Texas State Soil and Water Conservation Board Clean Water Act §319(h) Nonpoint Source Grant Program FY 2019 Workplan 19-05

SUMMARY PAGE				
Title of Project	Implementing Agriculture and Rural Management Measures in the Update to the Arroyo			
	Colorado Watershed Protection Plan (ACWPP) to Address NPS Pollution and Impairments			
Project Goals	 Encourage voluntary implementation of agriculture measures to prevent nonpoint source pollution. Develop best management practice (BMP) educational materials for agricultural producers, focused on technical and financial information. Deliver an education program focused on irrigation techniques and specifics to agricultural producers to increase BMP adoption. Educate agricultural produces on the economics of BMP adoption and various incentive programs available to help pay for them. Host field tours and demonstrations for agricultural producers to observe the effects of BMPs. Increase the number of producers participating in incentive programs and installing BMPs. Provide technical assistance to landowners for conservation planning. Provide public outreach/education. Implementation of Management Measures identified in the Arroyo Colorado WPP 			
	Update.			
Project Tasks	 (1) Project Administration; (2) Conduct Education and Outreach to Increase Landowner Participation in BMPs and Incentive Programs; (3) Support and Facilitation of ACWPP Update Implementation and Coordination of Watershed Steering Committee and Workgroups 			
Measures of Success	 Educational materials developed on BMP specifications and benefits Education of agricultural producers Increased participation in incentive programs Increased adoption of BMPs Steering Committee and Workgroup meetings and involvement Maintenance of stakeholder list Coordination with critical watershed groups, including meetings and other communication Annual newsletters Success will be evaluated on the number of contacts made during the project period 			
Project Type	Implementation (X); Education (X); Planning (); Assessment (); Groundwater ()			

TSSWCB CWA §319(h) Project 19-05 9-21-2022 Page 2 of 24

			Fage 2 01 24			
Status of Waterbody on	Segment ID	Parameter of Impairment or Concern	Category			
2014 Texas Integrated	2201 Arroyo Colorado	Bacteria	5c			
Report	Tidal	DDE in edible tissue	5c			
		Depressed dissolved oxygen	5a (04) & 5c (05)			
		Mercury in edible tissue	5c			
		PCBs in edible tissue	5a			
			54			
	2201B Unnamed Drainage Ditch Tributary (B) in Cameron County Drainage District #3	Bacteria	5b			
	2202 Amoria Calanada	Destaria	5h			
	2202 Arroyo Colorado	Bacteria	50			
	Above-Iidal	DDE in edible tissue	4a			
		Mercury in edible tissue	5c			
		PCBs in edible tissue	5a			
	2202A Donna Reservoir	PCBs in edible tissue	4a			
	2401 Laguna Madra	Bacteria	50			
	2491 Laguna Madre	Depressed dissolved ovugen	50 51			
		Depressed dissorved oxygen	50			
	2/191OW Laguna Madre	Bacteria	50			
	(Ovster Waters)	Dactoria	50			
Project Location						
(Statewide or						
Watershed and	Arroyo Colorado Watershee	d; Cameron, Hidalgo, and Willacy counti-	es			
Watershed and						
County)						
Key Project Activities	Hire Staff (); Surface Wate	r Quality Monitoring (); Technical Assis	tance ();			
	Education (X); Implementat	tion (X); BMP Effectiveness Monitoring	();			
	Demonstration (); Planning	g (); Modeling (); Bacterial Source Track	ing (); Other ()			
2017 Texas NPS	• Component 1					
Management Program	Long Term Goal O	bjectives: 1, 2, 3, 5, 6, 7, 8				
Reference	• Short Term Goal, C	Definition: B, D				
	• Short Term Goal, C	Dejective 3 Education: A, B, C, D, F, G				
	• Component 2					
	Component 3					
	Component 1					
	Milestone/Massurement	at: ST3/C D Watershad Training: ST2/A	R F G Watershad			
	• Intestione/Inteasurement: 515/C,D watershed Training; 515/A,B,F,G watershed Education: ST2/A C Watershed Coordination: ST2/D Implement WPPs					
Project Costs	Federal \$290,184	Non-Federal \$193,456	Total \$483,640			
Project Management	• Texas A&M AgriLife	Research, Texas Water Resources Institut	e (TWRI)			
Project Period	October 14, 2019 – March 30, 2023					

Part I – Applicant Information

Applicant									
Project Lea	ıd	Dr. Lucas Grego	ory						
Title		Associate Direct	or						
Organizatio	on	Texas A&M Ag	riLife Rese	earch, Texa	as W	ater Resour	ces Institu	te (TWRI)	
E-mail Add	lress	LFGregory@ag.	LFGregory@ag.tamu.edu						
Street Add	ess	1001 Holleman Dr. East; 2118 TAMU							
City	College St	ation	ion County Brazos State TX Zip Code 77843-2118						
Telephone	Number	979-314-2361			Fax	x Number			

I I Uject I al the	ers
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Names	Roles & Responsibilities
Texas State Soil and Water Conservation	Provide state oversight and management of all project activities and
Board (TSSWCB)	ensure coordination of activities with related projects and TCEQ.
Texas A&M AgriLife Research, Texas	Project oversight and administration, coordination, and facilitation of the
Water Resources Institute (TWRI)	Arroyo Colorado Watershed Partnership, technical assistance to the
	Watershed Steering Committee and stakeholders, continue to collect data
	on WPP Management Measure implementation, develop final report.
Texas A&M AgriLife, District 12	Work with TWRI in updating educational materials to make region
Research and Extension Center	specific and present during educational events, as appropriate.
Texas A&M AgriLife Extension,	Work with TWRI in updating education materials, support the education
Department of Agricultural Economics	programs and discuss the economics of BMPs as a primary driver for
	adoption.
Texas State Soil and Water Conservation	Work with and assist soil and water conservation districts (SWCDs) in the
Board, Harlingen Regional Office (HRO)	development, implementation, and maintenance of water quality
	management plans (WQMPs). Responsible for technical review and
	certification of WQMPs. Provide information to AgriLife Extension to
	coordinate related education programs and assist with demonstration field
	tour.
Southmost Soil and Water Conservation	Lead cost-share program and provide information to AgriLife Extension
District #319 and Hidalgo Soil and Water	to coordinate related education programs and assist with demonstration
Conservation District #350 (SWCD)	field tour.

Part II – Project Information

Project Type

Surface Water	Х	Groundwater							
Does the project ir	npleme	nt recommendation	ns made i	n (a) a completed WPP, (b) an adopte	d				
TMDL, (c) an app	roved I-	Plan, (d) a Compr	ehensive	Conservation and Management Plan		Vac	\mathbf{v}	No	
developed under CWA §320, (e) the Texas Coastal NPS Pollution Control Program, or (f) the					Λ	INO			
Texas Groundwate	Texas Groundwater Protection Strategy?								
If yes, identify the document. Update to the Arroyo Colorado Watershed Protection Plan 2017									
If yes, identify the agency/group that Arroyo Colorado Watershed Partnership, Year									
developed and/or approved the document. facilitated by TWRI and TCEQ; approved Developed 2					20	17			
			by TCE	Q and EPA		-			

Watershed Information				
Watershed or Aquifer Name(s)	Hydrologic Unit Code (12 Digit)	Segment ID	Category on 2014 IR	Size (Acres)
Lower Arroyo Colorado	121102080700	2201	5c 5c 5a 5c 5a	83,558
Unnamed Ditch, CCDD#3		2201B	5b	
Middle Arroyo Colorado	121102080600	2202	5b 5c 5a	105,412
Upper Arroyo Colorado	121102080100	2202	5b 5c 5a	109,630
Donna Reservoir		2202A	4a	
Laguna Madre		2491	5c 5b	
Laguna Madre Oyster Waters		2491OW	5c	

Water Quality Impairment

Describe all known causes (i.e., pollutants of concern) and sources (e.g., agricultural, silvicultural) of water quality impairments or concerns from any of the following sources: 2014 Texas Integrated Report, Clean Rivers Program Basin Summary/Highlights Reports, or other documented sources.

