State Office of Administrative Hearings

Kristofer S. Monson
Chief Administrative Law Judge

June 20, 2022

Mary Smith
General Counsel
Texas Commission on Environmental Quality
12100 Park 35 Circle, Bldg. F, Room 4225
Austin TX 78753

Re: SOAH Docket No. 582-22-0585; TCEQ Docket No. 2021-1001-MWD; Application of City of Granbury

Dear Ms. Smith:

The above-referenced matter will be considered by the Texas Commission on Environmental Quality on a date and time to be determined by the Chief Clerk's Office in Room 201S of Building E, 12118 N. Interstate 35, Austin, Texas.

Enclosed are copies of the Proposal for Decision and Order that have been recommended to the Commission for approval. Any party may file exceptions or briefs by filing the documents with the Chief Clerk of the Texas Commission on Environmental Quality no later than Monday, July 11, 2022. Any replies to exceptions or briefs must be filed in the same manner no later than Thursday, July 21, 2022.

This matter has been designated **TCEQ Docket No. 2021-1001-MWD; SOAH Docket No. 582-22-0585**. All documents to be filed must clearly reference these assigned docket numbers. All exceptions, briefs and replies along with certification of service to the above parties shall be filed with the Chief Clerk of the

TCEQ electronically at http://www14.tceq.texas.gov/epic/eFiling/ or by filing an original and seven copies with the Chief Clerk of the TCEQ. Failure to provide copies may be grounds for withholding consideration of the pleadings.

Pratibha Shenoy,

Co-Presiding Administrative Law Judge

Sarah Starnes

Sarah Starnes,

Presiding Administrative Law Judge

Enclosures
cc: Mailing List

SOAH Docket No. 582-22-0585 **Suffix: TCEQ**

Before the
State Office of Administrative Hearings

IN RE: 2021-1001-MWD

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TABLE OF ABBREVIATIONS

ABBREVIATION	MEANING
7Q2 flows	The lowest flows occurring over a seven-day period with a recurrence interval of two years
ALJ	Administrative Law Judge
Applicant	City of Granbury
BNR	Biological nutrient removal
$CBOD_5$	Five-day carbonaceous biochemical oxygen demand
CCN	Certificate of Convenience and Necessity
cfs	Cubic feet per second
CFU/100 mL	E. coli colony-forming units per 100 milliliters
Commission	Texas Commission on Environmental Quality
DO	Dissolved oxygen
Draft Permit	Draft TPDES Permit No. WQ0015821001
East Plant	Proposed wastewater treatment facility at issue in the Draft Permit
ED	Executive Director of the Commission
EPA	Federal Environmental Protection Agency
EQ basin	Equalization basin
Granbury	City of Granbury
IPs	Refers to TCEQ publication RG-194, Procedures to Implement the Texas Surface Water Quality Standards
Lake Granbury WPP	Lake Granbury Watershed Protection Plan, 2010
mb	Millibars (unit of measurement for barometric pressure)
MBR	Membrane bioreactor
MGD	Million gallons per day
mg/m2	Milligrams per square meter
msl	Mean sea level (measured in feet)
mv	Millivolts
OPIC	Office of Public Interest Counsel
ORP	Oxidation reduction potential
QUAL2K	EPA-sponsored water quality model
QUAL-TX	ED's standard water quality model
SOAH	State Office of Administrative Hearings

ABBREVIATION	MEANING
SOD	Sediment oxygen demand
South Plant	South Wastewater Treatment Plant, Granbury's existing wastewater treatment facility
SWQS	TCEQ's Surface Water Quality Standards
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TPDES	Texas Pollutant Discharge Elimination System
TPWD	Texas Parks & Wildlife Department
Tr. Vol.	Transcript volume
TWDB	Texas Water Development Board
ug/L	Micrograms per liter
WWTP	Wastewater treatment plant

SOAH Docket No. 582-22-0585 **Suffix: TCEQ**

Before the
State Office of Administrative Hearings

IN RE: 2021-1001-MWD

PROPOSAL FOR DECISION

The City of Granbury has applied to the Commission for new TPDES Permit No. WQ0015821001, which would authorize the treatment and discharge of up to 1.0 MGD in the Interim phase, and 2.0 MGD in the Final phase, from a proposed new wastewater treatment facility, referred to as the East Plant, located at 3121 Old Granbury Road in Granbury, Hood County, Texas. The wastewater would be discharged into an unnamed tributary of Rucker Creek, where it would flow to Rucker Creek and then to Lake Granbury in Segment No. 1205 of the Brazos River Basin. The TCEQ referred the application to SOAH for a contested case hearing on thirteen issues. After considering those issues, in light of the evidence and arguments presented by the parties, the ALJs recommend the Commission issue the Draft Permit without amendments.

I. PROCEDURAL HISTORY

Granbury filed its application for a TPDES permit on September 16, 2019.[1] The application was declared administratively complete on November 12, 2019.[2] The Notice of Receipt of Application and Intent to Obtain a Water Quality Permit was published in English on November 16, 2019, in *The Hood County News,* and was published in Spanish on November 25, 2019, in *La Prensa Comunidad.*[3]

The ED completed the technical review of the application on March 18, 2020, and prepared the Draft Permit on May 4, 2020.[4] The Notice of Application and Preliminary Decision was published in English on May 9, 2020, in *The Hood County News,* and was published in Spanish on May 11, 2020, in *La Prensa Comunidad.*[5]

The notice of Public Meeting was published on August 5, 2020, in *The Hood County News.*[6] A public meeting was held on September 10, 2020, via webcast. The public comment period closed the same day. The ED filed its Response to Public Comment on May 26, 2021.[7]

The Commission granted requests for a contested case hearing at an open meeting on September 22, 2021, issued its Interim Order on September 29, 2021, and docketed this case at SOAH on October 25, 2021. The Commission established a 180-day deadline for the proposal for

[1] Admin. Record at 209.

[2] Admin. Record at 95.

[3] Admin. Record at 84-88.

[4] Admin. Record at 65.

[5] Admin. Record at 57-61.

[6] Admin. Record at 33-35.

[7] Ex. ED-10. The ED's exhibits are labeled "Ex. ED-__" but Granbury's exhibits are labeled "COG Ex. ____." To facilitate the reader's ability to consult the record, citations to exhibits follow each party's naming convention.

decision (from the date of the preliminary hearing) and referred thirteen issues, which are set out in Section II below.

The preliminary hearing was convened by ALJ Ross Henderson on December 13, 2021, via Zoom videoconference. At the preliminary hearing, ALJ Henderson determined that SOAH had jurisdiction, named parties, and adopted the parties' proposed procedural schedule.[8]

A prehearing conference was convened by ALJs Pratibha J. Shenoy and Sarah Starnes on March 3, 2022, via Zoom videoconference. At the prehearing conference the ALJs ruled on the parties' pending motions and evidentiary objections.

The hearing on the merits was held March 7-9, 2022, via Zoom videoconference before ALJs Shenoy and Starnes. Attorney Jason Hill represented Granbury; Attorneys Eric Allmon and John Bedecarre represented Protestants Victoria Calder and Granbury Fresh; Attorney Michael J. Booth represented Protestants James and Stacy Rist and Bennett's Camping Center and RV Ranch; attorneys Garrett Arthur and Amanda Pesonen represented OPIC; and attorneys Anthony Tatu and Mattie Isturiz represented the ED. The record closed on April 19, 2022, with the filing of the parties' post-hearing briefs.[9]

II. THE COMMISSION'S REFERRED ISSUES

As noted above, the Commission identified thirteen issues in its order referring this case to SOAH for a contested case hearing. Those thirteen issues are:

[8] SOAH Order No. 2 (January 12, 2022).

[9] SOAH Order No. 4 set the deadline for replies to closing arguments on April 18, 2022. Granbury's Response to Closing Arguments was filed one day after that deadline, on April 19, 2022. No party objected to the late filing, so the record closed on that date.

A. Whether the draft permit complies with applicable requirements to abate and control nuisance odors, as set forth in 30 TAC § 309.13(e);

B. Whether the draft permit is protective of water quality;

C. Whether the draft permit is protective of groundwater and wells;

D. Whether the draft permit is protective of the health of the requesters and their families, livestock, and wildlife, including endangered species;

E. Whether the proposed discharge will adversely impact recreational activities;

F. Whether the application is accurate and complete;

G. Whether the modeling complies with applicable regulations to ensure the draft permit is protective of water quality;

H. Whether the ED's antidegradation review was accurate;

I. Whether the nutrient limits in the draft permit comply with applicable Texas SWQS;

J. Whether the Commission should deny or alter the terms and conditions of the draft permit based on the consideration of need under Texas Water Code § 26.0282;

K. Whether the Applicant's compliance history or technical capabilities raise any issues regarding the Applicant's ability to comply with the material terms of the permit that warrant denying or altering the terms of the draft permit;

L. Whether the proposed location for the Facility complies with the 100-year flood plain and wetland location standards found in 30 TAC § 309.13(a) and (b); and

M. Whether Applicant substantially complied with applicable public notice requirements.

III. BURDEN OF PROOF

Granbury, as the Applicant, bears the burden of proof by a preponderance of the evidence.[10] The application was filed after September 1, 2015, and the Commission referred it under Texas Water Code § 5.556, which governs referral of environmental permitting cases to SOAH.[11] Consequently, this case is subject to Texas Government Code § 2003.047(i-1)-(i-3), which provides:

> (i-1) In a contested case regarding a permit application referred under Section 5.556 . . . [of the] Water Code, the filing with [SOAH] of the application, the draft permit prepared by the executive director of the commission, the preliminary decision issued by the executive director, and other sufficient supporting documentation in the administrative record of the permit application establishes a prima facie demonstration that:
>
> (1) the draft permit meets all state and federal legal and technical requirements; and
>
> (2) a permit, if issued consistent with the draft permit, would protect human health and safety, the environment, and physical property.
>
> (i-2) A party may rebut a demonstration under Subsection (i-1) by presenting evidence that:
>
> (1) relates to . . . an issue included in a list submitted under Subsection (e) in connection with a matter referred under Section 5.556, Water Code; and
>
> (2) demonstrates that one or more provisions in the draft permit violate a specifically applicable state or federal requirement.

[10] 30 TAC § 80.17(a); 1 TAC § 155.427.

[11] Tex. Water Code §§ 5.551(a), .556.

(i-3) If in accordance with Subsection (i-2) a party rebuts a presumption established under Subsection (i-1), the applicant and the executive director may present additional evidence to support the draft permit.[12]

Although this law creates a presumption, sets up a method for rebutting that presumption, and shifts the burden of production on that rebuttal, it does not change the underlying burden of proof. The burden of proof remains with the Applicant to establish by a preponderance of the evidence that the application would not violate applicable requirements and that a permit, if issued consistent with the Draft Permit, would protect human health and safety, the environment, and physical property.[13]

In this case, the application, the Draft Permit, and the other materials listed in Texas Government Code § 2003.047(i-1),[14] which are collectively referred to as the "Prima Facie Demonstration," were offered and admitted into the record at the December 13, 2021 preliminary hearing.

IV. OVERVIEW OF PROPOSED FACILITY

The East Plant is designed to use an MBR process operated in the continuous flow mode with a BNR system. The BNR process uses anaerobic, anoxic, and aerobic selector zones to reduce $CBOD_5$, total suspended solids, ammonia, and total phosphorus so that the discharge can meet applicable nutrient limits.[15] Then, in the MBR system, membrane filters separate clean effluent from the suspended solids, resulting in lower bacteria concentrations than compared to

[12] *Accord* 30 TAC § 80.17(c).

[13] 30 TAC § 80.17(a), (c).

[14] Admin. Record, Exhibits A (Tabs A-D) and B (Tab E).

[15] COG Ex. 300 at 22.

conventional WWTPs.[16] Granbury contends these technologies result in a higher effluent quality compared to other current wastewater treatment technologies, such as the activated sludge process commonly used at large WWTPs.[17]

The facility is designed so that influent enters from the collection system and is fed through mechanical and manual bar screens, grit removal units, and fine screens before moving into the influent lift station.[18] If a storm surge inundates the water collection system, the stormwater would be held in a temporary EQ basin until capacity is available, then released from the temporary EQ basin to the influent lift station. From there, the wastewater will flow through a BNR anaerobic basin to a BNR anoxic basin to a BNR aeration basin, and then into MBR basins. Then, wastewater will be subject to UV disinfection before being discharged into an unnamed tributary to Rucker Creek.[19]

V. DISCUSSION AND ANALYSIS OF REFERRED ISSUES

A. Whether the Draft Permit Complies with Applicable Requirements to Abate and Control Nuisance Odors, as Set Forth in 30 TAC § 309.13(e)[20]

Pursuant to the Commission's location standards, new WWTPs can meet the requirement to abate and control nuisance odors by using buffer zones on lands owned by the

[16] COG Ex. 300 at 21.

[17] COG Ex. 300 at 20, 22-23.

[18] Admin. Record at 676.

[19] Admin. Record at 676.

[20] OPIC did not take a position on this issue.

permittee to contain odors.[21] The buffer zones must measure either 150 feet or 500 feet from the nearest property line, depending on the type of plant unit at issue. Specifically, 30 TAC § 309(e)(1) provides, in relevant part:

> Lagoons with zones of anaerobic activity (e.g., facultative lagoons, un-aerated equalization basins, etc.) may not be located closer than 500 feet to the nearest property line. All other wastewater treatment plant units may not be located closer than 150 feet to the nearest property line. Land used to treat primary effluent is considered a plant unit.

Granbury contends that no East Plant units are subject to the 500-foot buffer zone requirement. Because it is undisputed that Granbury owns the 150-foot buffer zone around all plant units, Granbury argues that the odor-control location requirements are met. Protestants contend that there are two plant units—the temporary EQ basin and the BNR anerobic basin—that require a 500-foot buffer zone. It is undisputed that Granbury does not own a 500-foot buffer. Therefore, Protestants argue, Granbury has not met the Commission's requirement to abate and control nuisance odors and the permit application should be denied.

1. Granbury's and the ED's Evidence and Arguments

In the application, Granbury indicated that it would meet the buffer zone requirements by ownership, because the city owns all property within the required buffer.[22] Granbury offered a buffer zone map which shows that all plant units will be located on Granbury's property more than 150 feet from the property boundary.[23] The application explained:

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[21] 30 TAC § 309.13(e)(1). Granbury does not contend it meets the alternative ways to comply with the requirement to abate and control nuisance odors: submitting a nuisance odor prevention request with engineer-prepared plans controlling odors; or submitting evidence of legal restrictions prohibiting residential structures in the part of the buffer zone not owned by the permittee. 30 TAC § 309.13(e)(2)-(3).

[22] Admin. Record at 237.

[23] Admin. Record at 298.

> The proposed Granbury East WWTP will utilize a temporary equalization (EQ) basin, as needed, and will utilize biological nutrient removal (BNR) anaerobic, anoxic, and aeration basins upstream of the membrane bioreactor (MBR) basins.
>
> A 150-feet buffer zone is applicable for the temporary EQ basin since the wastewater will not be allowed to remain in the temporary EQ basin for more than 48 hours. . . .
>
> A 150-feet buffer zone is applicable for the proposed treatment units since no units will be allowed to "go septic." . . . .[24]

The application is incorporated into the Draft Permit as one of the permit's conditions, and the Draft Permit's requirements state that "by ownership of the required buffer zone area, the permittee shall comply with the requirements of 30 TAC § 309.13(e)."[25] Granbury's witness Josh Berryhill, P.E., the primary engineer responsible for designing the project, cited a series of emails between Granbury and ED staff wherein Granbury confirmed the basins will be designed and operated to prevent the wastewater from going septic.[26] Failure to meet that representation could put Granbury in violation of the 150-foot buffer zone requirement to abate and control nuisance odors and result in loss of the permit, Mr. Berryhill said.[27]

The ED contends that, as long as the permittee operates the facility in compliance with the Draft Permit terms, nuisance odor conditions to adjacent areas are not expected.[28] Granbury

[24] Admin. Record at 299. The application included correspondence with Granbury's engineer in support of these assertions.

[25] Ex. ED-7 at 13, 35.

[26] Tr. Vol. 2 at 313-15.

[27] Tr. Vol. 2 at 317.

[28] Ex. ED-10 at 014.

notes that, by accepting a permit, it would be explicitly committing to maintaining compliance with these requirements and will be subject to enforcement penalties if it falls short.[29]

As described above, whether Granbury has satisfied the odor abatement and control requirement in 30 TAC § 309.13(e) turns on whether the East Plant has any "lagoons with zones of anaerobic activity (e.g., facultative lagoons, un-aerated equalization basins, etc.)."[30] Mr. Berryhill explained that a lagoon is a lined "pond-like body of water" that provides surface impoundment of wastewater, and a "zone of anaerobic activity" is a zone where biological activity occurs without oxygen present.[31] An anaerobic zone will begin to produce odor-laden gases if left undisturbed for extended periods, usually 48 hours or more.[32] Mr. Berryhill further testified that the level of oxygen in water is measured by its oxygen reduction potential, or ORP, quantified in millivolts, or mv. Aerobic (oxygenated) conditions occur when the ORP is at or exceeds 200 mv; anoxic (oxygen-deficient) conditions have an ORP between 200 and -200 mv; and anaerobic conditions have an ORP below -200 mv.[33] Anaerobic influent is devoid of oxygen and can off-gas methane or hydrogen sulfide.[34]

According to Granbury, the reference in 30 TAC § 309.13(e)(1) to "lagoons with zones of anaerobic activity (e.g., facultative lagoons, un-aerated equalization basins, etc.)" describes a type of passive treatment system where a lagoon holds influent for a long period of time, typically at least 21 days, while the water is treated via biological, not mechanical, process.[35]

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[29] Granbury's Closing Argument at 14.

[30] 30 TAC § 309.13(e)(1).

[31] COG Ex. 300 at 22, 25.

[32] COG Ex. 300 at 25-26.

[33] Tr. Vol. 2 at 240.

[34] Tr. Vol. 2 at 241-42.

[35] Granbury Response to Closing Arguments at 5-6; Tr. Vol. 1 at 86, 88; Tr. Vol. 2 at 227-28.

Luci Dunn, P.E., one of the main permitting engineers for the East Plant, testified that in passive treatment systems, biological processes break down the influent through an unaerated, anaerobic layer at the bottom; an anoxic layer in the middle; and a wind-aerated layer at the surface of the lagoon.[36] The bottom, unaerated layer is a zone of anaerobic activity in the lagoon-treatment process.[37] This process can create significant odors, which is why the Commission's rules require a 500-foot buffer for such lagoons.[38]

This is not how the East Plant is designed or how the temporary EQ basin or the BNR anaerobic basin will function. Mr. Berryhill testified that the East Plant will not have any lagoons with zones of anaerobic activity.[39]

The EQ basin is referred to as "temporary" because, although it will be a permanent part of the East Plant, it is designed to hold wastewater only temporarily. In normal conditions, there would be no water in the temporary EQ basin. During significant rainfall events, when stormwater would otherwise inundate and infiltrate the water collection system, the temporary EQ basin will hold the excess influent until it can be drained back into the main treatment process, once capacity is available.[40] The basin can typically empty within 90 minutes.[41] Therefore, the wastewater would not be held in the EQ basin long enough for nuisance odors to develop.[42] Further, because the EQ basin would only store water for 48 hours or less (the time it

[36] Tr. Vol. 2 at 227-28.

[37] Tr. Vol. 1 at 88; Tr. Vol. 2 at 227, 243.

[38] Tr. Vol. 2 at 222, 243.

[39] Tr. Vol. 2 at 245, 250-51.

[40] Tr. Vol. 2 at 226; COG Ex. 300 at 28-29.

[41] Tr. Vol. 2 at 229, 247-48.

[42] *See* COG Ex. 300 at 25-26.

takes for an anaerobic zone to develop foul odors), it should not be considered a "lagoon," according to Mr. Berryhill.[43]

Although wastewater is not expected to be held long enough to develop nuisance odors, the temporary EQ basin is designed to have a cover, foul-air piping, and air scour blowers to control any foul air that might be produced.[44] It will be fully enclosed and equipped with a mechanical mixer to keep the contents fully agitated until the influent is redirected back into the treatment system.[45] This mixing will also introduce air into the captured influent, providing aeration by virtue of the mechanical mixing equipment, Mr. Berryhill testified.[46] Thus, Granbury argues, the temporary EQ basin is not an "*un-aerated* equalization basin" as that term is used in 30 TAC § 309.13(e)(1) (emphasis added).

Mr. Berryhill also testified that, notwithstanding its name, the BNR anaerobic basin will not allow wastewater to become truly anaerobic. The BNR anaerobic basin will reduce the oxygen level of the influent wastewater so that it will efficiently convert phosphorous to a form that can then be effectively removed without allowing that influent to stagnate so that it produces odor-causing gases.[47] The BNR anaerobic basin will maintain wastewater ORP between -50 mv and -100 mv, a range that is anoxic but not anaerobic.[48] Further, the influent will constantly flow through the BNR anaerobic basin and will be mixed during the process, with influent passing in,

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[43] COG Ex. 300 at 27.

[44] COG Ex. 300 at 27; Tr. Vol. 2 at 244.

[45] Tr. Vol. 2 at 229, 247-48. In his prefiled direct testimony, Mr. Berryhill referred to the temporary EQ basin as an "un-aerated area." COG Ex. 300 at 27. At the hearing, however, he elaborated that "it will have the ability to provide some aeration to that wastewater" due to the mixers in the basin. Tr. Vol. 2 at 247.

[46] Tr. Vol. 2 at 247.

[47] Tr. Vol. 2 at 243-44, 248.

[48] Tr. Vol. 2 at 241.

through, then out of the BNR anaerobic basin within 90 minutes.[49] The BNR anaerobic basin will not be anaerobic, and water would move through in less than the 48 hours it takes for odor-producing gases to develop. Therefore, Granbury argues, the BNR anaerobic basin is not a lagoon and the 500-foot buffer does not apply.

Granbury contends that the opinions of Protestants' witness on this issue—Steven Esmond—are unreliable because he misunderstood how the East Plant would operate when he asserted that the East Plant would have lagoons with zones of anaerobic activity. Mr. Esmond acknowledged that he has no direct experience with designing an MBR plant project.[50] He initially, and erroneously, believed that the EQ basin might be removed from Granbury's design or abandoned in the future, leading him to opine that the East Plant could not operate without the EQ basin.[51] He then opined that his concerns regarding the EQ basin would be alleviated if the basin was a permanent structure in the East Plant, though he also emphasized that it had to have a 500-foot buffer.[52] Mr. Esmond misunderstood that the temporary EQ basin has always been planned as a permanent part of the East Plant, as shown in the application, according to Granbury.[53]

Mr. Esmond also lacks expertise in BNR selector zones, according to Granbury, as reflected by the fact that he described an image of a plant with surface mixing aerators as similar to the East Plant and "typical" of a BNR unit in Texas.[54] To the contrary, the East Plant is

[49] COG Ex. 300 at 28; Tr. Vol. 2 at 248-49.

[50] Tr. Vol. 1 at 41-42.

[51] Tr. Vol. 1 at 42-44; Ex. GF-300 at 10.

[52] Tr. Vol. 1 at 42-45.

[53] Admin. Record at 209-719.

[54] Ex. GF-300 at 9.

designed with submersible mixers in the anaerobic basin.[55] Moreover, Mr. Berryhill explained, a plant with surface mixers could not be permitted in Texas because Commission rules require submerged mixers to prevent nuisance odors.[56] Because he misunderstood what is typical of Texas facilities, Granbury argues, Mr. Esmond's opinions on the features and function of the temporary EQ basin and the BNR anaerobic basin are unreliable.

Finally, Granbury argues that the labels used in the application ("EQ basin" and "anaerobic basin") do not control the determination of whether there are zones of anaerobic activity, pointing to the Commission rules that require consideration of a facility's proposed "design, construction, and operational features" both in determining whether a facility complies with the Commission's location standards and in evaluating TPDES applications as a whole.[57] A plant unit that meets the requirements of 30 TAC § 309.13(e)(1) satisfies that location standard no matter what the unit is called, according to Granbury.

In sum, Granbury contends that neither the temporary EQ basin nor the BNR anaerobic aeration basin are "lagoons" as that term is used in 30 TAC § 309.13(e)(1), nor will they have zones of anaerobic activity. Therefore, neither plant unit requires a 500-foot buffer zone as Protestants contend. Instead, according to Granbury and the ED, the Draft Permit satisfies the requirement to abate and control nuisance odors because all plant units are located within a 150-foot buffer zoned owned by the city. Granbury also reiterates that the representations in the application are enforceable because they are the basis on which the Draft Permit was granted. This point is also addressed under Issue E.

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[55] Admin. Record at 328.

[56] COG Ex. 300 at 30; *see also* 30 TAC § 217.157(d)(10)(A).

[57] 30 TAC §§ 309.10(b), .12.

2. Protestants' Evidence and Arguments

Protestants argue that the Draft Permit does not comply with the requirements of 30 TAC § 309.13(e) because the East Plant's temporary EQ basin and BNR anaerobic basins are lagoons with zones of anaerobic activity, and are therefore subject to a 500-foot buffer zone, which the East Plant does not have.

Protestants take issue with Granbury's construction of the term "lagoons with zones of anaerobic activity" and deny that the term refers only to passive treatment systems like activated sludge systems. While 30 TAC § 309.13(e)(1) designates "facultative lagoons" and "un-aerated [EQ] basins" as per se lagoons of anaerobic activity, Protestants argue, it also leaves room for other types of lagoons to meet that designation. Citing the Merriam-Webster Dictionary, which defines "lagoon" to include "a shallow artificial pool or pond (as for the processing of sewage or storage of a liquid),"[58] Protestants contend that the definition is broad enough to include both the temporary EQ basin and the BNR anaerobic basin.[59]

Protestants also contend that "there is no dispute" that the temporary EQ basin "will be authorized to be unaerated."[60] They point to the testimony of Granbury's expert, Mr. Berryhill, when he was asked whether the facility operators could operate "consistent with the representations in the application" and still operate the temporary EQ basin "in a manner that was unaerated," and he responded, "I believe so," adding "so long as it's less than 48 hours and the wastewater is not allowed to go septic so that it's not producing foul odors that would go

[58] *Lagoon,* Merriam-Webster Online Dictionary, https://www.merriam-webster.com/dictionary/lagoon (last visited May 25, 2022).

[59] Protestants' Closing Argument at 4.

[60] Protestants' Closing Argument at 6.

offsite."[61] Elsewhere in his testimony, Mr. Berryhill also described the temporary EQ basin as "the first un-aerated area" in the facility, which Protestants construe as an admission that it is an "un-aerated equalization basin" as that term is used in 30 TAC § 309.13(e)(1).[62] Therefore, according to Protestants, it is required to have a 500-foot buffer zone.

The Commission's location standards were enacted in part to protect the public from nuisance conditions, including nuisance odors.[63] Mr. Berryhill acknowledged that the East Plant has the potential to produce foul odors, which is why the EQ basin has been designed with features like a cover and foul air piping. Protestants take issue, explaining that the protection offered by these design elements is illusory because they are voluntary and not required by the Draft Permit, and the Commission's location standards "do not rely on such non-binding good intentions."[64] If the EQ basin is constructed without those features, which would not violate the Draft Permit, the untreated wastewater it stores has significant potential to create foul odors. Therefore, Protestants argue, the Draft Permit is not sufficiently protective against nuisance odors. This contention is discussed further under Issue E.

Likewise, Protestants contend that the BNR anaerobic basin is a "lagoon with zones of anaerobic activity" that requires a 500-foot buffer. To show the basin is a lagoon, they point to a photograph offered by their expert, Mr. Esmond, of what he called a "typical BNR unit configuration" and contend it shows the basin is a type of shallow pool or pond that falls within the plain meaning of "lagoon."[65] Protestants dispute Mr. Berryhill's testimony that the unit will only be anoxic and not anaerobic, saying he offered "no scientific support" for his assertion that

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[61] Tr. Vol. 2 at 322.

[62] COG Ex. 300 at 27.

[63] 30 TAC § 309.10(b).

[64] Protestants' Closing Argument at 5.

[65] Granbury's Closing Argument at 9.

"anaerobic" refers to a total absence of oxygen.[66] The Commission's rules do not support his opinion, according to Protestants, who point to a TCEQ rule that refers to "anaerobic digestion" as occurring where there is "an absence of *free* oxygen," not all oxygen.[67] Protestants contend that Granbury referred to a BNR anaerobic basin in the application because the basin will, in fact, be anaerobic. Because it is a lagoon and because it will have anaerobic activity, the BNR anaerobic basin must have a 500-foot buffer from the nearest property line, according to Protestants. By omitting this requirement, the Draft Permit will not sufficiently abate and control nuisance odors.

Finally, Protestants are not assuaged by Granbury and the ED's insistence that the East Plant will be operated in compliance with 30 TAC § 309.13(e) because the Draft Permit requires it. The Commission cannot rely on a subsequent review of construction plans or on future enforcement actions to ensure that the permit will abate and control nuisance odors. Instead, Protestants argue, the buffer zone requirements must be satisfied based on an evaluation of Granbury's application, and the permit cannot be issued if they are not.[68] Properly applying 30 TAC § 309.13(e) at the time of the application "requires more than simply an assumption that a particularized demonstration of compliance will be made after the permit is issued."[69]

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[66] Tr. Vol. 2 at 256-57; Protestants' Closing Argument at 8-9.

[67] 30 TAC § 285.2(3) (emphasis added). This definition is found in the Commission's rules on management of on-site sewage facilities. 30 TAC ch. 285. The parties have cited no corollary in the Commission's rules for wastewater systems.

[68] Protestants' Response to Closing Arguments at 3-4, *citing* 30 TAC § 309.10.

[69] Protestants' Response to Closing Arguments at 4.

3. ALJs' Analysis

Whether the temporary EQ basin or the BNR anaerobic basin requires a 500-foot buffer, as Protestants contend, depends on whether those plant units are "lagoons with zones of anaerobic activity (e.g., facultative lagoons, un-aerated equalization basins, etc.)."[70]

With respect to the temporary EQ basin, the ALJs are not persuaded that "lagoon," as the term is used in 30 TAC § 309.13(e)(1), can be construed to encompass a storage pool that will only sporadically and temporarily hold water for a brief period of time. The examples included in the rule—"e.g., facultative lagoons, un-aerated equalization basins, etc."—describe types of lagoons that hold wastewater for long periods of time (21 days or more), long enough for nuisance odors to develop. This supports Granbury's contention that the rule was not intended to apply to other types of storage pools, such as the occasional, short-term storage provided by the temporary EQ basin.

Even if the temporary EQ basin could be considered a "lagoon," the preponderance of the evidence shows that it will not have "zones of anaerobic activity." Mr. Berryhill testified that it takes 48 hours for wastewater to turn anaerobic and develop nuisance odors, and wastewater would not be held in the temporary EQ basin long enough for that to happen. Instead, the EQ basin will be operated in the "low end of the anoxic zone" at -50 to -100 ORP, while anaerobic conditions do not occur until -200 to -400 ORP. Thus, the temporary EQ basin will not be operated with anaerobic conditions where nuisance odors would start to develop.[71] Though Protestants disagree with Mr. Berryhill's testimony, the evidence he provided is specific and unrefuted regarding where the lines between aerobic, anoxic, and anaerobic fall, and why anaerobic conditions will not develop in the temporary EQ basin. Thus, the preponderance of the

[70] 30 TAC § 309.13(e)(1).

[71] Tr. Vol. 2 a 240-41.

evidence established that the temporary EQ basin will not be a "lagoon with zones of anaerobic activity" that is subject to a 500-foot buffer zone.

The evidence also failed to establish that the BNR anaerobic basin will be a "lagoon" or have "zones of anaerobic activity." The ALJs agree with Granbury that Mr. Esmond's testimony about "typical" BNR plants was unreliable, and there was no other testimony or evidence to show how the BNR basin might constitute a lagoon. All parties broadly agree that a lagoon is a pool or pond-like body of water, but Granbury's evidence showed that the BNR basins are designed for wastewater to flow continuously, passing through the BNR anaerobic basin within 90 minutes. Unlike a pool or lagoon, wastewater in the BNR anaerobic basin will not stagnate or accumulate as standing water. The evidence also did not establish that the BNR basin will be truly anaerobic. Rather, Mr. Berryhill explained that notwithstanding the labels used in the application, the BNR anaerobic basin, like the temporary EQ basin, will be operated at "the low end of the anoxic zone" and will not allow the wastewater to develop anaerobic conditions where nuisance odors would develop.[72] As noted above, Protestants' evidence failed to rebut Mr. Berryhill's testimony or otherwise show that truly anaerobic conditions would develop in what the application referred to as the BNR anaerobic basin. Thus, the preponderance of the evidence established that the BNR anaerobic basin will not be a "lagoon with zones of anaerobic activity" that is apt to develop nuisance odors and must therefore have a 500-foot buffer.

Because a 500-foot buffer is not required, and because Granbury has shown it satisfies the 150-foot buffer that otherwise applies, Granbury has met its burden of proving that the Draft Permit complies with the requirements in 30 TAC § 309.13(e) to abate and control nuisance odors.

[72] Tr. Vol. 2 at 241-42.

B. Whether the Draft Permit is Protective of Water Quality[73]

The question of whether the Draft Permit is protective of water quality encompasses several issue addressed by other referred issues, namely Issue D (regarding whether the Draft Permit is protective of the health of the requesters, their families, livestock, and wildlife, including endangered species); Issue G (whether the modeling complies with applicable regulations to ensure the Draft Permit is protective of water quality); Issue H (whether the ED's antidegradation review was accurate); and Issue I (whether the nutrient limits in the Draft Permit comply with applicable SWQS). As discussed under those respective issues, the ALJs find that the effluent limits set in the Draft Permit will be protective of water quality to protect people, animals, and wildlife; the modeling complies with applicable regulations; the ED's antidegradation review was accurate and shows no more than a de minimis reduction in water quality; and the nutrient limits in the Draft Permit are sufficiently stringent to comply with the applicable SWQS. Therefore, the ALJs conclude the Draft Permit is protective of water quality.

C. Whether the Draft Permit is Protective of Groundwater and Wells

Granbury's evidence shows that there are no public water wells, springs, or similar sources of public drinking water within 500 feet of any of the WWTP's units,[74] and no private water wells within 250 feet of any units that would be authorized by the Draft Permit.[75] There are also no potable water elevated storage tanks or ground storage tanks within 500 feet of the East Plant site.[76] All plant units will be located at least 500 feet from all surface water treatment

[73] OPIC did not take a position on this issue.

[74] Tr. Vol. 2 at 225; COG Ex. 200 at 9-10; COG Ex. 500 at 8-9.

[75] COG Ex. 200 at 9; COG Ex. 500 at 8-9.

[76] COG Ex. 200 at 9; COG Ex. 500 at 9.

plants.[77] There are no public water wells, springs, or similar sources of public drinking water within 300 feet of any wet well or pump station that would be authorized by the Draft Permit.[78]

The proposed site complies with the Commission's rule addressing site characteristics for WWTPs[79] and does not threaten surface water or groundwater contamination. No party disputed this component of Granbury's prima facie case.[80] Accordingly the ALJs conclude that the preponderance of the evidence in the record demonstrates that the Draft Permit is protective of groundwater and wells.

D. Whether the Draft Permit is Protective of the Health of the Requesters and Their Families, Livestock, and Wildlife, Including Endangered Species[81]

One purpose of the Commission's water quality standards is to "maintain the quality of water in the state consistent with public health and enjoyment [and] the propagation and protection of terrestrial and aquatic life."[82] This purpose has been implemented in both narrative and numerical requirements.

As part of the narrative requirements, water in the state must be maintained to preclude adverse toxic effects on human health, aquatic life, terrestrial life, livestock, or domestic animals resulting from contact recreation or from consumption of aquatic organisms or water.[83] As part of the numerical requirements, 30 TAC § 307.6(c) and (d) provide specific numerical aquatic life

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[77] COG Ex. 200 at 10.

[78] COG Ex. 500 at 9.

[79] 30 TAC § 309.13(c).

[80] *See* Identification of Uncontested Issues (stipulating that Protestants do not contest Preliminary Order Issue C).

[81] OPIC did not take a position on this issue.

[82] 30 TAC § 307.1; *accord* Tex. Water Code § 26.003.

[83] 30 TAC §§ 307.4(b)(7), (d), .6(b).

and human health criteria related to toxicity. Bacteria criteria, based on the receiving waters' type and recreation use, are set forth in 30 TAC § 307.7(b).[84] To preclude excessive growth of aquatic vegetation, 30 TAC § 307.7(b)(4)(e) requires nutrient criteria when appropriate to protect aquatic life. Other Commission rules also protect human health from permitted WWTPs and their discharges via effluent limits and requirements relating to, *inter alia,* siting, pretreatment, disinfection, and storage. All of these regulations serve the policy of ensuring a draft permit will be protective of human health, wildlife, and livestock.

The parties' arguments on Issue D focused principally on whether the Draft Permit's bacteria and effluent limits are sufficient to prevent E. coli and algal growth from threatening public health and the health of wildlife and livestock. This question is addressed in greater detail under Issues G-I below.

1. Granbury's and the ED's Evidence and Arguments

The ED explained that "aquatic life protection began with characterizing the receiving waters."[85] Aquatic scientist Jeff Paull determined that the unnamed tributary of Rucker Creek, where the wastewater would first be discharged, is an intermittent stream with perennial pools and limited aquatic life use, incidental fisheries use, and primary contact recreation use. It flows into Rucker Creek, which is a perennial stream with high aquatic life use, sustainable fisheries use, and primary contact recreation use.[86] Rucker Creek flows into Lake Granbury, which has high aquatic life use, public water supply use, and primary contact recreation use.[87]

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[84] 30 TAC §§ 307.3(50), .7(b)(1)(A)(i) (for primary contact recreation 1).

[85] ED's Closing Argument at 12.

[86] Ex. ED-11 at 8.

[87] Ex. ED-11 at 9.

With that information, ED staff determined the DO criteria needed to maintain the receiving waters' aquatic uses, and what effluent limits were needed to meet those criteria.[88] ED water modeler James Michalk recommended stricter ammonia nitrogen limits and minimum DO in effluent requirements than initially proposed by Granbury.[89] Mr. Paull then performed nutrient screening (discussed under Issue I) and recommended a total phosphorus effluent limit of 1.0 mg/L in the Interim phase and 0.5 mg/L in the Final phase of the Draft Permit. He explained that the phosphorus limits "should help prevent the excess accumulation of algae in the receiving waters by reducing the nutrient load in the water bodies that are sensitive to total phosphorus."[90] He did not recommend a total nitrogen limit, explaining that the Commission's "general approach for setting nutrient limits is to 'focus on phosphorus instead of nitrogen,'" as outlined in the IPs.[91]

Granbury argues that the Draft Permit's toxics criteria—which are dictated by the characterization of the receiving waters having incidental and sustainable fisheries uses and limited and high aquatic life uses—ensure that the proposed discharge will not adversely affect the health of people consuming fish from these waters.[92] In fact, Mr. Paull explained that the toxics criteria to protect aquatic life are often more restrictive than the fisheries criteria to protect human health, so the aquatic-life toxics criteria offer further protection for human health.[93]

Mr. Paull also testified that the end-of-pipe bacterial limits required in all permits for domestic wastewater facilities will help preclude any adverse impacts on contact recreation uses

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[88] Ex. ED-11 at 9-10.

[89] Ex. ED-13 at 4. These limits are discussed in greater detail under Issues G-I below.

[90] Ex. ED-11 at 11.

[91] Ex. ED-11 at 11.

[92] Granbury's Closing Argument at 25; ED-11 at 11.

[93] Ex. ED-11 at 12.

of the receiving waters.[94] The Draft Permit has an E. coli limit of 126 CFU/100 mL.[95] Granbury argues that the E. coli limit is protective of contact recreation activities like swimming, where immersion and ingestion are likely, and is consistent with what the EPA considers to be protective of human health through contact recreation.[96] It is also what Granbury's biologist David Flores described as a "standard limit" that is applied across the state of Texas.[97]

Granbury also argues that Protestants' concerns about potentially toxic algal blooms, including cyanobacteria and golden algae, are unsupported. According to Mr. Flores, the Brazos River Authority, which is responsible for environmental monitoring of Lake Granbury, has publicly stated that there have been "no known, documented algal blooms in the Brazos River basin that were considered harmful to humans, pets, or wildlife in the past 25 years."[98] Granbury's water modeler Tim Osting likewise testified that he had not identified any significant fish kills in Lake Granbury resulting from cyanobacteria.[99] And while golden algae species have been documented in Lake Granbury to contribute to fish kill events, more recent studies have shown that increased circulation and water flow have resulted in "the lowest levels of golden algae and golden algae toxicity in Lake Granbury."[100] Mr. Osting's water modeling (discussed in more detail below in Issues G-I) indicated that "the potential for harmful algae in the cove is not made worse by the addition of this permitted discharge."[101]

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[94] Ex. ED-11 at 12.

[95] Ex. ED-7 at2.

[96] COG Ex. 600 at 38-39; COG Ex. 707.

[97] Tr. Vol. 2 at 398.

[98] COG Ex. 700 at 41.

[99] COG Ex. 60 at 34.

[100] COG Ex. 600 at 35-36

[101] COG Ex. 600 at 36.

Granbury disputes Protestants' claim that the East Plant would run afoul of goals of the Lake Granbury WPP. The plan, prepared in July 2010, explained that "[p]eriodic elevated concentrations of E. coli and fecal coliform bacteria have been found in the coves of Lake Granbury," though "[e]levated bacteria concentrations in the main body of the lake do not occur regularly nor are periods of high concentration persistent."[102] The main contributors of bacteria for the Lake Granbury watershed were found to be livestock, failing septic tanks, feral hogs, and pets.[103] One of the plan's recommendations for addressing this problem was to move residents away from on-site sewage facilities (septic systems) in favor of regional wastewater treatment options.[104] Mr. Osting is one of the authors of the plan, and he testified that the Draft Permit is consistent with the plan's centralized waste treatment concept because it follows the recommendation to move residents toward centralized waste treatment, which will reduce the risk of bacterial discharges from dispersed residential systems.[105]

The Lake Granbury WPP explained that bacteria levels were elevated in dead-end coves and canals because stagnant conditions in those areas kept the water from circulating and mixing with the main body of the lake.[106] Rather than aggravating the problem, as Protestants suggest will occur, Granbury contends that discharge from the East Plant will improve the stagnant conditions observed in the data collected for the Lake Granbury WPP, because the wastewater discharge will circulate through the cove and mix with the main body of the lake.[107]

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[102] Ex. GF-306 at 9, 14.

[103] Ex. GF-306 at 14.

[104] Ex. GF-306 at 104.

[105] COG Ex. 600 at 39.

[106] Ex. GF-306 at 27.

[107] Granbury's Response to Closing Arguments at 15.

For the same reasons the Draft Permit is protective of human health, it is also protective of and will not adversely affect livestock, wildlife, or aquatic wildlife, Granbury argues.[108] Mr. Paull also checked for potentially affected or endangered or threatened species and determined that the East Plant's discharge is not expected to affect any federal endangered or threated aquatic or aquatic-dependent species or their habitat.[109]

2. Protestants' Evidence and Arguments

Protestants argue that people live all along Rucker Creek whose health could be negatively impacted by the discharge from the East Plant. Granbury Fresh members Victoria Calder and Jason Nolte both testified that their homes are located directly on Rucker Creek—on the effluent route before it reaches Lake Granbury—and they are concerned about their families' ability to swim, boat, and fish in the creek, and eat the fish they catch, if the East Plant is approved.[110] Dr. Calder[111] also testified that the creek runs dry during droughts, and she fears that in such periods the creek would be "effluent only and our back yards will be an open sewer."[112]

Protestants' expert Mr. Esmond also opined that the Draft Permit would allow harmful bacteria levels—particularly E. coli—that would negatively impact public health. To protect the public health and prevent infectious diseases, the EPA sets an E. coli standard of 126 CFU/100 mL for fresh recreational waters.[113] Mr. Esmond acknowledged that the Draft Permit has adopted this value, but he disputed this level is necessarily safe for recreational use. At 126 CFU/100 mL,

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[108] Granbury's Closing Argument at 24-25; ED-11 at 12.

[109] Ex. ED-11 at 9.

[110] Ex. GF-100 at 3, 5; Ex. GF-200 at 3.

[111] Dr. Calder holds a PhD in educational psychology. Tr. Vol. 1 at 20. She testified as a fact witness, not an expert on any of the scientific matters in issue.

[112] Ex. GF-100 at 5.

[113] Ex. GF-305 at 12.

the EPA estimates that an illness rate of 36 per 1,000 contact recreators.[114] In Mr. Esmond's opinion, lower levels can be achieved and should be required to protect public health and maintain water quality.[115] However, he was not able to identify any Texas permits where a lower E. coli limit was required.[116]

According to Mr. Esmond, bacteria levels are already concerning in Rucker Creek and its coves, and the East Plant's discharge will worsen these problems. He pointed to the Lake Granbury WPP (issued in 2010), which recognized that elevated bacteria levels, specifically E. coli, were already a periodic problem in Lake Granbury and its coves.[117] He also testified that the Commission's historical water quality sampling measured E. coli levels above 126 CFU/100 mL on several occasions between 2007 and 2010.[118] Allowing a discharge of up to 2.0 MGD of treated wastewater with E. coli concentrations of up to 126 CFU/100 mL would exacerbate this problem and further underline the water quality in Lake Granbury, in his opinion.[119] Protestants argue this would lead to gastrointestinal illnesses among "a not insignificant number of recreators," which shows the Draft Permit is not adequately protective of their health.[120]

Mr. Esmond also expressed concern that increased bacteria concentrations would reduce the quality of water entering a public water supply intake situated about two miles downstream.[121] He contended that the EPA's limit of 126 CFU/100 mL is based upon human skin contact, but

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[114] Ex. GF-300 at 12-13; Ex. GF-305 at 12.

[115] Ex. GF-300 at 13-14.

[116] Tr. Vol. 1 at 24.

[117] Ex. GF-300 at 13-14; Ex. GF-306.

[118] Ex. GF-300 at 15.

[119] Ex. GF-300 at 14-15.

[120] Protestants' Closing Argument at 29.

[121] Ex. GF-300 at 15.

E. coli is even more dangerous to human health if ingested, which would happen if the effluent reached the public water supply.[122]

Protestants also contend that the East Plant's discharge could lead to algal blooms that will harm or kill fish and animals in Rucker Creek Cove. Dr. Calder claimed that a golden algae bloom killed over 250,000 fish in the Brazos River in 2011, and she is concerned that effluent wastewater would put Rucker Creek or its coves at risk for similar fish kills.[123] Protestants' expert Woody Frossard testified that excess phosphorus and nitrogen can cause cyanobacteria to proliferate, which at certain levels can cause both human and animal health issues, including animal death after ingesting cyanobacteria while in water.[124] He criticized the ED's water-quality modeling because it did not attempt to analyze algal growth or whether cyanobacteria levels would pose a public risk in this case.[125] In his opinion, the ED failed to consider potential health impacts from harmful algal blooms.[126]

3. ALJs' Analysis

The Draft Permit's E. coli limit is consistent with both the EPA's standard for fresh recreational waters and the Commission's standard for waters designated for primary contact recreation.[127] Mr. Flores testified that the 126 CFU/100 mL limit is standard in permits throughout the state and, though he disagreed with the limit, Mr. Esmond could not point to any permits with stricter E. coli limits. Nor have Protestants otherwise shown that E. coli levels in the

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[122] Ex. GF-300 at 15-16.

[123] Ex. GF-100 at 5.

[124] Ex. GF-100 at 14.

[125] Ex. GF-500 at 13-14; Tr. Vol. 1 at 58.

[126] Ex. GF-500 at 9.

[127] 30 TAC §§ 307.3(50), .7(b)(1)(A)(i); Ex. GF-305.

receiving waters are currently problematic, let alone that they would be dangerously worsened if the Draft Permit is issued. The Lake Granbury WPP was written over a decade ago and reported E. coli levels recorded between twelve and fifteen years ago. The evidence does not show whether those conditions persist today. Even assuming they do, Granbury has convincingly shown that the East Plant will help, not hurt, the conditions that the Lake Granbury WPP blamed for high bacteria levels. The East Plant will facilitate the Plan's goal of moving residents away from the failing private septic systems that were responsible, in large part, for the high bacteria levels recorded in the coves of Rucker Creek. The flow of effluent will also increase circulation in the coves, improving the stagnant conditions that led to the elevated bacteria levels. For these reasons, the ALJs find that Granbury has shown, by a preponderance of the evidence, that the E. coli limit in the Draft Permit is protective of human health and, by extension, the health of livestock or wildlife who may ingest or have contact with the receiving water.

Similarly, Protestants have not shown that algal blooms will occur due to the expected effluent discharge, but have merely shown that a concern exists. Granbury answered this concern with evidence that there have been no harmful algal blooms in the Brazos River basin in 25 years,[128] no known fish kills in Lake Granbury arising from cyanobacteria,[129] and there are now low levels of golden algae in Lake Granbury.[130] In addition, a total phosphorus limit has been included in the Draft Permit specifically to prevent excess accumulation of algae in the receiving waters, and water modeling indicated that the permitted discharge would not increase the potential for harmful algae in the coves of Rucker Creek.[131] Beyond the unsupported concerns of Mr. Frossard and Dr. Calder, Protestants presented no evidence that cyanobacteria is actually present in Rucker Creek, its coves, or Lake Granbury, or that cyanobacteria or golden algae are

[128] COG Ex. 700 at 41.

[129] COG Ex. 60 at 34.

[130] COG Ex. 600 at 35-36.

[131] Ex. ED-11 at 11; COG Ex. 600 at 36.

likely to develop as a result of the discharges authorized by the Draft Permit. Therefore, the ALJs find the discharged effluent will not result in significant algae growth that poses a risk to humans, animals, or livestock.

In sum, the ALJs conclude that Granbury has met its burden of showing that the Draft Permit's E. coli limits and effluent limits are sufficiently protective of public health, wildlife and livestock. There is no evidence that any endangered species would be affected by the Draft Permit. Because the ALJs have also found (in Issues B and G-I) that the Draft Permit is protective of water quality—an inquiry that includes addressing whether the Draft Permit meets standards intended to protect human and aquatic life—they agree with Granbury and the ED that the Permit overall is protective of the health of nearby residents, animals, and livestock.

E. Whether the Proposed Discharge Will Adversely Impact Recreational Activities[132]

In determining whether to issue a permit to discharge effluent into a body of water with an established recreational standard, the Commission is required to consider "any unpleasant odor quality of the effluent" and how it might adversely affect the receiving body of water.[133] And if the effluent would be comprised primarily of sewage or municipal waste and discharged into a body of water that crosses or abuts a park, playground, or schoolyard within one mile of the discharge, the Commission must consider "any unpleasant qualities of the effluent, including unpleasant odor, and any possible adverse effects that the discharge of the effluent might have on the recreational value of the park, playground, or schoolyard."[134]

[132] OPIC did not take a position on this issue.

[133] Tex. Water Code § 26.030(a).

[134] Tex. Water Code § 26.030(b).

In their arguments on Issue E, Protestants focused principally on how the East Plant would impact the Bennett's Camping Center RV park, which is situated on land next to the proposed facility. Additional facets of the Draft Permit's implications for recreational use are addressed in connection with other Referred Issues.

1. Granbury's and the ED's Evidence and Arguments

Granbury contends that, as addressed in Issues B, D, and G-I, the Draft Permit imposes appropriate toxics criteria and bacteria limits to ensure the discharge will not impact the health of people who recreate in the receiving waters or consume fish they catch in the receiving waters.[135] Therefore, the discharge authorized by the Draft Permit will not adversely impact any recreational activities.

Granbury also asserts that Protestants' concerns about unpleasant odors are unfounded. They contend that Protestants have not shown any discharges authorized by the Draft Permit will have an unpleasant odor and, even if there are odors, the 150-foot buffer zone (addressed above, Issue A) is sufficient to contain them. Further, the facility is designed to have a cover on the temporary EQ basin, as well as mixing, foul-air piping, and air scour blowers that will reduce and move any foul air from the EQ basin to the aerobic selector zone and the MBR tanks, providing continuous biological treatment of any foul air that might arise during the short time wastewater could be stored in the temporary EQ basin.[136] While Granbury does not expect any foul odors to develop, it emphasized that the East Plant is designed to "go above and beyond the minimum requirements" to capture and treat any odors on site.[137]

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[135] Granbury's Closing Argument at 27-28.

[136] COG Ex. 300 at 27-28.

[137] Tr. Vol. 2 at 277.

Granbury rejected Protestants' argument that these additional features are not required in the permit and thus might not be implemented. Mr. Berryhill pointed to a section of the Draft Permit that states that the permit is granted "on the basis of the information supplied and representations made by the permittee during action on an application and relying upon the accuracy and completeness of that information and those representations."[138] The permit may be modified, suspended, or revoked for good cause, which includes "obtaining the permit by misrepresentation or failure to disclose fully all relevant facts or a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge."[139]

Mr. Berryhill opined that these terms in the Draft Permit require Granbury "to do what it says it's going to do."[140] Any changes to the design would have to be approved by the owner, designer, and TCEQ as well.[141] He also testified that a permit does not typically go into the level of detail that Protestants questioned him about, and there is an engineering review conducted by TCEQ of the plans and specifications before construction can start.[142]

Finally, Granbury contends that the Bennett's Camping Center RV park does not abut any of the receiving waters, so Texas Water Code § 26.030 does not apply in any event.

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[138] Tr. Vol. 2 at 311-12.

[139] Tr. Vol. 2 at 312.

[140] Tr. Vol. 2 at 312.

[141] Tr. Vol. 2 at 317.

[142] Tr. Vol. 2 at 326.

2. Protestants' Evidence and Arguments

In addition to their public-health concerns, discussed above in Issue D, that the East Plant's discharge would make it unsafe to continue swimming and fishing in Rucker Creek waters, Protestants also contend that the facility will impair other recreational uses on nearby property. Specifically, they cite the testimony of Protestant Stacy Rist, who is one of the owners of Bennett's Camping Center, Inc. which owns and operates an RV park that abuts the property where Granbury proposes to build the East Plant.[143] The park has 44 sites, most of which are occupied by guests who rent on a monthly basis, many of them staying for three or more years. There are also short-term sites rented on a daily or weekly basis. Ms. Rist testified that the park is almost always full and she and her partners have plans to expand by another 29 sites.[144] The RV park includes a playground and campsites with RVs parked right at the property line shared with the City, with little buffer.[145] Ms. Rist is concerned that the East Plant will be unsightly and will generate noise, odors, and lights that will disturb her customers and reduce business revenues.[146] She visited a plant that was represented to her to be similar to the proposed East Plant and was "amazed at the nasty smells coming from [that] facility."[147] Dr. Calder expressed similar concern that noxious odors from the treatment plant will impair her enjoyment of her property, making it unpleasant to engage in outdoor recreation.[148]

Protestants argued that, although Granbury touts the "above and beyond" features of the East Plant that are designed to control nuisance odors, these design features are voluntary and

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[143] Rist-Bennett Ex. 0 at 3.

[144] Rist-Bennett Ex. 0 at 4.

[145] Rist-Bennett Ex. 0 at 5-7.

[146] Rist-Bennett Ex. 0 at 8.

[147] Rist-Bennett Ex. 0 at 9.

[148] Ex. GF-100 at 6.

not required by the Draft Permit. Granbury has stated "non-binding good intentions"[149] that Protestants believe are unenforceable. During cross-examination, Mr. Berryhill conceded that the Draft Permit does not: spell out that an EQ basin will be used;[150] specify the maximum time wastewater may be stored in the temporary EQ basin;[151] require mixing in the temporary EQ basin;[152] specify that the temporary EQ basin will be aerated;[153] establish the ORP that must be maintained;[154] require monitoring of the ORP in the BNR anaerobic zone or the EQ basin;[155] or require that the cover, air filtration, and other features will be maintained.[156] Protestants take these concessions as evidence that the special features that promise to control foul odors ultimately may not be included in the plant, and there will be no recourse due to the lack of enforceable terms in the Draft Permit.

3. ALJs' Analysis

Texas Water Code § 26.030(a) expressly addresses the "odor quality of the effluent" that would be discharged pursuant to the Draft Permit, and "the possible adverse effect" the effluent might have on the receiving waters. Similarly, when the receiving water "crosses or abuts any park, playground, or schoolyard within one mile of the point of discharge," Texas Water Code § 26.030(b) requires the Commission to consider potential adverse effects on the recreational value of those sites.

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[149] Protestants' Closing Argument at 5.

[150] Tr. Vol. 2 at 259.

[151] Tr. Vol. 2 at 263, 265.

[152] Tr. Vol. 2 at 266.

[153] Tr. Vol. 2 at 266-67.

[154] Tr. Vol. 2 at 268.

[155] Tr. Vol. 2 at 272.

[156] Tr. Vol. 2 at 284.

Ms. Rist's property, the Bennett's Camping Center RV park, does not abut and is not crossed by any of the Draft Permit's receiving waters. Therefore, the ALJs agree with Granbury that Texas Water Code § 26.030 does not apply to Ms. Rist's concerns about odors. However, Dr. Calder's concerns that the odors from the East Plant's effluent might detract from recreational enjoyment on her property, which does abut Rucker Creek on the discharge route, can fairly be construed to invoke § 26.030(a)'s requirement to consider whether effluent odors will affect receiving waters. Further, unlike some of the other Referred Issues, the Commission's directive in Issue E to consider "whether the proposed discharge will adversely impact recreational activities" was not tied to any specific rule or regulation. Therefore, the ALJs will address the impact on recreational activities without limiting their consideration to only those impacts addressed in § 26.030.

Here, Ms. Rist's testimony establishes (and no party disputes) that Bennett's Camping Center and RV Park is a park-like setting, which includes a playground, that is used for recreational purposes. The evidence is also undisputed that the RV park is very close to the proposed East Plant, sharing a property line with the side of the site where the temporary EQ basin and BNR basins will be situated.[157] Dr. Calder's property is further away from the facility but is situated on the discharge route, and she has raised concerns similar to Ms. Rist about odors from the East Plant affecting recreational activities in the waters by her property.

While it is true that the ALJs have determined that, with a 150-foot buffer zone, the East Plant will satisfy applicable requirements to abate and control nuisance odors (*see* Issue A above), that is not the end of the inquiry. Protestants have raised reasonable concerns about potentially intrusive odors that do not rise to the level of "nuisance odors" addressed by

[157] Admin. Record at 312.

30 TAC § 309.13(e)(1), but could nonetheless interfere with guests' recreational enjoyment at the Bennett's Camping Center RV park.

However, the ALJs also find that the potential for foul odors reaching nearby properties can be mitigated if Granbury constructs the East Plant with a cover on the temporary EQ basin and the piping, blowers and other features it has planned to contain foul odors that may unexpectedly develop. While Protestants are concerned these elements are not actually required by the Draft Permit, the omission is logical, however, as explained by Mr. Berryhill. The permitting review and authorization is not the full-blown engineering review of plans and specifications that occurs before construction may start. If an engineering-level review was required at the permitting stage, the submission and review of the permit would be far more costly and resource-intensive for both the applicant and ED staff. Furthermore, the memorialization of detailed design requirements in the permitting stage would prevent consideration of design improvements that may become available during the often years-long process of permitting and preparing for construction. Thus, it makes sense that the Draft Permit refers to the representations made in the application rather than making each design feature a permanent element of the Draft Permit. For these reasons, the ALJs find that the Draft Permit will not adversely affect recreational uses.

F. Whether the Application is Accurate and Complete[158]

1. Granbury's and the ED's Evidence and Arguments

Granbury and the ED argue that, by virtue of having gone through Commission staff's administrative and technical review processes,[159] Granbury has established that the application is

[158] OPIC did not take a position on this issue.

[159] *See* 30 Tex. Admin. Code ch. 281.

accurate and complete. Under administrative review by ED staff, Granbury corrected minor inaccuracies identified by staff and timely provided all additional information that was requested.[160] On November 12, 2019, ED staff declared the application administratively complete,[161] which reflects staff's determination that Granbury had submitted all of the information required in the administrative report portion of the permit application.[162] Then the application proceeded to technical review, where staff from the Wastewater Permitting and Water Quality Assessment Section, the Municipal Permits Team, the Standards Implementation Team, and the Water Quality Assessment Team performed reviews and modeling before the application was declared technically complete on March 18, 2020.[163] Technical completion reflects that ED staff is satisfied with the completeness and accuracy of the technical portion of the application.[164] The ED contends that "it is ultimately up to ED staff to determine" whether the application is accurate and complete so as to enable staff to write a draft permit, and that that the application would not have been declared administratively or technically complete if Granbury had not met this burden.[165]

2. Protestants' Evidence and Arguments

Protestants dispute that Granbury's application is complete. Citing the Commission's Instructions for Completing Domestic Wastewater Permit Applications,[166] Protestants contend that Granbury was required to send certified letters to all domestic wastewater treatment

[160] COG Ex. 200 at 16-17; Ex. ED-1 at 16.

[161] Admin. Record at 95.

[162] Ex. ED-1 at 4.

[163] Ex. ED-1 at 6-7.

[164] Ex. ED-1 at 4.

[165] ED's Closing Argument at 15.

[166] Ex. GF-5.

facilities located within a three-mile radius of the East Plant, asking whether those facilities could provide wastewater service for the proposed service area, and to include those letters and any responses with the application.

The application instructions note the state's policy to "encourage and promote the development and use of regional and area-wide waste collection, treatment, and disposal systems . . . and to prevent pollution and maintain and enhance the quality of water in the state" and go on to provide:

> If there are any permitted domestic wastewater treatment facilities or sanitary sewer collection systems located within a three-mile radius of the proposed wastewater treatment facility, provide a list of all of these facilities, including the permittee's name and wastewater permit number . . . . Provide copies of your certified letters to these facilities and their response letters concerning providing wastewater service for the proposed service area. If any of these facilities agree to provide service, provide justification and a cost analysis of expenditures that shows the cost of connecting to these facilities versus the cost of the proposed facility or expansion.[167]

Here, Granbury did not send letters to any wastewater facilities within three miles. Instead, the application identified three facilities within a 3-mile radius and explained why those facilities were not viable alternatives to the East Facility, as follows:

> 1. City of Granbury's South Wastewater Treatment Facility – WQ0010178002 (CCN No. 20356)
>
> Letter to Granbury South Wastewater Treatment Facility (South WWTP) is not necessary because the City of Granbury is the owner/operator of the South WWTP and will be the owner/operator of the proposed East WWTP. The proposed new facility is a satellite facility to provide additional treatment capacity for the City of Granbury. Additionally, the East WWTP service area is included in the City of Granbury's existing CCN, and the new East WWTP will simply

[167] Ex. GF-5 at 64-65.

alleviate some of the stress on the existing South WWTP by taking some of the flow which is currently routed to the South WWTP.

2. Acton Municipal Utility District (MUD) Wastewater Treatment Facility No.1 at DeCordova Bend – WQ0014211001 (CCN 20889)

Acton MUD Wastewater Treatment Facility at DeCordova Bend is a small facility which was constructed specifically to serve the DeCordova subdivision; the proposed service area for the new East WWTP does not include any portion of the DeCordova subdivision, so a letter to Acton MUD is not applicable. Additionally, the Acton MUD – DeCordova facility does not have enough capacity to accept the flow proposed for the new Granbury East WWTP.

3. Shady Grove Sewer System (CCN 20767)

A letter to the Shady Grove Sewer System is not applicable because the Shady Grove Sewer System serves a small area, none of which is included in the proposed Granbury East service area. Additionally, the small collection system does not have the capacity to treat the flow proposed for the new Granbury East WWTP.[168]

In their briefs, Protestants do not contend that Granbury was required to send a letter to itself to ask whether the existing South Plant could provide service, nor do they contend that a letter to Acton MUD was required.[169] However, Protestants do contend Granbury was required to send a letter to the Shady Grove Sewer System, noting that Granbury's own engineering consultant, Luci Dunn, acknowledged in her testimony that Shady Grove was an operator within three miles of the proposed facility.[170] According to Protestants, the application instructions do not allow an applicant to avoid or sidestep the requirement to send a letter to this operator, and Granbury's failure to adhere to the instructions makes the application incomplete.

[168] Admin. Record at 324.

[169] Protestants' Closing Arguments at 33-35.

[170] Tr. Vol. 2 at 209.

3. ALJs' Analysis

The ALJs do not agree that the absence of a letter to Shady Grove Sewer System renders the application substantively inaccurate or incomplete. While Ms. Dunn did testify that Granbury did not send a letter to Shady Grove, she explained this was because "[w]e were not able to find a Shady Grove treatment plant or sewer system. We listed them [in the application] because that particular system showed up as having a Certificate of Convenience and Necessity, a CCN, on the [Commission's] website . . . but they are on septic in that area," and do not actually appear to have a wastewater facility within a 3-mile radius of the proposed East Plant.[171]

Moreover, as noted by Granbury, the application instructions do not have the binding force of a Commission rule.[172] The Commission rules required Granbury to provide "information as the [ED] or [Commission] may reasonably require."[173] The preponderant evidence shows that Granbury met this requirement when it listed on the application the three permitted wastewater treatment facilities within a three-mile radius and provided a detailed explanation for why none of those facilities could meet the need to be addressed by the proposed East Plant. Notwithstanding the suggestions in the instructions, it would not have been reasonable for ED staff to require Granbury to send a letter to the Shady Grove Sewer System when the only evidence shows they could not provide additional capacity for Granbury or otherwise facilitate a regionalization policy.

For these reasons, the ALJs determine that Granbury has met its burden of showing that the Application is both accurate and complete.

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[171] Tr. Vol. 2 at 209-10.

[172] Granbury's Response to Closing Arguments at 27.

[173] 30 TAC §§ 281.5(7), 305.45(a)(6)(E).

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

DO is the amount of free molecular oxygen dissolved in water, typically entering the water body from the atmosphere and aquatic plant photosynthesis.[174] DO concentrations in a water body are affected by factors such as water temperature, depth, velocity, and flow, and by constituents in the water such as nutrients, algae, and oxygen-demanding organic matter.[175] Thus, DO modeling is used to gauge overall water quality because DO is a primary indicator of the general biologic health of the water body, with a higher DO generally indicating higher water quality.[176] TCEQ's rule 30 TAC § 307.7(b)(3)(A)(i) sets a DO criterion for a given water body based on its aquatic life use subcategory (oyster waters, exceptional, high, intermediate, limited, or minimal). The DO criterion is the 24-hour DO mean or minimum that is assigned to support a water body's aquatic life use.[177]

The parties' central dispute regarding Issue G is whether the ED staff's modeling of predicted DO values, prepared using the QUAL-TX model, is adequate to show the discharges from the East Plant will maintain the minimum DO criteria in the receiving water bodies. Granbury and the ED contend the QUAL-TX model predicts DO values of 4.84 mg/L in the 1.0 MGD Interim phase and 4.81 mg/L in the 2.0 MGD Final phase, and that these results indicate the East Plant discharge will meet the criteria of 5.0 mg/L DO for Rucker Creek and Lake Granbury. Granbury presented Mr. Osting's modeling and testimony to show that a QUAL-TX model updated with some site-specific inputs predicted 4.82 mg/L (1.0 MGD) and 4.95 mg/L DO (2.0 MGD). Another model used by Mr. Osting, QUAL2K, predicted DO values over 5.0 mg/L even under critical conditions.

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[174] Ex. ED-13 at 3.

[175] COG Ex. 600 at 15.

[176] Ex. ED-13 at 3.

[177] Ex. ED-11 at 9.

Protestants and OPIC point out that 4.81, 4.82, 4.84, and even 4.95 mg/L are not the same as 5.0 mg/L, and assert the standard is not met on the basis of the QUAL-TX modeling. They reject the QUAL2K model as unapproved in Texas and contend that Mr. Osting's QUAL2K model failed to take critical conditions into account.

1. Granbury's and the ED's Evidence and Arguments

As previously noted, ED aquatic scientist Mr. Paull determined that the unnamed tributary of Rucker Creek is an intermittent stream with perennial pools and limited aquatic life use, incidental fisheries use, and primary contact recreation; Rucker Creek is a perennial stream with high aquatic life use, sustainable fisheries use, and primary contact recreation use;[178] and Lake Granbury has high aquatic life use, public water supply use, and primary contact recreation use.[179] Based on these categorizations, Mr. Paull assigned the appropriate DO criterion to each water body: 3.0 mg/L for the tributary and 5.0 mg/L for Rucker Creek and Lake Granbury.[180]

Mr. Paull provided the DO criteria to ED water modeler James Michalk, who used TCEQ's preferred modeling tool, QUAL-TX, to develop a model assessing the effluent limits necessary to maintain the DO criterion for each water body.[181] Mr. Michalk noted that Granbury's proposed discharge route, which is a route involving "advective stream reaches and narrow constricted lake backwater reaches," is a type typically modeled with QUAL-TX.[182] Advective reaches are unobstructed or free-flowing portions of streams, while lake backwater

[178] Ex. ED-11 at 8.

[179] Ex. ED-11 at 9.

[180] Ex. ED-11 at 9; Ex. ED-4 at 1.

[181] Ex. ED-13 at 6; Ex. ED-3 at 84.

[182] Ex. ED-13 at 12.

reaches are transitional areas between a flowing stream or river and more open waters in a lake cove or main lake body.[183]

For purposes of modeling DO criteria, Mr. Michalk explained, backwaters are considered to be part of the lake water body. The DO criterion for a classified segment lake applies up to the defined normal pool elevation of the lake, which for Lake Granbury is 693 feet msl.[184] Thus, as shown on the modeling map prepared by ED staff, the lake backwater portions of the Rucker Creek channel are modeled as part of the water body of Lake Granbury.[185]

The result, Mr. Michalk elaborated, is a model in which "a wastewater discharge will reach the more restrictive lake backwater portions of the model more quickly and dissolved oxygen predictions will be more pessimistic than if a lower lake level scenario were modeled, with the lake backwater section beginning farther downstream."[186] He noted that this approach is applied to all lake discharge permit applications to ensure uniformity in permitting. This conservative approach is also intended to protect the DO level in a lake—which is usually higher than in the reaches—"all the way upstream to its defined normal pool elevation."[187]

To analyze a "worst-case" scenario, "critical conditions" are assumed, meaning high temperatures, low flow of the receiving water body (the 7Q2 flow), and the flow of the effluent at permit limits.[188] For larger water bodies, the 7Q2 flows can be calculated from sources such as the U.S. Geological Survey streamflow data, but the information is unavailable for smaller water

[183] Ex. ED-13 at 13.

[184] Ex. ED-13 at 12.

[185] Ex. ED-21; Ex. ED-13 at 13.

[186] Ex. ED-13 at 14.

[187] Ex. ED-13 at 14.

[188] Ex. ED-3 at 86.

bodies such as the unnamed tributary and Rucker Creek.[189] Mr. Michalk therefore used default hydraulic coefficient values for the tributary and Rucker Creek, setting the baseflow (the amount of flow in the water body without wastewater discharges) of the tributary at zero and Rucker Creek at 0.1 cfs.[190] In Mr. Michalk's experience, the results of models using such default values are almost always more conservative (predicting lower DO concentrations) than if site-specific values are used. For example, he noted that summertime lake temperatures in the Granbury area are typically cooler than the default high temperature value used, and the DO saturation is typically higher than the default 80% saturation value.[191]

After constructing the QUAL-TX model, Mr. Michalk entered effluent flows and values representing the oxygen-demanding substances and DO present in the proposed discharge. Granbury had proposed effluent limits as shown below; he determined based on model results that those proposed limits would not be sufficiently protective and recommended more stringent limits to maintain water quality.[192]

	$CBOD_5$	**Ammonia nitrogen**	**Minimum DO in effluent**
Granbury proposed for 1.0 MGD phase[193]	5.0 mg/L	2.0 mg/L	4.0 mg/L
ED staff recommended for 1.0 MGD phase	**5.0 mg/L**	**1.6 mg/L**	**6.0 mg/L**
Granbury proposed for 2.0 MGD phase	5.0 mg/L	3.0 mg/L	4.0 mg/L
ED staff recommended for 2.0 MGD phase	**5.0 mg/L**	**1.0 mg/L**	**6.0 mg/L**

[189] Ex. ED-13 at 9.

[190] Ex. ED-13 at 9.

[191] Ex. ED-13 at 9.

[192] Ex. ED-13 at 14.

[193] This table is not in the record evidence; it was created by the ALJs based on Mr. Michalk's testimony. *See* Ex. ED-13 at 14.

Based on Mr. Michalk's recommended values, the QUAL-TX model predicted 4.84 mg/L DO in the 1.0 MGD phase and 4.81 mg/L DO in the 2.0 MGD phase.[194]

Mr. Michalk noted that Protestants' expert James Machin criticized the use of a default barometric pressure (1013.25 mb, the average pressure at sea level) instead of the actual barometric pressure at the site (998 mb at approximately 700 feet msl).[195] Mr. Michalk agreed that water holds less oxygen at higher elevations, but he found it inappropriate to change only one value from default to site-specific without also revising other inputs.[196] He pointed out that the QUAL-TX user's manual states barometric pressure is used in temperature simulation and to calculate DO saturation concentrations, and neither exercise is relevant here.[197] Furthermore, Mr. Michalk tried but was unable to reproduce Mr. Machin's resulting DO value (4.03 mg/L), obtaining a value of 4.63 mg/L DO when he changed only the barometric pressure, and a value of 4.65 mg/L DO when he reinitialized the model.[198]

Mr. Michalk also acknowledged Protestants' criticism, expressed by Mr. Frossard[199] and Mr. Machin,[200] that none of the QUAL-TX model runs achieved a DO of 5.0 mg/L. He responded that the TCEQ Water Quality Assessment Team conducted a modeling study in 2008 to examine the appropriateness of allowing a model to deviate by up to 0.20 mg/L from the water body's assigned DO criterion. The study, "Margin of Safety in TCEQ Default QUAL-TX Modeling Analyses," found that QUAL-TX analyses used a combination of inputs (discharge

[194] COG Ex. 604.

[195] Ex. GF-1 at 5.

[196] Ex. ED-13 at 16.

[197] Ex. ED-13 at 16-17.

[198] Ex. ED-13 at 17-18.

[199] Ex. GF-500 at 9.

[200] Ex. GF-400 at 5-6.

flows and environmental conditions) that are unlikely to occur simultaneously, and therefore the model predicts DO values that are more conservative, i.e., lower, than actual levels.[201] A 2018 memorandum for the Water Quality Assessment Team, "Modeling Review of Wastewater Permit Applications, General Guidance," reiterates that "it is acceptable to consider a model predicted dissolved oxygen that is up to 0.20 mg/L below the criteria as being consistent with the criteria."[202] In closing arguments, the ED took the position that the acceptance of a "target minimum downstream 'DO sag' concentration of daily average criteria values minus up to 0.20 mg/L below the designated criteria is a long-standing practice that dates back decades[.]"[203]

Granbury's expert Mr. Osting reviewed Mr. Michalk's QUAL-TX modeling and found it to be accurate and compliant with applicable regulations.[204] Like Mr. Michalk, Mr. Osting was unable to replicate Mr. Machin's results when he changed the barometric pressure to a site-specific value.[205] Mr. Osting opined that Mr. Machin had changed more than just the barometric pressure, commenting that he appeared to have changed two lake segments to river segments, which altered the corresponding inputs.[206]

Mr. Osting also created his own QUAL-TX model, adjusting barometric pressure to 987.88 mb and updating the geometry to reflect the average depth and width inside each model "segment" or "reach" based on TWDB's 2015 volumetric survey of Lake Granbury.[207] He reinitialized the SOD coefficients because otherwise the predicted DO concentration would have

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[201] Ex. ED-13 at 22; Ex. ED-24.

[202] Ex. ED-15 at 6.

[203] ED's Response to Closing Arguments at 2.

[204] COG Ex. 600 at 18-19, 40-41.

[205] Tr. Vol. 2 at 343-44.

[206] Tr. Vol. 2 at 345.

[207] COG Ex. 600 at 19-20.

been higher than intended. His final result was 4.82 mg/L DO for the 1.0 MGD phase and 4.95 mg/L for the 2.0 MGD phase.[208] He agreed that varying depths of water will correspond to varying reaeration rates, and conceded he did not change the default reaeration rates although he changed segment depths.[209] He explained, "if the depth is greater than a depth to where I thought it was necessary to change [the reaeration rate], I would have changed it."[210] Mr. Osting said his DO predictions "are consistent with Mr. Michalk's conclusion [and] meet the Texas surface water quality standard of 5.0 mg/L in both Rucker Creek and Lake Granbury."

Mr. Osting also created a QUAL2K model primarily for the purpose of enhancing the antidegradation analysis. The reason he used QUAL2K, and the meaning of his "calibration" to September 15, 2021 conditions, are discussed below under Issue H. However, his modeled DO outputs are included here for reference.

Mr. Osting's QUAL2K calibrated runs B1-B3 all reflected the critical conditions of low flow, high temperature, and dry conditions. Run B1 showed the water quality without any discharge from the East Plant (i.e., the expected water quality under critical conditions in the absence of the East Plant). Run B2 showed water quality in the receiving water bodies with discharge at full permit limits for the 1.0 MGD phase. Run B3 showed the water quality in the receiving water bodies with discharge at full permit limits for the 2.0 MGD phase.[211] The DO was predicted at three locations: Rucker Creek, the middle of Rucker Creek Cove, and Lake Granbury.

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[208] COG Ex. 600 at 20; COG Ex. 607.

[209] Tr. Vol. 2 at 361-62.

[210] Tr. Vol. 2 at 362.

[211] Granbury's Reply to Closing Arguments at 13; COG Ex. 615.

Calibrated QUAL2K Modeling[212]	**Average DO mg/L**		
Run	**Rucker Creek**	**Mid-Cove**	**Lake**
B1: critical conditions, no East Plant discharge	5.5	7.0	6.5
B2: critical conditions, 1.0 MGD phase	5.9	6.5	6.5
B3: critical conditions, 2.0 MGD phase	6.0	5.5	6.5

Mr. Osting also ran QUAL2K scenarios (runs C1-C3) on his calibrated model with the assumption that Lake Granbury was at 686 feet msl, the average low it reached during the drought of record.[213] He adjusted the model geometry (segment depth and width) to account for the lower lake level, and reinitialized the model to update the SOD inputs to "account for the submerged lake segments that, at lake level 686 feet, are no longer submerged and that function more like a river channel than a lake."[214] He again ran scenarios to show the water quality without any discharge from the East Plant (run C1), at full permit limits for the 1.0 MGD phase (run C2) and at full permit limits for the 2.0 MGD phase (run C3).

Calibrated QUAL2K Modeling, 686 feet msl[215]	**Average DO mg/L**		
Run	**Rucker Creek**	**Mid-Cove**	**Lake**
C1: critical conditions, no East Plant discharge	5.25	4.75	7.0
C2: critical conditions, 1.0 MGD phase	5.9	5.9	7.0
C3: critical conditions, 2.0 MGD phase	6.0	6.0	3.7

For run C3, which assumes critical conditions, a drought lake level of 686 feet msl, and discharge at the permit limits for the 2.0 MGD phase, the predicted DO for the lake fell significantly below 5.0 mg/L, to 3.7 mg/L. However, Mr. Osting noted that the combination of

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[212] This table is not in the record evidence. It was created by the ALJs using Mr. Osting's testimony and tables. *See* COG Exs. 600 at 30-33, 615.

[213] COG Ex. 600 at 32. Mr. Frossard said that between July 2012 and May 2015, during the drought of record, the reservoir average was approximately 6 feet below the normal pool elevation (693 feet msl), for an average level of 687 feet msl. *See* Ex. GF-500 at 12.

[214] COG Ex. 600 at 32-33.

[215] This table is not in the record evidence. It was created by the ALJs using Mr. Osting's testimony and tables. *See* COG Exs. 600 at 30-33, 615.

these circumstances is highly unlikely to occur.[216] He pointed out that the QUAL2K model runs under critical conditions (runs B2 and B3) all reflected DO values above 5.0 mg/L in both the Interim and Final phases.[217]

2. Protestants' Evidence and Arguments

Protestants criticize the ED for deciding that 4.81 mg/L "is close enough [to 5.0 mg/L] based upon staff guidance allowing a 0.20 mg/L variance."[218] They note that this staff guidance has not been promulgated as a rule. Protestants' expert Mr. Machin testified that when the QUAL-TX model is run with the correct barometric pressure for the site, the final phase DO is predicted to be 4.03 mg/L, well below the assigned DO criterion.[219] Protestants point out that Mr. Machin "corrected an error" in the model, but—if the QUAL-TX model is "supposed to be representative otherwise"—changing one model input parameter should not require all other parameters to be revised to be site-specific.[220] In response to the assertion that neither Mr. Michalk nor Mr. Osting could reproduce Mr. Machin's results, Protestants query why neither the ED nor Granbury cross-examined Mr. Machin.[221]

Protestants' expert Mr. Frossard questioned whether Mr. Michalk used the correct critical conditions inputs for his QUAL-TX modeling. Mr. Frossard noted that the Lake Granbury reservoir reached a low in 2013 of 682 feet msl, about 11 feet below the defined normal

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[216] COG Ex. 600 at 32-33.

[217] COG Ex. 600 at 24, 33-34.

[218] Protestants' Closing Argument at 9.

[219] Ex. GF-400 at 6.

[220] Protestants' Closing Argument at 9.

[221] Protestants' Closing Argument at 9-10.

pool elevation (693 feet msl).[222] Between July 2012 and May 2015, the reservoir average was approximately 6 feet below the normal pool elevation.[223] According to Mr. Frossard, the area utilized for determining the DO standard in Rucker Creek Cove is about 6 feet or less in depth on average, meaning that "for a period of 3 years, Rucker Creek and the area utilized by TCEQ for determining impact to receiving waters was dry."[224] He opined that Mr. Michalk's QUAL-TX model did not use the most critical period because it did not use the data from this time period.[225]

Even when Mr. Osting used an updated QUAL-TX model, the predicted DO concentrations were less than 5.0 mg/L, and, Protestants argue, Mr. Osting further erred by failing to update the reaeration rates when he adjusted other inputs.[226] Reaeration rates are listed as "among the most important" inputs in DO modeling, according to the IPs.[227] Mr. Osting testified he could not be sure what the results would have been if he had also updated the reaeration rates, stating that he was attempting to minimize the number of values that he changed from the TCEQ default.[228] Protestants also reject the QUAL2K model submitted by Mr. Osting, asserting it is unapproved in Texas, did not take critical conditions into account, and only predicted values for the date (September 15, 2021) to which it was calibrated.[229]

Ultimately, Protestants refer back to canons of statutory construction, contending that regulatory rules are to be interpreted under the same principles as statutes, and "courts presume

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[222] Ex. GF-500 at 12-13.

[223] Ex. GF-500 at 12.

[224] Ex. GF-500 at 13.

[225] Ex. GF-500 at 15.

[226] Protestants' Closing Argument at 11.

[227] Protestants' Closing Argument at 11, citing Ex. ED-3 at 84.

[228] Tr. Vol. 2 at 366-67.

[229] Protestants' Closing Argument at 12.

the Legislature intended for all the words in a statute to have meaning and for none of them to be useless."[230] By accepting a value of less than 5.0 mg/L, the ED is "in violation of the TCEQ's own regulations."[231]

3. OPIC's Position

OPIC echoes Protestants' arguments. Even though ED witness Mr. Michalk could not reproduce Mr. Machin's result of 4.03 mg/L DO when the barometric pressure was changed to be site-specific, Mr. Michalk's own results were less than 5.0 mg/L DO. OPIC concludes that the ED and Mr. Machin disagree on how to revise QUAL-TX inputs, but "their results share one thing in common," namely that "[n]one of them show a DO value which meets the required minimum of 5.0 mg/L."[232] Therefore, Applicant has not demonstrated that the modeled DO levels ensure the Draft Permit is protective of water quality, in OPIC's view.[233]

4. ALJs' Analysis

Granbury met its burden of proof to show the QUAL-TX model and its results complied with applicable regulations. No party disputes that the DO criteria for the unnamed tributary, Rucker Creek, and Lake Granbury are 3.0 mg/L, 5.0 mg/L, and 5.0 mg/L, respectively. QUAL-TX is the modeling program TCEQ (through the IPs) deems preferrable for evaluating TPDES permit applications. Mr. Michalk entered the appropriate QUAL-TX inputs for critical conditions, and calculated the effluent limits that would maintain the DO in the receiving water bodies at the DO criteria levels, resulting in effluent limits more stringent than those initially

[230] Protestants' Closing Argument at 13 (internal citations omitted).

[231] Protestants' Closing Argument at 13.

[232] OPIC's Closing Argument at 5.

[233] OPIC's Closing Argument at 5-6.

proposed by Applicant. With those stricter limits, his model predicted 4.84 mg/L DO in the Interim phase and 4.81 mg/L DO in the Final phase.

Protestants and OPIC correctly observe that 4.84 mg/L and 4.81 mg/L are both numerically below the criterion of 5.0 mg/L DO for Rucker Creek and Lake Granbury. However, the QUAL-TX model is not meant to definitively determine that the East Plant in actual operation will meet the DO criteria. Rather, the model is used for predictive purposes, to estimate whether the effluent limits are adequate—under worst-case critical conditions—to maintain the DO criteria in the receiving water body. TCEQ has determined that, due to the significant conservatism built into the QUAL-TX model, a deviation of 0.20 mg/L is within a "margin of safety" and does not detract from the predictive value of QUAL-TX model results. This "DO sag," as the ED referred to it, is not memorialized in a rule. Yet, it has been agency practice for over 20 years, and the ALJs are aware of no action by either the Commission or a court to deem it improper, inaccurate, or in violation of 30 TAC § 307.7.

The ALJs also find that Mr. Michalk's use of default values, including for barometric pressure, was appropriate. Protestants assert that changing the barometric pressure lowered the resulting DO prediction to 4.03 mg/L. Mr. Frossard focused on the dry period between July 2012 and May 2015 when the Lake Granbury reservoir averaged 6 feet lower than the defined normal pool elevation of 693 feet msl and the cove segments would have been dry. Mr. Osting created a more site-specific QUAL-TX model to answer these concerns, updating the barometric pressure as well as the geometry of each segment, and he reinitialized the SOD coefficients to avoid skewing the DO result upward. Protestants object that he did not also change the reaeration rates, leaving them at the TCEQ default levels. Mr. Osting agreed that varying the depth of water can affect the reaeration rate, and he could not be sure what the model results would have been if he had updated the reaeration rates. He decided that the depth adjustments he made did not require revised reaeration rates.

Mr. Osting changed only a limited number of values from the defaults, altering the two inputs Protestants singled out. That is a reasonable judgment call, and the ALJs find Mr. Osting's updated QUAL-TX model to be helpful as another source of predicted DO values. The model is also useful as a demonstration that the inputs are interdependent and the interactions between inputs need to be understood if the outputs are to be meaningful. For example, two other experts using the same model as Mr. Machin could not replicate his results when he changed the barometric pressure input, indicating that other inputs may also have been altered. In the absence of an understanding as to how the inputs are related, which inputs were adjusted, and why, the consistent use of default values is also appropriate, as shown by Mr. Michalk.

The QUAL2K modeling is more relevant to the antidegradation review and nutrient screening than for DO modeling per se, so it is discussed in detail under Issues H and I. However, the ALJs find the QUAL2K model to be scientifically validated and the outputs to be helpful in confirming the DO levels predicted by the QUAL-TX models. For purposes of Issue G, Granbury has met its burden of proof with the DO modeling by ED staff and Mr. Osting's confirmation that TCEQ's QUAL-TX modeling was accurate, without needing to reference the QUAL2K model results.

H. Whether the ED's Antidegradation Review was Accurate[234]

The Commission's antidegradation policy in 30 TAC § 307.5(b) is composed of three tiers, the first two of which are applicable to Lake Granbury and Rucker Creek.[235] Tier 1 states that existing uses and water quality sufficient to maintain those existing uses must be maintained.

[234] OPIC did not take a position on this issue.

[235] The third tier applies to "outstanding national resource waters," which are not at issue here. *See* 30 TAC § 307.5(b)(3).

The existing use categories and criteria in 30 TAC § 307.7(b)(3) apply (i.e., the water bodies at issue here are classified as high aquatic life use with mean DO criteria of 5.0 mg/L). As discussed under Issue D, Lake Granbury and Rucker Creek are also primary contact recreation waters for which the E. coli limit is 126 CFU/100 mL pursuant to 30 TAC § 307.7(b)(1)(A)(i).

Tier 2 applies to any activity subject to regulatory action that "would cause degradation of waters that exceed fishable/swimmable quality" unless the Commission is satisfied that the lowering of water quality is "necessary for important economic or social development."[236] Lake Granbury and Rucker Creek are fishable/swimmable waters, meaning they have quality sufficient to support "the propagation of indigenous fish, shellfish, terrestrial life, and recreation in and on the water."[237] Degradation for fishable/swimmable waters is "defined as a lowering of water quality by more than a de minimis extent, but not to the extent that an existing use is impaired."[238]

The parties dispute whether the East Plant will cause a greater-than-de-minimis reduction in water quality. Protestants assert that the ED and Granbury did not properly evaluate the expected lowering of water quality and cannot show that water of fishable/swimmable quality will be preserved. Protestants also reject Granbury's claim that the East Plant is necessary for important economic or social development. While there may be a need for expanded wastewater treatment capacity, Protestants argue that Granbury failed to properly analyze alternative options that could eliminate or reduce the anticipated water quality degradation, and the cost and feasibility of such alternatives.

[236] 30 TAC § 307.5(b)(2).

[237] 30 TAC § 307.5(b)(2).

[238] 30 TAC § 307.5(b)(2).

Nutrient screening and permit limits on effluent nutrient levels are integral to the antidegradation review. However, those topics are discussed in greater detail under Issue I, below.

1. Granbury's and the ED's Evidence and Arguments

The ED's aquatic scientist Mr. Paull conducted a Tier 1 review and determined that existing water quality uses would be preserved in the unnamed tributary, Rucker Creek, and Lake Granbury, provided that the East Plant complies with the requirements set forth in the Draft Permit, including effluent DO levels and limits on $CBOD_5$ and ammonia nitrogen, as calculated by Mr. Michalk.[239] For a Tier 2 review, Mr. Paull said that "'de minimis' typically means less than a noticeable decrease in water quality."[240] He added that it is consistent with the IPs to set the "presumed baseline" for the receiving water bodies at issue at the 5.0 mg/L DO criterion.[241]

Mr. Paull used available site-specific information from the Texas Integrated Report of Surface Water Quality to verify that none of the water bodies at issue was listed as having an existing water quality impairment. He confirmed that the discharge is not expected to have an effect on any federal endangered or threatened aquatic or aquatic-dependent species or their critical habitat within the discharge route.[242] He also conducted a nutrient screening, based on which he recommended a total phosphorus effluent limit of 1.0 mg/L (1.0 MGD phase) and 0.5 mg/L (2.0 MGD phase).[243]

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[239] Ex. ED-11 at 10.

[240] Ex. ED-11 at 6.

[241] Tr. Vol. 1 at 138.

[242] Ex. ED-11 at 6, 9-10.

[243] Ex. ED-11 at 10, 14.

Mr. Osting opined that Mr. Paull's antidegradation review was an accurate application of the review guidelines in the IPs.[244] To perform an enhanced antidegradation review taking into account the issues Protestants raised (phosphorus and algae), Mr. Osting used the QUAL2K program.[245] He explained that QUAL2K is a model sponsored by EPA that is used in other states for evaluating the water quality impact of wastewater discharges.[246] He said QUAL-TX and QUAL2K are similar in that both are one-dimensional models. However, QUAL2K can take additional variables into account and can evaluate changes in variables throughout a day.[247] In Mr. Osting's opinion, QUAL2K is unquestionably a tested and reliable program; its use in Texas is infrequent because "TCEQ requires the use of QUAL-TX for TPDES permitting decisions."[248]

Mr. Osting used QUAL2K to study how stream conditions would change over the course of a day considering a diurnal pattern (a night and a day) of sunlight, air and water temperatures, and constituents in the water such as "nutrients, total suspended solids, water column algae, benthic algae, and DO."[249] He used TCEQ default values for SOD, aeration, nitrification, and growth rate, and site-specific inputs for dispersion, light attenuation, light saturation, decay rates, and shading, and he obtained climate data from the National Weather Service station at the Granbury Municipal Airport for air temperature, dewpoint, cloud cover, and wind.[250]

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[244] COG Ex. 600 at 41.

[245] COG Ex. 600 at 25.

[246] COG Ex. 600 at 23.

[247] COG Ex. 600 at 23.

[248] COG Ex. 600 at 23.

[249] COG Ex. 600 at 23.

[250] COG Ex. 600 at 30.

As an initial step, Mr. Osting calibrated his QUAL2K model by setting coefficients that could replicate actual conditions, using as a reference the data gathered by biologist Mr. Flores on his September 15, 2021 field visit to the East Plant area. Granbury explains that Mr. Osting conducted this calibration exercise to test whether his QUAL2K model generated outputs that could be deemed reliable because they matched the real-life conditions at the site. The model showed it could successfully replicate the results that Mr. Flores observed during his visit.[251] After calibrating the model in his run "A1," Mr. Osting ran several scenarios. As discussed under Issue G, Mr. Osting's runs B1-B3 reflected the critical conditions of low flow, high temperature, and dry conditions. Runs C1-C3 assumed critical conditions with Lake Granbury at 686 feet msl.

In addition to projecting DO levels, the models generated chlorophyll-*a*, total phosphorus, ammonia nitrogen, bottom algae, and E. coli predictions for the B1-B3 and C1-C3 scenarios. These values are discussed under Issue I, below, because they were relevant to the nutrient screening. For the antidegradation analysis, Mr. Osting provided his QUAL2K model outputs to Mr. Flores to complete a Tier 2 review.

Referring back to the definition of degradation for a Tier 2 review, Mr. Flores testified that the question of whether water quality is lowered by more than a de minimis extent is answered by reference to the assimilative capacity of a water body.[252] He defined assimilative capacity as "the natural ability [of a water body] to dilute, disperse, and assimilate a pollutant or waste material without adverse effects on its biological users."[253] The IPs provide the following guidance:

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[251] Granbury's Reply to Closing Arguments at 12-13; COG Ex. 611.

[252] COG Ex. 700 at 38.

[253] COG Ex. 700 at 38.

> New discharges that use less than 10% of the existing assimilative capacity of the water body at the edge of the mixing zone are usually not considered to constitute potential degradation as long as the aquatic ecosystem in the area is not unusually sensitive to the pollutant of concern. New discharges that use 10% or greater of the existing assimilative capacity are not automatically presumed to constitute potential degradation but will receive further evaluation.[254]

In Mr. Flores's opinion, a scientifically justified way to determine how much a discharge affects assimilative capacity in a water body is to first quantify the changes in background water quality conditions. The second step is to gather site-specific data on habitat and biological communities in the subject water body and to use that data for an impact analysis that examines the effects of the predicted water quality changes on the specific biological communities.[255] Using a "simple percentage change in water quality parameters" would be incorrect, he explained.[256]

Mr. Flores directly assessed background water quality in four field visits to the area of the proposed East Plant, Rucker Creek, Rucker Creek Cove, and Lake Granbury. He provided the data to Mr. Osting so the latter could model changes in water quality over a diurnal period using QUAL2K. Mr. Flores said the ability of the QUAL2K model to predict water quality conditions on a diurnal basis was important because the proposed discharge would result in "increased loading of oxygen-demanding constituents and nutrients" to the water bodies, and nighttime conditions are typically when a water body has the lowest DO concentrations.[257]

On September 9, 2021, Mr. Flores walked the footprint of the proposed plant and collected stream cross-section data for the unnamed tributary near the proposed discharge

[254] Ex. ED-3 at 64.

[255] COG Ex. 700 at 24.

[256] COG Ex. 700 at 24.

[257] COG Ex. 700 at 8, 17.

point.[258] He took photographs and installed a water quality sonde in Rucker Creek Cove. He returned on September 15-16, 2021, to retrieve the sonde and collect water samples from Rucker Creek Cove near the sonde and from Rucker Creek near the downstream boundary of the stream reach.[259] Then, on January 28, 2022, Mr. Flores met with some of the Protestants at the proposed East Plant site. During that visit, he also conducted a habitat screening and collected additional photographs.[260] His final visit was on February 1, 2022, to collect additional water samples and other data.[261]

Mr. Flores characterized the visible water quality in Rucker Creek as generally clear, and somewhat less clear in Rucker Creek Cove. In both water bodies, he observed a green hue attributable to the existence of photosynthetic organisms, which he said is typical of lakes in general.[262] The unnamed tributary was dry for some distance downstream of the proposed discharge outfall. Rucker Creek had several large pools without any visible flow between them. Mr. Flores observed bottom and filamentous algae in parts of these pools.[263] He said pool habitats tend to have limited mixing processes, potentially decreasing DO. Shallower "riffle" areas have higher water velocities with surface turbulence and typically higher DO concentrations.[264] He did not observe any "significant stands of aquatic vegetation in Rucker Creek Cove and along the shorelines."[265]

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[258] COG Ex. 700 at 10.

[259] COG Ex. 700 at 10-11.

[260] COG Ex. 700 at 11.

[261] COG Ex. 700 at 11.

[262] COG Ex. 700 at 14-15.

[263] COG Ex. 700 at 14.

[264] COG Ex. 700 at 15.

[265] COG Ex. 700 at 14.

For the impact analysis, Mr. Flores consulted TPWD's Threatened and Endangered Species of Texas by County database to see whether the proposed East Plant location, Rucker Creek, and/or Lake Granbury had potential habitat for any threatened or endangered species.[266] The database indicated that the Texas Horned Lizard and the Brazos Water Snake, both of which are State threatened species, have preferred habitats likely to occur in the area of the East Plant and subject water bodies.[267]

For the Texas Horned Lizard, harvester ant mounds are a primary food source, and TPWD considers the presence of such mounds critical in determining if the lizard is present.[268] Mr. Flores found no harvester ant mounds during his onsite survey. He assumed the Brazos Water Snake to be present based on its habitat requirements and noted that the snake "only comes into surface contact with water and feeds on aquatic organisms."[269] He concluded that because the Draft Permit is protective of the high aquatic life use in Rucker Creek and Lake Granbury, the Brazos Water Snake would not be impacted by the East Plant discharge.[270] No native mussel species were observed during Mr. Flores's field data collection visits to Rucker Creek, and his research indicated no sensitive mussel species were expected to occur.[271]

Next, Mr. Flores compiled a list of fish species that he collected during his field visits. He focused on species that are typical in most river and reservoir systems and that are important recreational fishing species, such as catfish, bluegills, several species of sunfish, and largemouth

[266] COG Ex. 700 at 27-28.

[267] COG Ex. 700 at 13.

[268] COG Ex. 700 at 29.

[269] COG Ex. 700 at 30.

[270] COG Ex. 700 at 30.

[271] COG Ex. 700 at 29.

bass.[272] He then researched species-specific thresholds for DO and ammonia. Comparing these thresholds to the values predicted by Mr. Osting's QUAL2K models, Mr. Flores determined that the aquatic species known to exist in Rucker Creek and Rucker Creek Cove "can tolerate lower DO concentrations" and "higher ammonia concentrations" than what is predicted to occur in the water bodies.[273]

Taking all of these findings into account (including the nutrient screening discussed under Issue I), Mr. Flores concluded that "the proposed discharge will not cause more than a de minimis lowering of water quality" and "existing uses, including those of aquatic and terrestrial wildlife, will be maintained."[274] He summarized his Tier 2 review as follows:

> First, I want to be clear that my opinion is not that the proposed discharge will not cause any lowering of water quality. The modeling outputs generated by Mr. Osting clearly show that there will be some lowering of background concentrations of water quality, specifically for DO, ammonia, phosphorus, chlorophyll-*a* and bottom algae.
>
> This lowering of water quality does not exceed the [water bodies'] assimilative capacity because the predicted concentrations of these parameters are well below species-specific thresholds . . . . [T]he proposed effluent limits in the draft permit will . . . still maintain water quality standards . . . [and] will not significantly impact the biological community or existing uses of Rucker Creek and Rucker Creek Cove on Lake Granbury.[275]

Mr. Flores distinguished his work from that of Protestants' expert Mr. Machin, stating that Mr. Machin relied "on only computational differences in background water conditions," specifically the alleged failure to meet the 5.0 mg/L DO requirement. Mr. Flores reiterated that

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[272] COG Ex. 700 at 30-31.

[273] COG Ex. 700 at 32.

[274] COG Ex. 700 at 40.

[275] COG Ex. 700 at 37.

the water quality modeling is only the first step of determining an impact on assimilative capacity.[276] Mr. Machin failed, in Mr. Flores's opinion, to evaluate the impact of any changes in water quality on the specific aquatic communities or designated uses for the water bodies at issue.[277] Mr. Flores had the same criticism for Protestants' expert Mr. Frossard because he focused on numerical changes to background water quality concentrations and did not use site-specific scientific data. For example, Mr. Frossard offered photos of algae mats from other locations in Texas.[278]

Granbury stresses that the East Plant discharge will not cause more than a de minimis lowering of water quality, but argues it also provided ample evidence of the plant being necessary for important economic or social development. Granbury's evidence regarding the need for the plant and its consideration of alternatives is discussed in Issue J below, and is not repeated here.

2. Protestants' Evidence and Arguments

Protestants reiterated their concern, discussed above under Issue G, that the water quality modeling did not show the minimum 5.0 mg/L DO level would be achieved. Mr. Frossard contended that "[c]ertainly, a lowering of dissolved oxygen to 4.80 [mg/L] would be greater than de minimis."[279] He clarified during his testimony at the hearing that whether a water quality change was de minimis would depend on "what the assimilative capacity of the receiving water is," and if "the additional pollutant or load going into that receiving water . . . consumes more than 10 percent of that existing assimilative capacity, then that is not de minimis, and it is an

[276] COG Ex. 700 at 42.

[277] COG Ex. 700 at 42.

[278] COG Ex. 700 at 44.

[279] Ex. GF-500 at 16.

impact."[280] He added that "once [the DO prediction] reached 4.8 [mg/L], the TCEQ should have had additional modeling done in order to determine whether that would have been a de minimis amount or not."[281] The ED should have required Granbury to collect enough site-specific data to calibrate the model to the existing water quality conditions in Rucker Creek. The calibrated model would then be used to reduce the discharge criteria limits "until the DO [of 5.0 mg/L] was either met or the determination [was made] that the receiving waters could not assimilate a discharge of 2 MGD and the discharge would not be permitted."[282]

Mr. Frossard pointed out that pursuant to TCEQ rules, the "highest water quality sustained since November 28, 1975 (in accordance with EPA Standards Regulation 40 Code of Federal Regulations Part 131) defines baseline conditions for determinations of degradation."[283] He opined that the existing conditions, which Mr. Paull used as a baseline, do not reflect the highest water quality sustained in the receiving water bodies. After 1975, water quality was degraded over time to the point that state authorities found it necessary to issue the Lake Granbury WPP in July 2010 with the goal of mitigating bacterial levels in the lake.[284] Neither the ED nor Granbury ascertained what the highest water quality was prior to the bacterial problems existing, Mr. Frossard said. Therefore, a proper baseline for water quality was not determined and the ED's and Granbury's Tier 2 evaluations were unreliable.[285] He also found that the ED and Granbury failed to model assimilative capacity. He noted that the ED used only the

[280] Tr. Vol. 1 at 58.

[281] Tr. Vol. 1 at 52.

[282] Ex. GF-500 at 11.

[283] 30 TAC § 307.5(c)(2)(B).

[284] Protestants' Closing Argument at 17 (citing Ex. GF-306).

[285] Ex. GF-500 at 10-11.

QUAL-TX model, which did not address nutrient impacts to the receiving waters and did not provide a basis to determine that the antidegradation policy would be satisfied.[286]

On the other hand, Mr. Frossard also found Mr. Osting's QUAL2K models to be insufficient in judging assimilative capacity. He agreed that that QUAL2K model has an advantage over QUAL-TX in that QUAL2K can evaluate additional parameters, such as phosphorus. However, Mr. Osting's QUAL2K model did not address Mr. Frossard's concerns because it looked at "what a diurnal impact would be for one day of the year," and did not "look at what would happen the next day or a week after that from the standpoint of either DO [or] algal growth."[287] Protestants elaborate that Mr. Osting's QUAL2K model used "'typical' wastewater pollutant concentrations," not the flow at permit limits, and only predicted "what the downstream concentrations would be if the discharge had occurred on September 15, 2021."[288] In addition to these flaws, Protestants state that QUAL2K "is not generally accepted by TCEQ for permitting purposes and is not sufficiently reliable for use for permitting purposes."[289]

If the East Plant discharge reduced water quality by a greater-than-de-minimis amount, Granbury could still meet Tier 2 antidegradation standards by demonstrating that the lowering of water quality was necessary for important economic or social development.[290] Protestants assert Granbury cannot make this demonstration because it cannot show that alternatives causing less degradation were considered, including the cost and feasibility of reasonable alternatives.[291] As

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[286] Ex. GF-500 at 17-18.

[287] Tr. Vol. 1 at 57.

[288] Protestants' Closing Argument at 12.

[289] Protestants' Closing Argument at 12, note 50.

[290] 30 TAC § 307.5(b)(2).

[291] Protestants' Closing Argument at 26.

noted under Issue J, Protestants cite a 2019 cost estimate that projected that expansion of the South Plant would be more cost-effective than constructing a new plant.

3. ALJs' Analysis

The antidegradation policy requires maintenance of existing uses to satisfy Tier 1, and no more than a de minimis reduction in water quality of fishable/swimmable waters to satisfy Tier 2. Granbury has met its burden of proof to show that the East Plant discharge will preserve the existing high aquatic use life for Lake Granbury and Rucker Creek, and will not cause a more-than-de-minimis reduction in water quality.

Mr. Paull conducted the ED's analysis by setting the "presumed baseline" for Rucker Creek and Lake Granbury at 5.0 mg/L DO. Protestants argue this is not the highest water quality sustained since November 1975, as set forth in 30 TAC § 307.5(c)(2)(B). However, Mr. Paull's approach conforms with the IPs, which state:

> The effect of a proposed discharge is compared to baseline water quality conditions in order to assess the potential for degradation of water quality. The applicable date for establishing baseline water quality conditions is November 28, 1975, in accordance with 40 CFR Part 131 (EPA standards regulation). **Baseline conditions are estimated from existing conditions, as indicated by the latest edition of the Texas Water Quality Inventory or other available information**, unless there is information indicating that degradation in ambient water quality has occurred in the receiving waters since November 28, 1975.[292]

[292] Ex. ED-3 at 63 (emphasis added).

There is no data as to whether Lake Granbury has had DO levels since 1975 that are higher than 5.0 mg/L. The ALJs find Mr. Paull correctly set the baseline to 5.0 mg/L DO to estimate the existing water quality conditions.[293]

As also discussed under Issue G, the ED's and Granbury's DO models satisfy the 5.0 mg/L DO based on TCEQ staff's study of the margin of safety in QUAL-TX modeling and the longstanding practice of accepting up to a 0.20 mg/L "DO sag" based on the model's conservatism. The model result of 4.8 mg/L is not, as Mr. Frossard seemed to state, a *per se* failure to meet the Tier 2 antidegradation review. He is also incorrect in stating that it is a *per se* greater-than-de-minimis impact if a new discharge uses more than 10% of the assimilative capacity of the receiving water body. The IPs specifically state that discharges using 10% or greater of the existing assimilative capacity of a water body "are *not* automatically presumed to constitute potential degradation but will receive further evaluation."[294]

In addition to disputing the validity of the baseline values used by the ED and Granbury, Protestants reject Mr. Osting's QUAL2K model for purposes of assessing assimilative capacity. Their criticisms of the QUAL2K model appear to be based on a misunderstanding of the model and of Mr. Osting's methods. Mr. Osting used Mr. Flores's September 15, 2021 field data to verify his model could replicate real-life conditions. Because he calibrated the model in this fashion, the projections from his B1-B3 and C1-C3 runs are more likely to be accurate. It does not mean that his models predicted only what would happen on September 15, 2021. Contrary to Protestants' characterization, the B1-B3 runs were performed under critical conditions of low flow, high temperature, and dry conditions, and at full permit limits for the 1.0 and 2.0 MGD phases. Mr. Osting also created the C1-C3 runs to predict DO concentrations under critical conditions with Lake Granbury at 686 feet msl, as it was during the drought of record.

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[293] Mr. Frossard also appeared to be criticizing the lack of a baseline E. coli level, discussed in Issue I below.

[294] Ex. ED-3 at 64 (emphasis added).

Although it is not TCEQ's preferred modeling tool for wastewater discharge permits, QUAL2K is scientifically validated as an EPA-sponsored program. There is no basis for Protestants' bald assertion that QUAL2K is "not sufficiently reliable for use for permitting purposes." It is used for that very purpose in other states. The model also provides important enhancements to the antidegradation analysis because it allows diurnal analysis of DO and consideration of parameters that are unavailable in QUAL-TX. The ALJs conclude the outputs from Mr. Osting's QUAL2K models were properly generated.

Using these expected values for changes in water quality, Mr. Flores provided a credible and unrefuted expert opinion on how to assess assimilative capacity using species-specific thresholds. He testified that the aquatic species found in Lake Granbury and Rucker Creek can tolerate lower DO and higher ammonia nitrogen than are projected to occur. He agreed that there will be some lowering of background concentrations of water quality, but the reduction in water quality is within the water bodies' assimilative capacity and will preserve the high aquatic use and fishable/swimmable waters of Lake Granbury and Rucker Creek. The ALJs find Granbury satisfied its burden of proof to meet a Tier 2 antidegradation review.

I. Whether the Nutrient Limits in the Draft Permit Comply with Applicable Texas SWQS

A nutrient is defined in TCEQ rules as "a chemical constituent, most commonly a form of nitrogen or phosphorus, that in excess can contribute to the undesirable growth of aquatic vegetation and impact uses" of a water body.[295] Nutrients from permitted discharges must not cause excessive growth of aquatic vegetation that impairs an existing, designated, presumed, or

[295] 30 TAC § 307.3(a)(44).

attainable use.[296] Five concerns were discussed by the parties: E. coli levels, and the inter-related issues of phosphorus, nitrogen, chlorophyll-*a*, and algae growth.[297] There is a statistically significant relationship between high total phosphorus and high chlorophyll-*a*, and high chlorophyll-*a* levels have correspondingly high potential for harmful algae.[298] However, the IPs caution that there is a "high variability in the relationship between [total phosphorus] to chlorophyll-*a*."[299] Increased nitrogen can also cause an increase in algal growth, but phosphorus is generally the primary nutrient in freshwater sources.[300]

TCEQ evaluates applications for new wastewater discharges to determine if an effluent limit is needed for total phosphorus "or, in appropriate situations, total nitrogen," to preclude excessive aquatic vegetation growth.[301] The nutrient screening performed by the ED and Granbury, and the corresponding effluent limits set in the Draft Permit, were the subject of dispute as to whether the health of the requesters and their families, livestock, and wildlife would be protected (Issue D) and as a component of the antidegradation review (Issue H). This section addresses the derivation of the nutrient screening and the validity of the limits set in the Draft Permit.

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[296] 30 TAC § 307.4(e).

[297] As discussed in Issue G, Mr. Michalk recommended $CBOD_5$, ammonia nitrogen, and effluent DO limits more stringent than originally proposed by Granbury. The IPs and the Draft Permit also addressed total suspended solids, for which a limit of 12 mg/L is set. However, Protestants did not raise any fact issues with respect to total suspended solids.

[298] Ex. ED-3 at 35; COG Ex. 600 at 36.

[299] Ex. ED-3 at 35.

[300] Ex. ED-3 at 29.

[301] Ex. ED-3 at 27.

1. Granbury's and the ED's Evidence and Arguments

TCEQ staff use various screening worksheets for different types of water bodies and "assign point values to aspects of the receiving waters that may contribute to nutrient enhancement."[302] Mr. Paull said the point values help to "develop a recommendation regarding the need for a nutrient effluent limit or monitoring requirement."[303] The factors considered in the screening include flow rates, water clarity, and shading in narrow backwaters.[304] Points are assigned as Low (1 point), Moderate (3 points), or High (5 points).[305] Mr. Paull's scoring resulted in a total of 37 points and an average point value of 4.11.[306] The IPs note that an effluent limit for total phosphorus "is typically indicated when a significant number of screening factors are rated as moderate and high."[307] Based on his screening, Mr. Paull decided that a total phosphorus limit was appropriate to "help prevent the excess accumulation of algae in the receiving waters."[308] Per the IPs, a typical effluent limit for total phosphorus is 1.0 to 0.5 mg/L for a flow of 0.5 to 3.0 MGD.[309] Mr. Paull recommended a total phosphorus effluent limit of 1.0 mg/L in the 1.0 MGD phase and 0.5 mg/L in the 2.0 MGD phase.[310]

In response to a contention by Protestants that Mr. Paull predicted nutrient loading in Rucker Creek Cove by improperly using the volume of Lake Granbury in the calculation, the ED

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[302] Ex. ED-11 at 10.

[303] Ex. ED-11 at 10.

[304] Ex. ED-11 at 11.

[305] Ex. GF-506 at 2.

[306] Ex. GF-506 at 2.

[307] Ex. ED-3 at 27.

[308] Ex. ED-11 at 11.

[309] Ex. ED-3 at 29.

[310] Ex. ED-11 at 11; Tr. Vol. 1 at 123-24.

counters that no prediction of nutrient loading for the cove was conducted.[311] Rather, Mr. Paull performed a narrative screen to assess the phosphorus sensitivity of the receiving waters, with a focus on Rucker Creek, to decide if a phosphorus limit was necessary.[312] The screening tool indicated a 2.09% increase in total phosphorus was likely in the reservoir.[313]

Although a nitrogen limit may be recommended under certain circumstances, Mr. Paull testified that TCEQ's approach is to focus on phosphorus instead of nitrogen.[314] The IPs provide a list of reasons to focus on phosphorus: there is less data on total nitrogen in Texas water bodies; phosphorus is a primary nutrient in freshwaters; "most of the noxious forms of blue-green algae" can fix nitrogen directly from the atmosphere; and available technologies make reduction of phosphorus more effective than reducing nitrogen.[315] A total nitrogen limit may be considered if existing or projected levels would, for instance, result in a substantial increase in nitrate-nitrogen that could adversely affect public drinking water supplies.[316]

Mr. Paull determined that the effluent limits in the Draft Permit satisfied the requirements for discharges within five miles upstream of public water supply reservoirs.[317] And, as previously stated, he opined the E. coli limit of 126 CFU/100 mL would prevent greater-than-de-minimis degradation of the receiving water bodies and would preserve the high aquatic use life.[318]

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[311] ED's Response to Closing Arguments at 4.

[312] ED's Response to Closing Arguments at 4-5.

[313] Ex. GF-506 at 1.

[314] Ex. ED-11 at 11.

[315] Ex. ED-3 at 29-30.

[316] Ex. ED-3 at 30.

[317] Ex. ED-4 at 1.

[318] Ex. ED-4 at 1.

Mr. Osting testified that Mr. Paull's nutrient screening and the Draft Permit effluent nutrient limits were in compliance with applicable SWQS.[319] Regarding total phosphorus limits, Mr. Osting said very low concentrations of phosphorus are needed for aquatic algae to grow, and phosphorus is currently sufficiently abundant in Lake Granbury for algal growth.[320] Mr. Osting stated his model outputs estimated no impact to uses as a result of increased phosphorus from the effluent, and also no increase in chlorophyll-*a* concentrations due to the increased phosphorus.[321] Perhaps counterintuitively (in Protestants' view),[322] the model predicted a beneficial impact (lower concentrations of chlorophyll-*a*) under critical conditions. It also predicted that the amount of nitrogen "that is in the proposed effluent does not impact uses."[323]

To understand why the proposed discharge will have these impacts, Mr. Osting said, more than just the numerical amount of phosphorus or nitrogen in the effluent must be considered. Factors such as the applicable dispersion coefficients, increased velocity, and increased circulation will influence what happens as a result of the addition of nutrients.[324] Mr. Osting looked at the expected impacts to Lake Granbury, but he also studied the potential impacts to Rucker Creek Cove, the subject of concern for Protestants. He was the project manager for the modeling conducted for the Lake Granbury WPP, and that work included a series of dye tracing studies to measure the dispersion in a wide range of coves on Lake Granbury, ranging from very constricted and narrow to those with a creek flow.[325] A dye trace was not

[319] Ex. ED-3 at 29-30.

[320] COG Ex. 600 at 36.

[321] COG Ex. 600 at 36.

[322] Tr. Vol. 2 at 381.

[323] COG Ex. 600 at 37.

[324] Tr. Vol. 2 at 382-83.

[325] Tr. Vol. 2 at 389.

conducted in Rucker Creek Cove, but Mr. Osting said it is similar to one of the cove types included in the dye tracing studies.[326] Using the site-specific dispersion coefficients and other calibrated model inputs, Mr. Osting concluded:

> In all cases, the model predicts that chlorophyll-*a* levels are decreased in the cove after the addition of flow from the discharge into the cove. The predicted decrease in travel time and associated increase in circulation resulting from the addition of flow are the factors that help to prevent stagnating conditions and prevent high chlorophyll-*a* concentrations. Based upon model scenarios for critical conditions that include increase in both phosphorus and nitrogen nutrients, there is no predicted impact to uses.[327]

Though Protestants found it counterintuitive, Mr. Osting noted that chlorophyll-*a* is expected to be highest without the discharge because of the "limited circulation during extended periods with very small or no flow entering the cove."[328] For example, in the C1-C3 model runs (critical conditions and lake at 686 feet msl), chlorophyll-*a* in the mid-cove would be very high, over 400 ug/L, in the absence of the East Plant discharge. With the discharge and increased "flushing of the shallow non-refreshed waters," the predicted chlorophyll-*a* at mid-cove would be 4 ug/L (1.0 MGD phase) and 2 ug/L (2.0 MGD phase).[329]

With respect to anticipated impacts to the lake, Mr. Osting reached the same conclusions as for the cove. He stated:

> My model also shows that the with-permit conditions are likely to support chlorophyll-*a* concentrations comparable to baseline chlorophyll-*a* concentrations already found in the main body of the lake. My model scenarios do not indicate a

[326] Tr. Vol. 2 at 389-90.

[327] COG Ex. 600 at 37.

[328] COG Ex. 600 at 36.

[329] COG Ex. 600 at 31.

> reduction in algae, nor do they indicate higher algae and higher chlorophyll-*a* concentrations with the plant operating at permit limits.
> . . .
> The existing concentration [of phosphorus] in Lake Granbury, even though concentrations are often below reportable levels from typical laboratory analysis, is high enough to support growth of algae.
> . . .
> The addition of nitrogen to the water body, with or without phosphorus, will promote growth of aquatic algae.
> . . .
> The draft permit authorizes discharge of nitrogen and phosphorus at levels that will not impair the designated uses for the receiving water bodies.[330]

Responding to Protestants' concerns that ED staff predicted the percentage increase of phosphorus for Lake Granbury but not for Rucker Creek Cove, Mr. Osting noted that there is no observation data regarding total phosphorus levels in Rucker Creek Cove. If observation data existed for the cove, it could confirm whether "high levels [of total phosphorus] already exist in the cove across a range of conditions, in the same way high levels are confirmed in the main body of the lake," which has data from the monitoring stations.[331] Mr. Osting said ED staff's prediction of a 2.09% increase in total phosphorus in Lake Granbury, using the volume of the lake, "is an appropriate calculation because that location can be tied to existing long term monitoring data used to assess water quality standards."[332] The same data is nonexistent for Rucker Creek Cove. More importantly, a simple percentage increase does not necessarily explain the anticipated impact of an added nutrient, as Mr. Osting's model showed.

Mr. Flores said nutrient loading is a concern for "most rivers and lakes in Texas, especially in developed areas."[333] Freshwater systems are typically phosphorus limited.[334] Thus,

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[330] COG Ex. 600 at 36, 41.

[331] COG Ex. 600 at 36.

[332] COG Ex. 600 at 36.

[333] COG Ex. 700 at 19.

it is not unreasonable to have a phosphorus limit to try to reduce nutrient loading in the water bodies receiving the East Plant discharge. As for chlorophyll-*a*, it is not considered a direct threat to fish unless concentrations are such that DO is reduced. In fact, Mr. Flores explained, "elevated concentrations of chlorophyll-*a* and algae provide improved food sources and aquatic habitat for the fish communities."[335] However, Mr. Flores did not observe any significant stands of aquatic vegetation in Rucker Creek Cove and along the shorelines during his site visits. He did see some bottom and filamentous algae in the pools of Rucker Creek without visible flow between them.

The parties disagreed whether the nutrient limits would be sufficient to prevent nuisance levels of algae. The IPs provide that a nitrogen limit may be considered if existing or projected nitrogen levels would result in "growth of nuisance aquatic vegetation."[336]

Mr. Osting cited a 2020 bioassessment of four Hill Country streams by Baylor University professor Ryan S. King, which described a "nuisance level" of bottom algae as occurring at benthic chlorophyll-*a* values exceeding 150-200 mg/m2.[337] The QUAL2K model predicted bottom algae concentrations in Rucker Creek under critical conditions as high as 120 mg/m2, and 35 mg/m2 in Rucker Creek Cove, still below Dr. King's nuisance threshold.[338]

Mr. Flores cited a 2019 study of nutrients in the Blanco River by Dr. King that stated 150 mg/m2 of chlorophyll-*a* "is widely considered to be a threshold for nuisance levels of

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[334] Tr. Vol. 2 at 410-11.

[335] COG Ex. 700 at 32.

[336] Ex. ED-3 at 30.

[337] COG Ex. 624 at 13 (Dr. King's study explains that benthic refers to algae attached to rocks on the stream bottom). *See also* COG Ex. 600 at 34.

[338] COG Ex. 615.

algae."[339] Mr. Flores said the study is the first time he has seen an attempt to quantify what would qualify as a nuisance level of algae.[340] He described nuisance algae as a subjective concept because "there are water bodies in the State of Texas that are covered in mats of algae, high aquatic vegetation, and people recreate through them all the time."[341] He gave the Guadalupe River, San Marcos River, Lake Bastrop, and Lake Austin as examples of such water bodies.[342] Regardless of the definition of a "nuisance" threshold, Mr. Flores reiterated that an increase in bottom algae is beneficial to fish communities because it provides additional food and habitat sources.

As discussed under Issue D, the parties debated whether the E. coli limit of 126 CFU/100 mL was sufficient to protect recreational activities in Rucker Creek and Lake Granbury. Mr. