

**SOAH DOCKET NO. 582-20-1895
TCEQ DOCKET NO. 2019-1156-IWD**

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| IN THE MATTER OF THE | § | BEFORE THE STATE OFFICE |
| APPLICATION OF PORT OF | § | |
| CORPUS CHRISTI AUTHORITY OF | § | OF |
| NUECES COUNTY FOR TPDES | § | |
| PERMIT NO. WQ0005253000 | § | ADMINISTRATIVE HEARINGS |

PORT ARANSAS CONSERVANCY'S
WRITTEN CLOSING ARGUMENTS

November 30, 2020

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PORT ARANSAS CONSERVANCY’S WRITTEN CLOSING ARGUMENTS

TO THE HONORABLE ADMINISTRATIVE LAW JUDGES:

I. SUMMARY

After more than two years, several rounds of CORMIX modeling by both the staff of the Texas Commission on Environmental Quality (TCEQ or Commission) and the Port of Corpus Christi Authority of Nueces County (Port or Applicant), extensive discovery, and a five-day hearing with testimony from twelve expert witnesses, it is remarkable how many basic, critical questions remain unanswered in this case. For example, the record is void of evidence or contains clearly contradictory evidence on the following questions, among others:

- Who will construct, own, or operate the desalination plant, and will they have any expertise in managing the discharge facilities?
- Where will the facilities, including the discharge outfall and diffuser, be located?
- What diffuser design is actually going to be used, thus impacting the potential mixing of the discharge with the ambient water in the Aransas Pass tidal inlet?
- What chemicals will be used in the reverse osmosis process and discharged in the wastewater and what are their characteristics?
- What are the chemicals in the intake water, such as copper, that will be concentrated in the desalination process and discharged in the effluent?
- What will be the minimum volume of discharge that might be released daily, thus resulting in less mixing and more concentrated salinity in the mixing zones?
- How will the bathymetry in the vicinity of the outfall/diffuser impact mixing? (which will determine the pollutants that aquatic life will actually encounter)

Many of these and other questions were raised in the comments of the Texas Parks and Wildlife Department (TPWD) to TCEQ in 2018, and repeated in 2019. The Port could have provided accurate and complete answers to these questions then, before the Executive Director (ED) completed the technical review, but did not. Instead, the Port contends these questions do not matter, because it will just address them later with the TCEQ. That position entirely disregards the issues referred by the Commission to the Administrative Law Judges (ALJs) and does not comport with the requirements of the permitting process.

The ALJs are required to answer the questions referred by the Commission based on the evidentiary record and the pending Application and draft permit. Port Aransas Conservancy (PAC) clearly rebutted the prima facie demonstration set out in the statute and, therefore, the burden of proof is with the Port to establish the Application and draft permit satisfy all applicable legal requirements and the proposed discharge will not have adverse effects or degrade the receiving waters. The Port has failed to meet this burden, as the record demonstrates giant gaps in knowledge and unanswered questions about the proposed facility, and the evidence clearly indicates potential serious harm to aquatic life if the permit is issued.

In contrast to the many unanswered questions identified above, there are many things we *do* know, such as:

- The Port has no experience with design or operation of a desalination facility or the related discharge;
- The Port has no intention of ever owning or operating the desalination facility;
- The design of the discharge facilities in the Application cannot meet the draft permit's requirements;
- The facility is proposed to be directly inside the Redfish Bay State Scientific Area, an environmentally sensitive state-designated scientific area—the only one on the Texas coast, and one for which special protections exist in state law;

- As noted by TPWD and numerous aquatic experts, Aransas Pass is one of the most critical fish spawning habitats on the Texas coast, and high salinity is fatal to fish larvae and highly disruptive to migration of early stages of fin and shellfish;
- The multimillion dollar fish stocking efforts of TPWD could be wiped out by the discharges from this proposed facility;
- The location proposed for the desalination facility directly conflicts with another pending permit application before TCEQ and the State Office of Administrative Hearings (SOAH); and,
- The facility is proposed for an area that TPWD and the Texas General Land Office (GLO) have specifically excluded from being appropriate for desalination facilities.

This case presents a very clear choice: The Commission can serve its function of protecting the environment, or it can completely disregard the evidence and permit a first-of-its-kind facility that has not been shown to protect aquatic life or the marine environment, with potentially devastating effects to one of Texas's most treasured, and ecologically and economically valuable, bays. The Executive Director's review in this case has been based not on reliable science providing a high level of confidence, but rather on hope, feelings, and assumptions. The law requires that there can be no mortality from the discharge, even in the zone of initial dilution (ZID). So, how sure is the TCEQ that this standard will be met? When asked whether the discharge from this facility would kill aquatic life, the TCEQ's biologist responded, "I hope [not]."¹ And, when asked about her antidegradation review, she testified that because of the lack of relevant toxicological criteria and data (especially regarding salinity), it was based on her "feelings."² Such speculative evidence is shockingly deficient when the law requires the Applicant and TCEQ ensure that there will be no mortality from such a facility.

¹ Tr. Vol. 5, at 165:21-166:2.

² PAC-16, at 34 of 56 (62:11-19).

In contrast, PAC presented four different, eminently-qualified marine ecologists who have devoted their careers to researching water quality, marine biology, aquatic wildlife, fisheries science, and what is necessary to ensure the coastal waters continue to provide a healthy marine system. In fact, most of them have worked the bulk of their careers in the precise aquatic system that will be affected by the proposed discharge. These experts testified the draft permit has not been shown, with any level of confidence, to protect the marine environment, and they note the potentially disastrous effects to that environment if this permit is issued. It is sadly ironic that the very first desalination facility the TCEQ proposes to permit in Texas is in a location the TPWD and GLO have specifically excluded from appropriate areas for desalination facilities. It is also sadly ironic that all of the fish stocking efforts of TPWD (nearly \$4 million annually) could be wiped out by allowing this facility to be permitted. Such an absurd result cannot be allowed. Plainly and simply, under any diligent objective analysis, this permit must be denied.

II. UNDERLYING FACTS

In this case, the Port seeks a wastewater discharge permit for Texas's first marine-water desalination plant. The facility is proposed to be located on Harbor Island, which sits inside the Redfish Bay State Scientific Area (RBSSA).³ The proposed facility will discharge up to 110 million gallons per day of highly saline wastewater directly into the Aransas Pass tidal inlet, an area that has been called "the heart – the engine" of the marine ecosystem for the region. Why is this area so critical? Because, as Dr. Brad Erisman testified, it is the most important, multi-species

³ The Redfish Bay State Scientific Area contains unique, fragile biological communities including seagrass beds, oyster reefs, marshes and mangroves. Seagrass growing in shallow water provides valuable feeding and nursery habitat and critical refuge for shrimp, crabs and juvenile game fish. Seagrasses also provide food for sea turtles, shorebirds and waterfowl. Wading birds use mangroves and marshes for roosting, feeding and nesting habitat. The habitats in Redfish Bay support commercial and recreational fishing and hunting. All seagrasses in the state scientific area are protected by law. PAC-27; *compare with*, Administrative Record (AR), Tab D, S-Application 000025. *See* Tr. Vol. 5, at 106:21-107:14.

spawning site for the most economically valuable sportfishes in the entire region.⁴ This is not just any water body; it is one of the most sensitive, yet productive, waterbodies in the United States.

A. The EPA, the National Oceanic and Atmospheric Administration, TPWD, and the GLO Recognize the Aransas Pass Tidal Inlet as Uniquely Valuable and Vulnerable.

The Corpus Christi Bay system is located in the southern Texas Coastal Bend and includes three of the seven estuaries in Texas: Aransas, Corpus Christi and upper Laguna Madre. The system is separated from the Gulf of Mexico by Mustang and North Padre Islands, with water exchange taking place almost exclusively through Aransas Pass.⁵ The Corpus Christi Bay system has been designated as an estuary of national significance by the Environmental Protection Agency (EPA), and is home to more than 490 species of birds and 234 species of fish.⁶

Essential Fish Habitat (EFH) is defined by the U.S. Congress in the Magnuson-Stevens Fishery Conservation and Management Act as “those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity.”⁷ EFH includes all types of aquatic habitat such as wetlands, coral reefs, sand, seagrasses, and rivers.⁸ The National Marine Fisheries Service (NOAA Fisheries), a department of the federal government, is responsible for the stewardship of the nation's ocean resources and their habitat.⁹ NOAA Fisheries has identified the Aransas Pass, Copano Bay, Aransas Bay, Redfish Bay, Corpus Christi Bay, Ingleside Cove, Nueces Bay, and Laguna Madre as EFH for the Red Drum (redfish) and shrimp.¹⁰

⁴ PAC-1, at 6:15-16.

⁵ <https://www.gulfbase.org/geological-feature/corpus-christi-bay#:~:text=The%20Corpus%20Christi%20Bay%20system,almost%20exclusively%20through%20Aransas%20Pass.>

⁶ <https://www.gulfbase.org/geological-feature/corpus-christi-bay#:~:text=The%20Corpus%20Christi%20Bay%20system,almost%20exclusively%20through%20Aransas%20Pass.>

⁷ 16 U.S.C. § 1802(10).

⁸ <http://www.habitat.noaa.gov/protection/efh/index.html>

⁹ <https://www.fisheries.noaa.gov/about-us>

¹⁰ <https://www.habitat.noaa.gov/application/efhmapper/index.html>

In 2018, the TPWD and GLO prepared a report entitled *Marine Seawater Desalination Diversion and Discharge Zones Study* (the Report).¹¹ In their own words, GLO and TPWD prepared the Report “to identify zones in the Gulf of Mexico that are appropriate for the diversion of marine seawater and for the discharge of marine seawater desalination waste while taking into account the need to protect marine organisms.”¹² Although the Port has argued the Report should somehow be relevant for only expedited permitting, and irrelevant in this case, there is no basis for such contention. While expedited permitting was the reason the Report was commissioned by the Texas Legislature, the Report itself is not limited to expedited permitting but is intended to scientifically address the suitability of areas on the Texas coast for desalination activities, period.

Moreover, the ED’s own witness testified this is a distinction without a difference. Shannon Gibson, the TCEQ permit coordinator who had overall responsibility for drafting the permit in this case, testified the substantive requirements for an expedited permit and individual permit are identical,¹³ and the same water quality standards apply to an expedited permit as apply in this case.¹⁴ The substantive law to protect the waters of the state is the same whether we are in the expedited permit process or not.¹⁵

The TPWD/GLO Report generally designates the entire Texas coast as appropriate for desalination discharge. However, the Report very selectively excludes the five major passes – including Aransas Pass – connecting the Gulf of Mexico with Texas bays and estuaries.

¹¹ PAC-7.

¹² PAC-7, at 2.

¹³ Tr. Vol. 5, at 99:3-16.

¹⁴ Tr. Vol. 5, at 99:3-16.

¹⁵ Tr. Vol. 5, at 100:8-21.

Graphic of TPWD/GLO Excluded Passes



Figure 5. Red stars show the locations of five major passes connecting the Gulf of Mexico with Texas bays and estuaries. Credit: TPWD/Lynne Hamlin

The Port's application shows the desalination plant located on the southeastern tip of Harbor Island, with the discharge pipeline terminating in an outfall at the confluence of the Corpus Christi Ship Channel, Lydia Ann Channel, and the Aransas Pass tidal inlet. This is directly within one of the areas specifically excluded by TPWD and GLO for desalination activities.

B. The Modeling had to Be Changed on Multiple Occasions and the Applicant Still Cannot Meet the Permit Requirements.

Katie Cunningham is an aquatic scientist/hydrologist on the Water Quality Assessment Team, Water Quality Assessment Section, Water Quality Division of TCEQ.¹⁶ She performed the Cornell Mixing Zone (CORMIX) modeling to predict the expected effluent percentages, or critical dilutions, at prescribed distances from the outfall (the edges of regulatory mixing zones).¹⁷ In 2018, Cunningham interpreted her CORMIX modeling as predicting a concentration of effluent of **less than 2%** at the edge of the ZID.¹⁸ When Protestants produced evidence that she had not interpreted the results correctly, Cunningham agreed. She then reinterpreted the results from the CORMIX model again in 2020, and agreed with PAC that it predicted a concentration of effluent of **18.4%** at the edge of the ZID.¹⁹ In other words, two years ago the TCEQ was ready to issue a permit that would have allowed approximately ten times many of the pollutants allowed in the current draft permit.²⁰

Despite the significant increase in effluent percentage allowed at the ZID under Ms. Cunningham's revised modeling, the Port's witness, Dr. Lial Tischler, performed new CORMIX modeling in mid-October, producing the results of his modeling to other parties only late the night before his deposition.²¹ For this brand new modeling, Dr. Tischler made two changes to the design of the diffuser: (1) he reduced the size of the ports from 2' in diameter to 0.83'²² in order to increase the velocity of the discharge, which went from 1.5 meters per second to 27 meters

¹⁶ ED-KC-1, at 2:9-10.

¹⁷ ED-KC-1, at 5:11-15.

¹⁸ Tr. Vol. 6, at 97:17-98:2.

¹⁹ Tr. Vol. 6, at 98:3-7.

²⁰ Tr. Vol. 5, at 81:25-83:8.

²¹ Tr. Vol. 3, at 218:2-5.

²² Tr. Vol. 3, at 219:1-3.

per second, or about twenty times faster;²³ and (2) he changed the angle of the ports so they point toward the surface to a greater degree.²⁴ The reason for this design change is because “you want the initial jet [of effluent] to go as close to the surface as possible for maximum dilution before it falls to the bottom of the channel.”²⁵

When asked why he made these changes, Dr. Tischler testified that the Port “may have difficulty meeting the 18.5 [sic] percent in the ZID, unless they make revisions to the [diffuser] design. . . . They may not meet it. . . . Under the condition of high flow rates, the modeling would suggest that they couldn’t meet it.”²⁶ That is a damning admission.

