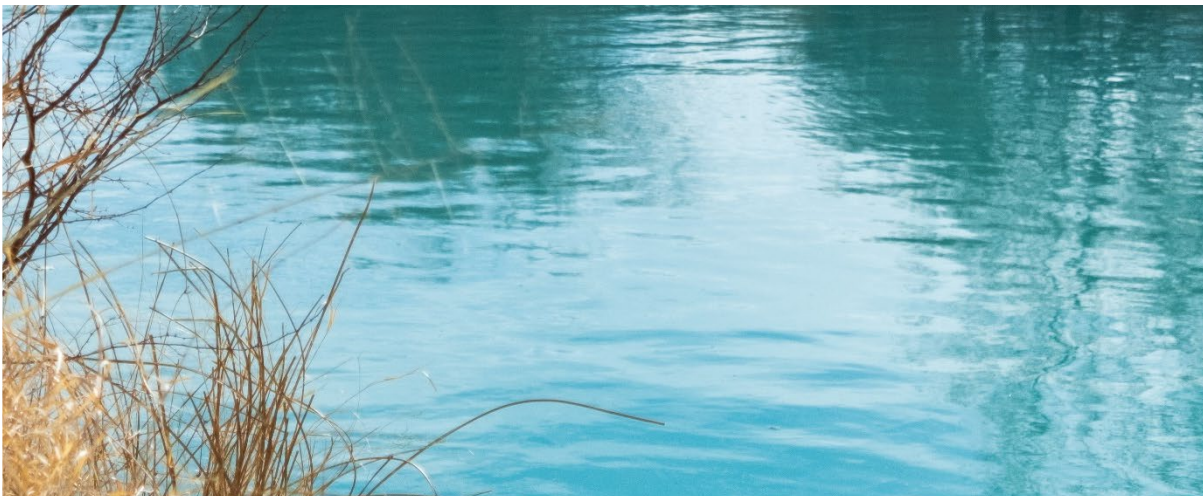




Quarterly Report: 4 – 2023
Candidate Conservation Agreements:
Texas Hornshell (*Popenaias popeii*)



Creating Conservation Through Partnerships



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I. Introduction

This report describes the activities conducted in the fourth quarter of 2023 under the three sister Candidate Conservation Agreements for the Texas hornshell mussel (THM) (*Popenaias popeii*) and other covered species. 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 New Mexico State Land Office (SLO) administers a CCAA for state trust lands. The three conservation agreements are referred to collectively herein as the “CCA/As.” To the extent practicable, CEHMM and the SLO jointly implement the CCA/As in cooperation with the Bureau of Land Management (BLM) and the U.S. Fish and Wildlife Service (Service) through a common governance structure. Figure 1 shows the CCA/A boundary, CCA/A management zones, and land ownership. Additional details about the CCA/As are available in the 2018 annual report and in the agreements themselves, which can be accessed at:

- <http://cehmm.org/thmreports>
- <https://www.fws.gov/species/texas-hornshell-popenaias-popeii>

