



Baffin Bay Watershed Model

Final Project Report

Project Number – 2328
August 2023

Prepared by:

John J. Byrum II, Executive Director
Nueces River Authority
539 S. Highway 83
Uvalde, TX 78801
jbyrum@nueces-ra.org
830-278-6810

Submitted to:
Aaron Baxter, Project Manager
Coastal Bend Bays & Estuaries Program
615 N. Upper Broadway, Suite 1200
Corpus Christi, TX 78401

*PREPARED IN COOPERATION WITH THE
COASTAL BEND BAYS & ESTUARIES PROGRAM, INC.,
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY and
ENVIRONMENTAL PROTECTION
AGENCY*

The views expressed herein are those of the authors and do not necessarily reflect the views of CBBEP or other organizations that may have provided funding for this project.

Final Report for:

Baffin Bay Watershed Model

Background/Objective

The Baffin Bay Watershed consist of three tributaries: Petronila, San Fernando, and Los Olmos Creeks. The water quality in these three creeks, which contribute flow to Baffin Bay, has been impacted by non-source pollution. The Nueces River Authority (NRA) has partnered with several groups, including the Coastal Bend Bays & Estuaries Program, to help promote awareness and conduct projects aimed at improving water quality in Baffin Bay. This project created a model so that students and other groups could attend a visual presentation and learn about the sources of non-point pollution, its effects in receiving streams, and impacts to water quality. The model provides a visualized learning experience aimed at influencing those attending to do their part in reducing non-point and other sources of pollution. The model is constructed to allow attendees to pinpoint where they live and how water is conveyed from their property through one of the tributaries and into the bay. Using food coloring to simulate pollution, and water to convey that pollution, the water flows through the model and into the bay carrying the “simulated pollution” and in moments, the bay changes colors. This visualization is one that remains in the memory of those in attendance and that memory will enable them to become better stewards of the environment.

The custom plastic model is designed to accurately simulate how water flows through the watershed and into the creeks and ultimately Baffin Bay. It is small enough to be transported in a vehicle and light enough to be carried into classrooms.

To construct the model, NRA solicited the assistance of a company experienced in constructing thermoplastic models and one experienced in developing detail mapping. The mapping not only details cities and counties, but streams and creeks within the selected area. The map is then matched to elevation contours so that a mold of the selected area can be cut to form the thermoplastic model. Labels are then produced by specialized computer software and applied to the underside of the thermoplastic model. The model is then hand-painted.

The objective of this project is to instill a desire for members of the public to refrain from contributing to pollution and to assist the NRA and our partners in conveying the importance of preventing negative impacts on water quality due to non-source pollution in the Baffin Bay Watershed.

Model Design

Staff at the NRA began the design process by identifying the major waterways/waterbodies, landmarks, and landforms to be included on the model. This is critical for allowing students to locate their community at a watershed scale within the model. The suggested labels were shared with project partners who provided further input to the model’s design. After incorporating these recommendations, the information was passed along to the company (Siglo Group, LLC) tasked with creating the detailed mapping for the model.