Impairments

SegID 2201: Arroyo Colorado Tidal: From the confluence with Laguna Madre in Cameron/Willacy County to a point 100 meters (110 yards) downstream of Cemetery Road south of Port Harlingen in Cameron County

Parameter	Category	Year	
Bacteria	5c	2006	
2201_01: From the downstread	m end of the seg	ment to the	confluence with San Vincente Drainage Ditch
2201_02: From the confluence	e with San Vince	nte Drainag	e Ditch to the confluence with an unnamed drainage ditch
with NHD RC 121101080053	53 at point N-97.	.53, W 26.3	
2201_03: From the confluence	e with an unname	ed drainage	ditch with NHD RC 12110108005353 at point N-97.53, W
26.31 to the confluence with H	Harding Ranch D	itch tributar	y –

2201_04: From the confluence	with Harding R	anch Ditch tributary to just upstream of the City of Rio Hondo
Wastewater Discharge at point	N-97.58359, W	726.247186
2201_05: From just upstream of	of the City of Ri	o Hondo Wastewater Discharge at point N-97.58359, W26.247186 to the
upstream end of the segment		
Parameter	Category	<u>Year</u>
DDE in edible tissue	5c	2010
2201_05 : From just upstream of	of the City of Ri	o Hondo Wastewater Discharge at point N-97.58359, W26.247186 to the
upstream end of the segment		
Donomotor	Cotogowy	Voor
<u>ranameter</u>	<u>Category</u>	
2201 04: Erom the confluence	Ja with Honding D	1990 Janah Ditah tributaru ta juat unatroom of the City of Die Hande
2201_04 : From the commence	N 07 58250 W	anch Dhen thouary to just upstream of the City of Kio Hondo
2201 05: Erom just upstroom	1N-97.38339, W	20.24/160 a Handa Wastawatan Disaharaa at naint N 07 58250, W26 247186 to tha
2201_05: From Just upstream of	of the City of Ri	o Hondo wastewater Discharge at point N-97.58559, w 20.247180 to the
upstream end of the segment		
Parameter	Category	Year
Mercury in edible tissue	5c	2008
2201 05 : From just upstream of	of the City of Ri	o Hondo Wastewater Discharge at point N-97,58359, W26,247186 to the
upstream end of the segment		
Parameter	Category	Year
PCBs in edible tissue	5a	2008
2201 05: From just upstream of	of the City of Ri	o Hondo Wastewater Discharge at point N-97.58359, W26.247186 to the
upstream end of the segment	2	
SegID 2201B: Unnamed Drai	inage Ditch Tri	butary (B) in Cameron County Drainage District #3 (unclassified
water body) From the conflu	ence with the A	Arroyo Colorado in Cameron County in the Rio Hondo turning basin
at -97.6, 26.196 decimal degree	ees to a point 1'	7.6 km upstream at the FM 510 crossing.
	a .	
Parameter	Category	<u>Year</u>
Bacteria	5b	2010
2201B_01 : Entire Water Body		
SegID 2202: Arroyo Colorad	o Above Tidal:	From a point 100 meters (110 yards) downstream of Cemetery Road
south of Port Harlingen in Ca	ameron County	y to FMI 2062 in Hidaigo County
Parameter	Category	Vear
Racteria	5h	<u> </u>
2202 01: From the downstream	n end of segmer	to the confluence with Little Creek just unstream of State Loon 499
2202_01: From the confluence	with Little Cree	ek to the confluence with La Feria Main Canal just unstream of Dukes
Highway	with Little Cree	ek to the confractice with La i ena Main Canal Just upsticall of Dukes
2202 03: From the confluence	with La Feria N	Agin Canal just unstream of Dukes Highway to the confluence with La
Cruz Resaca just downstream of	of FM 907	run Canai just apparcant of Dakes mighway to the contractice with Da
2202 04: From the confluence	with La Cruz R	Resaca to the upper end of segment at FM 2062
_		
Parameter	Category	Year
Mercury in edible tissue	5c	2008
2202_01: From the downstream	n end of segmer	nt to the confluence with Little Creek just upstream of State Loop 499.
2202_02: From the confluence	with Little Cree	ak to the confluence with La Feria Main Canal just upstream of Dukes
	With Little Cie	ek to the confidence with La Peria Main Canal Just upstream of Dukes

2202_03: From the confluence with La Feria Main Canal just upstream of Dukes Highway to the confluence with La Cruz Resaca just downstream of FM 907

2202_04: From the confluence with La Cruz Resaca to the upper end of segment at FM 2062

Parameter	Category	Year	
PCBs in edible tissue	5a	2008	

2202_01: From the downstream end of segment to the confluence with Little Creek just upstream of State Loop 499. **2202_02**: From the confluence with Little Creek to the confluence with La Feria Main Canal just upstream of Dukes Highway.

2202_03: From the confluence with La Feria Main Canal just upstream of Dukes Highway to the confluence with La Cruz Resaca just downstream of FM 907

2202_04: From the confluence with La Cruz Resaca to the upper end of segment at FM 2062

SegID: 2202A Donna Reservoir Off-channel irrigation reservoir pumped from Rio Grande near the City of Donna in Hidalgo County

SegID: 2491 Laguna Madre Laguna Madre

Parameter	Category	Year
Bacteria	5c	2010
2491 02: Area adjacent	t to the Arrovo Colorad	o confluence

Parameter	Category	Year
Depressed dissolved oxygen	5b	1999
2401 01. Unner portion of how	north of the Ar	morro Colonod

2491_01: Upper portion of bay north of the Arroyo Colorado confluence

2491_02: Area adjacent to the Arroyo Colorado confluence

SegID: 2491OW Laguna Madre (Oyster Waters) Laguna Madre (Oyster Waters)

ParameterCategoryYearbacteria (oyster waters)5c20062491OW02: Area adjacent to the Arroyo Colorado confluence

Concerns and Sources

Seg ID 2201: Arroyo Colorado Tidal: From confluence with Laguna Madre in Cameron/Willacy County to a point 100 meters (110 yards) downstream of Cemetery Road south of Port Harlingen in Cameron County

Parameter	Level of Concern		
Chlorophyll-a	CS		

2201_01: From the downstream end of the segment to the confluence with San Vincente Drainage Ditch
2201_02: From the confluence with San Vincente Drainage Ditch to the confluence with an unnamed drainage ditch with NHD RC 12110108005353 at point N-97.53, W 26.31

2201_03: From the confluence with an unnamed drainage ditch with NHD RC 12110108005353 at point N-97.53, W 26.31 to the confluence with Harding Ranch Ditch tributary

2201_04: From the confluence with Harding Ranch Ditch tributary to just upstream of the City of Rio Hondo Wastewater Discharge at point N-97.58359, W26.247186

2201_05: From just upstream of the City of Rio Hondo Wastewater Discharge at point N-97.58359, W26.247186 to the upstream end of the segment

Parameter Level of Concern

Depressed dissolved oxygen CS

2201_05: From just upstream of the City of Rio Hondo Wastewater Discharge at point N-97.58359, W26.247186 to the upstream end of the segment

	Page 7 of 24							
Parameter	Level of Concern							
nitrate	CS							
2201_01: From the downstream e	end of the segment to the confluence with San Vincente Drainage Ditch							
2201_02: From the confluence with San Vincente Drainage Ditch to the confluence with an unnamed drainage ditch								
with NHD RC 12110108005353 at point N-97.53, W 26.31								
201_03 : From the confluence with an unnamed drainage ditch with NHD RC 12110108005353 at point N-97.53, W								
26.31 to the confluence with Hard	ling Ranch Ditch tributary							
2201_04: From the confluence w	ith Harding Ranch Ditch tributary to just upstream of the City of Rio Hondo							
Wastewater Discharge at point N	-97.58359, W26.247186							
2201_05: From just upstream of t	he City of Rio Hondo Wastewater Discharge at point N-97.58359, W26.247186 to the							
upstream end of the segment								
SegID 2201A: Harding Ranch l	Drainage Ditch Tributary (A) to the Arroyo Colorado Tidal (unclassified water							
body)								
Parameter	Level of Concern							
ammonia	CS							
2201A_01: Entire water body								
SegID 2201B: Unnamed Draina water body)	age Ditch Tributary (B) in Cameron County Drainage District #3 (unclassified							
Parameter	Level of Concern							
Chlorophyll-a	CS							
2201B_01 : Entire Water Body								
Daramatar	Level of Concern							
nitrate	<u>CS</u>							
2201B_01 : Entire Water Body								
SegID 2202: Arroyo Colorado A south of Port Harlingen in Can	Above Tidal: From a point 100 meters (110 yards) downstream of Cemetery Road aeron County to FM 2062 in Hidalgo County							
Parameter	Level of Concern							
Chlorophyll-a	CS							
2201_01 : From the downstream e	end of the segment to the confluence with San Vincente Drainage Ditch							
2201_02 : From the confluence w	ith San Vincente Drainage Ditch to the confluence with an unnamed drainage ditch							
with NHD RC 12110108005353	at point N-97.53, W 26.31							
2201_03: From the confluence w	ith an unnamed drainage ditch with NHD RC 12110108005353 at point N-97.53, W							
26.31 to the confluence with Hard	ling Ranch Ditch tributary							
2201_04: From the confluence w	ith Harding Ranch Ditch tributary to just upstream of the City of Rio Hondo							
Wastewater Discharge at point N	-97.58359, W26.247186							
Parameter	Level of Concern							
nitrate	CS							
2201_01 : From the downstream e	and of the segment to the confluence with San Vincente Drainage Ditch							
2201 02 : From the confluence w	ith San Vincente Drainage Ditch to the confluence with an unnamed drainage ditch							
with NHD RC 12110108005353	at point N-97.53, W 26.31							
2201 03 : From the confluence w	ith an unnamed drainage ditch with NHD RC 12110108005353 at point N-97.53. W							
26.31 to the confluence with Hard	ling Ranch Ditch tributary							
2201_04 : From the confluence w	ith Harding Ranch Ditch tributary to just upstream of the City of Rio Hondo							
Wastewater Discharge at point N	-97.58359, W26.247186							