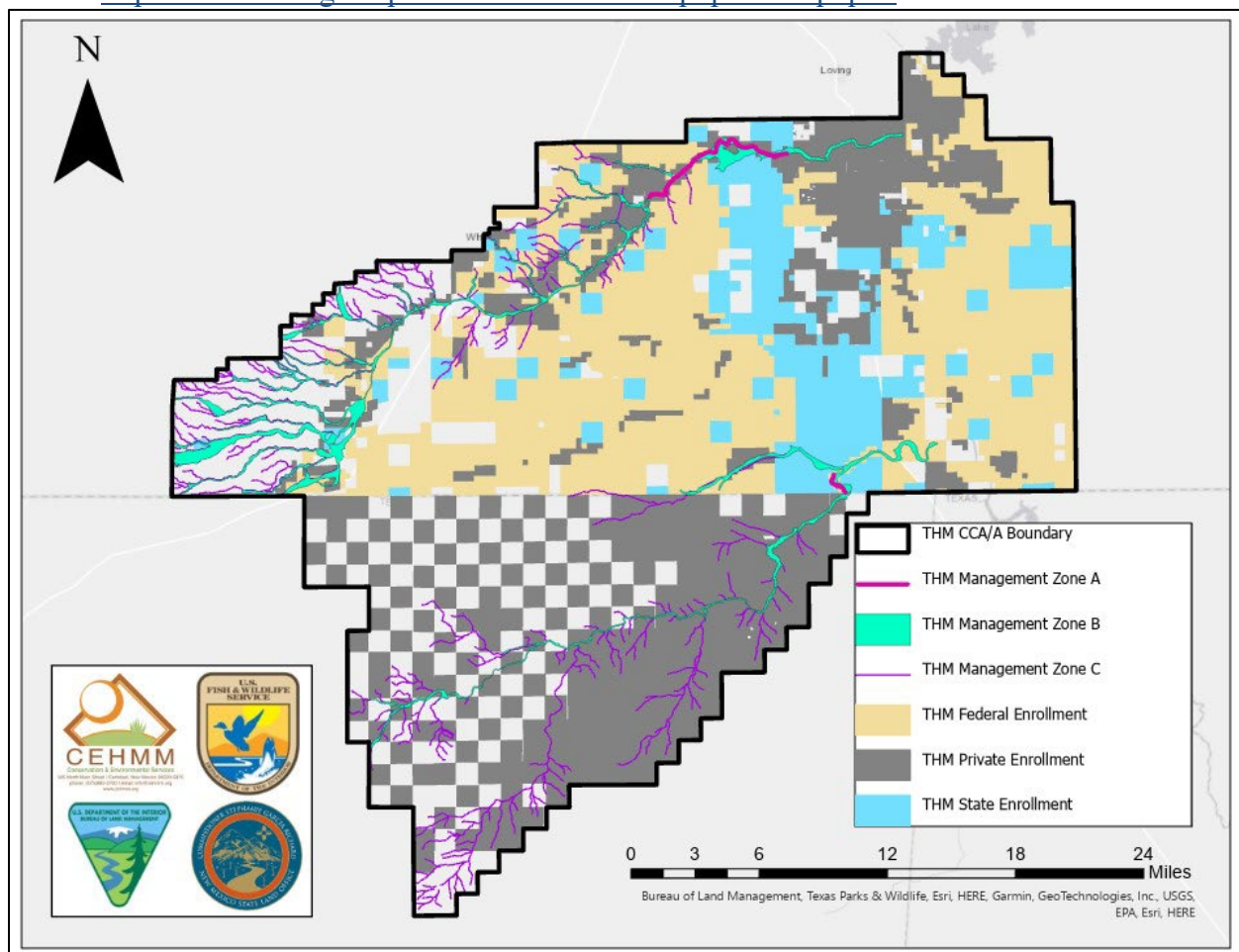


Figure 1. CCA/A Boundary, CCA/A Management Zones, and Land Ownership.

II. Enrollment & Funding

CEHMM administers 42 Certificates of Inclusion (CIs) under the CCAA and 33 Certificates of Participation (CPs) under the CCA. To date, CEHMM has enrolled 293,504.34 acres in the CCAA and 391,278.49 acres in the CCA. The SLO administers 28 CIs and has 112,284.17 acres enrolled in the CCAA.

Fifty Participants are enrolled in multiple CCA/As due to their combination of land ownership types. The total amount of land enrolled in the CCA/As in 2023 is 797,067.00 acres. Annual acreage can vary since the Participants who opted for “All Activities Enrollment” are able to add or remove enrolled acreage based on their current areas of activity. The same acres can also be enrolled more than once by different Participants who are using the land for different activities; the totals therefore reflect multiple enrollments of the same parcels. CCA/A Participant and parcel acreage enrollment data for 2023 are shown in Table 1.

Table 1. CCA/A Enrollment in 2023.

	CI	CP	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

During the fourth quarter of 2023, the Hornshell Program at CEHMM earned \$61,775.42 in Habitat Conservation Fees paid under the CEHMM CCA and CCAA. Also, during the fourth quarter of 2023, the SLO CCAA earned \$82,565.26 in Participant Habitat Conservation Fees.

