INTERLOCAL COOPERATION AGREEMENT BETWEEN TEXAS A & M UNIVERSITY – CORPUS CHRISTI AND THE CITY OF CORPUS CHRISTI REGARDING TAMU-CC STORMWATER FLOATING DEBRIS STUDY

WHEREAS, Texas A & M University – Corpus Christi ("TAMU-CC) and the City of Corpus Christi ("City") are authorized by Chapter 791 of the Texas Government Code to enter into an interlocal cooperation contract;

WHEREAS, TAMU-CC has requested permission to install temporary collection systems in Corpus Christi Bay and Oso Creek in order for TAMU-CC to collect data on stormwater floating debris after storm event;

NOW, THEREFORE, the parties hereto agree as follows:

1. PURPOSE. The City of Corpus Christi grants permission to TAMU-CC to install TAMU-CC owned and operated stormwater floating debris collection systems in Corpus Christi Bay and Oso Creek to be used by TAMU-CC to study stormwater floating debris, all as further described in Exhibit A.

2. STATEMENT OF WORK. TAMU-CC will perform its collection system deployment and stormwater floating debris study as outlined in Exhibit A, as generally described as follows. TAMU-CC agrees to:

A. Install stormwater floating debris collections systems at three locations (2 in Corpus Christi Bay and 1 on Oso Creek at locations identified in Exhibit A) that will collect floating stormwater debris. The collection systems will be installed approximately 2-3 days prior to an anticipated storm event, with collection of the debris and removal of the collection systems within 24 to 48 hours after discharge has ceased.

B. Obtain any required permits prior to installation of the collection systems.

C. Collect and analyze the types and amounts of stormwater floating debris.

D. Share data results with the City of Corpus Christi.

E. Provide notice to the Texas General Land Office, Corpus Christi Director of Utilities or designee, and the US Coast Guard prior to installation of the collection systems in Corpus Christi Bay or Oso Creek.

F. Mark each collection system with signage explaining the study and a TAMU-CC contact.

G. Affix lighting in a manner that warns mariners of the configuration of the deployed boom.

H. Remain solely responsible for design and operation of the TAMU-CC stormwater floating debris collection system.

I. Properly dispose of the floating debris collected during the study.

J. Defend and hold harmless the City of Corpus Christi including its officers and employees for any damages or claims arising out of TAMU-CC activities under this agreement.

3. PERIOD OF PERFORMANCE. This agreement shall be effective from the latest date of signatures below and continue for one year unless earlier terminated in accordance with Section 5 below.

4. EXPENDITURES OF REVENUES.

A. Each party agrees to be responsible for costs relating to its respective activities under this agreement and acknowledge that all expenditures under this agreement shall be paid with current revenues of the paying party.

B. The parties acknowledge that continuation of this agreement beyond City's current fiscal year is subject to annual budget process and appropriation of funds.

5. TERMINATION. Performance under this agreement may be terminated by either party with or without cause upon 30 days' written notice.

6. NOTICES. All notices to parties under this Agreement shall be in writing and sent to the names and address stated below. Either party to the Agreement may change the name and address by notice to the other in accordance herewith, and any change shall take effect immediately upon receipt of the notice.

Texas A&M University – Corpus Christi
Attn: Office of Sponsored Research

6300 Ocean Dr

Corpus Christi, Texas 78412

CITY City of Corpus Christi
Attn: Storm Water Division
P.O. Box 9277
Corpus Christi, TX, 78469

7. AMENDMENTS AUTHORIZED. The representatives who were authorized to sign this agreement are authorized to execute minor amendments to this agreement, to extend deadlines or minor changes in the scope of work.