Parameter	Level of Concern
Total phosphorus	CS
2201_01: From the downstream end	of the segment to the confluence with San Vincente Drainage Ditch
2201_02 : From the confluence with with NHD RC 12110108005353 at a	San Vincente Drainage Ditch to the confluence with an unnamed drainage ditch
2201 03 [•] From the confluence with	an unnamed drainage ditch with NHD RC 12110108005353 at point N-97 53 W
26.31 to the confluence with Hardin	g Ranch Ditch tributary
2201_04: From the confluence with	Harding Ranch Ditch tributary to just upstream of the City of Rio Hondo
Wastewater Discharge at point N-97	7.58359, W26.247186
SEG ID: 2202B Unnamed Draina flow into the segment in Cameron	ge Ditch Tributary (B) to S. Arroyo Colorado Perennial drainage ditches that and Hidalgo counties
Parameter	Level of Concern
ammonia	CS
2202B_01: Entire segment	
Parameter	Level of Concern
Bacteria	CN
2202B_01: Entire segment	
Parameter	Level of Concern
Chlorophyll-a	CS
2202B_01: Entire segment	
SEG ID: 2202C Unnamed Draina Arroyo Colorado to a point 1.1 mi Parameter ammonia	ge Ditch Tributary (C) to S. Arroyo Colorado From the confluence with S. iles upstream near US Highway 281. <u>Level of Concern</u> CS
2202B_01: Entire segment	
Parameter	Level of Concern
bacteria 2202B_01: Entire segment	CN
SEG ID: 2491 Laguna Madre Lag	guna Madre
Parameter	Level of Concern
ammonia	CS
2491_02: Area adjacent to the Arroy	yo Colorado confluence
Parameter	Level of Concern
chlorophyll-a	CS
2491_01 : Upper portion of bay nort 2491_02 : Area adjacent to the Arroy	h of the Arroyo Colorado confluence yo Colorado confluence
Parameter	Level of Concern
depressed dissolved oxygen	CS
2491_03: Lower portion of bay sout	h of the Arroyo Colorado confluence
Parameter	Level of Concern
nitrate	CS

2491_02: Area adjacent to the Arroyo Colorado confluence

Sources

SegID 2201: Arroyo Colorado Tidal: From the confluence with Laguna Madre in Cameron/Willacy County to a point 100 meters (110 yards) downstream of Cemetery Road south of Port Harlingen in Cameron County

AUID: 2201_01 From the downstream end of the segment to the confluence with San Vincente Drainage Ditch Bacteria Geomean

NS Enterococcus - PS - Municipal Point Source Discharges; UNK - Source Unknown; NPS - Urban Runoff/Storm Sewers;

Nutrient Screening Levels

CS Chlorophyll-a - NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS – Urban Runoff/Storm Sewers;

CS Nitrate - NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS – Urban Runoff/Storm Sewers;

AUID: 2201_02 From the confluence with San Vincente Drainage Ditch to the confluence with an unnamed drainage ditch with NHD RC 12110108005353 at point N-97.53, W 26.31

Bacteria Geomean

NS Enterococcus - PS - Municipal Point Source Discharges; UNK - Source Unknown; NPS - Urban Runoff/Storm Sewers;

Nutrient Screening Levels

CS Chlorophyll-a - NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS – Urban Runoff/Storm Sewers;

CS Nitrate - NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS – Urban Runoff/Storm Sewers;

AUID: 2201_03 From the confluence with an unnamed drainage ditch with NHD RC 12110108005353 at point N-97.53, W 26.31 to the confluence with Harding Ranch Ditch tributary

Bacteria Geomean

NS Enterococcus - PS - Municipal Point Source Discharges; UNK - Source Unknown; NPS - Urban Runoff/Storm Sewers;

Nutrient Screening Levels

CS Chlorophyll-a - NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS – Urban Runoff/Storm Sewers;

CS Nitrate - NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS – Urban Runoff/Storm Sewers;

AUID: 2201_04 From the confluence with Harding Ranch Ditch tributary to just upstream of the City of Rio Hondo Wastewater Discharge at point N-97.58359, W26.247186

Bacteria Geomean

NS Enterococcus - PS - Municipal Point Source Discharges; UNK - Source Unknown; NPS - Urban Runoff/Storm Sewers;

Dissolved Oxygen 24hr minimum

NS Dissolved Oxygen 24hr Min - PS - Municipal Point Source Discharges; UNK - Source Unknown; NPS - Urban Runoff/Storm Sewers;

Nutrient Screening Levels

CS Chlorophyll-a - NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS – Urban Runoff/Storm Sewers;

CS Nitrate - NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS – Urban Runoff/Storm Sewers;

AUID: 2201 05 From just upstream of the City of Rio Hondo Wastewater Discharge at point N-97.58359, W26.247186 to the upstream end of the segment **Bacteria Geomean** NS PS - Municipal Point Source Discharges; UNK - Source Unknown; NPS - Urban Runoff/Storm Sewers: Enterococcus **Dissolved Oxygen 24hr average** CN NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; UNK - Source Unknown; NPS - Non-Point Source; NPS - Urban Runoff/Storm Sewers; Dissolved Oxvgen 24hr Avg **Dissolved Oxygen 24hr minimum** NS NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; UNK - Source Unknown; NPS - Non-Point Source; NPS - Urban Runoff/Storm Sewers; Dissolved Oxygen 24hr Min **Dissolved Oxygen grab screening level CS** Dissolved Oxygen Grab UNK - Source Unknown; **DSHS** Advisories, Closures, and Risk Assessments NS Restricted and No-Consumption UNK - Source Unknown; NPS - Non-Point Source; NS Restricted and No-Consumption UNK - Source Unknown; NPS - Non-Point Source; **NS** Restricted and No-Consumption NPS - Atmospheric Deposition - Toxics; UNK - Source Unknown; **Nutrient Screening Levels** CS Chlorophyll-a NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS - Urban Runoff/Storm Sewers; CS Nitrate NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS - Urban Runoff/Storm Sewers: SegID 2201A: Harding Ranch Drainage Ditch Tributary (A) to the Arroyo Colorado Tidal (unclassified water body)

AUID: 2201A_01 Entire Water Body Nutrient Screening Levels CS Ammonia - UNK - Source Unknown;

SegID 2201B: Unnamed Drainage Ditch Tributary (B) in Cameron County Drainage District #3 (unclassified water body) From the confluence with the Arroyo Colorado in Cameron County in the Rio Hondo turning basin at -97.6, 26.196 decimal degrees to a point 17.6 km upstream at the FM 510 crossing.

AUID: 2201B_01 Entire Water Body

Bacteria Geomean *NS* Enterococcus UNK - Source Unknown; NPS - Non-Point Source; Nutrient Screening Levels *CS* Chlorophyll-a UNK - Source Unknown; NPS - Non-Point Source;

CS Nitrate UNK - Source Unknown; NPS - Non-Point Source;

SegID 2202: Arroyo Colorado Above Tidal: From a point 100 meters (110 yards) downstream of Cemetery Road south of Port Harlingen in Cameron County to FM 2062 in Hidalgo County

AUID: 2202_01 From the downstream end of segment to the confluence with Little Creek just upstream of State Loop 499.

Bacteria Geomean
NS E. coli PS - Municipal Point Source Discharges; NPS - Urban Runoff/Storm Sewers;
DSHS Advisories, Closures, and Risk Assessments
NS Restricted and No-Consumption PS - Industrial Point Source Discharge; UNK - Source Unknown;
NS Restricted and No-Consumption PS - Industrial Point Source Discharge; UNK - Source Unknown;

NS Restricted and No-Consumption NPS - Atmospheric Depositon - Toxics; UNK - Source Unknown; **Nutrient Screening Levels**

CS Total Phosphorus NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS – Urban Runoff/Storm Sewers:

CS Nitrate NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS – Urban Runoff/Storm Sewers:

CS Chlorophyll-a NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS – Urban Runoff/Storm Sewers:

AUID: 2202 02 From the confluence with Little Creek to the confluence with La Feria Main Canal just upstream of Dukes Highway.

Bacteria Geomean

NS E. coli PS - Municipal Point Source Discharges; NPS - Urban Runoff/Storm Sewers; **DSHS** Advisories, Closures, and Risk Assessments

NS Restricted and No-Consumption NPS - Atmospheric Deposition - Toxics; UNK - Source Unknown;

NS Restricted and No-Consumption PS - Industrial Point Source Discharge; UNK - Source Unknown;

NS Restricted and No-Consumption PS - Industrial Point Source Discharge; UNK - Source Unknown;

Nutrient Screening Levels

CS Chlorophyll-a NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS – Urban Runoff/Storm Sewers:

CS Nitrate NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS - Urban Runoff/Storm Sewers:

CS Total Phosphorus NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS – Urban Runoff/Storm Sewers:

AUID: 2202 03 From the confluence with La Feria Main Canal just upstream of Dukes Highway to the confluence with

La Cruz Resaca just downstream of FM 907

Bacteria Geomean

NS E. coli PS - Municipal Point Source Discharges; NPS - Urban Runoff/Storm Sewers;

DSHS Advisories, Closures, and Risk Assessments

NS Restricted and No-Consumption NPS - Atmospheric Depositon - Toxics; UNK - Source Unknown;

NS Restricted and No-Consumption PS - Industrial Point Source Discharge; UNK - Source Unknown;

NS Restricted and No-Consumption PS - Industrial Point Source Discharge; UNK - Source Unknown; **Nutrient Screening Levels**

CS Nitrate NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS – Urban Runoff/Storm Sewers:

CS Chlorophyll-a NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS – Urban Runoff/Storm Sewers;

CS Total Phosphorus NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS – Urban Runoff/Storm Sewers:

AUID: 2202_04 From the confluence with La Cruz Resaca to the upper end of segment at FM 2062 **Bacteria Geomean**

NS E. coli PS - Municipal Point Source Discharges; NPS - Urban Runoff/Storm Sewers; **DSHS** Advisories, Closures, and Risk Assessments

NS Restricted and No-Consumption NPS - Atmospheric Depositon - Toxics; UNK - Source Unknown;

NS Restricted and No-Consumption PS - Industrial Point Source Discharge; UNK - Source Unknown;

NS Restricted and No-Consumption PS - Industrial Point Source Discharge; UNK - Source Unknown;

Nutrient Screening Levels

CS Chlorophyll-a NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS – Urban Runoff/Storm Sewers;

CS Nitrate NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS – Urban Runoff/Storm Sewers;
 CS Total Phosphorus NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS – Urban Runoff/Storm Sewers;

SegID: 2202A Donna Reservoir Off-channel irrigation reservoir pumped from Rio Grande near the City of Donna in Hidalgo County

AUID: 2202A_01 Entire reservoir

DSHS Advisories, Closures, and Risk Assessments

NS Aquatic Life Closure NPS - Atmospheric Depositon - Acidity; PS - Industrial Point Source Discharge;

SEG ID: 2202B Unnamed Drainage Ditch Tributary (B) to S. Arroyo Colorado Perennial drainage ditches that flow into the segment in Cameron and Hidalgo counties

AUID: 2202B_01 Entire segment

Bacteria Geomean

CN E. coli UNK - Source Unknown; NPS - Non-Point Source;

Nutrient Screening Levels

CS Chlorophyll-a NPS - Irrigated Crop Production;

CS Ammonia NPS - Irrigated Crop Production;

SEG ID: 2202C Unnamed Drainage Ditch Tributary (C) to S. Arroyo Colorado From the confluence with S. Arroyo Colorado to a point 1.1 miles upstream near US Highway 281.

AUID: 2202C_01 Entire segment

Bacteria Geomean

CN E. coli UNK - Source Unknown;

Nutrient Screening Levels

CS Ammonia NPS - Irrigated Crop Production; PS - Municipal Point Source Discharges; NPS – Urban Runoff/Storm Sewers;

SegID: 2491 Laguna Madre Laguna Madre AUID: 2491 01 Upper portion of bay north of the Arroyo Colorado confluence **Dissolved Oxygen 24hr minimum NS** Dissolved Oxygen 24hr Min UNK - Source Unknown; **Nutrient Screening Levels** CS Chlorophyll-a UNK - Source Unknown; NPS - Non-Point Source; NPS - Upstream Source; AUID: 2491_02 Area adjacent to the Arroyo Colorado confluence **Bacteria Geomean NS** Enterococcus NPS - Non-Point Source; NPS - Upstream Source; **Dissolved Oxygen 24hr minimum** NS Dissolved Oxygen 24hr Min NPS - Non-Point Source; NPS - Upstream Source; NPS - Urban Runoff/Storm Sewers; **Nutrient Screening Levels** CS Ammonia NPS - Non-Point Source; NPS - Upstream Source; **CS** Chlorophyll-a NPS - Non-Point Source; NPS - Upstream Source; **CS** Nitrate NPS - Non-Point Source; NPS - Upstream Source; AUID: 2491_03 Lower portion of bay south of the Arroyo Colorado confluence **Dissolved Oxygen grab screening level CS** Dissolved Oxygen Grab UNK - Source Unknown; SegID: 2491OW Laguna Madre (Oyster Waters) Laguna Madre (Oyster Waters)

AUID: 24910W_02 Area adjacent to the Arroyo Colorado confluence DSHS Shellfish Harvesting Maps

NS DSHS Shellfishing Restrictions UNK - Source Unknown

Project Narrative

Problem/Need Statement

The Update to the Arroyo Colorado Watershed Protection Plan 2017 (ACWPP Update) was developed with local, state, and federal stakeholder input to address water quality issues in the Arroyo Colorado. The watershed is located in Cameron, Hidalgo, and Willacy counties in the Lower Rio Grande Valley of South Texas. The Arroyo Colorado flows approximately 90 miles from east of McAllen, transecting Hidalgo and Cameron counties and forming the boundary for Cameron and Willacy counties for the last 16 miles until it reaches the Lower Laguna Madre. To the Lower Laguna Madre, the Arroyo Colorado is the primary source of fresh water and serves as a nursery for aquatic life. Approximately 706 square miles of land drains into the Arroyo Colorado. Land uses have been classified by the Spatial Sciences Lab of Texas A&M University at College Station. Primary land uses include agriculture, including vegetable and fruit crops (54%); range (18.5%); urban (12%); water bodies (6%); and sugarcane (4%) (Kannan, 2012); and some industry exists. Two primary water users in the watershed are agriculture and municipalities, and flow in the Arroyo Colorado is primarily sustained by wastewater discharges and agricultural irrigation return flows; thus, the Arroyo Colorado serves as a conveyer of this water as it leaves the system. When wastewater discharges and agricultural return flows enter the Arroyo Colorado, they carry nutrients, sediment, and bacteria into the water body, leading to elevated levels of bacteria and nutrients, resulting in low dissolved oxygen levels.

The tidal segment (SegID 2201) of the Arroyo Colorado was first listed as having low levels of dissolved oxygen in 1996 and elevated levels of bacteria in 2006 (TCEQ) while the above tidal segment (SegID 2202) was listed in 1996 for having elevated levels of bacteria. The Laguna Madre (SegID 2491) is also listed as impaired by bacteria and low dissolved oxygen. To address these impairments, project activities center on priorities identified in the ACWPP Update: education and outreach to the agricultural community, and tracking implementation of Management Measures.

To address impairments, the Arroyo Colorado Agricultural Issues Workgroup, made up of local, state, and federal stakeholders, recommended education and outreach as a high priority for implementation. Since then, several projects have occurred such as an integrated farm management program, pesticide education program, and cost-share education program, which have been effective in raising water quality awareness. However, the Arroyo Colorado Watershed Partnership has not yet met its goal of 150,000 irrigated acres under conservation programs; to date there are approximately 133,000 acres under conservation practices. Education programing is needed to 1) continue raising awareness, 2) provide technical education for understanding of BMPs and their benefits, and 3) facilitate awareness and use of financial incentives.

Based on an evaluation tool assessing educational needs of agricultural producers in the Lower Rio Grande Valley of Texas, results indicated that:

1. Water quantity was the primary educational need. Specifically, agricultural producers indicated an interested in the amount of irrigation water available for the upcoming year and specific conservation practices that reduce the amount of irrigation water used. Conservation practices are especially important in improving water quality. Enciso (2012) found that the excessive/runoff tailwater during irrigation events could contain the highest amount of nutrients contributing to local impairments;

2. Agricultural producers were generally interested in water quality, particularly how water quality affects their operation, and current water quality, especially salinity levels of the water being released from Falcon & Amistad reservoirs.

