2023.

XII. SIGNATURE

If you have any questions, please call Matt Ramey at (575)-885-3700.

Signed: Emily K Wirth Date: 3/1/2024

Emily K. Wirth, Executive Director
CEHMM

Signed: Date: 3/18/24

Lisa J. Henne, Associate Counsel
New Mexico State Land Office

APPENDIX A – HABITAT CONSERVATION FEES FOR THE CALENDER YEAR 2023

Appendix E
Fee Structure – Revised 2/1/2024 for Inflation

The Participant may be responsible for paying an Enrollment Fee for the first three years this CCA and CP are in effect. If the Participant opts out of the CCA, the Participant is still responsible for these fees. The Participant shall pay the $30,000 Enrollment Fee for enrollment of facilities existing within the Covered Area if enrolling by the All Activities method of enrollment. The Participant may choose to enroll via the Parcel-by-Parcel method. In this case, the Participant shall pay a minimum Enrollment Fee of $3,000 for up to 1,000 acres. For all acreage above 1,000 acres, the Participant shall pay $3/acre. For either method of enrollment, the Participant shall make the first payment of Enrollment Fees at the time of enrollment. The Participant shall pay the second and third on the first and second anniversaries of the CCA effective date. If the Participant so chooses, the Participant may pay all three Enrollment Fees at the time of enrollment. Enrollment Fees will not be required after the initial three-year period.

The Habitat Conservation Fee for New Surface Disturbance associated with oil and gas development activities will be calculated using the following scales. The scales also apply to third parties doing work for the Participant either on or off the Participant's Enrolled Lands, regardless of who constructs or operates the associated facilities. The Participant may prepay Habitat Conservation Fees at any time at their discretion. The Participant must notify CEHMM prior to conducting any surface disturbing activities associated with this CP on or off the Enrolled Lands either by the Participant or third-party subcontractors. Management zone of the New Surface Disturbance is determined by the location of the activity being developed, not actual habitat found on site.

All Habitat Conservation Fees will be adjusted once yearly by CEHMM to account for inflation or deflation. The term "Base Habitat Conservation Fee" shall refer to the values of the Habitat Conservation Fees set forth in this Exhibit. For purposes of this section, the term "CPI-U" shall refer to the Consumer Price Index for All Urban Consumers, U.S. City Average, all items less food and energy (base 1982-84=100), not seasonally adjusted, as published by the U.S. Department of Labor, Bureau of Labor Statistics. The Maximum Annual Inflation Increase shall be based on the percent increase between the annual average CPI-U for the calendar year that precedes the date of the adjustment ("Current CPI-U") and the annual average CPI-U for calendar year 2016 ("Base CPI-U"). The Maximum Annual Inflation Increase shall be calculated as follows:

Maximum Annual Inflation Increase =

Base Habitat Conservation Fee x ((Current CPI-U – Base CPI-U) / Base CPI-U))

Increases, if any, shall occur on the January release date of the CPI-U. The Maximum Annual Inflation Increase will reflect the most recent revision to the annual average Current CPI-U, if any. CEHMM will send Participants a notification, both electronically and by mail, each year at the time the fees are adjusted.

If the annual average CPI-U is unavailable for a calendar year, no increases will be made. If the CPI-U is discontinued entirely or unavailable for a period longer than two calendar years, CEHMM will consult with the Participant to select an appropriate alternative index.

1) New Well Location Fees[1]

Management Zone	Conservation Fee
Zone A	Not applicable
Zone B	$24,686.36/location
Zone C	$12,343.18/location
Zone D	$3,085.79/location

[1.] Includes a single well pad no larger than 3 acres, multi-well pad no larger than 5 acres, and associated access road not to exceed 1 acre. Anything larger will be considered New Surface Development Fees described below. If any portion of the project falls into a higher management zone, the charge incurred will be that of the higher management zone.

2) New Surface Development Fees

For other New Surface Disturbances associated with Enrolled Lands, but not directly attributable to a new well pad[2] and associated road, including but not limited to pipelines, frac ponds, electric lines, pits, etc. the Habitat Conservation Fee will be based on the following scale:

Management Zone	Conservation Fee[3]
Zone A	Not applicable
Zone B	$9,257.39/acre
Zone C	$3,085.79/acre
Zone D	$1,234.32/acre

[2.] Co-located wells that require an increase in the size of the existing pad will be assessed by new acres disturbed.