8. SEVERABILITY. If any of the provisions of the agreement in the application thereof to any person or circumstance, is rendered or declared illegal for any reason, or shall be invalid or unenforceable, the remainder of the agreement and the application of the provision to other persons or circumstances shall not be affected thereby, but shall be enforced to the greatest extent by applicable law. The City and Texas A & M University- Corpus Christi agree that this agreement shall be reformed to replace the stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

9. DISPUTE RESOLUTION PROCESS. To the extent applicable, the dispute resolution procedures provided in Chapter 2260 of the Texas Government Code will be used to resolve contract claims under this contract.

10. MISCELLANEOUS. This agreement constitutes the entire agreement between the parties relative to the subject matter, and may only be modified or amended by a written agreement signed by both parties. It shall be construed in accordance with the laws of the State of Texas.

IN WITNESS WHEREOF, the parties have caused this agreement to be executed by their authorized representative.

Texas A&M University – Corpus Christi

By: _____
Name: Luis Cifuentes, Vice President
Title: Research Commercialization and Outreach
Date: 6.5.17

CITY OF CORPUS CHRISTI

ATTEST

_____
Rebecca Huerta
City Secretary

By: _____
Margie C. Rose
City Manager

APPROVED AS TO FORM:

This 12 day of June, 2017

Lisa Aguilar
Lisa Aguilar, Assistant City Attorney
For City Attorney

EXHIBIT A

[Insert the Proposed Scope of Work as provided by TAMU-CC Assistant Professor Conkle]

(Next 4 pages)

Proposed scope of work for the collection of plastic debris/floatable in storm water discharges around Corpus Christi.

Quantifying Plastic Debris Loading and Accumulation in Corpus Christi Bay to Improve Stakeholder Awareness

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Background

Corpus Christi is nicknamed the "Texas Riviera" or the "Sparkling City by the Sea," with Corpus Christi Bay being the centerpiece of this city. Unfortunately, Corpus Christi Bay is beginning to develop a reputation for its ubiquitous trash/plastic debris and littered shorelines. (See "All the Cups" on YouTube: https://www.youtube.com/watch?v=LhlBSOlTYdQ.) This "reputation" could have economic consequences in the broader region, with $1.5 billion and $5.4 million in local revenues tied to nature tourism and fisheries (respectively). It has also been documented that plastics in marine environment are harmful to fisheries and, sea turtles, birds and marine mammals. Unfortunately, this problem is not unique to Corpus Christi. Plastic debris estimates in the ocean are at ~268,000 tons and 4.8-12.7 million tons loaded annually. The fate of plastic debris is also largely unknown. Estimates for total annual plastic loading[4] do not match observed concentrations. The first step in understanding the problem locally is quantifying its scale and studying sources. This project will quantify and qualify (types, sources, sizes) plastic debris (i.e., polyethylene terephthalate, polyethylene, polypropylene, polystyrene, etc.) loading within Corpus Christi Bay.

Storm Water Sampling Design

Sampling of floating debris in storm water effluent at 3 sites (Figure 1) will be conducted using harbor class booms. This floating debris collection system will be deployed from the shore (using skiffs when necessary) 2-3 days prior to storm event and the debris collected and booms will be removed within 24 to 48 hours after discharge has stopped. We anticipate sampling 4-6 storm events at each site, but the current La Niña is expected to produce drier weather in the region, resulting in below average rainfall during the study period.

Booms in Corpus Christi Bay (Louisiana and Annapolis storm water basins) will be anchored to the shoreline and extend out 100 to 250 feet (depending on preliminary

testing) from the discharge. Oso Creek storm water samples will utilize a boom that is placed across the creek just upstream from the Staples Street bridge.

Collected plastic debris will be collected with dip nets, placed in heavy duty trash bags and transported back to the TAMUCC campus. The debris will be allowed to dry before being weighed, sorted and characterized. After processing, debris will be re-bagged and discarded in TAMUCC dumpsters.