III. Mitigation of Impacts to Habitat

During the fourth quarter, CEHMM received a total of 34 notices of new surface disturbances from industry, with 112.36 acres of new surface disturbances documented. All of these disturbances took place in Management Zone D. The SLO received 11 notices of new surface disturbances from industry, with 77.92 acres of new surface disturbances documented during the fourth quarter of 2023. CEHMM worked with the Participants to ensure all the proper conservation measures were followed including Reasonable and Prudent Practices for Stabilization (RAPPS) and Spill Prevention Control and Countermeasure (SPCC). These practices included water bars, silt fences, culverts, erosion blankets, waddles, and reseeding. These details are shown in Table 2 below.

Table 2. New Surface Disturbances in the Fourth Quarter of 2023.

	Well Pads	ROWs	Infrastructure	Total
CEHMM				
Notifications of New Surface Disturbances	7	23	4	34
Acres Disturbed	57.12	46.42	8.82	112.36
SLO				
Notifications of New Surface Disturbances	3	3	5	11
Acres Disturbed	23.16	6.95	47.81	77.92
COMBINED				
Notifications of New Surface Disturbances	10	26	9	45
Acres Disturbed	80.28	53.37	56.63	190.28

IV. Habitat Monitoring

Black River Discharge Monitoring

The CCA/A set a temporary minimum flow goal of 9.3 cubic feet per second (cfs) at the Malaga gage on the Black River. Since the CCA/A took effect in 2017, CEHMM has monitored the daily average flow at existing United States Geological Survey (USGS) flow gages in the Black River at Malaga (USGS 08405500) and Blue Springs (USGS 08405450) (Appendix A). Per the CCA/A, CEHMM staff set alarms on the Black River Above Malaga gage; when river flows are below 9.3 cfs, they are notified and can monitor the river more closely. In 2019, two additional gages were installed in the Black River with one new gage Black River at Harkey Crossing (USGS 08405400) and the second gage Black River Below Blue Springs (USGS 08405350) (Appendix A).

Along with gage data monitoring, CEHMM physically monitored the Black River periodically in quarter four. According to the USGS gage at Above Malaga, the monthly average discharge for quarter four in the Black River was 4.83 cfs in October, 5.40 cfs in November, and 5.77 cfs in December. The daily average discharge was below the 9.3 cfs threshold 100 percent of the days in the fourth quarter of 2023. See Figure 2 and Table 3 for fourth quarter flow rates. During periods of low flow which may pose a threat to the THM, Participants in the CCA/A who withdraw water from or near the Black River are notified to allow them to implement any pumping curtailment conservation measures contained in their CIs/CPs.