The evidence now irrefutably demonstrates that the Port’s diffuser design in the Application is incapable of satisfying the requirements of the draft permit. What is the consequence? Katie Cunningham testified that if the Port changed the diffuser design “at all” then that would need to be re-reviewed by TCEQ.²⁷ Yet this new diffuser design and new modeling have not been evaluated by the ED. Despite this, the ED inexplicably continues to support issuance of the draft permit. Given the ED’s prior modeling errors, the lack of certainty by the ED’s biologist that the permit will not result in the death of aquatic life, the lack of review of the new diffuser (despite saying it would have to be reviewed), and the failure to consider the real world conditions in the waterbody, the ED’s review provides no confidence whatsoever. It is in this context that Protestants now turn to the actual issues referred by the TCEQ.

²³ Tr. Vol. 3, at 221:5-10, 223:1-11.

²⁴ Tr. Vol. 3, at 221:17-21.

²⁵ Tr. Vol. 3, at 222:1-7.

²⁶ Tr. Vol. 3, at 264:20-265:3.

²⁷ Tr. Vol. 6, at 109:6-10.

III. DISCUSSION OF COMMISSION’S REFERRED ISSUES

The Commission referred a number of issues to be addressed by the ALJs. Each issue and the related relevant evidence is analyzed below. As will be seen, the Port has failed to meet its burden of proof in this case on these issues.

As also will be seen, the overarching theme continually repeated in the record is one of ignorance: the ED and the Port simply do not know, or did not consider, the information needed to properly evaluate the potential impacts of the proposed permit. The failure of the ED to re-evaluate its position once it knew this Application was full of errors is not rational. Its failure to prepare a permit that is actually protective is perhaps best described by Dr. Greg Stunz: “I cannot understand how the Executive Director can on one hand claim that the permit will be protective of the marine environment and aquatic life and on the other hand claim that the effluent and its effect on water quality has not yet been analyzed.”²⁸

A. Whether the Proposed Discharge will Adversely Impact: the Marine Environment, Aquatic Life, and Wildlife, Including Birds and Endangered or Threatened Species, Spawning Eggs, or Larval Migration.

This matter is governed by Title 30, Chapter 307 of the Texas Administrative Code: The Texas Surface Water Quality Standards (TSWQS). Every witness addressing the issue agreed that, under the TSWQS, the permit must insure the discharge will not cause any death, of any marine creatures, anywhere.²⁹ That includes the ZID, the area closest to the outfall and diffuser.³⁰ But the actual standard in this case is even more protective than that.

²⁸ PAC-6, at 22:10-13.

²⁹ Tr. Vol. 5, at 171:1-8, 178:16-23; Tr. Vol. 3, at 57:6-19.

³⁰ Tr. Vol. 5 at 178:16-23; Tr. Vol. 3, at 57:6-19; 215:10-16; and 245:9-15; 30 Tex. Admin. Code § 307.8(b)(2) (“Acute criteria and acute total toxicity levels may be exceeded in small zones of initial dilution (ZIDs) at discharge points of permitted discharges, but there must be no lethality to aquatic organisms that move through a ZID.”) (emphasis added).

The TSWQS provide that “[w]ater in the state must be maintained to preclude adverse toxic effects on aquatic life.”³¹ There are exceptions to this rule,³² but none apply to this standard in the mixing zone. The TSWQS prescribe that although “[n]umerical salinity criteria for Texas estuaries have not been established . . . careful consideration must be given to all activities that may detrimentally affect salinity gradients.”³³ Moreover “[s]alinity gradients in estuaries must be maintained to support attainable estuarine dependent aquatic life uses.”³⁴ “Attainable use” is “[a] use that can be reasonably achieved by a water body in accordance with its physical, biological, and chemical characteristics whether it is currently meeting that use or not.”³⁵ Thus, the TSWQS and first Referred Issue ask a very simple question: Will the discharge of up to 110 million gallons of brine per day in the Aransas Pass cause any harm to the environment, aquatic life, wildlife, birds, spawning eggs, or larval migration? The evidence is overwhelming that it will.

Protestants tendered four witnesses who are each among the most recognized experts in the world in their specialized areas of marine biology, ecology, wildlife, and fisheries science. Each has dedicated his professional life to research. Each has spent decades conducting research in the Corpus Christi Bay system. They have little or no previous experience testifying or with regulatory permitting. In other words, they are not professional witnesses. Their credentials, but more importantly the substance of their testimony regarding the importance of the Aransas Pass tidal inlet to the ecological health of this entire region, are unassailable. To a person, they each testified

³¹ 30 TAC §307.6(b)(4).

³² 30 TAC §307.8(b).

³³ 30 Tex. Admin. Code § 307.4(g)(3). This is consistent with Dr. Erisman’s testimony regarding Precautionary Management: “[T]he absence of scientific evidence is not justifiable to allow harm to be committed. In other words, it specifically talks about the burden of proof being reversed. You have to demonstrate that you’re not going to cause harm.” Tr. Vol. 2, at 96:19-23.

³⁴ 30 Tex. Admin. Code § 307.4(g)(3).

³⁵ 30 Tex. Admin. Code § 307.3(a)(4).

to the significant potential harm to the marine environment from this permit. Their testimony is discussed in detail further below.

1. Increased Salinity in the Aransas Inlet Will Harm Aquatic Life.

The main constituent of concern in this case is salinity. The desalination facility will remove the salts from the produced water and discharge the salts in high concentrations into the Aransas Inlet. High salinity or saline imbalances can be fatal to aquatic life. As Scott Holt testified, “high salinity sucks the water out of larvae.”³⁶ Dr. Andrew Esbaugh further explained “[w]ater inherently moves to higher concentrations of salt.” If the ambient water in the Aransas Pass has a higher concentration of salt than the water inside the animal, “the water that’s inside of a fish is going to move outside of the fish, effectively dehydrating it.”³⁷ “So when you’re looking at the impacts on larval fish, it’s all about the water getting sucked out of the animal and the animal not having enough time or ability to counteract it by drinking water, processing that water, and excreting salt.”³⁸

As Dr. Esbaugh noted, it is critical to keep salinity balanced for early stage aquatic life: “When we’re transporting embryos from Texas Parks & Wildlife to my lab . . . we refuse to use our own water . . . We take their water. . . . when salinities aren’t matched, embryos can sink or swell with water sometimes or they can blow up . . . We see major drops in our survival when we didn’t match salinity.”³⁹ Scott Holt testified that the “issue here is the very high concentration of [salt] in a small place.”⁴⁰ While estuarine organisms can be tolerant of a range of salinities and

³⁶ PAC-4, at 12:24-25.

³⁷ Tr. Vol. 3, at 39:1-4.

³⁸ Tr. Vol. 3, at 39:13-17.

³⁹ Tr. Vol. 3, at 53:22-55:19.

⁴⁰ Tr. Vol. 3, at 19:2-5.

temperatures, larval stages are not. This is especially true when the individual organisms encounter a sharp or sudden change in conditions such as might be expected in a brine discharge zone.⁴¹ The aquatic life experts have testified it is likely the discharge of brine, in the volumes proposed in the draft permit, into the Aransas Pass tidal inlet will result in a significant increase in the mortality of larvae on the journey to the nursery grounds in Corpus Christi Bay and surrounding estuaries.⁴²

One reason for this is that the draft permit does not properly address the range of existing salinity levels in the receiving waters. Dr. Esbaugh did, however, and he studied a five-year data set for salinity in the shipping channel available from the Mission Aransas National Estuarine Research Reserve. The median salinity value in this data set was 32.5 ppt which, by definition, means that half of the data points exceeded 32.5 ppt under natural conditions.⁴³ At the high end, they are above 40 ppt, which is consistent with Dr. Tischler's assumptions regarding ambient channel salinities.⁴⁴ To be protective of aquatic life when discharging highly saline effluent, it is imperative to consider the highest background data points for salinity, because that will better predict the highest levels of salinity occurring when the effluent is mixed with the ambient water.

From 2007-2012, ten percent of the time, the recorded salinities were in excess of 37 ppt.⁴⁵ That means that 10% of the time – before there is any discharge – salinity in the channel is already close to the physiological tolerance of the most sensitive and most economically significant species, the Red Drum.⁴⁶ Dr. Esbaugh testified that salinity in the channel peaks in late summer and early fall, which coincides with the spawning season of Red Drum. So just as salinities are

⁴¹ PAC-4, 9:14-17. *See also*, PAC-5, at 12:9-17.

⁴² PAC-4, at 7:11-14, 20:5-7. *See also*, PAC-5, at 6:2-4.

⁴³ PAC-5, at 11:25-12:3.

⁴⁴ APP-LT-9, Col. 3.

⁴⁵ Tr. Vol. 3, at 49:12-16.

⁴⁶ PAC-5, at 9:4-6.

potentially highest, Red Drum embryos are entering the channel.⁴⁷ That is the status quo before there is any discharge. So, the first error in the draft permit is that it relies on ambient salinity levels lower than they actually will be during significant parts of the year. But that is not the only problem with the salinity evaluations done by the Port and ED.

The desalination process is currently expected to use intake water from the Gulf of Mexico. The expected average intake salinity of Gulf waters will be in the range of 32 to 35 ppt.⁴⁸ With an input salinity of 35 ppt, the effluent discharge would have a salinity level as high as 58.5 ppt,⁴⁹ which would be very harmful to aquatic life that comes in contact with it or even much lower levels that will be found in the ZID and aquatic mixing zones.⁵⁰ So, the failure to properly account for the salinity of the intake water is another error in evaluation of impacts on marine species resulting in the underestimation of the salinity levels that will result from the discharge.

So, the evidence indicates the salinity levels in the receiving waters (in the ZID and other mixing zones) resulting from the discharge will be much higher than predicted by the Port and ED. This higher salinity is of major concern, as billions of larvae will travel through the mixing zones.⁵¹ When the larvae are pushed by tidal currents through Aransas Pass and into the brine discharge plume, they will instantaneously go from an ambient salinity level into a hypersaline condition. Dr. Greg Stunz,⁵² one of PAC's experts, explained these concerns well, when he testified, "As an

⁴⁷ Tr. Vol. 3, at 49:25-50:8.

⁴⁸ PAC-5, at 11:1-7.

⁴⁹ PAC-5, at 11:8-11.

⁵⁰ PAC-5, at 11:11-14.

⁵¹ PAC-6, at 13:1-10.

⁵² Dr. Stunz has a PhD in Wildlife and Fisheries Science, has received more than \$30 million in research grants on various topics of marine ecology and fisheries science, is a regular on Discovery Channel - Shark Week, and has given testimony before Congress regarding marine fisheries. He is currently the Director of the Center for Sportfish Science and Conservation, Harte Research Institute for Gulf of Mexico Studies, Texas A&M University-Corpus Christi. PAC-6, GS-1.

analogy, if a human being is transported directly from sea level to the top of Mt. Everest, the change in altitude and lack of oxygen would likely cause mortality.”⁵³ Numerous aquatic experts testified the same is likely to occur with the fish larvae in the ZID and other mixing zones.

Ironically, the Port recognized the potential harm to fish larvae from the intake pipe, and took action to address it, but they have failed to do the same for the outfall. In support of the draft permit issued by TCEQ, there is an email from Sarah Garza, the Port’s Director of Environmental Planning and Compliance, to Shannon Gibson dated June 21, 2019.⁵⁴ In that letter, Ms. Garza says:

The Port staff have concluded that there is not enough available information at this time to quantify the cumulative effects of a desalination intake structure in the Corpus Christi Ship Channel at Harbor Island. Specifically, predictive modeling to evaluate direct impacts to larval fish – which use the Ship Channel in high numbers at different times of the year to reach habitats in the bay system – cannot be completed within a time frame that would inform the permitting process to support the permitting process. The Port has concluded that the environmentally conservative approach to desalination at Harbor Island is to locate the intake structure offshore in the Gulf of Mexico.

As PAC’s experts note, the exact same reasoning applies to the brine discharge.⁵⁵ The review done by the Port and the ED is lacking regarding the impact of salinity upon the aquatic life and, thus, locating the outfall in such a sensitive zone is not environmentally protective. Dr. Stunz was unequivocal in testifying the discharge from desalination will kill perhaps millions of marine organisms: “Even with conservative calculations, the elevated salinity has the potential to result in mortality for literally millions of larvae and nekton during peak recruitment season.”⁵⁶ The discharge of 95.6 mgd is 24/7 and can last for years. Thus, it is easy to understand the aquatic experts’ cause for alarm and view of this permit as potentially disastrous to the local ecology.

⁵³ PAC-6, at 14:4-16.

⁵⁴ AR, at Tab F, ED – 0063, ¶ 2.

⁵⁵ PAC-4, at 8:1-16.

⁵⁶ PAC-6, at 14:21-23.

In addition to being living organisms entitled to protection, the larvae also represent a very ecologically important food base that would be unavailable for other marine life should their migration be impaired, and such can create a ripple effect. Thus, it is not just fish larvae that are at risk from the hypersalinity in the water. Even birds could be affected, as Dr. Stunz testified the crabs, shrimp, and fish in the Aransas Pass tidal inlet provide an important food supply for birds. “[I]t’s not just about what’s living in the water.”⁵⁷ He expects the discharge will cause “extraordinarily high mortality for various forms of marine life in the channel.”⁵⁸ Among other things, higher salinities are associated with higher occurrence of harmful algae blooms, such as red tide, which is harmful to aquatic life and kills fish.⁵⁹

2. Although Texas has no Numerical Criteria for Saline, it is Possible to Determine the Harmful Concentration: 37.4 ppt in the Pass.

The clear potential harm from hypersalinity begs the question of what salinity levels would be safe for aquatic life in this area? While there are no numerical standards in the rules, Dr. Esbaugh explained how guidance in the rules can show us the proper limit, and he used that guidance to establish an appropriate limit.