Boom Design & Deployment

The floating debris collection system will be developed using standard harbor class oil spill response boom extending 100 to 250 feet (depending on preliminary testing) into the bay from the shoreline in an open trapezoidal configuration (Figure 1). This configuration will allow potentially strong discharge currents to flow under the boom while capturing floating debris. Longshore currents in Corpus Christi Bay will also require that the deployed boom system be long enough to diffuse currents from various directions. This concern will be assessed during boom deployment, but it is expected that the proposed 100 to 200 feet of boom will be sufficient. By keeping the boom length less

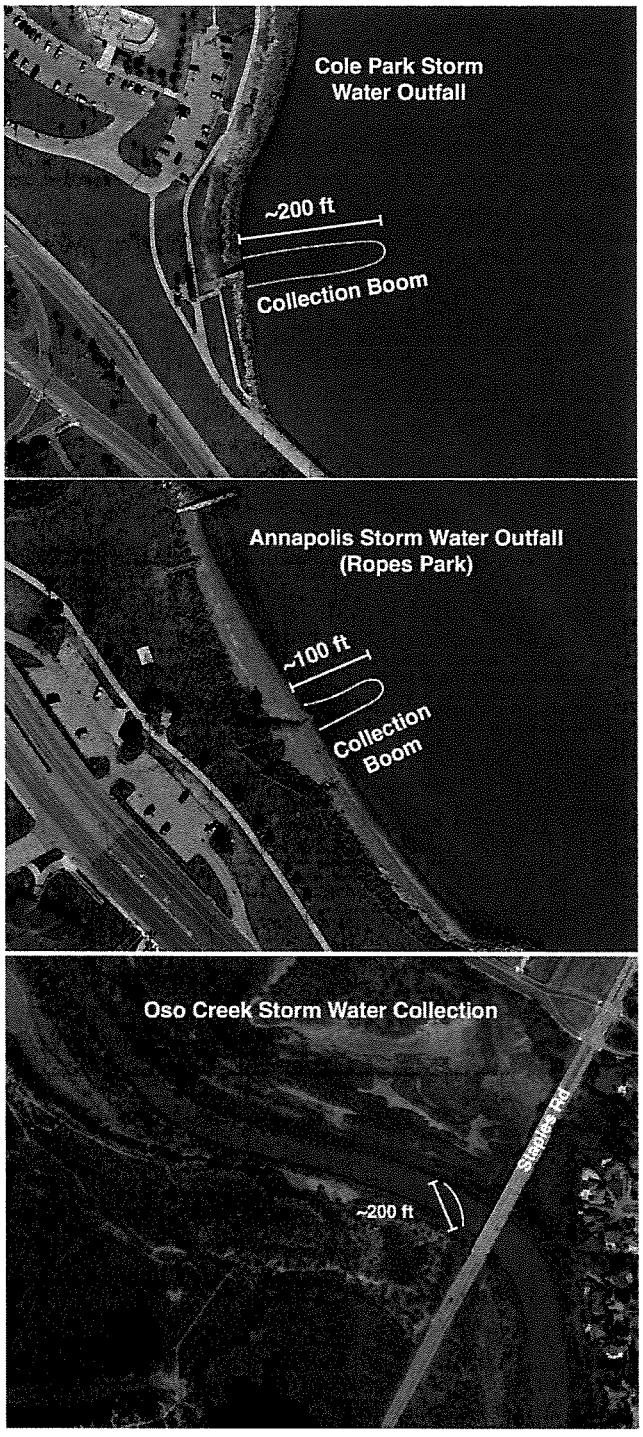

Figure 1. Potential storm water sampling sites.

than 200 ft, they will remain in shallow, near shore waters and should not hinder navigation.