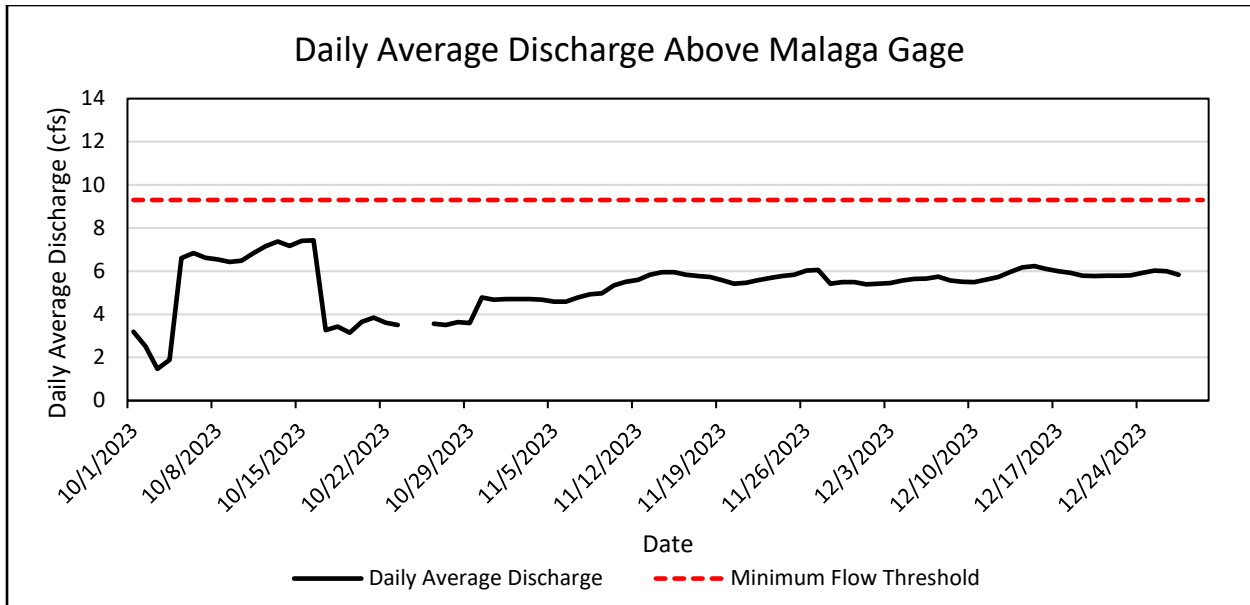


Figure 2. The Daily Average Discharge of the Black River at the USGS Black River Above Malaga Gage During the Fourth Quarter of 2023.

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

	Jul	Aug	Sep	Oct	Nov	Dec
Black River (USGS 08405500 BR Above Malaga)						
Average Flow	2.35	3.32	7.17	4.83	5.40	5.77
Minimum Daily Average	0.00	0.00	4.10	1.47	4.59	5.39
Maximum Daily Average	4.30	8.43	13.6	7.43	6.05	6.23
Black River (USGS 08405400 Black River at Harkey Crossing)						
Average Flow	4.01	3.79	5.28	6.09	6.78	6.39
Minimum Daily Average	3.11	3.05	2.99	3.82	5.45	5.89
Maximum Daily Average	4.70	7.26	13.0	16.9	8.66	6.91
Black River (USGS 08405350 Black River Below Blue Springs)						
Average Flow	3.73	3.80	3.74	3.58	5.73	6.36
Minimum Daily Average	2.80	3.28	2.91	3.09	5.28	6.14
Maximum Daily Average	4.21	4.52	8.76	5.32	6.10	6.60
Delaware River (USGS 08408500 DR NR Red Bluff)						
Average Flow	N/A	N/A	N/A	N/A	N/A	N/A
Minimum Daily Average	N/A	N/A	N/A	N/A	N/A	N/A
Maximum Daily Average	N/A	N/A	N/A	N/A	N/A	N/A

Delaware River Discharge Monitoring

On October 10, 2022 the Delaware River near Red Bluff USGS gage was removed due to bridge construction that was occurring in the area. CEHMM physically monitored flows in the Delaware River every two weeks during the fourth quarter. In mid-May 2023 the Delaware ceased to flow and water levels steadily dropped. The Delaware regained flow temporarily in mid-August but has since stopped. Water levels have steadily dropped though the final months of 2023. CEHMM staff has ensured that no mussels or relics of mussels are present in newly exposed areas as water levels decrease. CEHMM will continue to monitor the status of the Delaware River by physical inspection throughout 2024 (Figure 3).



Figure 3. The Flows on the Delaware River on November 28, 2023.

V. Species Monitoring

In October 2023, CEHMM assisted the New Mexico Department of Game and Fish (NMDGF) with the annual fish population survey along the Black River. Fish populations were surveyed using numerous sampling methods, including trammel nets and electroshocking. The fish that were caught were weighed, measured, and then released back into the river.

VI. Grants

Sensor Array Study

In 2021, CEHMM submitted a grant proposal to the National Fish and Wildlife Foundation (NFWF) to fund a Sensor Array Study to better understand in situ conditions experienced by the endangered THM in the Black River. The NFWF awarded the grant in June 2022. The Sensor Array grant was approved by the Implementation and Executive committees. This funding requires an in-kind matching contribution of \$24,784.30 from the CCA/A program. CEHMM proposed a project to establish a sensor array within the occupied reach of the Black River in southeastern New Mexico. The water quality data loggers will allow CEHMM to monitor and better understand the water quality conditions endured by the endangered THM. Through the establishment of the sensor arrays, CEHMM will be able to further monitor and gain data to determine if, when, and for what period of time the THM are enduring intolerable environmental conditions. The results of this data collection are expected to provide key insights into environmental gradients among microhabitats, especially as we prepare for further climate-driven variation.