Model Fabrication

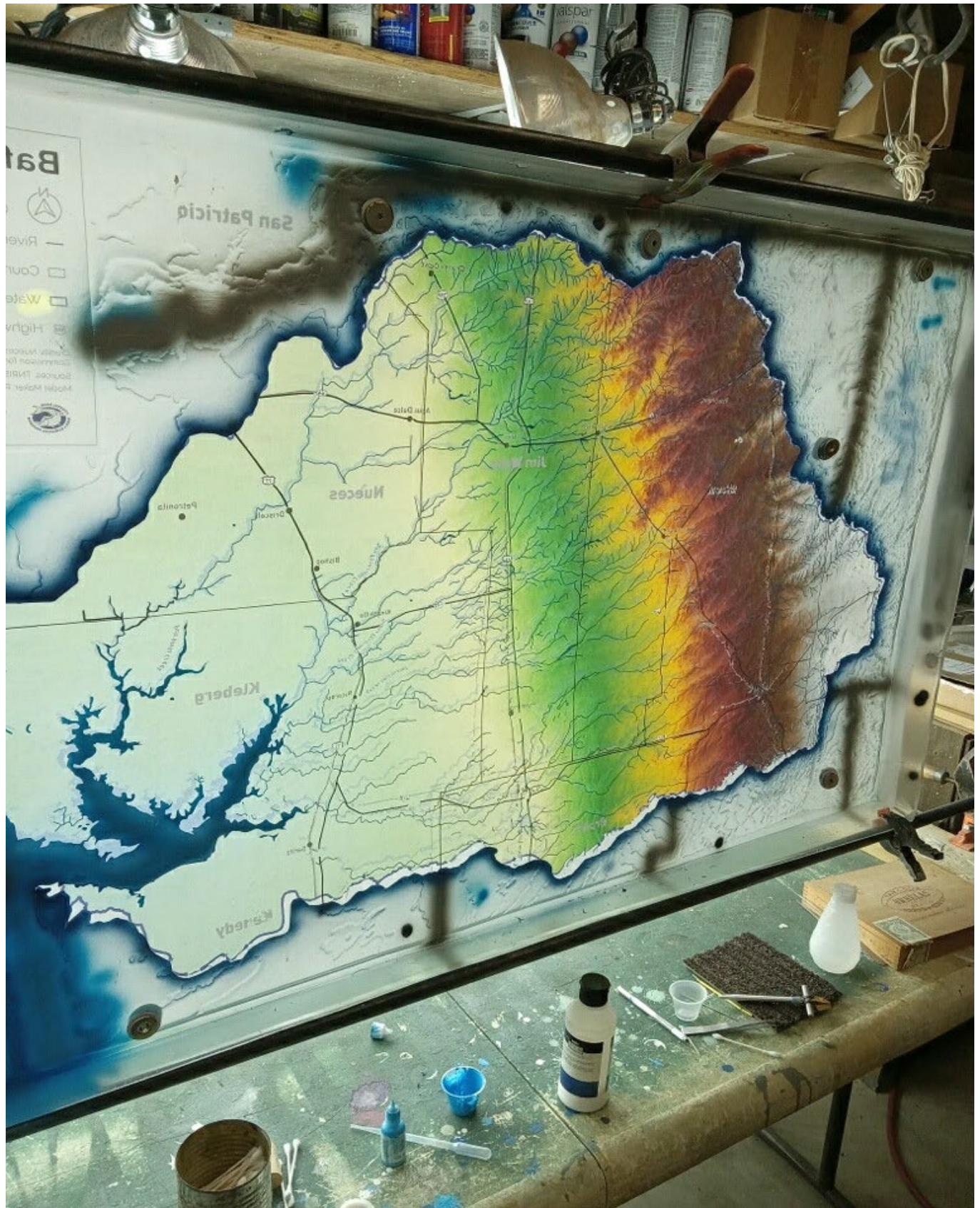
The 5’ x 3’ model was fabricated by Paul Bond. Photos of model fabrication are included below.



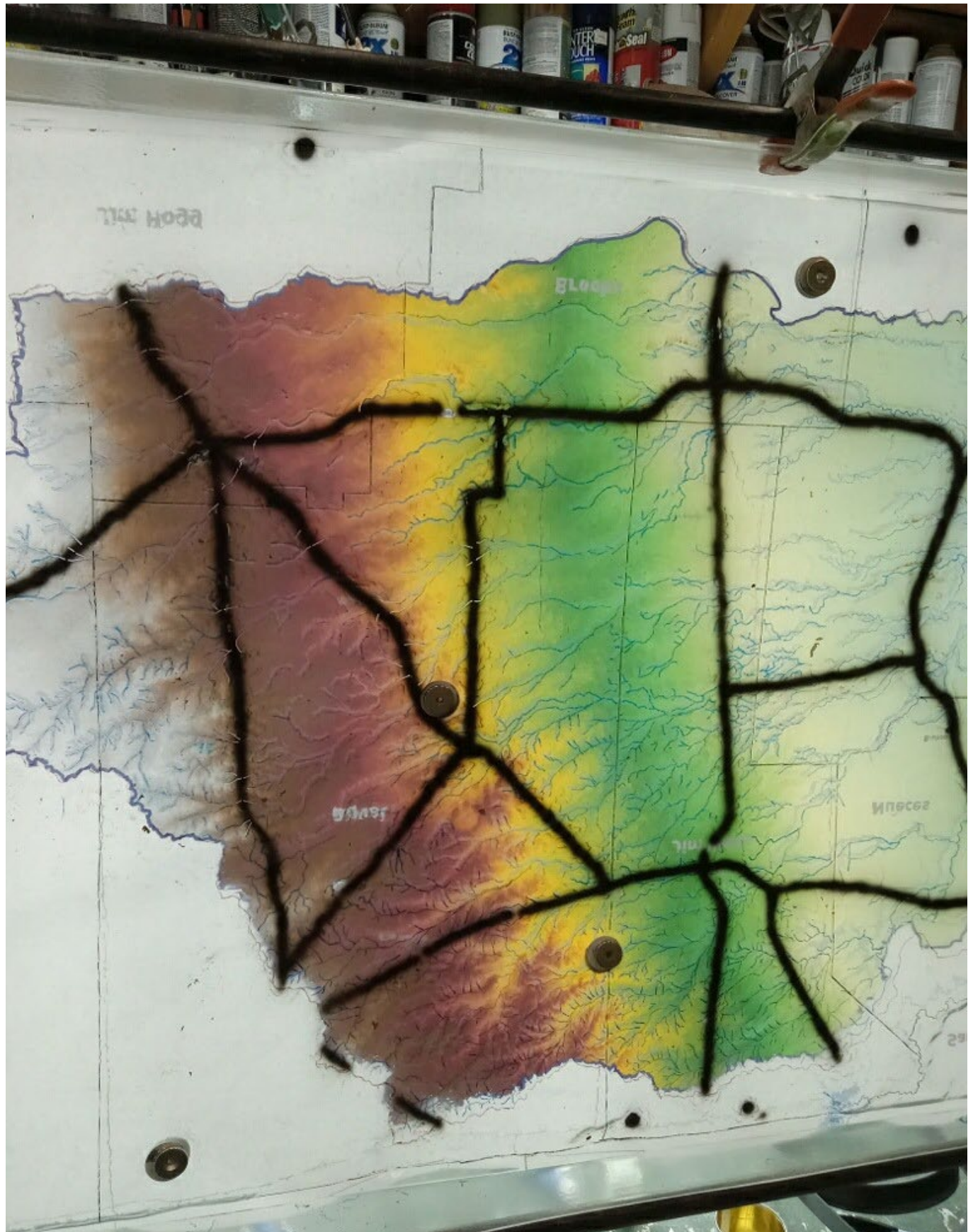
Labels are printed and cut for installation on the back side of the map