3. Financial incentives held the next highest interest, including how to apply for financial incentives and sources of financial incentives available to help pay for conservation practices.

4. Education on adopting conservation practices and updates on conservation practice effectiveness can most improve their operation. Addressing these educational needs is crucial to gaining widespread adoption of agricultural management practices.

A second component of Enciso's evaluation was to assess the barriers to adopting management practices. Results indicated that economic barriers were the primary reasons for non-adoption. Specifically, respondents indicated that the initial cost of installing practices and low incentive levels were the primary adoption barriers. Insufficient information

on conservation practices and their effectiveness, and the lack of opportunities to see practices at demonstrations were the next highest barrier to adopting practices. These were followed closely by low awareness of incentive programs. These results indicate a need for educational programs that address incentives and practices. Supporting these barriers in the literature, Nowak (1992) described two reasons for non-adoption: 1) being unable to adopt and 2) being unwilling to adopt. Both are tied directly to education and stem from lacking or scarce information; limited access to supporting resources; conflicting information; and poor applicability/relevance of information. Rogers (2003) also supports this by providing the needed components of innovations including relative advantage, compatibility, complexity, observability, and trialability. Educators are not able to meet the component of trialability; however, the other four can be provided. It is the goal of this project to deliver the most relevant information to agricultural producers and equip them with the technical information needed to adopt BMPs, especially through incentive programs.

The transformation of the Arroyo and its watershed from its natural state have contributed to water quality problems that the ACWPP Update seeks to address. In the development of the Update, several hundred stakeholders and experts have created a coordinated plan, incorporating numerous issues and concerns and identifying BMPs and Management Measures to address them. It is important to implement and track all of these measures to determine their effectiveness. However, because of the high percentage of land in agricultural production in the watershed and the large number of Ag stakeholders, the Partnership has designated education and incentives for agricultural producers as a high priority. The availability of up-to-date, accurate information will enhance efforts to prevent the introduction of significant amounts of nutrients and bacteria into the watershed. These efforts are part of the overall work to implement and track all Management Measures.

References:

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Nowak, P. (1992). Why farmers adopt production technology: Overcoming impediments to adoption of crop residue management techniques will be crucial to implementation of conservation compliance plans. *Journal of Soil and Water Conservation*, 47(1), 14-16.

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https://www.tceq.texas.gov/assets/public/waterquality/swqm/assess/14txir/2014_imp_index.pdf

Update of the Arroyo Colorado Watershed Protection Plan 2017, (2017). Texas Water Resources Institute Technical Report – 504 August 2017 College Station, Texas

Enciso, Juan. (2012). Evaluation of BMPs to Reduce NPS Pollution at the Farm Level. Texas Water Resources Institute Technical Report – 423 August 2017 College Station, Texas

Project Narrative

General Project Description (Include Project Location Map)

Through multiple TCEQ and TSSWCB projects, Texas A&M AgriLife Research's TWRI has facilitated and worked with local stakeholders in the development of the Update of the Arroyo Colorado Watershed Protection Plan 2017 (ACWPP Update) addressing water quality concerns within the watershed. Projects completed include BMP demonstrations, water quality monitoring, educational program development and delivery, and WPP development and implementation. TWRI prides itself on developing effective teams of project partners that have the needed expertise and capabilities to conduct work described in an efficient and timely manner. TWRI coordinates and manages these projects and commonly collaborates with local stakeholder groups, local entities, and regional authorities as well as appropriate state and federal agencies. The Arroyo Colorado (Segments 2201 and 2202) is located in the Lower Rio Grande Valley of South Texas, and is impaired for bacteria, depressed dissolved oxygen (DO), and pesticides, and mercury in edible fish tissue. Chlorophyll-a, nitrate, orthophosphorus, ammonia, and total phosphorus levels have also been identified as concerns in the watershed. It flows into the Lower Laguna Madre (Segments 2491 and 24910W), impaired for bacteria and depressed dissolved oxygen. Predominate land use within the watershed is agriculture.

Project activities center on the pursuit of three goals to address impairments within the watershed. The first is education and outreach centering on the informational needs of the agricultural community, including financial incentives, to ensure long-term sustainability and encourage participation and adoption of BMPs. This project will provide technical assistance to landowners for conservation planning, along with public outreach and education. TWRI will update existing Agricultural Incentive Education Programs and develop new informational material such as a checklist for new producers to apply for incentive programs. Finally, TWRI will track the implementation of BMPs and Management Measures identified in the ACWPP Update. The project will include monitoring activities to determine the effectiveness of specific pollution prevention methods. This is vital for coordination of stakeholder efforts and evaluation for future improvements.

The primary focus of the agricultural education and financial incentives goals of this project is to continue efforts from TSSWCB 15-07 and enhance the education program delivery to provide more specific, technical, and financial information that will address both nutrient- and bacteria-induced impairments. This project compliments ongoing partnership efforts implementing the Update to the Arroyo Colorado Watershed Protection Plan and addresses the need of educating the agricultural community, a gap existing within other current projects. TWRI will act as the primary conduit between local agricultural producers, TSSWCB, and NRCS.

In this project, the Extension Assistant will maintain and update a contact list for direct mailings, electronic communication, personal contacts, news releases, and other communication to producers that will be geared toward highlighting the availability of, and involvement in, incentive programs, and other upcoming educational opportunities for key stakeholders. Project personnel will attend SWCD meetings twice annually to provide them with information about the program. Additional emphasis will be placed on small acreage producers and beginning farmers, to include a targeted workshop series covering topics such as range/pasture management, prescribed grazing, and water conservation BMPs. Under this project, the Extension Assistant will work with County Agricultural and Natural Resources Extension Agents, TSSWCB, SWCDs, and NRCS to develop and distribute additional information about technical and financial assistance for both nutrient and bacteria BMPs. The information will be tailored to the Arroyo Colorado watershed.

Key to the project's education and outreach efforts, the Extension Assistant will coordinate annual programming on specific topics to help agricultural producers make decisions about a variety of BMPs. An annual Irrigation Training Program will provide producers with technical information contained in an updated irrigation manual. The Extension Assistant will also host an annual meeting for producers that promotes TSSWCB, NRCS, and other technical and financial assistance programs and will highlight BMPs that can be adopted through those programs. Finally, the Extension Assistant will host at least one field tour annually that will demonstrate the use of BMPs and their efficiency.



As the Performing Party in this project, TWRI will continue its role in providing for continued implementation and tracking of the WPP and its Management Measures. To facilitate communication, TWRI will continue to provide technical assistance to the Watershed Steering Committee (WSC), and other stakeholders, and will continue to collect data on their WPP Management Measures implementation efforts. The Watershed Coordinator will serve as the primary conduit for interaction with landowners, citizens, officials, and other entities. To facilitate implementation efforts, TWRI will assist the agricultural community and counties to acquire resources, including state and federal technical and financial assistance.

Tasks, Object	tives and Schedules						
Task 1	Project Administration						
Costs	Federal \$14,509	Non-Federal	\$9,673	Total	\$24,182		
Objective	To effectively administer,	coordinate and monitor al	l work performed u	under this pro	ject including		
	technical and financial su	pervision and preparation of	of status reports.				
Subtask 1.1	TWRI will prepare electro	onic quarterly progress rep	orts (QPRs) for sub	omission to th	e TSSWCB. QPRs		
	shall document all activiti	es performed within a quar	rter and shall be sul	bmitted by th	e 1 st of January,		
	April, July and October.	PRs shall be distributed to	all Project Partner	rs.			
	Start Date	Month 1	Completion D	Date	Month 42		
Subtask 1.2	TWRI will perform accou	nting functions for project	funds and will sub	mit appropria	ate Reimbursement		
	Forms to TSSWCB at lease	st quarterly.					
	Start DateMonth 1Completion DateMonth 42						
Subtask 1.3	TWRI will host coordination meetings or conference calls, at least quarterly, with Project Partners to						
	discuss project activities, project schedule, communication needs, deliverables, and other requirements.						
	TWRI will develop lists of action items needed following each project coordination meeting and						
	distribute to project personnel.						
	Start Date	Month 1	Completion D	Date	Month 42		
Subtask 1.4	TWRI will develop a Final Report that summarizes activities completed and conclusions reached during						
	the project and discusses the extent to which project goals and measures of success have been achieved.						
	Start Date	Month 1	Completion D	Date	Month 42		
Deliverables	• QPRs in electronic for	ormat					
	Reimbursement Form	ns and necessary document	tation in hard copy	format			
	• Final Report in electr	ronic and hard copy format	S				

Tasks, Objec	tives and Schedules	\$					
Task 2	Conduct Education	and Outreach to	o Increase Lando	wner Participation	in BMPs	and Incentive Program	ns
Costs	Federal \$	203 129	Non-Federal	\$135.419	Tot	al \$338 548	10
Objective	To deliver education	nal materials ar	d host education:	al events and field	days as w	ell as evaluate	
Objective	educational program effectiveness. Further, objectives are to contact landowners through direct mailing						Igs
	and direct contact	and support and	participate in enti	ty meetings and o	ther demo	nstrations	90
Subtask 2.1	The Extension Ass	istant will conti	ue to maintain a	nd develop a maili	ng list of 1	producers in the Arroy	10
Subtush 211	Colorado Watershe	ed and updated t	he mailing list as	needed	ing inst or j		0
	Start Date		Month 1	Completion I	Date	Month 42	
Subtask 2.2	The Extension Ass	istant will perio	dically distribute	emails to produce	rs identifie	d in Subtask 2.1. Dire	ect
	mailings and perso	nal contact will	be geared toward	highlighting the a	vailability	of and involvement i	n
	available incentive	programs. Also	, emails and news	s releases will adve	ertise upco	oming educational	
	opportunities. Furt	her, AgriLife Ex	tension will enga	ge producers throu	ugh persor	al contact. Direct	
	contact will be made	de with individu	als identified in S	ubtask 2.1 as well	as attenda	ance at SWCD meetin	gs
	(twice annually at	each SWCD). T	SSWCB must app	prove all project-re	elated cont	ent in any information	nal
	materials and prom	otional publicat	ions prior to distr	ibution.			
	Start Date		Month 1	Completion I	Date	Month 42	
Subtask 2.3	The Extension Ass	istant will use ir	formation in the	USDA-NRCS Field	ld Office	Fechnical Guide	
	(FOTG) to develop	educational ma	terials that highli	ght specifications,	beyond d	escriptions, about	
	various BMPs that	are of interest to	producers. The	Extension Assistar	nt will wor	k with AgriLife	
	Extension Departm	ent of Agricultu	iral Economics to	incorporate inform	mation on	the economics of BM	Ps
	as a primary driver	for adoption. N	laterials will be d	istributed at the va	rious educ	cational events in the	
	following subtasks	. Also, materials	that educate pro	ducers on technica	l and final	icial assistance will be	e
	updated and delive	red at education	al events to furthe	er encourage the a	doption of	BMPs through	
	assistance program	IS.	N. A. 1 - 1			N 1 12	
S1-41-2-4	Start Date	:	Month I	Completion I	Date	Month 42	
Sublask 2.4	The Extension Assistant will coordinate an irrigation Training Program that will be held once annually.						
	• Economics of	BMP adoption	insis that will pre	sent on various top		ing, but not minted to	<i>'</i> .
	Irrigation sch	duling					
	Inigation service	nologies and Bl	/Pc				
	• Water quality	issues	vii 5				
	• Cron-specific	guidelines					
	Materials will be p	rinted and provi	ded to participant	S.			
	Start Date		Month 1	Completion I	Date	Month 42	
Subtask 2.5	The Extension Ass	istant will coord	inate with SWCI	Ds, NRCS, HRO, a	and cooper	ating producers to host	st
	one educational me	eting annually,	specifically dedic	ated to promoting	technical	and financial assistan	ce
	programs. The Ext	ension Assistant	will use previous	sly developed mate	erials as w	ell as develop technic	al
	materials that high	light the specific	ations of BMPs i	n the NRCS FOTO	G (Subtask	. 2.3).	
	Start Date		Month 1	Completion	Date	Month 42	
Subtask 2.6			i i o intili i	Completion	Date	Miomai 12	
	AgriLife Extension	n will coordinate	with SWCDs, N	RCS, HRO, and co	ooperating	producers to host fiel	d
	AgriLife Extension tours that demonstr	will coordinate rate benefits of I	with SWCDs, N 3MPs and WQMI	RCS, HRO, and co RS. At least one fie	ooperating ooperating	producers to host fiel ll be held annually.	ld
	AgriLife Extension tours that demonstr Demonstrations wi	a will coordinate rate benefits of I Il include the us	with SWCDs, N 3MPs and WQMI e of equipment to	RCS, HRO, and co Ps. At least one fie billustrate the efficiency	ooperating eld tour wi eacy of BN	producers to host fiel ll be held annually. IPs.	ld
	AgriLife Extension tours that demonstr Demonstrations wi Start Date	a will coordinate rate benefits of I Il include the us	with SWCDs, N 3MPs and WQMI e of equipment to Month 1	RCS, HRO, and co Ps. At least one fie illustrate the effic Completion I	ooperating eld tour wi cacy of BN Date	producers to host fiel ll be held annually. <u>APs.</u> Month 42	ld
Subtask 2.7	AgriLife Extension tours that demonstr Demonstrations wi Start Date The Extension Ass	a will coordinate rate benefits of I Il include the us istant will host	with SWCDs, N 3MPs and WQMI e of equipment to Month 1 workshops targeti	RCS, HRO, and co Ps. At least one fie illustrate the effic Completion I ng small acreage p	ooperating eld tour wi cacy of BM Date	producers to host fiel ll be held annually. IPs. Month 42 and beginning farmers	ld ;
Subtask 2.7	AgriLife Extension tours that demonstr Demonstrations wi Start Date The Extension Ass that cover range/pa	a will coordinate rate benefits of I ll include the us istant will host v sture manageme	with SWCDs, N BMPs and WQMI e of equipment to Month 1 workshops targeti ent, prescribed grad	RCS, HRO, and co Ps. At least one fie illustrate the effic Completion I ng small acreage p azing, and water co	ooperating eld tour wi eacy of BM Date producers a onservatio	producers to host fiel ll be held annually. <u>APs.</u> <u>Month 42</u> and beginning farmers n.	ld
Subtask 2.7	AgriLife Extension tours that demonstr Demonstrations wi Start Date The Extension Ass that cover range/pa Start Date	a will coordinate rate benefits of I ll include the us istant will host sture manageme	with SWCDs, N 3MPs and WQMI e of equipment to Month 1 workshops targeti ent, prescribed gra Month 1	RCS, HRO, and co Ps. At least one fie illustrate the effic Completion I ng small acreage p azing, and water co Completion I	ooperating eld tour wi cacy of BM Date producers onservatio Date	producers to host fiel ll be held annually. <u>APs.</u> <u>Month 42</u> and beginning farmers <u>n.</u> <u>Month 42</u>	ld 3
Subtask 2.7 Subtask 2.8	AgriLife Extension tours that demonstr Demonstrations wi Start Date The Extension Ass that cover range/pa Start Date The Extension Ass	a will coordinate rate benefits of I Il include the us istant will host v isture management istant will suppo	with SWCDs, N 3MPs and WQMI e of equipment to Month 1 workshops targeti ent, prescribed gra Month 1 ort, promote, and	RCS, HRO, and co Ps. At least one fie illustrate the effic Completion I ng small acreage p azing, and water co Completion I participate in at least	ooperating eld tour wi cacy of BM Date producers a onservatio Date ast one an	month 12 s producers to host fiel ll be held annually. <u>APs.</u> <u>Month 42</u> and beginning farmers n. <u>Month 42</u> nual field day,	ld ;
Subtask 2.7 Subtask 2.8	AgriLife Extension tours that demonstr Demonstrations wi Start Date The Extension Ass that cover range/pa Start Date The Extension Ass demonstration, site	a will coordinate rate benefits of I ll include the us istant will host sture manageme istant will suppo	with SWCDs, N BMPs and WQMI e of equipment to Month 1 workshops targeti ent, prescribed gra Month 1 ort, promote, and on event sponsor	RCS, HRO, and co Ps. At least one fie illustrate the effic Completion I ng small acreage p azing, and water co Completion I participate in at least ed by NRCS, HRO	ooperating eld tour wi cacy of BM Date producers a onservatio Date ast one and D, and/or S	month 12 g producers to host fiel ll be held annually. <u>APs.</u> <u>Month 42</u> and beginning farmers <u>n.</u> <u>Month 42</u> nual field day, WCDs for the Arroyo	ld 3
Subtask 2.7 Subtask 2.8	AgriLife Extension tours that demonstr Demonstrations wi Start Date The Extension Ass that cover range/pa Start Date The Extension Ass demonstration, site Colorado watershe	a will coordinate rate benefits of I ll include the us istant will host v istant will suppo istant will suppo tour, or educati d, as appropriate	with SWCDs, N BMPs and WQMI e of equipment to Month 1 workshops targeti ent, prescribed gra- Month 1 ort, promote, and on event sponsore	RCS, HRO, and co Ps. At least one fie o illustrate the effic Completion I ng small acreage p azing, and water co Completion I participate in at lease ed by NRCS, HRC	ooperating eld tour wi cacy of BM Date oroducers a onservatio Date ast one and O, and/or S	Allow 12 in producers to host field II be held annually. <u>Month 42</u> and beginning farmers n. Month 42 nual field day, WCDs for the Arroyout	ld 3