The Species Sensitivity Standard used by EPA is the same as the implementation procedure for the TSWQS Guidelines.⁶⁰ Dr. Esbaugh followed those standards – he reviewed the available literature, for eight acute lethality data sets across seven species.⁶¹ This included a report by TCEQ on the effects of salinity on early life survivability of Red Drum, and Atlantic Croaker.⁶² The

⁵⁷ Tr. Vol. 3, at 75:21 – 76:3.

⁵⁸ Tr. Vol. 3, at 105:13-24.

⁵⁹ Tr. Vol. 3, at 132:17 – 133:13.

⁶⁰ Procedures to Implement the Texas Surface Water Quality Standards, June 2010, at 143-48.
https://www.tceq.texas.gov/waterquality/standards/WQ_stds/#implementation-procedures

⁶¹ PAC-5, at 11:10-18.

⁶² Tr. Vol. 3, at 49:17-23.

“LC50” is salinity “that causes 50 percent lethality in a test scenario” over a 72 hour period.⁶³ When establishing any regulatory criteria, the limits are ultimately set to protect the most sensitive species. The scientific literature, including the TCEQ report, indicated an LC50 for Red Drum of 37 ppt.⁶⁴ Following the EPA and Texas Guidelines, Dr. Esbaugh determined that 37.4 ppt is the limit for acute salinity exposure for the most sensitive species, which is also the Texas number one sportfish, the Red Drum.⁶⁵ Therefore, any discharges that result in total salinity of 37.4 or higher will not be protective of aquatic life. The evidence clearly indicates that the proposed discharge will result in exceedance of this limit often.⁶⁶

3. Constituents Other than Salinity May Cause Harm to Aquatic Life.

Another problem with both the permit – and this entire permitting process – is that the Port has not been required to identify exactly which of numerous chemicals will actually be used in this plant. But the chemicals used may cause harm. For example, the draft permit authorizes the discharge of copper. Dr. Stunz testified that “I am aware the copper exposure can have serious negative effects on aquatic life. My concern is that copper exposure, when combined and coupled with exposure to hypersaline conditions, will have significantly worse effects on aquatic life than either copper exposure or saline exposure would have by themselves.”⁶⁷ TPWD has raised the issue of the concentration of copper in the desalination process and the need for the Port to present information on copper in the intake water.⁶⁸

⁶³ Tr. Vol. 3, at 50:17 – 51:2.

⁶⁴ Tr. Vol. 3, at 49:17-23.

⁶⁵ Tr. Vol. 3, at 49:17-23, 58:4 – 60:10.

⁶⁶ PAC-5, at 11:1 – 12:6.

⁶⁷ PAC-6, at 21:13-18.

⁶⁸ ED-SG-3, at 54-55.

The TSWQS establish unique and more stringent criteria for copper in saltwater environments that are designated as oyster waters, as they are here.⁶⁹ The Port provided no data on the copper expected in its effluent.⁷⁰ Dr. Wiland looked for intake-water copper data, hoping to derive an estimate of the minimum effluent copper concentration. He found there was no copper data from the Gulf of Mexico station at Port Aransas, but that data from the Lydia Ann Channel station indicated a range of 0.00083 to 0.012 mg/L dissolved copper, this upper bound being six times higher than the value the Port estimated.⁷¹ The Port's witness, Mr. Palachek, testified that Gulf of Mexico intake waters would have no more than 0.002 mg/L dissolved copper,⁷² but his sole source of data was a 1992 paper (Palachek Exhibit 15) that did not even examine Gulf of Mexico waters. That paper looked at six estuaries on the Texas Gulf Coast, and its sampling sites ranged from the mouths of the rivers, e.g., the Nueces River, that fed the estuaries, to an estuary segment that "approached" the segment by the Gulf.⁷³ But, even at the 0.002 mg/L copper at the intake as used by Mr. Palachek, the effluent at 50% desalination efficiency would be at least 0.004 mg/L and, thus, exceed the copper chronic criterion, and exceed the limit of 0.0036 mg/L copper discharge to oyster waters set by applicable law.⁷⁴

The ED's witness was evasive when questioned about her analyses of copper in the effluent or receiving water, testifying essentially (1) that her antidegradation finding required a determination that copper (in the mixing zone or outside of it) did not exceed 0.0036 mg/L, but

⁶⁹ 30 TAC § 307.6(c)(1), Table 1; i.e., 0.0135 mg/L is the acute criterion and 0.0036 mg/L is the chronic criterion.

⁷⁰ Tr. Vol. 5, at 47:18-21 and 227:3-13.

⁷¹ PAC-3, at 18:1-13.

⁷² APP-RP-1, at 36:28-29.

⁷³ APP-RP-15, Figure 1, and p. 309: "Samples were collected across the salinity gradient from fresh river inputs to the estuary mouths, which approached the open Gulf of Mexico end-member."

⁷⁴ 30 TAC § 307.6(c)(1), Table 1, note 1.

she did not know the information;⁷⁵ (2) that, based on the CORMIX report and Katie Cunningham's memo, neither of which addresses the extent or concentration of a copper plume, she wrote her standards implementation memo without consideration that there might be a copper plume;⁷⁶ and (3) that she did not “in this particular case” pay any special attention to copper impacts on oyster spat,⁷⁷ because she felt there would be an adequate zone of passage for them around the mixing zones.⁷⁸ This last position incorrectly ignores that the TSWQS limitation on copper exists outside all mixing zones, and also ignores the fact that oyster spat represents larvae permanently attached to a surface, thus making the concept of movement or passage nonsensical in this context. It is clear from Dr. Wallace’s testimony that the ED did no real evaluation of the potential harm from the copper that will be in the effluent, nor did the ED properly determine the impact of such effluent on oyster waters, which the area of the discharge indisputably are.⁷⁹

4. Migration and Spawning will be Disrupted, Causing Decline in Populations.

In addition to killing larvae and other aquatic life, high salinity will impact migration and spawning. Dr. Erisman, one of the most experienced researchers in the world on essential fish spawning habitat,⁸⁰ testified that the change in salinity in the Aransas Inlet “can disrupt the spawning migrations through the channel.”⁸¹ The effluent can lead to two concerning effects: (1) increased death of fish, and (2) diminished reproduction of fish.⁸² Dr. Erisman testified that female

⁷⁵ Tr. Vol. 5, at 217:7-14.

⁷⁶ Tr. Vol. 5, at 226:19-227:2.

⁷⁷ Oyster larvae permanently attached to a surface are known as “oyster spat.” <https://oceanservice.noaa.gov/facts/spat.html#:~:text=Once%20oyster%20larvae%20permanently%20attach,as%20oyster%20reefs%20or%20beds.>

⁷⁸ Tr. Vol. 5, at 217:20-218:4.

⁷⁹ Tr. Vol. 5, at 162:6-14, 170:5-18, and 171:12-15.

⁸⁰ PAC-1, at 1:7-14.

⁸¹ PAC-1, at 12:3-4.

⁸² PAC-1, at 12:12-14.

fish “tend to stay along the bottom as they develop their eggs in preparation for spawning.”⁸³ A hypersaline layer along the bottom “could disrupt egg development, egg production, and courtship and spawning activity.”⁸⁴ Hypersalinity could lead to fewer eggs, which then die at a much higher rate than usual.⁸⁵ Dr. Erisman testified that “[i]f this area is degraded, fish won’t simply go elsewhere to spawn. . . . harming [the Pass] will just cause them to spawn less (or not at all), reduce their feeding, and ultimately reduce the carrying capacity of local fish populations.”⁸⁶

5. This Location is the Problem, More than Desalination Itself.

Ultimately, the primary issue here is not so much about desalination and brine discharge, in general, but the location chosen. Given that the inlet compounds and magnifies the marine life abundance, the impacts are disproportionately greater than what would not occur in other areas with much less densities and concentrations of marine life.⁸⁷

Dr. Erisman testified that the draft permit “presents a very real threat of serious destructive harm to the marine environment, aquatic life, and wildlife, including fish growth, reproduction, and survival.”⁸⁸ “[T]he Port of Corpus Christi has chosen perhaps the most ecologically sensitive aquatic area on the Texas coast to seek to discharge brine into. . . . this is the worst possible location for such a facility.”⁸⁹ Dr. Esbaugh has concluded that “[s]imply put, the area where the Port of Corpus Christi seeks to discharge effluent is one of the worst places that could have been chosen on the Texas coast for such an activity. . . . The permit has the potential to have devastating and

⁸³ PAC-1, at 11:23-24.

⁸⁴ PAC-1, at 12:1-2.

⁸⁵ PAC-1, at 12:15-22.

⁸⁶ PAC-1, at 11:15-19.

⁸⁷ PAC-6, at 16:5-8.

⁸⁸ PAC-1, at 4:24-26.

⁸⁹ PAC-1, at 16:3-5.

far-reaching consequences to the marine environment and aquatic life, both in the immediate area and beyond.”⁹⁰

Dr. Stunz was the only witness to have previous experience evaluating the virtues of various locations for a desalination plant. He was hired by the City of Corpus Christi to perform a siting analysis for such a plant and was “responsible for assessing locations for both intake and discharge of brine from desalination plants.”⁹¹ He noted that the Harbor Island area was not even given serious consideration, because there are very feasible alternatives that would have much less impact.⁹² As Dr. Stunz testified, “If I had to choose the absolute worst location on the Texas coast, from an ecological perspective, to place a desalination plant, I would choose Harbor Island in the Aransas Pass inlet.”⁹³

6. The Port and ED’s Witnesses Acknowledge the Potential for Adverse Effects.

The Port’s witness, Dr. Lial Tischler, is a civil engineer; as such, he is arguably not even qualified to opine on whether the proposed discharge will adversely impact the marine environment. But he did, and his testimony did not show the discharge would comply with the TSWQS. He is not a biologist, has not conducted any studies on the impact of increased salinity on fish larvae,⁹⁴ and is only “generally” familiar with how fish larvae move through the Aransas Pass into the Corpus Christi Bay.⁹⁵ But he acknowledged that, in all likelihood, some larvae will pass through the ZID,⁹⁶ testifying that there is “almost a one hundred percent probability that at

⁹⁰ PAC-5, at 7:15-20.

⁹¹ PAC-6, at 5:18-19.

⁹² PAC-6, at 7:25-8:4.

⁹³ PAC-6, at 8:18-22.

⁹⁴ Tr. Vol. 3, at 213:19 – 214:8.

⁹⁵ Tr. Vol. 3, at 214:23 – 215:3.

⁹⁶ Tr. Vol. 3, at 215:-9.

least one larvae would enter” the mixing zone, or the ZID, and would suffer an adverse effect.⁹⁷ When pressed further about the potential for aquatic life deaths, he testified, “If there was an absolute number, I’m not going to make a statement that zero are affected.”⁹⁸

Dr. Tischler knows the TSWQS prohibit any death, but he simply ignores that because he has invented a new standard – he looks at “populations.”⁹⁹ Because something less than 100% of all living things in the channel will avoid dying, that appears good enough for Dr. Tischler.¹⁰⁰ In his words “the vast majority of the larvae, the juvenile fish and adults” will have an adequate zone of passage.¹⁰¹ What Dr. Tischler means by “vast majority” is anyone’s guess – but it does not matter because that is not the correct legal standard. This imagined “zone of passage” for a “vast majority” is a fiction not found in the applicable standards related to lethality. The TSWQS do not contain any threshold for a permissible amount of death. They do not allow any foreseeable death.

Dr. Wallace was the ED’s only witness on Referred Issues A, B, and C. She is an Aquatic Scientist IV, and she performed the TCEQ’s antidegradation review. Demonstrating the unreliability of her opinions, her prefiled testimony was often inconsistent with both her deposition testimony and her live testimony at the hearing. On cross examination, however, Dr. Wallace gave testimony that was surprisingly similar to Dr. Tischler’s testimony. Dr. Wallace is well aware that the TCEQ regulations prohibit death, even in the ZID.¹⁰² She has not performed any studies of larvae in the Corpus Christi Bay or the estuaries,¹⁰³ but she acknowledged that hypersaline water

⁹⁷ Tr. Vol. 3, at 244:20-245:6.

⁹⁸ Tr. Vol. 3, at 245:17-24.

⁹⁹ Tr. Vol. 3, at 245:3-8.

¹⁰⁰ Tr. Vol. 3, at 244:8-18.

¹⁰¹ Tr. Vol. 3, at 244:8-18.

¹⁰² Tr. Vol. 5, at 178:16-23, 171:1-8 (oysters are not supposed to die as a result of this discharge).

¹⁰³ Tr. Vol. 5, at 148:11-13, 171:9-11 (She did no investigation of the tolerance of oysters for changes in salinity.)

could be harmful to zooplankton if they got trapped in the ZID.¹⁰⁴ She could not offer any opinion about what the range of salinity needs to be to support marine life in this area,¹⁰⁵ but she conceded that she had no basis to dispute that at least 10% of the time, the salinity in the channel is already 37 ppt and this is the upper physiological limit of some species¹⁰⁶

Particularly troubling was Dr. Wallace's candid admissions about the limitations of her analysis. Dr. Wallace testified she was "very uncomfortable" doing the antidegradation review on this application because "of the size of the discharge, the nature of the discharge, the location of the discharge. And looking into the gazing ball and seeing all this playing out."¹⁰⁷ She further testified that she "hopes" the proposed discharge will not cause death in the channel.¹⁰⁸ But, she also testified she was "unconcerned" about possible death in the ZID "because there is adequate zone of passage."¹⁰⁹ In other words, Dr. Wallace has joined Dr. Tischler in inventing a brand new standard: If something less than all living things will be harmed or killed, that is good enough. Again, this is not the legal standard.

There is no evidence that TCEQ, or Dr. Wallace, attempted to quantify the aquatic life that exists in the waters today, much less the number that will pass through the ZID and admittedly suffer some harm, or that will win the larval lottery and avoid the mixing zones by pure luck. The foregoing represents the unreliable analysis used to support the permit, and is clearly outweighed by the testimony of the aquatic experts that the proposed discharge will adversely impact the marine environment, aquatic life, spawning eggs, or larval migration.