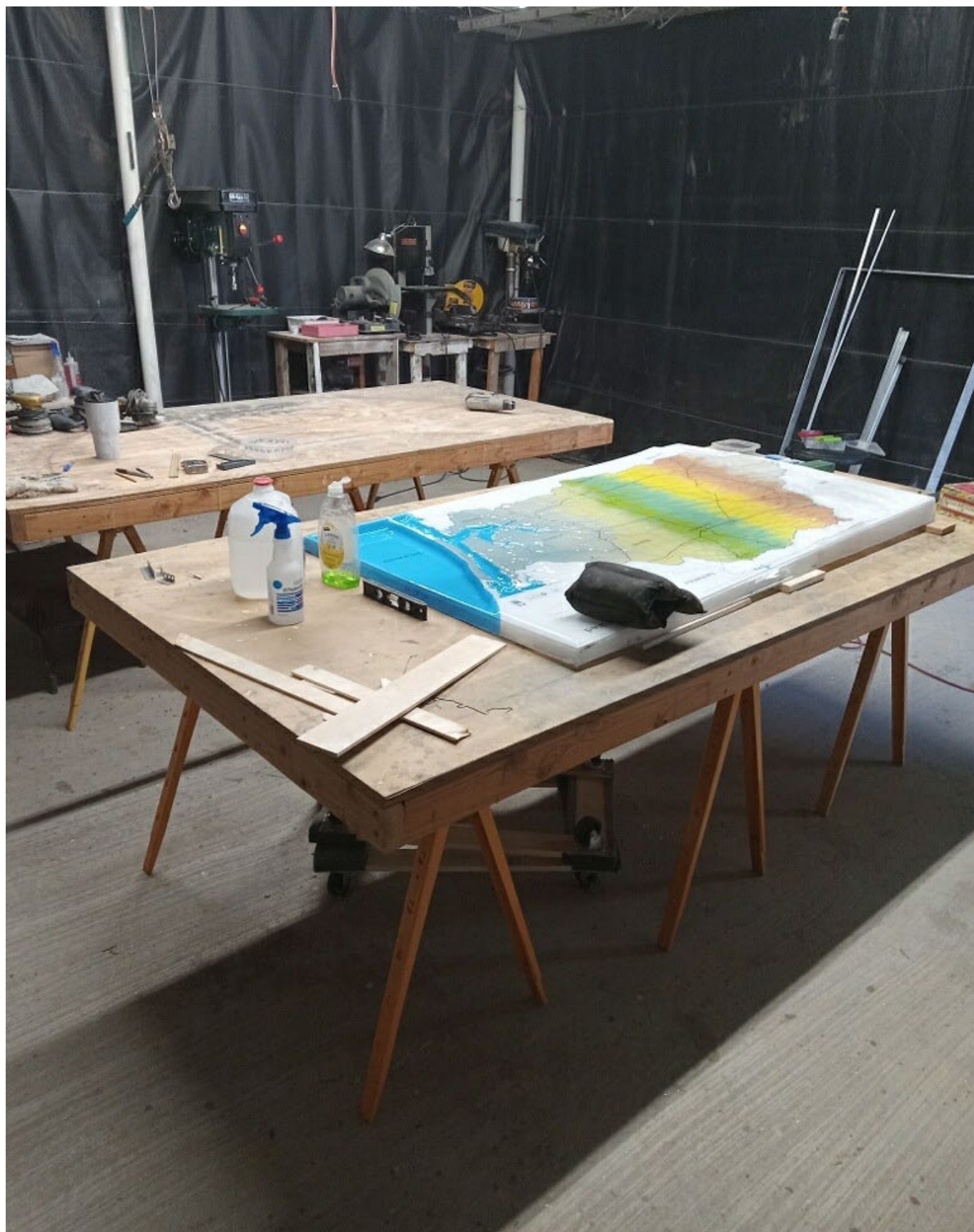
Labels are then applied to the underside of the map



