US Army Corps of Engineers ®
Galveston District

Appendix G

Clean Air Act Compliance

for

Coastal Texas Protection and Restoration Study

October 2020

1. INTRODUCTION

The US Army Corps of Engineers (USACE) in partnership with the Non-Federal Sponsor (NFS), the Texas General Land Office (GLO), are conducting the Coastal Texas Protection and Restoration Feasibility Study (Coastal Texas Study) to determine the feasibility of alternatives that would enhance, restore, and sustain the environment, economy, and culture along the Texas coast. In accordance with the Clean Air Act (CAA) in 40 CFR Part 93 Subpart B, federal actions that result in direct and indirect emissions in exceedance of threshold values described in Table 1 are required to perform a General Conformity Determination. The scale of the Coastal Texas Study and potential resulting construction effort would indicate a significant construction related emission output. However, the information required to make a formal emissions estimate is not available at this time. The purpose of this document is to analyze the potential emissions using the currently available information in order to determine if a formal General Conformity Determination is required and what the planning impacts would be.

1.1. Project Background

The project Recommended Plan (RP) consists of Ecosystem Restoration (ER) and Coastal Storm Risk Management (CSRM) features. A coast-wide ER plan was formulated to restore degraded habitats that buffer communities and industry on the Texas coast from erosion, subsidence, and storm losses. On the upper Texas coast, the Galveston Bay surge barrier was formulated as a system with multiple-lines-of-defense to reduce as a CSRM feature. On the lower Texas coast, a CSRM beach restoration project on South Padre Island was also developed. The Coastal Texas Study area stretches the entire Texas coastline as shown in Figure 1. The study area has been divided into four areas the Upper, Mid to Upper, Mid and Lower Texas Coast (Figure 1). The RP is a combination of ER and CSRM features throughout the coastline. The ER features include barrier systems, estuarine bay systems and bayhead deltas. The CSRM features were developed to provide a primary line of defense to reduce storm surge as well as an interior line of defense. These efforts include onshore construction activities using general construction equipment such as dozers, excavators and off-road trucks.

2. REGULATORY BACKGROUND

General Conformity is a Federal Clean Air Act (CAA) requirement that ensures actions taken by federal agencies do not cause or contribute to violations of the National Ambient Air Quality Standards (NAAQS) and will not delay the states timely attainment of the NAAQS. The definition of a Federal action as specified in 40 CFR 93.152 includes "…any activity engaged in by a department, agency, or instrumentality of the Federal government, or any activity that a department, agency or instrumentality of the Federal government supports in any way, provides financial assistance for, licenses, permits, or approves, other than activities related to transportation plans, programs, and projects developed, funded, or approved under title 23 U.S.C. or the Federal Transit Act (49 U.S.C. 1601et seq.)"

The General Conformity Rule (GCR) was established under 176(c)(4) of the CAA and delineates certain requirements for federal agencies to demonstrate conformity of any proposed actions with the State Implementation Plan (SIP) for attainment of the NAAQS.