¹⁰⁴ Tr. Vol. 5, at 147:17-148:6.

¹⁰⁵ Tr. Vol. 5, at 162:24-163:6.

¹⁰⁶ Tr. Vol. 5, at 151:21-152:11.

¹⁰⁷ Tr. Vol. 5, at 186:16-21.

¹⁰⁸ Tr. Vol. 5, at 165:23-166:2.

¹⁰⁹ Tr. Vol. 5, at 166:22-167:8.

B. Whether the Proposed Discharge will Adversely Impact the Health of the Requesters and Their Families, Including Whether Fish and Other Seafood will be Safe for Human Consumption.

For Referred Issue B, there is almost no evidence in the record to conclude the proposed discharge will not adversely impact requesters and their families. To support the draft permit, Dr. Wallace gave merely circular reasoning; namely, she concluded that because (1) the TSWQS require that that “water in the state must be maintained to preclude adverse toxic effects on aquatic life, terrestrial life, livestock, and domestic animals resulting from contact, consumption of aquatic organisms, or consumption of water,”¹¹⁰ and (2) the ED has “determined that the draft permit...is in compliance with the TSWQS,” then therefore the designated uses will be maintained and protected. This is classically circular reasoning, and is not evidence sufficient to demonstrate that the proposed discharge will not adversely impact public health or the safety of fish and seafood. The ED presents no other evidence on Referred Issue B, including any underlying evaluation or scientific analysis of the discharge that would support a finding of safety to human health or fish and seafood. Not only does this rely on circular reasoning, but it does not actually address whether seafood will be safe for human consumption.

The Port’s witness, Dr. Tischler, argues that if the proposed discharge is in compliance with the draft permit, then it will not adversely affect human consumption of fish and other seafood.¹¹¹ Dr. Tischler’s opinion depends upon the Port’s ability to comply with the draft permit. However, during cross examination, Dr. Tischler testified that he does not believe the Port can comply with the draft permit with the facilities currently proposed in the Application.¹¹²

¹¹⁰ ED Ex. MW-1, at 6:22-32.

¹¹¹ APP-LT-1, at 23:17-20.

¹¹² Tr. Vol. 3, at 264:13 – 265:3.

C. Whether the Proposed Discharge will Adversely Impact Recreational Activities, Commercial Fishing, or Fisheries in Corpus Christi Bay and the Ship Channel.

This issue is directly tied to Issue A discussed above, because the impact upon aquatic life will impact the fish populations in the region, which in turn will impact all activities, whether commercial or recreational, that depend upon fish populations. Therefore, the impact upon aquatic life discussed above in regard to Issue A must be considered when addressing this issue as well.

As Dr. Brad Erisman testified “[t]he Aransas Pass tidal inlet is the most important multi-species, spawning site for the most economically valuable sportfishes in the region.”¹¹³ The productivity of local populations of sportfishes (red drum, spotted seatrout, sheepshead, black drum and southern flounder) “are directly linked to, and dependent upon, the reproductive activity that occurs at this inlet.”¹¹⁴ The fisheries in the Corpus Christi Bay, Aransas Pass tidal inlet, and the Texas Gulf of Mexico support a multi-billion dollar commercial fishing industry (e.g., finfish, crab, and shrimp), provides a livelihood for many residents in the area, and recreation opportunities (e.g., fishing) for many local residents and visitors to the region.¹¹⁵

As noted previously, Aransas Pass and other tidal inlets in the area have been designated as essential fish habitat, or EFH, due to their disproportional productivity—namely, many fish species spawn there and in large numbers. The Aransas Pass is the only tidal inlet in the area, with the other nearest major tidal inlets 60 miles to the north and 80 miles to the south.¹¹⁶ This makes the Aransas Channel the main source of productivity (e.g. for spawning, migrating, feeding) and connectivity with the Gulf of Mexico for all the fish and invertebrate populations in this entire

¹¹³ PAC-1, at 6:15-16

¹¹⁴ PAC-1, at 7:4-7; *See also* PAC-5, at 12:9-17.

¹¹⁵ PAC-6, at 23:11-18.

¹¹⁶ PAC-6, at 10:8-15.

region. Therefore, the productivity of fish populations and fisheries are highly dependent upon the maintenance of this key area for their development and survival.

The protection of EFH is a provision of the Magnuson-Stevens Act,¹¹⁷ a federal law governing marine fisheries management in United States federal waters. EFH is recognized by both state and federal agencies as a priority for the management and conservation of coastal marine fishes and fisheries, because its protection is necessary to maintain productive fisheries and to rebuild depleted stocks. As Dr. Brad Erisman testified, the waterbodies that would be directly impacted by the discharge are “irreplaceable.”¹¹⁸

If the discharge impacts marine life as PAC’s experts testified they anticipate, the consequences for the people who either enjoy, or rely on, the regional fisheries would be devastating. Dr. Erisman testified that the draft permit will “disrupt fish reproduction in the area to such a degree that significantly diminished fish populations in and around Corpus Christi Bay and the ship channel will adversely impact fishing and fisheries in the region.”¹¹⁹ Dr. Stunz opines that the adverse effects to fish populations will cause catastrophic damage to both the commercial and recreational fishing industries, with commensurate economic devastation.¹²⁰

In fact, if issued by TCEQ, this permit could completely negate the fish-stocking efforts of TPWD, which spends approximately \$3.7 million annually to stock 20 million fish along the Texas coast. Dr. Stunz testified that “[T]he impact here in this one inlet [of the discharge] could essentially negate all that stocking efforts in, essentially, just a few days, based on some of my

¹¹⁷ 16 U.S.C. §§ 1801-1891d.

¹¹⁸ PAC-1, at 3:14-16.

¹¹⁹ PAC-1, at 5:6-8; *see also*, PAC-5, at 12:23-13:2; PAC-4, at 20:22-24.

¹²⁰ PAC-6, at 23:11-18.

calculations.”¹²¹ The predominant fish stocked by TPWD is Red Drum.¹²² Dr. Stunz testified that “[t]he discharge could wipe out a year’s worth of the Texas Parks and Wildlife hatchery program – 18 million baby red drum – over a very short period of time. And much higher numbers for other things that occur at much higher densities per cubic meter.”¹²³ Because of this, Dr. Stunz – who is appointed by the U.S. Secretary of Commerce and the Texas Governor to commissions that make multi-billion dollar decisions regarding federal and state fisheries policy¹²⁴ - testified that granting this permit would be “catastrophic.”¹²⁵

D. Whether the Application, and Representations Contained therein, are Complete and Accurate.

On this issue there can be little dispute: the evidence clearly and conclusively demonstrates that the Application, and the representations contained therein, are not complete or accurate. There are numerous inaccuracies in the Application, which are addressed in detail below.

1. The Facility Proposed in the Application Cannot Satisfy the Draft Permit.

The evidence indisputably establishes that the facility proposed by the Port in the Application cannot meet the draft permit requirements. This fact is demonstrated most obviously by the testimony of Applicant’s expert witness, Dr. Tischler, who testified that the Port likely could not meet the draft permit requirements with the diffuser design included in the Application.

As noted previously, the diffuser is a critical piece of the equipment for a desalination facility. Its design dictates the discharge flow rates, direction, and spatial dispersion and, thus, it is a critical piece of equipment that influences the impact of the discharge on aquatic life in the

¹²¹ Tr. Vol. 3, at 72:14-21, 73:3-5.

¹²² Tr. Vol. 3, at 114:18-25.

¹²³ Tr. Vol. 3, at 120:22-121:6.

¹²⁴ Tr. Vol. 3, at 101:1-25.

¹²⁵ PAC-6, at 25:5-11.

ZID and the dispersion of the discharge into the marine environment. Because the diffuser is such a critical piece of equipment, Katie Cunningham testified in her deposition that if the Port were to change the diffuser from what was presented in the application, it would have to be re-reviewed by the ED.¹²⁶ Ms. Cunningham was unequivocal in this:

Q: Okay. So in other words, the design that they used for their modeling doesn't have to be the design they use in reality; they're allowed to just use any design as long as it meets this number?

A: If the design of the diffuser were to change, it would need to be re-reviewed by TCEQ.

Q: Okay. So that's -- so if -- if the design was to change and significantly? At all?

A: At all.¹²⁷

During the hearing, the Port's expert witness, Dr. Tischler, testified that he ran updated modeling using a different diffuser design than was presented in the Application.¹²⁸ He noted that the new diffuser design reduced the discharge openings by nearly 80%, to a size that was roughly 20% of what they were in the design in the Application,¹²⁹ and this increased the discharge velocity approximately 20-fold.¹³⁰ When asked why he did this updated modeling, he testified he did so to demonstrate that the draft permit's effluent limits at the ZID could be met.¹³¹ When pressed further, he acknowledged his belief that the diffuser design in the Application would not be able to meet the draft permit's limits. Specifically, Dr. Tischler testified:

¹²⁶ Tr. Vol. 6, at 109:6-10; PAC-13, at 10:2-10.

¹²⁷ PAC-13, at 10:2-10.

¹²⁸ Tr. Vol. 3, at 218:11 – 219:3.

¹²⁹ Tr. Vol. 3, at 219:1 – 221:4.

¹³⁰ Tr. Vol. 3, at 221:5-10 and 223:1-11.

¹³¹ Tr. Vol. 3, at 230:13-25.

Q: . . . Do you have any opinion on whether the revised -- in your expert opinion, of course, do you have any expert opinion on whether the revised diffuser design is necessary to meet permit requirements?

A: Yes.

Q: What is that opinion?

A: They may have difficulty meeting the 18.5 (sic)¹³² percent in the ZID, unless they make revisions to the design.

Q: What do you mean by “difficulty,” sir?

A: They may not meet it.

Q: So just black and white, they won't be able to meet it; is that your testimony, sir?

A: Under the conditions of high flow rates, the modeling would suggest that they couldn't meet it.¹³³

Thus, the Port's own proffered expert witness acknowledges the evidence does not establish the diffuser in the Application will meet the draft permit's discharge limits. This admission means, as a matter of law, the Application is either not accurate or complete, or both. This is because, at the time the case was referred to SOAH, the Port and the ED both contended that the draft permit would satisfy all applicable requirements and the Application sufficiently demonstrated the draft permit requirements could be met by the proposed facilities. Such clearly is wrong, as shown by the testimony of the Port's own expert.

In addition to Ms. Cunningham's testimony on this, ED witness Shannon Gibson testified that if she had become aware of the diffuser design change prior to the contested case hearing process, the ED's staff would have reviewed the information to validate it and determine whether

¹³² This appears to be an inadvertent misstatement, as the correct number is 18.4.

¹³³ Tr. Vol. 3, at 264:13 – 265:3.

it would change the draft permit. But, since it happened in the contested case hearing process, she was not sure how to handle it now, as it was a legal question for the ED's legal counsel.¹³⁴

The ED has not reviewed the updated modeling done with the new diffuser design,¹³⁵ but such review is required according to ED's staff ("If the design of the diffuser were to change, it would need to be re-reviewed by TCEQ." – Katie Cunningham)¹³⁶ ("if they do validate that the diffuser design that they presented to the TCEQ cannot meet the dilutions and they cannot meet the tenets of this permit, if they're able to validate that and they have information that needs to be things to amend and supplement their application, they need to provide that to us as promptly as possible." – Shannon Gibson).¹³⁷ Under the circumstances, this deficiency renders the Application incomplete and inaccurate, as the evidence demonstrates the facilities proposed in the Application, and reviewed by the ED, are not able to meet the draft permit limits.

2. The Application Falsely Represents the Port Will Own and Operate the Desalination Plant.

In the Application, the Port indicates it will be the owner and operator of the desalination plant.¹³⁸ It has never modified or amended this representation, and the draft permit reflects this as well. But this representation is false. Just two months ago, on September 15, 2020, the Chairman of the Port Commission unequivocally stated in an open meeting that:

. . . we've said consistently on both of these permits that we are not going to own, operate, or build a desalination plant. We are in the process of trying to get the permits in order to meet one of the concerns that our industry partners had several years ago about having an uninterrupted source of water.¹³⁹

¹³⁴ Tr. Vol. 5, at 103:15 – 105:16.

¹³⁵ Tr. Vol. 5, at 104:4-9.

¹³⁶ PAC-13, at 10:6-7.

¹³⁷ Tr. Vol. 5, at 103:23 – 104:4.

¹³⁸ AR, S-Application 000227.

¹³⁹ PAC-24, at p. 4 of 5.

Ms. Sarah Garza, the Port's identified corporate representative, testified that both the Port's Commissioners and the Port's Chief Executive Officer have stated on numerous occasions that the Port does not intend to own or operate this facility.¹⁴⁰ In fact, Ms. Garza testified she might have stated as much herself.¹⁴¹ The testimony of Ms. Garza is quite clear:

Q: Has the Port made the statement, "We're not going to run the desalination facility?"

A: Yes.¹⁴²

* * *

Q: Okay. So haven't you represented that the Port at – at certain times, you represented the Port was looking for and was not intending to operate the desal facility?

A: Members of the Port staff have represented that, yes.¹⁴³

The Port recognizes that the statements made by its leadership on this issue are problematic for it, so it has engaged in remarkable word gymnastics to try to avoid acknowledging the plain truth of its intentions. In her depositions, Ms. Garza bounced between acknowledging the Port on numerous occasions has indicated publicly it would not own or operate the desalination plant, but then pointing to the Application and stating that it accurately represents the Port will be the owner and operator of the desalination plant. Ms. Garza could provide no justification for the continued inconsistent positions by the Port, other than a somewhat nonsensical response:

Q: Subsequent to this date, subsequent to March 5th, 2018, we have commissioners and the CEO publicly stating we will not operate the facility. Are you able to reconcile them making those statements with what was certified as true to the TCEQ about the Port operating the facility?

¹⁴⁰ PAC-18, at 4:25 – 6:1; 6:23 – 7:14.

¹⁴¹ See PAC-18, at 25:2-16 ("It is possible I made that representation at the public meeting.").

¹⁴² PAC-18, at 5:8-10.

¹⁴³ PAC-18, at 25:2-7.

A: Yes.

Q: Okay. Explain it to me. How could they -- how could they say that in light of what was certified to TCEQ?

A: The statements being made by commissioners and CEO are not necessarily reflective of this document because they don't necessarily know exactly what is in here in the context of what was in here. If I had been given direction that the Port would not be operating and we are pursuing a different operator, then the application would have been revised.¹⁴⁴

When pressed whether the Port actually intended to operate the desalination facility,

Ms. Garza dodged the question by giving a “non-answer” answer:

Q: And sitting here today, are you aware of whether the Port intends to be the operator of the facility?

A: We are seeking a permit and the permit indicates that we are the owner and operator. If at some point in the future that changes, we will modify this application.¹⁴⁵

So, Ms. Garza recognizes that if the Port does not intend to be the owner and operator of the desalination plant, it must revise its application. Ms. Garza’s deposition testimony above was given on September 2, 2020. Just two weeks later, the Port’s Commission Chairman went on record saying, “we are not going to own, operate, or build a desalination plant.”¹⁴⁶ Ms. Garza has testified that the Chairman of the Port Commission has authority to speak on behalf of the Port.¹⁴⁷

Thus, a few points are unmistakably clear: (1) the Port’s own corporate representative acknowledges that, if the Port does not intend to own or operate the facility, it must amend the Application; (2) the Port’s own Commission Chairman subsequently stated, just two months ago, that the Port does not intend to own or operate the desalination plant; and (3) the Application still

¹⁴⁴ PAC-18, at 8:14 – 9:5.

¹⁴⁵ PAC-18, at 10:10-16.

¹⁴⁶ PAC- 24, at p. 4 of 5.

¹⁴⁷ PAC-18, at 7:3-9.

identifies the Port as the intended owner or operator of the facility. These positions are simply not congruent, and they reflect that the Application currently is not accurate. To hold that these statements are consistent and accurate is to completely gut all meaning from the word “accurate” and to allow applicants to put anything they want into an application even when it does not match reality. If that is where the permitting process is, then why even have a permitting process?

Given the incredible efforts the Port has gone through trying to maintain two inconsistent positions—continually telling the public it will not own or operate the desalination plant, while at the same time telling the TCEQ and the ALJs that it will—it is not surprising that the Port chose not to present Ms. Garza as a witness at the hearing, despite previously designating her as a corporate representative. The Port even went so far as to withdraw portions of her deposition just to avoid having to subject her to questioning, and it declined to present *any* corporate employee to provide testimony at the hearing in this case. The ALJs should review Ms. Garza’s deposition testimony to see the amazing gymnastics the Port is engaging in to avoid acknowledging the plain truth of their plans to never own or operate the facility, despite identifying themselves as the intended owner and operator in the Application.¹⁴⁸ Given the clear statements of the Port’s highest leadership, both previously and as recently as within the past two months, there is no conclusion to draw but that the representation in the Application that the Port will be the owner and operator of the desalination plant is not accurate.

3. The Application has an Inaccurate Location for the Facility.

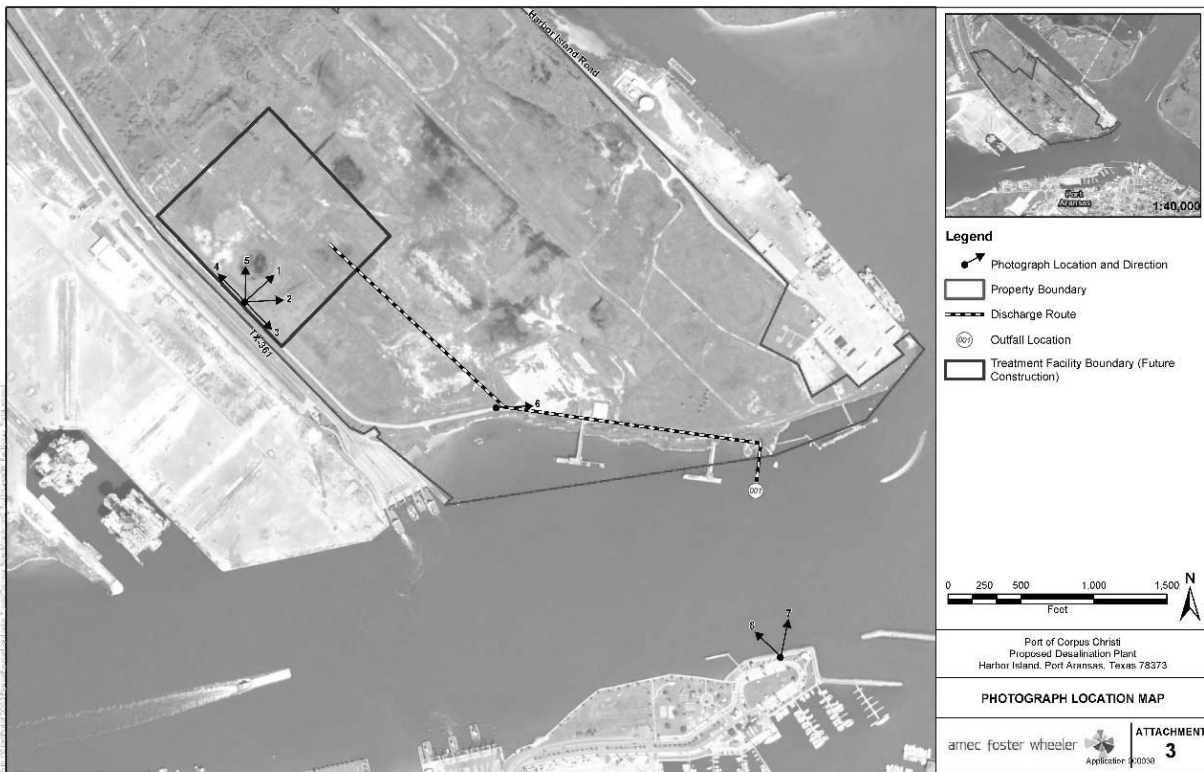
The Application identifies the proposed location of the desalination plant on Harbor Island. **But such is in the exact same location at which Lone Star Ports, LLC (LSP) has proposed a marine terminal, and the proposed site of the discharge pipes are exactly where marine ship**

¹⁴⁸ See PAC-18, at pp. 4-10 and 25-29.

berths are to be located under the LSP application. Currently pending before SOAH in Docket No. 582-20-3438 is an air permit application submitted by LSP. That application identifies the location for a marine terminal, including two ship berths and support facilities, that it seeks to permit. That proposed marine terminal is located on the exact site where the desalination facility is proposed in this case.¹⁴⁹

The figures below taken from the two applications depict this inconsistency:

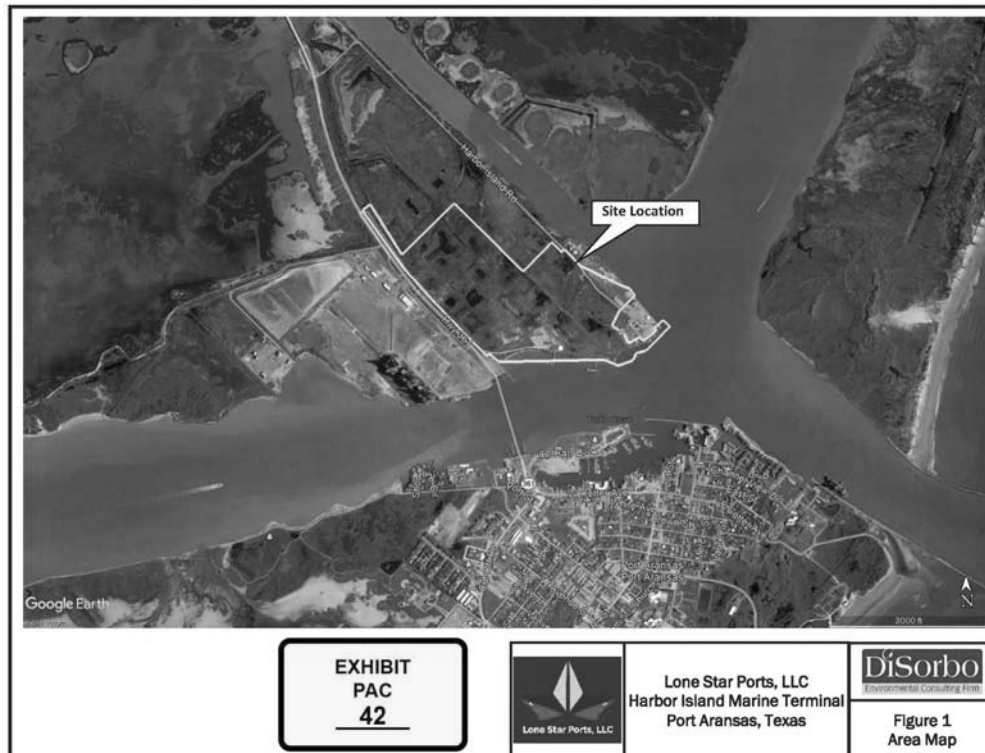
The Location of the Proposed Desalination Plant¹⁵⁰



¹⁴⁹ See PAC-41 and PAC-42; Tr. Vol. 5, at 108:5-21; 110:24 – 112:16; 119:11 – 120:20.

¹⁵⁰ This graphic is in the Administrative Record, at Tab D, Application 000038.

Location of Lone Star Ports Marine Terminal Facilities



APP-00929



APP-00930

As seen in the maps above, there is a clear conflict between LSP's permit application and the facilities proposed by the Port in this case. The Port's submitted site plan shows the desalination facility in the same location as the marine terminal proposed in the LSP case, and shows the desalination discharge pipe in the same location where a ship berth is proposed in the LSP case.

Moreover, this is not a simple mistake or a sign of miscommunication between two entities. The Port and LSP are partners in the development of Harbor Island and the site of the facility in the LSP case is on property leased by LSP from the Port. Thus, it is clear that one, or both, applications contain misrepresentations because both facilities cannot possibly be built as sited, which means at least one party is clearly misrepresenting in its application what it intends to build. This inconsistency renders the Application inaccurate, or at least warrants a remand to address and resolve the inconsistency.

4. The Application has Inaccurate Information for the Outfall Location.

The undisputed evidence establishes that the Application identifies latitude and longitude coordinates for the outfall location that are not accurate.¹⁵¹ The Application has, for example, two sets of latitude and longitude figures for its outfall—one of which is what the Port now says is accurate,¹⁵² while the other puts the outfall location in the Gulf of Mexico.¹⁵³ In addition to conflicting latitude and longitude coordinates, the Application also has a number of figures where the outfall and diffusers are shown at different locations.¹⁵⁴ One figure uses an arrow to show the location near the middle of the Corpus Christi Ship Channel.¹⁵⁵ Even the ED staff was confused

¹⁵¹ PAC-13, at 8:3-12; Tr. Vol. 6, at 83:22 – 84:4.

¹⁵² AR, Tab D, at S App 258; PAC-18, at 31:1-14.

¹⁵³ AR, Tab D, at S-App 217.

¹⁵⁴ For example, AR, Tab D, at S-App 246 and S-App 386.

¹⁵⁵ AR, Tab D, at S-App 343.

and thought the arrow pointed to the actual location of the outfall.¹⁵⁶ The Port claims the arrow was mistakenly reversed to point in the wrong direction. However even that explanation is inadequate, because reversing the arrow (to point in the direction the Port claims is accurate) results in it pointing to a location that is not the same location identified by the latitude and longitude coordinates or other figures in the Application purportedly depicting the outfall location. Thus, it is irrefutable that the Application gives inconsistent information regarding the outfall location, resulting in at least some of this information in the Application being necessarily inaccurate.

Further, the Application lists the depth at the outfall as 63 feet, but the actual depth has subsequently been determined to be 90 feet. The Port and the ED have subsequently acknowledged this discrepancy, and it is discussed more in the modeling section. But, it irrefutably shows that the Application is inaccurate.

5. There are Other Inaccuracies in the Application.

In addition to the inaccuracies noted above, there are many other inaccuracies in the Application related to the Port's modeling and environmental impacts analysis. Those matters are discussed in more detail in other sections of this brief, related to modeling and other issues referred by the Commission, and are not restated here.

E. Whether the Applicant Substantially Complied with Applicable Public Notice Requirements.

The requirements for filing an application with TCEQ for an industrial waste discharge permit include a map and list of affected landowners,¹⁵⁷ which are those owners of lands that are within one half a mile of the outfall for the discharge.¹⁵⁸ To determine the landowners entitled to

¹⁵⁶ PAC-14, at 10:23 – 11:6.

¹⁵⁷ 30 TAC § 305.48(a)(2); ED-SG-7, at 31; S-APP 231-240.

¹⁵⁸ PAC-3, attached exhibit BW-3, at 14.

notice, the location of the outfall in the Application must be accurate, because that is the baseline determinant for notice. However, as discussed above, the Port provided conflicting information in its Application for the location of the outfall.

Even small changes in the location of the outfall will affect which properties are required to be identified for notice and, thus, which landowners are required to receive mailed notice.¹⁵⁹ There is no dispute that there are conflicts in the Application regarding these matters.¹⁶⁰ Despite the significant impact of the outfall location on notice requirements, the ED permit writer appeared to suggested that a small change in the location of the outfall may not be a major or even minor amendment that would require new notice or a reevaluation of the impacts of the discharge.¹⁶¹ Yet, it is clear here that the location of the outfall is a major consideration for any modeling of the impacts of the discharge and for determining notice. Thus, it is critical that the outfall location is properly determined to ensure that notice was properly provided.