Deliverables	News releases
	Annual Irrigation Training Program agenda
	Additional educational materials (developed as appropriate)
	Annual financial and technical assistance program agenda
	Annual demonstration field tour
	Small acreage producer educational workshops
	• Entity meeting agendas in which project personnel participate
	• List of field days, demonstrations, and other events in which project personnel participate

Tasks, Objec	tives and Schedules						
Task 3	Support and Facilitation of ACWPP Update Implementation and Coordination of Watershed Steering						
	Committee and Workgroups						
Costs	Federal \$	72,546	Non-Federal	\$48,364	Total	\$120,910	
Objective	To facilitate and tra	ack continued st	takeholder involve	ement in the Arroy	o Colorado v	watershed to ensure a	
	successful impleme	entation of the A	ACWPP Update, i	ncluding agricultur	e BMP impl	lementation,	
	education and outre	each, and other	Management Mea	sures.			
Subtask 3.1	Watershed Coordin	ator Continuati	on — TWRI will	continue to employ	an Arroyo	Colorado Watershed	
	Coordinator (WC)	to engage and f	acilitate the Arroy	o Colorado WSC,	watershed st	takeholders, and	
	entities identified in	n the Arroyo Co	olorado WPP. The	WC will be station	ned in the wa	atershed area and	
	serve as the primar	y conduit for in	teraction with land	downers, citizens, a	and entities t	to facilitate the	
	implementation of months of this cont	the WPP. Fund	ing for the waters	hed Coordinator w	ill not be fui	nded until the last 3.6	
	Start Date	luct.	Month 32	Completion [) ate	Month 42	
Subtask 3.2	Workgroup & Wat	ershed Steering	Committee Facili	tation — TWRI w	ill facilitate i	public participation	
	and stakeholder inv	volvement in the	e watershed plann	ing process, specif	ically by hos	sting semi-annual	
	meetings of the Arr	royo Colorado V	Workgroup and qu	arterly Steering Co	ommittee me	eetings. TWRI will	
	assist with agenda	development an	d facilitation as n	eeded. TWRI will	coordinate m	neetings, secure	
	meeting locations,	and prepare and	l disseminate mee	ting notices and ag	endas. Meet	ting summaries will	
	be prepared and po	sted to the proje	ect website. Meeti	ng summaries will	include: age	enda, meeting	
	summary, attendance list, and meeting materials.						
	Start Date		Month 32	Completion D	Date	Month 42	
Subtask 3.3	Coordination with critical watershed groups — TWRI will attend and participate in other public						
	meetings as approp	riate to commu	nicate project goa	ls, activities, and a	ccomplishm	nents to affected	
	parties. Such meeti	ngs may includ	e, but are not limi	ted to, county com	missioners' of	courts, Clean Rivers	
	Program, Basin Ste	ering Committe	ee and Coordinate	d Monitoring meet	ings, local S	SWCDs, groundwater	
	conservation distric	ts, Lower Rio (Grande Valley De	velopment Council	l, Region M	Water Planning	
	Group, Internationa	al Boundary and	1 Water Commiss	ion Public Forum r	neetings, and	d other appropriate	
	meetings of critical	Watersned stak	enolder groups. C	oordination activit	ies will be d	locumented in the	
	Quarterly Progress	Reports.	Month 1	Completion [Nata	Month 12	
Subtack 2.4	Start Date	ural information	to Appuel Neuro	lottora TWPL w	ill develop	monun 42	
SUDIASK 5.4	distribute appual n	ural information	re designed to key	n landowners and	antities info	publish, and	
	WPP implementati	on activities in	cluding water qua	lity data collection	and progres	s toward achieving	
	milestones in the A	CWPP Undate	The newsletter w	ill be distributed to	individual	landowners and	
	entities in the water	rshed TWRI wi	ill solicit content i	natter for the news	letters from	project partners as	
	appropriate. TSSW	CB must appro	ve all project-rela	ted content in any i	informationa	al materials and	
	promotional public	ations prior to c	listribution.				
	Start Date		Month 1	Completion D	Date	Month 42	

Deliverables	Website Redevelopment			
	Semi-Annual Steering Committee Meeting summaries			
	Annual Work Group Meeting summaries			
	Annual Newsletters			

Project Goals (Expand from Summary Page)

- Develop educational materials that focus on specifications of BMPs to reduce the complexity of BMPs and demonstrate compatibility with current operations
- Develop BMP educational materials for agricultural producers, focused on technical and financial information
- Deliver an education program focused on irrigation techniques and specifics to agricultural producers to increase BMP adoption
- Support and promote the adoption of BMPs through incentive programs by hosting annual cost-share update meetings and field tours to demonstrate the effectiveness of BMPs
- Increase the number of BMPs that have been adopted through providing materials and other educational efforts
- Encourage voluntary implementation of agriculture measures to prevent nonpoint source pollution
- Educate agricultural produces on the economics of BMP adoption and various incentive programs available to help pay for them
- Host field tours and demonstrations for agricultural producers to observe the effects of BMPs
- Increase the number of producers participating in incentive programs and installing BMPs
- Provide technical assistance to landowners for conservation planning
- Provide public outreach/education
- Perform monitoring activities to determine the effectiveness of specific pollution prevention methods
- Implement Management Measures identified in the Arroyo Colorado WPP Update

Measures of Success (Expand from Summary Page)

- Development of educational materials specifically addressing incentive programs and BMP specifications and benefits
- Number of producers reached through education programs
- Increase in the number of BMPs installed as a result of increased outreach and education through this project
- Evaluation of educational programs and producer likeliness to adopt practices
- Increased participation in incentive programs
- Increased adoption of BMPs
- Steering Committee and Workgroup meetings and involvement
- Coordination with critical watershed groups, including meetings and other communication
- Annual newsletters
- Success will be evaluated on the number of contacts made during the project period.

2017 Texas NPS Management Program Reference (Expand from Summary Page)

Components, Goals, and Objectives

Component 1: Explicit short- and long-term goals, objectives, ... that protect surface and groundwater. Long Term Goals

- 1: Focus NPS abatement efforts, implementation strategies, and available resources in watersheds identified as impacted by nonpoint source pollution.
- 2: Support the implementation of state, regional and local programs to prevent NPS pollution through assessment, implementation and education.
- 3: Support the implementation of state, regional and local programs to reduce NPS pollution, such as implementation of strategies defined in... Watershed Protection Plans.
- 5: Support the implementation of state, regional, and local programs to reduce NPS pollution in the coastal management zone through the Texas Coastal NPS Pollution Control Program.
- 6: Develop partnerships, relationships, ... to facilitate collective, cooperative approaches to manage NPS pollution.
- 7: Increase overall public awareness of NPS issues and prevention activities.
- 8: Enhance public participation and outreach by providing forums for citizens and industry to contribute their ideas and concerns about the water quality management process.

Short Term Goals

- #1: Implementation: Coordinate and administer the implementation of Watershed Protection Plans and other state, regional, and local plans/programs to reduce NPS pollution.
 - Objective B: Develop and implement BMPs to address constituents of concern or water bodies not meeting water quality standards in watersheds identified as impacted by NPS pollution.
 - Objective D: Implement... Watershed Protection Plans developed to restore and maintain water quality in water bodies identified as impacted by nonpoint source pollution.
- #2: Education: Conduct education and technology transfer activities to help increase awareness of NPS pollution and prevent activities contributing to the degradation of water bodies, including aquifers, by NPS pollution
 - Objective A: Enhance existing outreach programs at the state, regional and local levels to maximize the effectiveness of NPS education.
 - Objective B: Administer programs to educate citizens about water quality and their potential role in causing NPS pollution.
 - Objective C: Where applicable, expedite development of technology transfer activities to be conducted upon completion of BMP implementation.
 - Objective D: Conduct outreach through the ... Texas Cooperative Extension, Soil and Water Conservation Districts, and others to facilitate broader participation and partnerships. Enable stakeholders and the public to participate in decision-making and provide a more complete understanding of water quality issues and how they relate to each citizen.
 - Objective F: Implement public outreach and education to maintain and restore water quality in waterbodies impacted by NPS pollution.

Objective G: Implement public outreach and education to maintain and restore water quality in water bodies impacted by NPS pollution.

Component 2: Working partnerships and linkages to appropriate state, ..., regional and local entities, private sector groups and Federal agencies.

Component 3: Combination of statewide nonpoint source programs and on-the-ground projects achieve water quality benefits; efforts are well-integrated with other relevant state and federal programs.

Component 4: Description of how resources will be allocated between abating known water quality impairments from nonpoint source pollution.