Progress: CEHMM extracted, analyzed, and compiled the data 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 are subjected to and note distinctions between occupied and unoccupied habitats. Data will be extracted from the loggers again during

the second quarter of 2024.

Benjamin P. Duke Memorial Grant

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. The environmental exhibits will address aquatic species of concern in the lower Pecos River Drainage, educating the public to foster knowledge and appreciation of the species, ultimately promoting the wellbeing of wildlife and their habitats.



Figure 4. Installed Framework at Cottonwood Day-Use Area.

Progress: CEHMM has the exhibits and is currently waiting on the final print designs. The necessary framework has already been installed at Cottonwood Day Use Area (Figure 4).

Development of a Habitat Conservation Plan for THM

On November 14, 2022, CEHMM submitted a proposal to the NFWF to fund the development of a Habitat Conservation Plan (HCP) for the federally endangered THM in New Mexico and Texas. The HCP will further facilitate voluntary cooperation of oil and gas operators, solid minerals mining companies, water withdrawers, agriculture and ranching, researchers, and other interested stakeholders, thereby providing conservation benefits to the THM. When fully implemented, it will provide guidance for the conservation and management of this species and its habitat by reducing or eliminating threats to the species. On March 27, 2023 CEHMM's proposal for this grant was selected and funded for the full grant amount requested. This funding requires an in-kind matching contribution of \$25,000 from the CCA/A program.

Progress: CEHMM is working with the NFWF to complete an amendment to get funding and contracts developed for the Habitat Conservation Plan for the THM. CEHMM hopes to complete contract amendments in the first quarter of 2024.

VII. Project Updates

River Flow Regime Requirements Study

This study was approved and funded in October of 2020 for \$358,005.00. This project was completed in August of 2023. 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 Texas hornshell. 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 Texas hornshell. Combined with historical datasets, results will be used by both CEHMM 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 Texas hornshell populations in the Black River.

Progress: Auburn, Texas A&M, and Miami universities completed the field research and laboratory studies of sublethal thermal hypoxia stress and presented their findings to the CCAACC in December. Additional meetings will be held to determine what flow recommendations are required for the THM.

Design and Implementation of a Population Monitoring Program for THM Study

This study was approved and funded on July 15, 2022 for the amount of \$149,987. This project is ongoing and currently in year one out of three. The expected completion date of the project is July 31, 2025. Miami University is conducting this study with the overall objective to develop methods for estimating the size of the THM populations in the Black River and employ these methods for long-term monitoring of this essential population of mussels. The results of these analyses will inform management activities that seek to secure the existing population in the Black River and allow tracking of the population trajectory over time.



Figure 5. Taking Measurements of THM During Surveys.

Progress: CEHMM, alongside the NMDGF and the Shedd Aquarium, assisted Miami University with the design and implementation of a population monitoring program for THMs in the Black River (Figure 5). Miami University utilized THM census data from 2011-2012 and 2018-2019 and plugged that data into computer simulations to identify the most efficient methodology for surveying this species in the Black River. Based on the simulation results, Miami conducted the first of a two-year long term population monitoring program. Miami University also completed year one of the robust mark and recapture study at three known life history sites in the Black River. These surveys consisted of collecting, pit tagging, and documenting the mussels found and then returning the mussels back to their original locations. Pit tagging these mussels will allow for easier identification of known individuals during future surveys.



Figure 6. CEHMM Staff Assisting with Long Term Population Monitoring.

Project Proposals

CEHMM and the SLO are now accepting project proposals to fund projects related to research and monitoring, or habitat restoration for the THM and the Other Covered Species (Figure 7). Proposals are ranked and funded on a quarterly basis.