Moreover, the outfall location is not even identified in the draft permit as required by Texas law.¹⁶² Leaving the location of the outfall subject to confusion is simply not permissible and it nullifies any ability to evaluate whether notice has been properly provided as required by law. For this reason, the Protestants contend that the record is insufficient to support a finding that the Port substantially complied with applicable public notice requirements.

¹⁵⁹ PAC-3, at 14, attached exhibit BW-3.

¹⁶⁰ AR, Tab D, at S-App 217, 246, 258, 286, 343.

¹⁶¹ PAC-4, at 14:21 – 15:22.

¹⁶² *See* Tex. Water Code § 26.029(a)(2)-(3).

F. Whether the Draft Permit is Consistent with the Texas Coastal Management Program’s Goals and Policies.

The Port has failed to meet its burden of proof under 30 TAC Chapter 281, Subchapter B that the draft permit is consistent with the Texas Coastal Management Program, because the only evaluation of the consistency was based on the inaccurate and incomplete Application and the error in interpretation of the CORMIX model’s prediction of the extent of mixing.

It is clear by comparing the documentation of the consistency determination in the original record and that in the revised record that there was only one such evaluation and it was done based on the incorrect modeling results.¹⁶³ The original interpretation of the CORMIX model found that the percentage of effluent at the ZID would be 1.95 percent. The later interpretation now finds the percentage to be 18.4 percent.

Moreover, the only evaluation for consistency with the Texas Coastal Management Program was done by TCEQ employee Shannon Gibson, who explicitly claimed no expertise on impacts of the marine environment. In contrast, TCEQ employee Dr. Mary Anne Wallace—who has some expertise on the subject—stated that consideration of the Coastal Management Program or plan was not part of her responsibilities for this application.¹⁶⁴ And the brief review done by Ms. Gibson, documented at ED-SG-8, was done before TPWD filed both of its 2018 and 2019 comments on the application,¹⁶⁵ and before the filing of public comments on the impacts on marine environment by experts, such as those of Dr. Erisman and Dr. Stunz.¹⁶⁶

There was never a serious effort at a consistency determination for the Texas Coastal Management Program. Yet, a serious consistency determination is required by the applicable rules:

¹⁶³ Compare AR TAB C ED 056 with AR TAB F ED 0077.

¹⁶⁴ ED MW-1, at 8.

¹⁶⁵ PAC-37 and PAC-9.

¹⁶⁶ PAC-1, attached BE-1; PAC-6, attached GS-2.

The executive director shall review applicable requests and applications for consistency with CMP goals and policies and provide a brief summary of such analysis and other statements and recommendations in the draft permit and technical summary or referral to commission as provided by §281.21 and §281.22 of this title (relating to Draft Permit, Technical Summary, Fact Sheet, and Compliance Summary and Referral to Commission), respectively.¹⁶⁷

This requirement applies to wastewater discharge permits.¹⁶⁸

Here, with the first large discharge from a seawater desalination facility along the Texas coast, the ED basically ignored the policies and goals of the Texas Coastal Management Program to protect the coastal resources, including the marine environment. The document on the evaluation shows that no evaluation was done. It shows that the ED did not comply with the agency's rules and even the concerns raised by TPWD on impacts on the coastal resources, including those of the Redfish Bay State Scientific Area, the only such area along the Texas Coast.¹⁶⁹ It is clear that the ED also did not take into account the report of TPWD and GLO on the importance of keeping these types of discharges away from important migration routes and spawning areas for marine species.¹⁷⁰

The ED did so because the Port did not provide information on the significance of the area, the likely impacts on the marine environment, or its own evaluation of consistency with the Texas Coastal Management Program. The ED was led to believe this new type of discharge was just another “run of the mill” industrial discharge for which there are strict standards for chemicals in the effluent. However, it is not. The problem here is salinity, for which there are no real standards, just goals in the TSWQS and in the Texas Coastal Management Program. The complete failure to

¹⁶⁷ 30 TAC § 281.43(b).

¹⁶⁸ 30 TAC §281.45(a)(2)(H).

¹⁶⁹ PAC-9; PAC-37.

¹⁷⁰ PAC-7.

do a detailed evaluation of consistency leaves an empty record that precludes the ALJs from making any finding that the draft permit is consistent with the Texas Coastal Management Program's goals and policies.

G. Whether the Modeling Complies with Applicable Regulations to Ensure the Draft Permit is Protective of Water Quality, Utilizing Accurate Inputs.

For the ED to conduct accurate modeling the Applicant must, as a threshold matter, provide the following:

- a) a location for its outfall that will allow the CORMIX model to actually predict if the design and operations of the discharge will comply with state and federal law and agency regulations, and
- b) accurate inputs for the modeling or other type of evaluation of the impacts.

The Port failed in regard to both of these elements. Specifically, in this case, the Port has chosen a proposed discharge location that actually precludes the ability of the CORMIX model to provide accurate predictions. Further, even if the model could be helpful to the Commission in evaluating the impacts of the proposed discharge, the lack of accurate modeling input data provided by the Port renders the model worthless.

The ED may not be comfortable in evaluating the impacts without a model to rely upon. On a number of occasions, the ED's staff or its attorneys have suggested that the use of the CORMIX model itself and the inputs used for the modeling followed TCEQ guidance,¹⁷¹ were consistent with other modeling exercises,¹⁷² or, if not ideal, were the best TCEQ could do.¹⁷³ These rationalizations, however, do not justify reliance on a model that simply cannot be used to predict

¹⁷¹ ED-KC-1, at 7:14-18, 12:13-25, 13:5-7, 13:19-22.

¹⁷² *Id.* at 13:7-9.

¹⁷³ *Id.* at 14:5-14.

the actual mixing of the effluent in this particular location. In fact, the use of the CORMIX model here would give a false sense of reality. Thus, it simply cannot be used as a reliable predictor for the potential impacts of the discharge.

The ED is not required to use a model that does not fit, and the ED has evaluated the potential impacts of discharge permits without using the CORMIX model in the past. The ED's senior staff modeler, Mr. Michalk, testified there are situations where the model is not a viable tool, including where there is an eddy.¹⁷⁴ The Port's witness, Dr. Tischler, testified that he has been involved in a discharge permit for which there was no modeling.¹⁷⁵ In a situation where an appropriate model is not available or needed, TCEQ simply has to rely upon the opinions of experts, based on the best scientific judgment.

1. The Applicable Regulations are not Tied to Modeling.

There is no legal requirement that applicants must do any modeling of the impacts of their proposed effluent. TCEQ does have guidance for using the CORMIX model when it or an applicant does use the model, which was included by the Port in its Application in this case.¹⁷⁶ The guidance is not a rule, though, and there is no rule or requirement that the guidance must be used even if CORMIX modeling is performed.¹⁷⁷

There are, however, clear requirements that an applicant must provide accurate and complete information when requested to do so by the ED. Those requirements allow the ED to make required permit decisions based on accurate data. Thus, an applicant for a discharge permit must provide all of the needed information and must be accurate in doing so.

¹⁷⁴ PAC-15, at 6:2 – 7:20.

¹⁷⁵ Tr. Vol. 3, at 208:21-25.

¹⁷⁶ AR S-APP, at 371-375.

¹⁷⁷ PAC-14, at 6:3-4; PAC 15, 8:1-9.

TCEQ rules require that an applicant for a discharge permit provide certain information, requiring an application to include:

such other information as reasonably may be required by the executive director for an adequate understanding of the project or operation, and which is necessary to provide the commission an adequate opportunity to make the considerations required by ... §305.48 of this title.¹⁷⁸

TCEQ's rules further require "Additional Contents of Applications for Wastewater Discharge Permits," stating:

The following shall be included in an application for a wastewater discharge permit.

...

(3) The applicant shall submit any other information reasonably required by the executive director to ascertain whether the facility will be constructed and operated in compliance with all pertinent state and federal statutes.¹⁷⁹

Finally, these sections of TCEQ rules and the water quality standards found in 30 TAC Chapter 307 are clearly intended to assure that wastewater discharge permits will be protective of the state's water quality and marine environment, including the requirement that "Surface waters must not be toxic to...aquatic life."¹⁸⁰ Thus, in this instance, the discharge cannot cause any lethality in the ZID nor significant impacts on marine species or their ability to migrate. This is the showing that must be made, and improper or unreliable modeling will not satisfy it.

2. The Port's Proposed Diffuser Location Does Not Allow for Use of the CORMIX Model.

The evidence indicates multiple reasons why the CORMIX model cannot be used in this case.¹⁸¹ One critical factor in the mixing analysis in the CORMIX model is the bathymetry of the

¹⁷⁸ 30 TAC §305.45(a)(8)(C).

¹⁷⁹ 30 TAC §305.48.

¹⁸⁰ 30 TAC § 307.4.

¹⁸¹ PAC-2, at 13-15; PAC-3, at 10:25-31 and 22.

discharge location. Bathymetry refers to the depth, shape, and contours of the floor of the receiving waters, including whether there are slopes, pitches, and holes in the sea floor.¹⁸² The CORMIX model is not capable of modeling salinity plumes when bathymetry slopes upward as it does here, because the model has to be run with a zero or downward slope.¹⁸³

The modeling presented by the Port, as well as that done by the ED and PAC, shows that the discharge plume falls to the bottom of the channel quickly.¹⁸⁴ In the ED's model, the plume hits the bottom of the channel within 10 meters of the outfall.¹⁸⁵ The fact that the plume falls to bottom of the channel quickly is especially important in this case, because while the Application stated that the bottom of the channel is under 63 feet of water and slopes gently away from the outfall, the reality is the bottom of the channel below the outfall is a 90-foot hole, which slopes upward.¹⁸⁶ When the plume drops into the hole, to 90 feet or even less, it is still in a hole, with upward sloping sides. The CORMIX model is not capable of modeling this particular scenario because the CORMIX model allows only flat bottoms or ones that slope downward away from the outfall for concentrated brine discharges.

A second fundamental aspect of the CORMIX model is that it requires a steady state condition with flow of the receiving waters moving in a straight line. However, the diffuser is located near an eddy that changes the direction of the flow from straight line to more circular flow, which can recirculate the high salinity effluent in the same area.¹⁸⁷ This recirculation may result in increased effluent concentrations near the diffuser arrays and may cause the concentrated

¹⁸² Tr. Vol. 2, at 89:4-16.

¹⁸³ Tr. Vol. 6, at 77:25 – 78:11; PAC-2, at 13-15; PAC-3, at 22.

¹⁸⁴ Tr. Vol. 6, at 67:24 – 68:2.

¹⁸⁵ PAC-2, JT 2.

¹⁸⁶ PAC-2, at 14.

¹⁸⁷ PAC-15, at 6:2 – 7:20; PAC-3, at 21-22; Tr. Vol. 6, at 22:13 – 23:12; PAC-3, at 23.

effluent plume to cross the three boundaries of the mixing zone on which the diffuser array is located, well above any authorized percentages of effluent.¹⁸⁸

Similarly, an eddy can recirculate anything that is in the ambient water at the eddy, including larvae. Because the Port has not provided any information on the eddy, its size, shape, and exact location, it is anyone's guess as to the number of larvae and their potential exposure time to higher concentrations of salinity. Even if that information was available, it is clear from the testimony of Mr. Michalk and Ms. Cunningham that the CORMIX model cannot be used to predict the mixing where there is an eddy.¹⁸⁹

3. The Port Failed to Provide Accurate Bathymetry Input Information for the CORMIX Modeling.

As noted above, in its Application, the Port identified the depth of the channel bottom as 63 feet.¹⁹⁰ It is based on bathymetry available from the U.S. Army Corps of Engineers (USACE) website, but the Port used the wrong map, one that is not in the area of the outfall, until 2019 when it checked the website again.¹⁹¹ The USACE website since at least 2011 has shown that the 90-foot deep hole at the location of the diffuser.¹⁹² Because the Port's Application does not show the 90-foot hole, the upward sloping sides of the hole, or the eddy, TCEQ ignored the reality of the actual bathymetry in the area and did its modeling simply using the incorrect data in the Application for its inputs.¹⁹³ Thus, TCEQ modeled the discharge as if it is located over a 63 foot

¹⁸⁸ Tr. Vol. 6, at 22:13 – 23:12.

¹⁸⁹ PAC-15, at 6:2 – 7:20; Tr. Vol. 6, at 26:22 – 27:8.

¹⁹⁰ AR, Tab D – S-Application 000126.

¹⁹¹ PAC-3, at 16:1-19.

¹⁹² PAC-3, at 16:1-19; PAC-2, at 14:13-18; PAC-2 JT-3; PAC-23.

¹⁹³ ED-KC-1, at 10:27-28; PAC-2, at 9:18-29; PAC-3, at 15:1-20; Tr. Vol. 6, at 83:10 – 85:13.

channel floor with a 4% bottom slope downward and away from the outfall, which the evidence conclusively shows is not at all the bathymetry at the diffuser location.

When Ms. Cunningham was asked whether she would have conducted an additional modeling run had she known that the bottom of the channel was 90 feet rather than 63 feet, she replied, “Yeah, I’d do an additional modeling run.”¹⁹⁴ Unfortunately, the ED did not independently verify the water body depth or general bathymetry in the channel and relied solely on the incorrect bathymetry information provided by the Port.¹⁹⁵

To address the clear use of incorrect data in the modeling, the Port’s witnesses have tried to rehabilitate the modeling by suggesting it can at least be used to show the mixing at or above 63 feet. The Port’s experts then contend that mixing below 63 feet will be of no concern because the turbulence in the area created by the eddy and the flow of water in the channel will provide adequate mixing. Such a contention is simply untenable, as there are serious problems with it. First, the saline effluent plume will fall below the 63 feet imaginary bottom, making the assumption that the model will predict what happens above 63 feet patently invalid. The modeling at a depth of 63-feet is based upon the effects of a solid bottom at that depth. Changing the bottom depth changes the mixing conditions, even above the 63-foot depth. Second, there is no evidence of turbulence or adequate mixing by the eddy or the flow in the channel. Third, what the Port is really suggesting is that there is no need for a model, and the TCEQ can simply rely upon the mixing that will happen at the location of the outfall, but with no reliable data regarding such mixing or turbulence that could actually support such an opinion.