[3.] These Conservation Fees are based on the following figures. No additional amounts are owed beyond the amount of the Conservation Fees:

Lease of Water Rights……10 acre feet = $5,000-$10,000
Purchase of Water Rights……1 acre foot = $5,500-$10,000
Habitat Restoration (i.e., salt cedar treatment) ……4 acres = $10,000
Caliche Removal……2-3 acres = $10,000
Reseeding……1 acre = $1,000
Rebuilding Water Crossings……Undeterminable at this time

Note: All acreage calculations will be rounded up to the next whole acre, if over 0.5 acres.

New operations on previously disturbed land (e.g., co-located new well on an existing pad or new pipeline in an existing corridor, etc.) will incur no additional Habitat Conservation Fee, unless the area to be redisturbed has been reseeded and/or reclaimed as part of reclamation. Fees will also be assessed for any new acreage disturbed.

CEHMM will calculate areas of New Surface Disturbances based on information received and/or on-the-ground observations. Should the Participant disagree with CEHMM's calculation of the area of New Surface Disturbance, the Participant has the right to challenge the estimate, provide supporting data, and meet with CEHMM and/or

the FWS, if necessary. CEHMM and the FWS, if participating, will have the responsibility for the final determination of the area of New Surface Disturbance.

The Habitat Conservation Fee for above-ground powerlines will be calculated using the above scale for New Surface Development. The acreage of New Surface Disturbance will be based on information found in the OCD and SLO New Surface Disturbance activities approval document provided by the Participant to CEHMM.

If New Surface Disturbance falls within two or more management zones, the amount of the Habitat Conservation Fee will reflect the amount of the New Surface Disturbance within each management zone.

3) Fees Associated With New Seismic Data Acquisition

Management Zone	3D Survey Conservation Fee	2D Survey Conservation Fee
Zone A	$12.36/acre	$246.86/linear mile*
Zone B	$9.26/acre	$185.15/linear mile*
Zone C	$6.17/acre	$123.43/linear mile*
Zone D	$1.86/acre	$30.87/linear mile*

*or any fraction thereof

The acquisition of seismic data on enrolled parcels may also disturb the surface of other land not enrolled in this CP. The Habitat Conservation Fee calculated for seismic activity includes disturbances occurring on both enrolled and non-enrolled land.

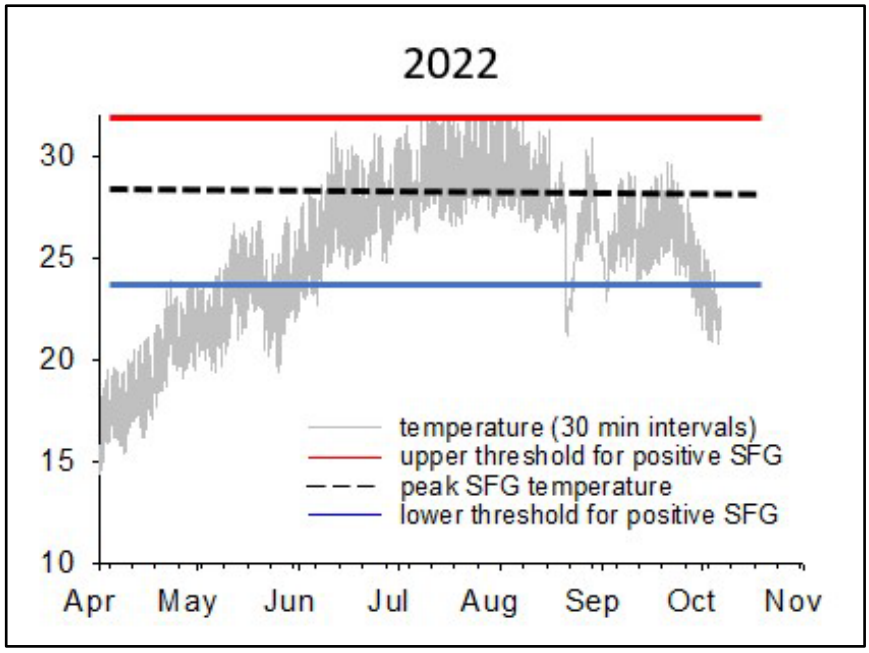
Routine Production Operations

Routine production operations are not considered New Surface Disturbance and will not create the obligations to pay a Habitat Conservation Fee. Routine production operations are those which do not require an agency permit or approval, and those operations that require an agency approval but do not disturb the surface.