The harbor class booms to be used in this study have the following characteristics:

- 18-inch plastic skirt that extends into the water column
- Yellow or orange color, making them easily visible from shore
- Boom will be in shallow water and will not be lighted at night
- 8-inch foam flotation chamber with 6+ inches of freeboard
- Chain ballast
- Cable (steel or aramid) top tension member
- Either Universal or Z-Type end connectors

On shore, booms will be anchored on each side of the outfall. Shore anchors will be established by tying off to existing rocks or other suitable fixed anchor points, or with temporarily placed T-posts driven into the sand. In the bay, the trapezoidal shaped apex (bay side collection area) of the boom will be secured with a standard anchor systems (Figure 2) consisting of:

- 20 pound Danforth Anchors
- Trip line with small floats
- Anchor chain
- Anchor lines 5 to 7 times the depth of the water in length.

Where additional holding strength is required to stabilize the boom due to waves and current, a tandem anchor system will be employed. A second anchor and chain will be positioned in-line between the trip line and the hilt of the first anchor. All anchors will be removed when booms are collected after each storm event (24 to 48 hours).

In Oso Creek, boom deployment must consider streamflow. T-posts will be used in the muddy banks of Oso Creek to establish a V-shaped collection point for floating debris. The apex of the "V" will be along the bank just upstream of the Staples Street Bridge if safe and adequate access can be assured. The boom will angle upstream across the streamflow at an angle sufficient to allow the water to flow under the boom while collecting the floating debris at the apex. Boom is not intended to capture floating materials when there is a current greater

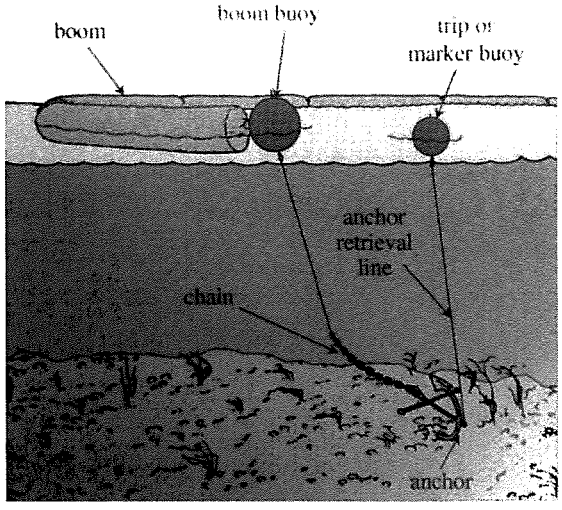

Figure 2. Boom anchoring system.

than 0.5 m sec^{-1} under the boom unless a deflective angle is established. If the current is 1 m sec^{-1} the boom angle across Oso creek will be established at 45º. There is no navigation or other passage in this area.

This boom collection strategy has been developed based on knowledge and experience collecting floating oil, but it is anticipated that target materials (plastics, Styrofoam and organic debris) of this study will behave in a similar manner. This should afford the opportunity to capture, characterize, and quantify these materials. Excessively large wind, waves, or current flows could have an adverse impact on the boom performance Additionally, slightly or neutrally buoyant materials like plastic bags or grass clippings may entrain easier and might not be collected. These potential issues will be considered when interpreting the results of our study.

Safety

During boom deployment, installation and sample collection all researchers will wear Coast Guard approved personal flotation devices, safety glasses, closed-toed shoes and pants and will always work in pairs. During sample collection, researcher will also wear nitrile gloves so that in the event biological materials (dead animals, feces, etc.) is encountered exposure to pathogens is minimized.

Involvement by the City of Corpus Christi

The Coastal Health & Water Quality lab run by Dr. Conkle at TAMUCC will be leading the project. He will work with the Crystal Ybanez, Environmental Services Superintendent for the City of Corpus Christi to ensure that all research activities follow local ordinances. During boom deployment, we will invite Crystal and colleagues from the city to observe installation activities and to ascertain that approved anchoring and marker buoys are used.

A major goal of this study is to inform policy and decision makers regarding storm water management and the debris storm water transports into local surface waters. Upon completion of this project, all data and results will be delivered to the Coastal Bend Bays and Estuaries Program and the City of Corpus Christi to ensure that this work benefits our community.