¹⁹⁴ Tr. Vol. 6, at 75:1-5.

¹⁹⁵ ED-KC-1, at 16:25-17:2.

The Port has not met its burden to present evidence in the Application or the record of the hearing to prove its novel mixing theories. Its CORMIX modeling was based upon incorrect bathymetry for the area, and it has not presented any data on the size, shape, depth, or strength of the eddy on which an informed opinion regarding the impacts of an eddy on mixing can be made.¹⁹⁶ Similarly, the Port has not presented any data on the conditions for flow in the Pass or ship channel on which an opinion regarding the impacts of such flow on mixing could be made.¹⁹⁷

While the Application includes some general information on the conditions in the Corpus Christi Ship Channel, the addition of Other Requirement 9 mandating the collection of flow velocity and other data on conditions at the outfall, clearly show that TCEQ did not receive the type of data on conditions at the outfall it needs to make an accurate prediction of worst case mixing. There is simply no evidence to support its theory that there the CORMIX model can be used in this location to show whether there will be adequate mixing to protect water quality standards or the marine ecology.

4. The Port Failed to Provide Accurate Information on Other Inputs to the CORMIX Modeling.

Modeling with CORMIX is generally performed using conservative inputs in order to determine the worst-case scenario for mixing.¹⁹⁸ The highest effluent percentages at the boundaries of the mixing zones are then used to determine water quality-based effluent limits.¹⁹⁹ Another issue with using the CORMIX model here, besides the bathymetry at the location, is that there are no criteria to use to set effluent limits.²⁰⁰ The Port and the ED set what they believed were

¹⁹⁶ Tr. Vol. 6, at 105:17-23.

¹⁹⁷ *Id.* at 14:20-23.

¹⁹⁸ *Id.* at 35:8-12.

¹⁹⁹ ED-KC-1, at 8:29-9:2.

²⁰⁰ 30 TAC § 307.5(g); ED-MW-1, at 19:15-20; PAC-3, p. 20; 12-14.

conservative goals for the percentage of effluent at the boundaries of the three mixing ones. The Application set them at 2.5% at the ZID, 1.5% at the aquatic life mixing zone, and 1% at the human health mixing zone.²⁰¹

The modeling results in the Application and those initially used by TCEQ were interpreted to indicate that the discharge would hit those targets; however, those interpretations were later demonstrated to be incorrect. The Port has admitted that the CORMIX modeling determinations used for its Application are not correct.²⁰² Thus, the statements in the Application relying on these flawed modeling determinations, including opinions regarding the impacts of the discharge, are also incorrect.

The same is true for the ED's initial modeling and the evaluation used for the initial draft permit. The ED has admitted it did not interpret its modeling correctly.²⁰³ Thus, when the ED reinterpreted the modeling results, the ED determined that the percentage of effluent at the ZID boundary was over 18%, far above the 2.5% used the Application.²⁰⁴ The ED redid its modeling evaluation and changed the draft permit. The Port redid its evaluation but did not change the Application.

Even apart from this, there are a remarkable number of failings in the modeling inputs—so many that no reasonable mind could conclude that the modeling demonstrates the discharge from the proposed facility will not be toxic to aquatic life and will be “protective of water quality.” Among other things, the modeling fails to properly and accurately account for intake water salinity

²⁰¹ AR S-Supp at 338-339; The mixing zone are defined in AR TAB F ED 0058, and ED KC-3.

²⁰² PAC-21, at 10.

²⁰³ Tr. Vol. 6, at 36:21-24.

²⁰⁴ Tr. Vol. 6, at 42:14-18; ED-SG-1, at 8:29-9:3.

concentrations,²⁰⁵ fails to use accurate velocity data within the Aransas Pass Inlet,²⁰⁶ and fails to account for any variation in discharge rates other than the maximum permitted amount of 95.6 million gallons per day (mgd).²⁰⁷

One important factor in the mixing analysis is the velocity of the receiving waters within the Aransas Pass Inlet. The ED and the Port both failed to use the appropriate velocity for the water flowing in and out of Aransas Pass and through the ship channel. As noted by TCEQ's modeling witness, the ED and the Port assumed an ambient water velocity of 0.05 meters/second. As discussed in regard to Referred Issue A, this velocity is simply not correct 95% of the time. Using more reliable, but still conservative, velocity data of 0.25-0.41 m/s, Mr. Trungale demonstrated that the concentration of effluent at the ZID boundary will reach a range of 60%-70%²⁰⁸ and at the aquatic mixing zone boundary, between 20 and 30%. Both of these are much higher than the draft permit's percentages.²⁰⁹

There is no evidence that such concentrations of high-salinity effluent at these boundaries assure no lethality in the ZID or no significant toxicity or disruption of spawning or migration of marine species through the area of the discharge. This is especially true since the velocities Mr. Trungale used, in the 0.25 to 0.41 m/s range, are still exceeded about 70% of the time,²¹⁰ while the velocities in the 0.05 m/s range that the Port and ED used are accurate only 5% of the time.²¹¹ So not only did the ED assume a velocity which appears to be accurate about only 5% of the time,

²⁰⁵ PAC-2, at 13:6-15 and 17:3 – 18:22.

²⁰⁶ *Id.* at 16:11-17:2.

²⁰⁷ *Id.* at 15:25-16:10.

²⁰⁸ *Id.* at 16:18-26.

²⁰⁹ The percentage of effluent at the boundary of the ZID remained at the 60 to 75% as the velocity goes up to 1.0 m/s.

²¹⁰ PAC-2, at 16:27-28.

²¹¹ *Id.* at 16:17-18.

but the ED also assumed a constant velocity in the same direction, which is demonstrably inaccurate. When asked about whether she considered the impacts of tides in her review, Ms. Cunningham stated, “No.”²¹²

The Application also fails to address a scenario where the desalination process is started at productions levels lower than represented in the Application, resulting in worse mixing of the effluent for some production levels.²¹³ Ms. Cunningham testified that the Application shows that if the desalination facility were operated at a 60% capacity, the effluent flow rate decreases to 57 mgd and the percentage of effluent at the ZID boundary increases to 24.7%,²¹⁴ far above what was predicted in the Application for discharges at a daily average discharge rate of 95 mgd, which is what is represented in the Application (and used by TCEQ for its modeling). Yet, despite worse mixing at lower discharge rates, there is no permit requirement for minimal discharge rates.²¹⁵

Moreover, the Application incorrectly identifies the source of the intake water²¹⁶ and failed to use water quality data for water in the Gulf even after the Port chose to move the proposed intake to the Gulf,²¹⁷ where salinity and temperature ranges are different from those the Port used in the Application and the TCEQ used in the draft permit.²¹⁸ The Port even committed to update its information on “source water” (the water it will intake), but never did so.²¹⁹ In its Response to Comments, the TCEQ states that “The composition of the source water was not used in the

²¹² ED-KC-1, at 12:11-12.

²¹³ PAC-22, at 3; AR S-APP-361-2, Table 7.

²¹⁴ Tr. Vol. 6, at 58:3-7.

²¹⁵ *Id.* at 107:20-23.

²¹⁶ PAC-21, at 5:1-20 and 6:6.

²¹⁷ AR S-APP-204.

²¹⁸ PAC-3, at 17:13-31; App LT 9.

²¹⁹ AR S-APP 271, PAC-3, at 17:28-31.

development of the draft TPDES permit. The applicant is required to provide information concerning the anticipated characteristics of the discharge itself, which are used in the development of the draft permit.”²²⁰ But the Port was never required to provide such information, even after it moved its intake to the Gulf.²²¹

5. The Port has Conceded its Modeling Problems.

Given the evidence above, it is clear that the modeling and evaluations by the ED and the Port do not provide a basis for issuance of a permit for the proposed discharge. The CORMIX model simply cannot be used for the proposed outfall location but even if it could, the Port’s witness, Dr. Tischler, testified that the Port “may have difficulty meeting the 18.5 percent in the ZID, unless they make revisions to the design...Under the conditions of high flow rates, the modeling would suggest that they couldn’t meet it.”²²² He did additional modeling shortly before the hearing because he recognized that the facility proposed by the Port in the Application could not satisfy the draft permit requirements. Thus, new modeling using a different diffuser design was needed.

Thus, by having its expert undertake the additional modeling at such a late date, it appears the Port is finally admitting that all the work of the ED and the protesting parties using the CORMIX model to analyze the mixing has been wasted. Based on Dr. Tischler’s testimony alone, no permit can be issued.

²²⁰ ED-SG-3, at 9.

²²¹ In the RTC, the ED states:

. . . according to the POCC application seawater will be drawn into the plant from a channel adjacent to Harbor Island. However, on June 24, 2019 the POCC provided documentation that the proposed intake structure will be relocated offshore in the Gulf of Mexico instead of in the Corpus Christi Ship Channel . . . **The POCC also noted that the salinity is nearly the same at the former and revised intake locations.** Therefore, the salinity of the effluent is based on the values provided in the application. Emphasis added

²²² Tr. Vol. 3, at 264:20-265:3.

H. Whether the Executive Director’s Antidegradation Review was Accurate.

1. The Antidegradation Standards.

The TSWQS have antidegradation requirements, the purpose of which is to preserve existing uses and to prevent existing water quality from being degraded more than a minimum amount by new or increased discharges of pollutants.²²³ The Port’s Application is subject to both Tier 1 and Tier 2 of the antidegradation policy.²²⁴ Under Tier 1, existing uses and water quality sufficient to protect those existing uses must be maintained.²²⁵ Tier 2 is more stringent and specifically prohibits any activities in those waters that exceed fishable/swimmable quality that would cause a lowering of water quality by more than a de minimis extent.²²⁶ Because the Aransas Pass Inlet is characterized as “exceptional aquatic life use,” this level of use must be maintained.²²⁷

In addition, the TSWQS include specific aquatic life criteria for toxic materials.²²⁸ The aquatic life criteria can be either numerical or narrative.²²⁹ As explained in TCEQ’s regulations, one of the narrative criterion for aquatic life is that “There must be *no lethality to aquatic organisms that move through a ZID.*”²³⁰ This is explained in TCEQ’s *Procedures to Implement the Texas Surface Water Quality Standards*, TCEQ Report No. RG-194, which provides: “Water

²²³ 30 TAC §307.5. This provision implements, at the State level, the 1975 EPA promulgation of a policy to protect against lowering of water quality in high quality waters, even in circumstances in which existing uses would not be impaired. 40 Fed. Reg. 55,334 (Nov. 28, 1975), now, 40 C.F.R. § 131.12(a). The amendment of the Clean Water Act in 1987 confirmed that the water quality standards adopted by each state must include an antidegradation policy. 33 U.S.C. § 1313(d)(4)(B).

²²⁴ Tr. Vol. 3, at 206:5-7.

²²⁵ 30 TAC §307.5(b)(1).

²²⁶ *Id.* 307.5(b)(2).

²²⁷ 30 TAC § 307.10, Appx. A (segment 2481).

²²⁸ 30 TAC § 307.6.

²²⁹ *Id.*; APP-LT-1, 9:3-4.

²³⁰ 30 TAC § 307.6(c)(6). (Emphasis added); *see also* 30 TAC § 307.8(b)(2) – “Acute criteria and acute total toxicity levels may be exceeded in small zones of initial dilution (ZIDs) at discharge points of permitted discharges, but there must be no lethality to aquatic organisms that move through a ZID.”

in the state shall not be acutely toxic to aquatic life. Although acute criteria may be exceeded in a zone of initial dilution (ZID), **there shall be no lethality to aquatic organisms that move through the ZID.**²³¹

In this case, the impact of hypersaline water into the Aransas Pass Inlet is of particular concern. TCEQ's rules specifically provide that:

Salinity gradients in estuaries must be maintained to support attainable estuarine dependent aquatic life uses. Numerical salinity criteria for Texas estuaries have not been established ... Absence of numerical criteria must not preclude evaluations and regulatory actions based on estuarine salinity, and careful consideration must be given to all activities that may detrimentally affect salinity gradients.²³²

With these requirements in mind, we can turn to the evidence to see what review was actually done by the ED.

2. The ED's Antidegradation Review Was Not Based on Sound Science.

From the outset, it is clear that Dr. Wallace's antidegradation review was not based upon sound science. Specifically, Dr. Wallace testified:

"sometimes you can have hard data and actually run some spreadsheet numbers or models and -- and really look at it from an empirical point of view. But for the most part, an antideg review on a new facility is a feeling, and my feeling with its location in this dynamic environment that it was going to be okay, that this amount of hypersaline water being discharged from this facility would not degrade the environment beyond de minimis."²³³

Actually, the antidegradation review was not based solely on feelings. It was also based on demonstrably incorrect data and unverifiable assumptions.

As described above, in a Tier 2 antidegradation review, degradation is defined as "a lowering of water quality by more than a de minimis extent, but not to the extent that an existing

²³¹ ED-MW-3, p. 130. (Emphasis added).

²³² 30 TAC § 307.4(g)(3).