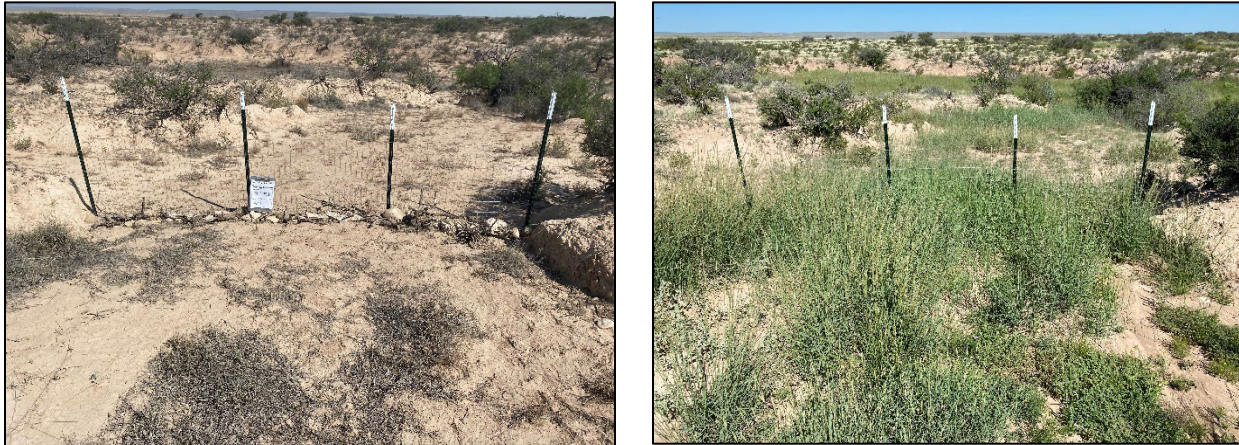


Figure 7. Before and After of Erosion Control Structures Used to Slow the Flow of Water and Catch Sediment.

VIII. Meetings

Joint Executive Committee

The Joint Executive Committee did not meet during the fourth quarter of 2023. The Executive Committee members in 2023 are as follows:

- CEHMM CCAA: Chuck Hayes (Service) and Emily Wirth (CEHMM)
- CEHMM CCA: Chuck Hayes, Emily Wirth, Ty Allen (BLM)
- SLO CCAA: Chuck Hayes, Lisa Henne (SLO)

Implementation Committee

The Implementation Committee met one time during the fourth quarter of 2023. The next The Implementation Committee members in 2023 are as follows:

- Service: Sarah Yates, Tim Ludwick
- BLM: Cassie Brooks
- CEHMM: Matt Ramey
- SLO: Elaine Heltman (alternates Camilla Romero and Kyle Rose)
- NMDGF: Nathan Thompson

The IC discussed the following topics:

- CCA/A Updates
- Black and Delaware River Status

- Landscape Monitoring and Conservation Concerns
- Current Project Updates
- Grant Opportunities
- Project Proposals

IX. Outreach

In October 2023, the Service joined CEHMM for a site tour of the Texas Hornshell CCA/A covered area. The tour consisted of various stops along the Black River depicting important habitats for the Texas Hornshell mussel and other covered species. This also served to provide insight regarding flow dynamics in the Black River.

During the fourth quarter of 2023, the LPC/DSL and THM programs at CEHMM hosted their annual Participant Meeting. During the meeting, CEHMM provided updates regarding the CCA/A programs, ongoing funded projects and research, future projects, and the Habitat Conservation Plan.



Figure 8. Service Assisting CEHMM and NMDGF with Fish Processing and Identification.

In December 2023, CEHMM presented at the New Mexico Environment Department Southern Roundtable. The presentation focused on the CCA/A programs and the minimum flow regime research that Auburn, Miami, and Texas A&M universities recently completed.

X. Compliance Monitoring

The CCA/As require CEHMM and the SLO to submit an annual compliance verification to the Service for each enrolled Participant. CEHMM assists the SLO with compliance verification through a Memorandum of Agreement for joint implementation of the CCAAs. In the fourth quarter of 2023, CEHMM’s CCA/A compliance monitoring included inspection for failure to submit new surface disturbances and inspection for Spill Prevention, Control, and Countermeasures (SPCC) or Reasonable and Prudent Practices for Stabilization (RAPPS) compliance, if applicable. CEHMM utilized the New Mexico Oil Conservation Division (NMOCD) data, BLM right-of-way data, and field surveying to conduct inspections.

XI. Signature

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

Signed: _____

Emily K. Wirth
Executive Director

Date: _____

Appendix A – USGS Discharge Gages in the CCA/A Boundary