APPENDIX B – COMPLETED PROJECTS IN 2023

River Flow Regime Requirements Study

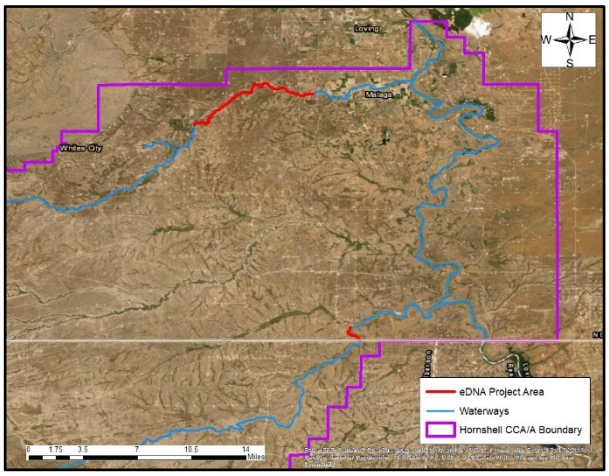
This project was approved and funded in October of 2020 for $358,005.00. A collaborative team of researchers from Miami, Texas A&M, and Auburn universities conducted a series of laboratory experiments and field monitoring studies to examine lethal and sublethal effects of thermal and hypoxia stress on various life history stages of the THM. Relationships between flow, temperature, and dissolved oxygen in the Black River were also studied. Results will be used to identify flow regimes most likely to induce mortality and/or thermal stress in the THM. Combined with historical datasets, results will be used by CEHMM, the SLO, and the Service. CEHMM will determine whether frequency of stressful periods has been increasing over time, and the Service will make specific flow recommendations for THM populations in the Black River.



Auburn University Scope for Growth Upper and Lower Temperature Thresholds Graph

Environmental DNA Assay Development for Texas Hornshell and Host Fishes

Originally approved and funded on August 12, 2020 for $22,480, the eDNA research project proposed by the United States Department of Agriculture (USDA), U.S. Forest Service Rocky Mountain Research Station, and NMDGF began in January 2022. eDNA refers to DNA that can be extracted from environmental samples, such as water. The goal of this project was to develop an eDNA assay for the THM (*Popenaias popeii*), gray redhorse (*Moxostoma congestum*), and blue sucker (*Cycleptus elongatus*). This project provided an additional tool for determining the presence, absence, and distribution of the target species. Using eDNA techniques to evaluate distribution of these covered species will be more efficient than traditional survey methods.



Research Area for eDNA study.

APPENDIX C – PROJECTS IN PROGRESS 2023

Population Monitoring Program for the Texas Hornshell Mussel

CEHMM Staff and NMDGF Conducting Intensive Transect Mussel Surveys in the Black River.

This project was proposed in March of 2022 and funded by the IC and EC in July 2022 for $149,987. The project aims to develop methods for estimating the THM population in the Black River and to employ these methods for long-term monitoring. Miami University and the NMDGF will conduct a robust mark-recapture study to estimate survival and probability of recapture of mussels from two microhabitats. This project utilized data from censuses in 2011-2012 and 2018-2019 to conduct computer simulation studies to identify the best methods for estimating population size of the THM in the Black River. The first year of the long-term population monitoring program was implemented in 2023. This program allows for regular estimates of the THM population in the Black River, and the detection of significant changes in population size over time. The second year of this study will take place in 2024. CEHMM, alongside the NMDGF and the Shedd Aquarium, assisted Miami University with new intensive THM population surveys. The team utilized the identified most efficient methodology for surveying this species in the Black River. This involved setting up three transects at each of the twenty-one different sites along the Black River which were searched for the presence and abundance of THM by dive and snorkel survey teams. Additionally, surveys were conducted at three known life history sites in the Black River. These surveys consisted of capturing, pit tagging, and documenting the mussels found and then placing the mussels back into their original locations. Pit tagging these mussels will allow for easier identification of known individuals during future surveys.

APPENDIX D – FUTURE PROJECTS

Davis and Bounds Riparian Restoration Projects

CEHMM plans to restore 23 acres of riparian habitat across two different enrolled landowners' properties during 2024. The IC and the EC have approved funding of $10,435.91 for the two restoration projects. The restoration will utilize the planting of native trees and shrubs to help support bank stabilization and restore riparian function back to the habitat. Bank stabilization will help to prevent sedimentation into the Black River; This is important because sedimentation is known to be one of the biggest threats to the THM. The overall restoration of riparian function will not only benefit the THM but all species that are utilizing the improved habitat.