²³³ PAC-16, at 34, 62:11-19.

use is impaired.”²³⁴ To determine the extent to which water quality will be degraded, if at all, one must have a baseline water quality condition to compare against the expected water quality condition resulting from the proposed discharge.²³⁵ However, this comparison was never done. Shockingly, Dr. Wallace testified she did not have enough time to review the Application to make a determination whether there was more than a de minimis change.²³⁶

So we know that Dr. Wallace did not complete the first step in a Tier 2 antidegradation review. Dr. Wallace’s decision to continue with her antidegradation review without substantiated data is further illustrated by the testimony she gave regarding the salinity conditions at the mixing zone boundary. She testified that she used a salinity concentration of 31.81 for the pH part of her analysis, which she got by “just playing around with –playing around with numbers and not thinking about the long-range ramifications of the spreadsheet...**So, like, quite honestly, you know, probably that salinity should be higher.**”²³⁷ With regard to her pH Screening, she noted that when she selected a salinity input of 18, she was in a hurry, but that “18 is actually high for what we usually put in for effluent. We usually put in .4.”²³⁸ However, Dr. Wallace later clarified that when she usually puts in 0.4 for the salinity input, she was “thinking about a freshwater discharge because usually our effluents are freshwater. So there’s my mistake right there.”²³⁹ Dr. Wallace noted that the lack of information made her “very uncomfortable” doing an antidegradation review along with “the size of the discharge, the nature of the discharge, the

²³⁴ 30 TAC § 307.5(b)(2).

²³⁵ Tr. Vol. 5, at 184:22-25.

²³⁶ *Id.* at 185:1-4.

²³⁷ Tr. Vol. 5, at 154:24-155:5 (Emphasis added); PAC-16, at 19:10-16. In this instance, the salinity concentration is referred to in terms of “practical salinity units” or “psu.” While not exactly equivalent with “parts per thousand” or “ppt” they are designed to be nearly equivalent. *See* ED-SG-3 at 69, fn. 4.

²³⁸ Tr. Vol. 5, at 156:2-6; PAC-16, at 19:10-16.

²³⁹ *Id.* at 158:4-7.

location of the discharge.”²⁴⁰ She compared her review to “looking into the gazing ball and seeing all this playing out.”²⁴¹

The ED may argue that Dr. Wallace’s terminology is just a poor choice of words and that she was relying on her “best professional judgment.”²⁴² While such a characterization would theoretically enhance the credibility of Dr. Wallace’s antidegradation review, this is not just a one-time slip up that can be written off as a misstatement. Dr. Wallace stated on multiple different occasions that her antidegradation review was based on “feelings,”²⁴³ that her review was like “trying to look into a gazing ball,”²⁴⁴ that she did not have enough time to conduct her review,²⁴⁵ that she does not have an opinion on the range of salinity that would support attainable estuarine dependent aquatic life uses,²⁴⁶ that she did not know how the 90 foot hole beneath the diffuser would impact her analysis,²⁴⁷ that while she thought about it and speculated quite a lot,²⁴⁸ ultimately, she was unconcerned about possible death in the ZID.²⁴⁹ This evidence clearly does not reflect a scientist using best professional judgment; and the ED’s permit coordinator agrees that feelings cannot be used to assist in drafting a permit.²⁵⁰ Simply put, this evidence shows that a credible, reliable antidegradation review that complies with the TSWQS was simply not done.

²⁴⁰ *Id.* at 186:16-20

²⁴¹ *Id.* at 186:20-21; PAC-16, at 30:7-10.

²⁴² *Id.* at 200:11-201:5.

²⁴³ PAC-16 at 34, 62:14-19; Tr. Vol. 5, at 199:18-25;

²⁴⁴ PAC-16 at 30, 58:3-10; Tr. Vol. 5, 184:14-18, 186:16-21.

²⁴⁵ PAC-16, at 31-32, 59:16-60:9; Tr. Vol. 5, 157:2-10, 157:22-158:16, 185:1-186:10. In her deposition, Dr. Wallace testified that she “did not have that data because it’s a new application,” demonstrating that the caveat provided in her testimony at the hearing does not change the fact that she did not have enough time to conduct her review.

²⁴⁶ Tr. Vol. 5, 162:15-23.

²⁴⁷ PAC-16 at 29, 57:1-18; Tr. Vol. 5, 175:6-25.

²⁴⁸ Tr. Vol 5, 182:5-11.

²⁴⁹ Tr. Vol. 5, 166:21-167:8.

²⁵⁰ Tr. Vol. 5, 87:11-13.

3. The Antidegradation Review was Based on Incorrect Modeling and Data.

Not only was Dr. Wallace's antidegradation review based on speculation and unverified assumptions, but it also relied upon modeling information provided by Ms. Cunningham that was inaccurate. As discussed previously in this brief, after her deposition, Ms. Cunningham conceded she had made mistakes in the interpretation of her initial modeling. Her subsequent review of the modeling had significantly different results, leading to a revised draft permit being submitted after the case was referred to SOAH. Yet the original information the ED acknowledged was incorrect for modeling purposes was still used as the basis of the antidegradation review!

Dr. Wallace's antidegradation review was based on the *initial* critical conditions memo prepared by Ms. Cunningham, which is the memo that was rescinded because it miscalculated the effluent percentage at the edge of the ZID by factor of 10. Dr. Wallace's antidegradation review was dated in July of 2018, after Ms. Cunningham performed her initial 2018 modeling. Dr. Wallace never updated the antidegradation review to account for the significant increase in effluent percentage at the ZID reflected in Ms. Cunningham's updated modeling performed in 2020.

Moreover, Mr. Trungale's testimony establishes two critical points regarding the review. First, the CORMIX modeling cannot even provide reliable predictions of the mixing in any mixing zone in this case. And, even if it could, the correct velocity input for the CORMIX model shows 70% of the effluent remaining at the boundary of the ZID, not the 18.4% that Ms. Cunningham's modeling shows. There has been no antidegradation review for the conditions the model would predict, even if the model could be used to provide accurate predictions here. Again, whether there will be more than de minimis degradation is an issue for the experts on the impacts of the discharge on the marine environment. To a person, they have all expressed very serious concerns about significant degradation to the marine environment from this proposed permit.

Furthermore, the modeling conducted by the ED was for a diffuser that we now know cannot meet the permit requirements. The facilities in the Application, which are the basis for the antidegradation review, are by the Port's own expert's admission unable to meet the permit requirements. This also renders the antidegradation review unreliable.

Ultimately, all of these errors—from the serious inaccuracies in the pH modeling assumptions, the fact that the modeled diffuser can't meet the permit limits, the fact that neither a baseline nor a post-discharge copper concentration in these oyster waters was determined, and the fact that antidegradation review relies on the retracted CORMIX modeling information the ED now acknowledges is inaccurate—can lead to no other conclusion but that the antidegradation review fails to meet applicable standards.

4. The Evidence Shows that Additional Salinity Will Likely Cause Adverse Effects.

Contrast the position of the Applicant and the ED to the world's top aquatic physiologists—such as Dr. Esbaugh, who has studied salt and water balance of marine species. Dr. Esbaugh also has extensive experience working as a toxicologist, performing acute and chronic toxicity testing using a methodology consistent with whole effluent toxicity (“*WET*”) testing. Dr. Esbaugh testified that issuance of the permit “will present a significant threat to the marine environment and aquatic life, particularly survival of the early life stages of fish and invertebrates.”²⁵¹ On top of examining individual species salinity tolerances, Dr. Esbaugh conducted a baseline analysis of existing salinity conditions within the Aransas pass Inlet, showing that the natural salinity in the channel is close to the physiological tolerance of the most sensitive species.²⁵²

²⁵¹ PAC-5, at 6:2-4.

²⁵² *Id.* at 9:4-6.

As previously discussed, the ED's modeling and draft permit assumed an intake salinity concentration of 18 to 22 ppt, while Dr. Esbaugh determined the actual expected intake salinity from the currently proposed location will be in the range of 32 to 35 ppt.²⁵³ If the intake water salinity concentration is 35 ppt and the desalination efficiency is only 40%, this results in the desalination effluent having a salinity as high as 58.5 ppt, which is very harmful to aquatic life.²⁵⁴ Dr. Tischler considered a 50% desalination efficiency and calculated effluent salinities as high as 78.5 ppt.²⁵⁵ The evidence indicates that the predicted no-effect concentration for salinity is 37.4 ppt, based on 8 acute lethality data sets across 7 species. The natural salinity in the shipping channel already exceeds the predicted no-effect concentration for portions of the year and any increase in salinity would jeopardize aquatic life.²⁵⁶

In short, Dr. Esbaugh's testimony demonstrates a much more thorough and scientific approach to evaluating the impact of salinity in the ZID and larger mixing zone than the hopes, overgeneralizations, and unsupported assertions of the Port and ED's witnesses.²⁵⁷ The antidegradation review fails because the information relied upon by the ED is not only seriously lacking as testified by TCEQ's own witness, but the information she used has been acknowledged by the ED to be incorrect. Further, both the ED's and Port's witnesses misstate the regulatory standard when they say that lethality within the ZID may be justified if there is an appropriate zone of passage. The actual regulatory standard is that there must not be any lethality in the ZID – a standard the evidence does not meet.

²⁵³ *Id.* at 11:1-7.

²⁵⁴ PAC-5, at 11:10-14.

²⁵⁵ APP-LT-9, at 1, Col. 5.

²⁵⁶ PAC-5, at 11:16-18.

²⁵⁷ *Id.* at 9:26-10:7.

I. Whether the Draft Permit Includes All Appropriate and Necessary Requirements.

It would be an understatement to say the draft permit does not include all appropriate and necessary requirements. In fact, it is impossible to determine whether appropriate and necessary requirements are included in the draft permit because, as explained by the Port's own expert, the Port will not be able to meet the permit requirements using the proposed diffuser design. At this point, we do not know what diffuser design will be used. Assuming the diffuser design as proposed in the Application will be used, then Other Requirement No. 4 (containing the maximum percentage of effluent at the edge of the ZID) must be revised.

However, the ED never tried to prove that all appropriate and necessary requirements were included. The ED did not even try to show reliable evidence related to Referred Issues A, B or C. Neither Ms. Gibson nor Ms. Cunningham provided an opinion on Referred Issues A, B, or C.²⁵⁸ Dr. Wallace did provide testimony on those issues, but she failed to do a scientifically valid analysis, as noted above. Thus, it would be impossible for anyone to determine the proper permit requirements that would be appropriate and necessary, because the underlying scientific analysis is so lacking.

In many cases, a draft permit may require revisions to permit limits or additional monitoring provisions to alleviate valid concerns raised by protestants. In this case, the draft permit cannot be salvaged. The ED presented little, if any evidence, regarding Referred Issues A, B, and C. We know the Application and the representations are not accurate (Referred Issue D). We know the CORMIX model should not be used here and that the modeling that was performed by the TCEQ and the Port did not utilize accurate inputs (Referred Issue G) and that the antidegradation review was based on unverified assumptions and inaccurate modeling data (Referred Issue H).

²⁵⁸ See ED-SG-1, at 11:31-12:11; ED-KC-1, at 9:16-10:3.

With all of this in mind, how can one even begin to suggest that the Draft Permit contains all of the appropriate and necessary requirements?

IV. INTRODUCTION OF THE ADMINISTRATIVE RECORD

Several individual parties filed an objection to the acceptance of the entire administrative record into evidence for all purposes.²⁵⁹ PAC joined in that objection. It was made because the Application in the administrative record had hearsay statements, opinions, and even opinions that directly conflicted with facts in the Application for which there was no basis in the evidence for admission. No licensed professional engineer or other qualified person was even identified as the source of such statements or for acceptance of hearsay statement as a basis for the expert opinions. None of the figures or reports were sealed by a licensed professional.

Over the course of the hearing, the problems with many other errors and omissions became obvious. The Port even admitted that the most basic aspect of the Application, the underlying modeling, was not reported correctly. The Port never presented anyone to testify to the facts or opinions in the Application. When there is a conflict with Texas Government Code § 2003.047, the Texas Rules of Evidence will govern. Here, those evidentiary rules prohibit consideration of the entire Administrative Record for all purposes in the face of a valid objection.

While the ALJs know that much of what is in the Application cannot be relied upon, the Commissioners will not, nor will a reviewing court. The Port and TCEQ are free to cite to the false facts and opinions in the Application when such is admitted for all purposes. While PAC recognizes the ALJs are in a hard position because of TCEQ's rule at 30 TAC § 80.127(h), PAC suggests this issue can be remedied by the ALJs making it clear in the Proposal for Decision that

²⁵⁹ The Objection to the Admission of the Administrative Record for all Purposes and Motion to Limit the Admission of Certain Documents, filed by Protestants Mary Abel et al.

nothing in the Application should be taken as reliable evidence unless it is found in the evidentiary record in testimony or another document. PAC requests such a notation by the ALJs.

V. CONCLUSION

WHEREFORE, PREMISES CONSIDERED, Protestant PAC respectfully requests that the ALJs issue a Proposal for Decision recommending denial of Applicant's permit application, because such fails to demonstrate that the facility to be operated will be protective of public health and the environment. Further, PAC requests such other and further relief to which PAC may show itself justly entitled.

Respectfully submitted,

/s/ Craig Bennett

Kirk D. Rasmussen
State Bar No. 24013374
krasmussen@jw.com
Benjamin Rhem
State Bar No. 24065967
brhem@jw.com
Craig R. Bennett
State Bar No. 00793325
cbennett@jw.com
Susan Dillon Ayers
State Bar No. 24028302
sayers@jw.com
Jackson Walker LLP
100 Congress Avenue, Suite 1100
Austin, Texas 78701
(512) 236-2000
(512) 691-4427 (fax)

**ATTORNEYS FOR PORT ARANSAS
CONSERVANCY**

Richard Lowerre
State Bar No. 12632900
rl@lf-lawfirm.com
David Frederick
State Bar No. 07412300
dof@lf-lawfirm.com

**FREDERICK, PERALES, ALLMON &
ROCKWELL, P.C**
1206 San Antonio
Austin, Texas 78701
512-469-6000 (t)
512-482-9346 (f)

CERTIFICATE OF SERVICE

I certify that a copy of this document was served on all parties of record on this date, November 30, 2020, in accordance with the applicable service procedures.

/s/ Benjamin Rhem _____

Benjamin Rhem