Estimated Load Reductions Expected (Only applicable to Implementation Project Type)

The modeling results presented here were estimated using the SWAT and CE-Qual-W2 models that were conducted during the Update to the ACWPP. SWAT results for the future baseline (FB) scenario, developed from the calibrated current baseline (CB) scenario by modifying land use fractions according to the future land use map, suggest that storm water runoff will increase by 13.8% and groundwater recharge will decline by 9.5% due to increased impervious cover. As a result, the total water yield from drainage areas is projected to increase by 4.3%. Other nonpoint source contaminant loads including sediment, TP, and E. coli increase by 16.8%, 2.1%, and 32.8%, respectively. In contrast, the nonpoint source TN load decreases by 11.1% because cropland and rangeland are converted to urban and fertilizer applications and livestock contributions are reduced. When these changes in nonpoint source loads are combined with increased discharges from point sources, the average daily flow in the main channel, along with TN, TP, and E. coli concentrations, would increase by 13.6%, 2.9%, 18.5%, and 11.6%, respectively at the Port of Harlingen (RCH#10), while sediment concentration is reduced by 30.3%. The large increases in TN and TP concentrations are largely attributed to the significant increase in point sources discharges. The significant increase in E. coli loads from upland nonpoint sources is contributed by urban and developments. However, model output indicates that increased volume of well-treated point source discharges would dilute the concentration of E. coli in the main Channel. After land use changes, the *E. coli* concentration at the outlet of RCH#10 was estimated to increase by only 11.6%, which is relatively less than the 32.8% increase in E. coli load from nonpoint sources. The probability of E. coli concentration exceeding the single sample maximum (N394 cfu/100 ml) increased to 11.0% (i.e. 0.9% greater than CB). However, the probability of exceeding the 7-day geomean standard (N126 cfu/100 ml) was reduced to 9.5% (i.e. 1.8% lower than CB), implying that the contribution of nonpoint sources carried by stormwater runoff will become more significant.

Annual sediment loads reductions by reach averaged 7% and ranged from a 19% increase in reach 11 to a 52% reduction in reach 2. Nitrogen load reductions averaged 11% and ranged from a 4% increase in reach 14 to a 26% decrease in reach 9. Phosphorus load reductions averaged 10% and ranged from a 7% increase in reach 14 to a 19% decrease in reach 4.

While SWAT *E. coli* results indicate non-impairment for future conditions in the non-tidal segment (2202), CE-QUAL-W2 results in the Arroyo Colorado Tidal show that Enterococci criterion (35 MPN/100 mL) are not met in Segment 2201 in the next 10 years with implementation of any of the scenarios modeled. This is due to the future growth expected to occur throughout the watershed and the high levels of wildlife present in the lower basin. Adaptive management is expected to be required to ultimately achieve water quality standards along with continued and expanded implementation of management measures. According to data in WPP, implementation of Scenario 3 and then continued/expanded implementation of conservation practices would be expected to achieve water quality standards in approximately 26 years in 2201_05, 20 years in 2201_04, less than 12 years in 2201_03, and less than 15 years in 2201_02. Based on the CE-QUAL-W2 model outputs, all scenarios modeled result in water quality standards attainment for DO. It should be noted that implementation of scenario 3 is unlikely to occur within the next ten years due to the lack of environmental studies, prohibitive cost and permitting required dredging the lake.

EPA State Categorical Program Grants – Workplan Essential Elements

FY 2018-2022 EPA Strategic Plan Reference

Strategic Plan Goal – Goal 1 Core Mission

Strategic Plan Objective – Objective 1.2 Provide for Clean and Safe Water

Part III – Financial Information

Budget Summary	ÿ							
Federal	\$	290	,184	% of total project		60%		
Non-Federal	\$	193	,456	9	6 of total p	project	40%	
Total	\$	483	,640		Total		100%	
		_						
Category			Federal			Non-Federal	Total	
Personnel		\$	175,35	0	\$	58,458	\$ 5 233,808	
Fringe Benefits		\$	56,98	4	\$	13,008	\$ 69,992	
Travel		\$	10,50	0	\$	0	\$ 5 10,500	
Equipment		\$ 0		0	\$	0	\$ 6 0	
Supplies		\$	1,67	0	\$	0	\$ 5 1,670	
Contractual		\$ 0		0	\$	0	\$ 6 0	
Construction		\$		0	\$	0	\$ 6 0	
Other		\$	7,83	0	\$	0	\$ 5 7,830	
Total Direct Costs		\$ 252,334		4	\$	71,466	\$ 323,800)
Indirect Costs (≤ 1	5%)	\$	37,85	0	\$	31,155	\$ 69,005	
Unrecovered IDC					\$	90,835	\$ 90,835	
Total Project Cost	S	\$	290,18	4	\$	193,456	\$ 483,640	

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Category	Total A	mount	Justification
Personnel	\$	175,350	TWRI Program Coordinator, \$53,112 annually @ 3.55 months (\$16,690) TWRI Program Manager, \$59,064 annually @ 2.93 months (\$14,866) TWRI Extension Assistant, \$48,508 annually @ 28.18 months (\$120,882) AGEC Economist, \$84,420 annually @ 2.54 months (\$18,912) Hourly Student Labor, 400 hrs @ \$10/hr (\$4,000) *named positions are budgeted with a 3% annual pay increase in all years; TBD positions and graduate students are budgeted with a 3% pay increase in years after year 1. *(Salary estimates are based on average monthly percent effort for the entire contract. Actual percent effort may vary more or less than estimated between months; but in the aggregate, will not exceed total effort estimates for the entire project.)
Fringe Benefits	\$	56,984	Fringe for faculty and staff is calculated at 16.8% salary plus \$747 per month *(Fringe benefits estimates are based on salary estimates listed. Actual fringe benefits will vary between months coinciding with percent effort variations; but in the aggregate, will not exceed the overall estimated total.)
Travel	\$	10,500	 TWRI travel to workshops, project presentations and for meeting with partnering agencies estimated at: 12 days per diem @ \$51/day (\$1,224) 6 nights lodging @ \$93/night (\$1,116) 16,320 miles @ \$0.50/miles (\$8,160)
Equipment	\$	0	N/A
Supplies	\$	1,670	TWRI supplies include, but are not limited to: USB flash drives, external hard drive, paper, toner, and other miscellaneous office supplies for project presentations/meetings
Contractual*	\$	0	N/A
Construction	\$	0	N/A
Other	\$	7,830	Communications Services (\$1,500) Facility Rental (\$1,500) Speaker fees (\$1,500) Computer & monitor (\$3,000) Postage for direct mailing (\$300) Website hosting fee (\$30)
Indirect	\$	37,850	15% Total Direct Costs

Budget Justification (Federal)

Budget Justificat	ion (Non-Federal)	
Category	Total Amount	Justification
Personnel	\$ 58,458	TWRI Director, \$205,400 annually @ 2.11 months (\$38,238)
		District Extension Administrator, \$105,047 annually @ 2.16 months
		(\$20,220)
		*named positions are budgeted with a 3% annual pay increase in all years; TBD positions and
		*(Salary estimates are based on average monthly percent effort for the entire contract. Actual
		percent effort may vary more or less than estimated between months; but in the aggregate, will
		not exceed total effort estimates for the entire project.)
Fringe Benefits	\$ 13,008	Fringe for faculty and staff is calculated at 16.8% salary plus \$747 per month
		*(Fringe benefits estimates are based on salary estimates listed. Actual fringe benefits will vary
		the overall estimated total)
Travel	\$ 0	N/A
Equipment	\$ 0	N/A
Supplies	\$ 0	N/A
Contractual*	\$ 0	N/A
Construction	\$ 0	N/A
Other	\$ 0	N/A
Indirect	\$ 121,990	Texas A&M AgriLife Research's federally negotiated indirect cost rate is
		50% modified total direct costs (MTDC) as of 9/1/2019 and 51.5% MTDC as
		of $9/1/2020$ and beyond.
		IDC on TWRI Director cost share (\$43,235 MTDC)
		- \$14.960 MTDC Year 1 * 0.50 = \$7.480
		- $\$31,275$ MTDC Years 1 & 2 * $0.51 = \$16,106$
		- Total Research IDC: \$23,586
		Unrecovered IDC
		- Year 1 (50% MTDC): \$84,462 MTDC * 0.35 = \$29,562
		- Years 2 & 3 (51.5% MTDC): \$167,872 MTDC * 0.365 = \$61,273
		- Total Unrecovered IDC: \$90,835
		Texas A&M AgriLife Extension Service's federally negotiated IDC rate is
		30% MTDC:
		IDC on District Extension Administrator cost share @ 30%
		\$25,231 MTDC * 0.30 = \$7,569