The map is then color shaded in accordance with the map legend



County Boundaries are painted to the back side of the model one the motel has been shaded



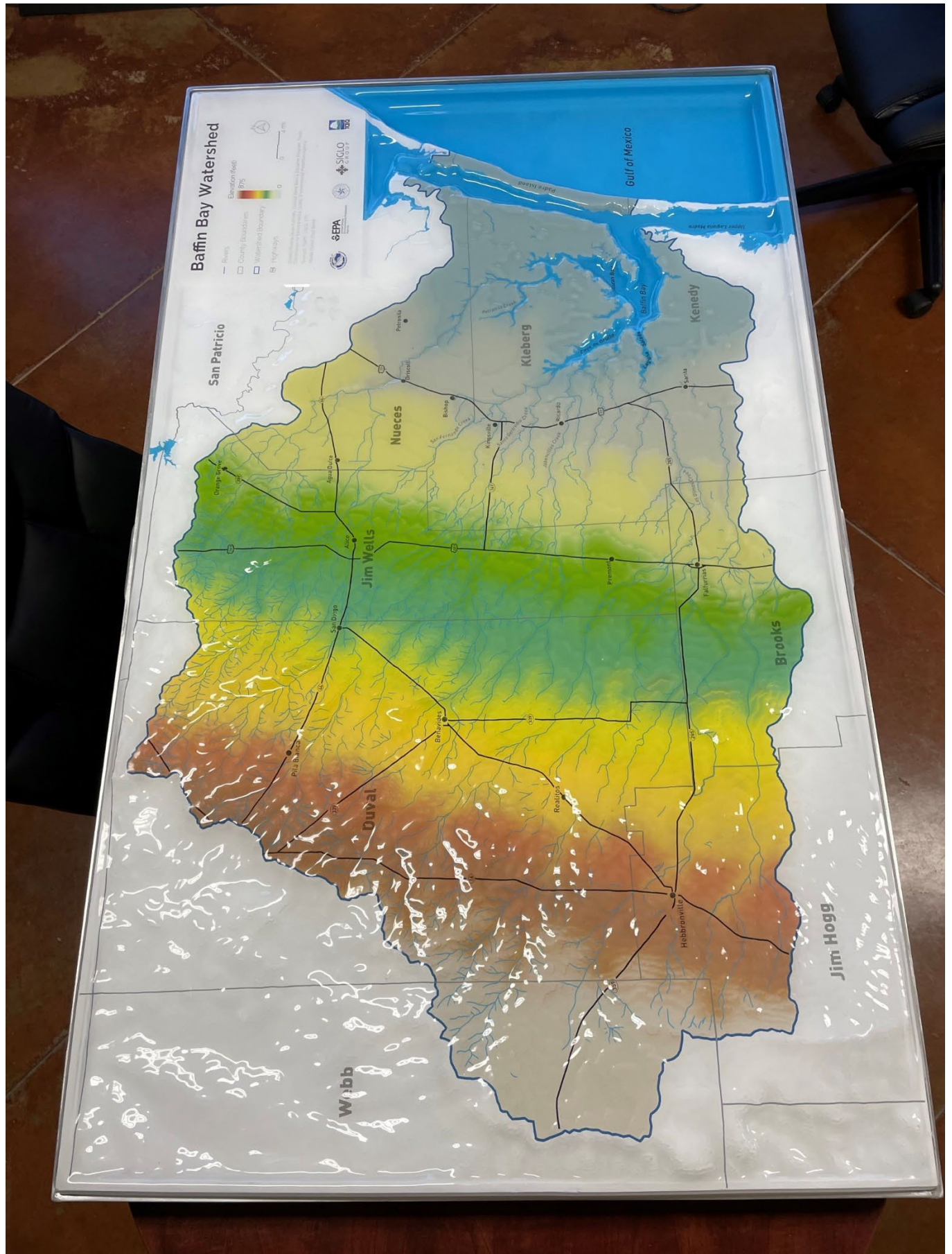
Final calibration and trimming



The model is framed for moving and transporting



The model is mounted on an aluminum frame for support



Completed Baffin Bay Watershed Model

Conclusions

The model was completed on time, and on budget, and will serve as a useful educational tool for students residing within the Baffin Bay watershed. By allowing them to visualize their impacts to local water quality, they can help spread the message to others in their communities, ultimately leading to better decision-making within the watershed and improved water quality.