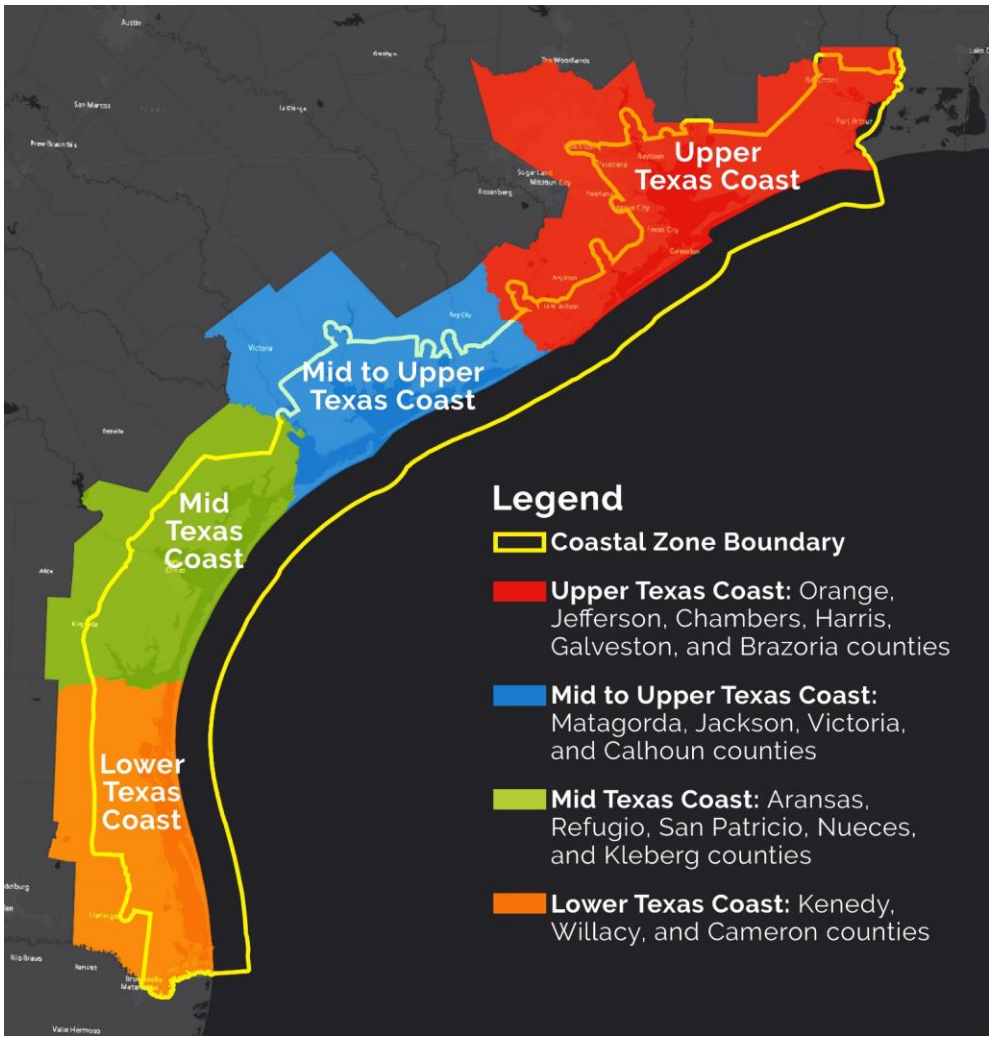

Figure 1. Coastal Texas Study Area and Regions

The GCR establishes *de minimis*, emission levels for a project in tons per year based on the severity of an area's air quality problem. The exceedance of a *de minimis* threshold requires a conformity determination, thresholds can be seen in Table 1. In 1993, the USEPA issued the initial GCR. The GCR was substantially revised in 2010 to improve the process federal entities use to demonstrate that their actions would not contribute to a NAAQS violation. Under the GCR, certain actions are exempted from conformity determinations, while others are presumed to be in conformity if total project emissions are below *de minimis* levels established under 40 CFR Section 93.153. Total project emissions include both direct and indirect emissions that can be controlled by a federal agency. Any new project that may lead to nonconformance or to a violation of the NAAQS requires a conformity analysis before initiating the action. The general conformity requirements apply only to nonattainment and maintenance areas.

Table 1. Significant Action Thresholds in Nonattainment Areas

Ambient Pollutant	Nonattainment Status	Tons/yr
Ozone (VOCs or NO_X):		
	Serious NAA's (Study Area)	**50**
	Severe NAA's	25
	Extreme NAA's	10
	Other ozone NAA's outside an ozone transport region	100
	Other ozone NAA's inside an ozone transport region	
	VOC	50
	NOx	100
Carbon monoxide:	All NAA's	100
SO2 or NO2	All NAA's	100
PM–10:		
	Moderate NAA's	100
	Serious NAA's	70
PM–2.5:		
	Direct emissions	100
	SO2	100
	NOx (unless determined not to be a significant precursor)	100
	VOC or ammonia (if determined to be significant precursors)	100
Pb:	All NAA's	25

Source of table: 40 CFR §93.153 Applicability. (Amended to include PM2.5)

2.1. Project Area Attainment Status

The Upper Texas Coast portion of the project study area includes several counties that are located within the Houston-Galveston-Brazoria (HGB) nonattainment area (NAA) as regulated under the CAA, consisting of Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties. The HGB NAA currently meets all of the EPA NAAQS, except for ozone (Figure 2). HGB is designated as being in serious nonattainment for ozone, shown in Table 2. The current designation of serious nonattainment changed in September 2019 for the 2008 Eight-hour Ozone Standard. This designation brings the *de minimis* threshold down to 50 tons-per-year (tpy) for all ozone emissions. The Mid Upper, Mid and Lower Texas Coast are not located in nonattainment counties and are therefore the GCR does not apply. Only the features of the project that are in nonattainment areas will be included in this analysis.

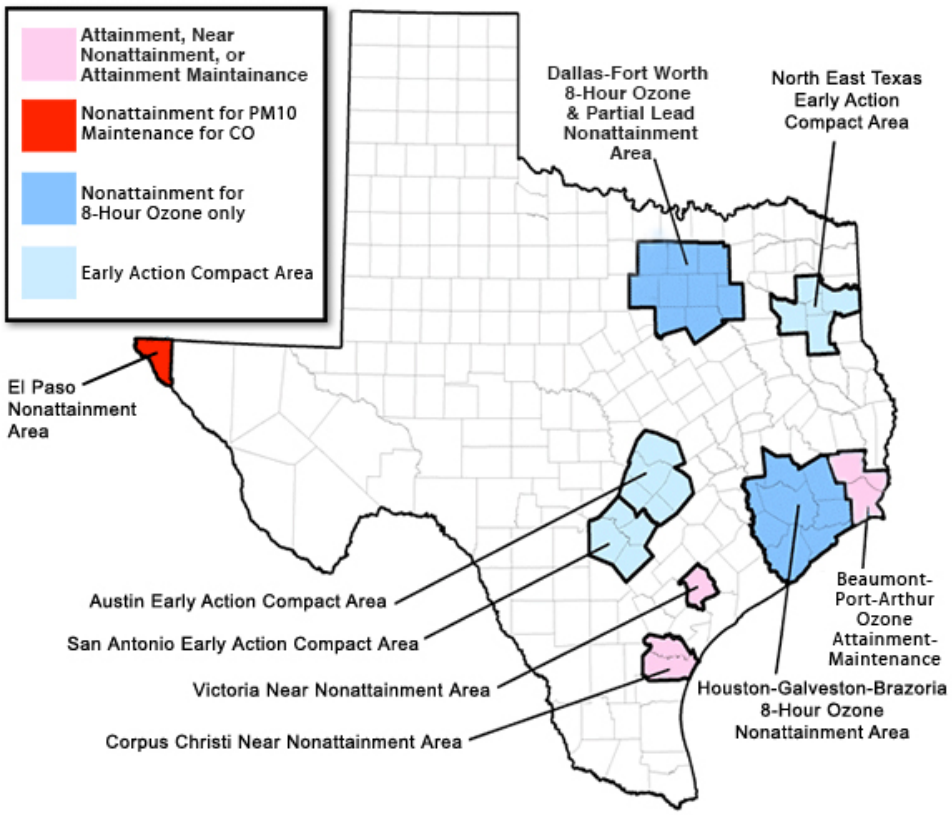

Figure 2. Attainment Status of Texas Counties, Drivecleantexas.org (2020)

Table 2. Areas Subject to General Conformity in Texas

Affected Area	NAAQS	Classification/ Designation	*de minimis* threshold (tpy)
Collin, Dallas, Denton, Tarrant, Ellis, Johnson, Kaufman, Parker, Rockwall, and Wise Counties	Ozone	Serious Nonattainment	50 tpy of either nitrogen oxides (NOX) or volatile Organic Compounds (VOC)
Brazoria*, Chambers*, Fort Bend, Galveston*, Harris*, Liberty, Montgomery, and Waller Counties	**Ozone**	**Serious Nonattainment**	**50 tpy of wither NOX or VOC**
Bexar County	Ozone	Marginal Nonattainment	100 tpy of either NOX or VOC
Collin County	Lead (Pb)	Maintenance	25 tpy Pb
El Paso County (Portion)	Carbon Monoxide (CO)	Maintenance	100 tpy CO
El Paso County (Portion)	Particulate Matter (PM10)	Moderate Nonattainment	100 tpy PM10

* Counties in Study Area

Source: TCEQ 2020

3. PROJECT CONSTRUCTION EMISSIONS

The emissions estimates are based on draft schedule and equipment information provided by USACE Project Engineers and Estimators. Emission factors for the marine vessels used during dredging were obtained from published sources including the *Port of Houston 2013 Goods Movement Air Emissions Inventory* (Eastern Research Group, 2017). Emission factors for the other nonroad equipment including excavators, tracked equipment and other construction vehicles were generated using the EPA MOVES2014a model.

Emission estimates for each engine have been calculated by multiplying horsepower by load factor by operating hours, multiplied by emission factors in units of grams per horsepower hour (g/hp hr). Emission factors have been chosen for marine and other nonroad engines to be relatively conservative (i.e., to be relatively high so as to calculate reasonably worst-case emission levels). Emission factors for marine vessels can be seen in Table 3. The emission factors for the non-road equipment is specific for each piece of equipment and horse power rating. This list is not shown here due to the very large size of the MOVES2014a output table.

Table 3. Emission Factors used for Marine Vessels

Vessel Type	grams per hp-hr	
	NOx	VOC
Dredging	9.34	0.10
Excursion	9.47	0.10
Government	9.99	0.11
Miscellaneous	9.13	0.11
Pilot	8.71	0.10
Tug	8.74	0.10

The project is expected to exceed the 50 tpy *de minimis* thresholds for NOx for 10 of the 15 year construction period and VOC for 7 of the 15 year construction period, as seen highlighted in red in Table 4. This is broken again in Table 4 to show total emissions per project feature. The large bulk, approximately 90% of the total emissions, comes from dredging activities. Portions of the project that include dredging are highlighted in orange in Table 5.

The below estimate includes all dredging activities listed in the equipment hours for the respective project areas. It should be noted that this estimate is conservative and not all dredging may actually be subject to the GCR. Section 328(a) of the CAA states sources located within 25 miles of the seaward boundary of such States, such requirements shall be the same as would be applicable if the source were located in the corresponding onshore area. This could drastically change the emissions if dredging is done outside the 25 mile range. Another possibility is the use of dredged material from dredging maintenance activities where the emissions are exempt from the GCR or otherwise accounted for. This again would have a significant impact on the emissions subject to the GCR.

Table 4. Draft Yearly Project Emissions

		NOx (tpy)	VOC (tpy)
2027	Year 1	4590.106	59.02553
2028	Year 2	4111.173	53.01188
2029	Year 3	4168.156	54.92143
2030	Year 4	4168.156	54.92143
2031	Year 5	4168.156	54.92143
2032	Year 6	4167.983	54.83479
2033	Year 7	4171.463	55.6835
2034	Year 8	2281.438	32.40445
2035	Year 9	248.9036	9.706709
2036	Year 10	192.0936	7.883795
2037	Year 11	25.7254	2.310925
2038	Year 12	25.7254	2.310925
2039	Year 13	3.405349	0.915121
2040	Year 14	3.405349	0.915121
2041	Year 15	3.405349	0.915121
	Total	**32,329.29**	**444.6821**

Red highlighting indicates years in which *de minimus* thresholds were exceeded

Table 5. Total Project Emissions per Measure

Measure	NOx Total Project Tons	VOC Total Project Tons
Galveston Ring Barrier	53.1637	12.8938
Clear Creek	32.6194	7.4518
Dickenson	13.9208	3.3948
Oyster Reef	1.1454	0.2066
Estuarine	0.5201	0.2599
Palustrine	0.0793	0.0412
Bolivar Rd Gates	51.0802	13.7268
West Glav	0.7122	0.2000
Bolivar	1.0963	0.3187
Bolivar Gates Hopper Dredging	3,106.9366	33.5246
Bolivar Gates Pipline Dredging	132.3477	2.4548
Clear Creek Dredging	397.6703	12.7604
Dickinson Dreding	89.2802	5.5832
Offatts and Crash Basin Dredging	89.2802	5.5832
G-28	1,287.8311	21.8844
Bolivar Beach and Dune	13,203.0345	157.2768
West Galveston Beach and Dune	13,196.8433	155.3016
B-2	478.8545	5.9725

B-12	192.8781	5.8470
Total	32,329.2939	444.6821

Orange highlighting indicates actions with dredging activities

4. GENERAL CONFORMITY PROCESS AND REQUIREMENTS

General conformity evaluation is designed to be a one-time occurrence and therefore should be done at a near final stage that would not change to a significant degree prior to construction. Due to the stage of this project an emissions estimate was completed to determine if a General Conformity Analysis may be required in the future and to get a potential emissions estimate for the Feasibility Study. Based on the current available information it is to be expected that the Houston/Galveston area portions of the project will likely be subject to the General Conformity Rule. These preliminary calculations show that there will be emissions in excess of the de minimis levels for the construction years 1 through 10, 2027 to 2036 respectively.

Once the General Conformity Determination is made a draft version will be reviewed by TCEQ who has requested a minimum of 30 days for review. After the TCEQ comments and issues have been addressed, the TCEQ requests a final, revised version of the documentation for review, after which, the TCEQ's letter of concurrence is routed through management and signed. Once the letter of concurrence has been signed a public review is required under general conformity regulations, and it is often linked with the public review requirement under NEPA typically another 30 day review period. The federal agency is responsible for meeting that requirement, and it occurs after TCEQ's concurrence is added to the determination package.

5. CONCLUSION

The above analysis indicates that the project will be subject to the GCR based on estimated NOx and VOC emissions for 10 of the 15 project construction years. The dredging emissions are the large bulk of the emissions and are intentionally conservative to show the total potential emissions in a worst case scenario. It is likely that that some of the dredging will not be subject to the GCR due to dredging location or the potential of using material obtained through maintenance dredging. This could significantly reduce the emissions estimated in this document. Once the details of the dredging process, the equipment hours and the schedule are finalized the general conformity determination can be initiated and the regulatory process can begin.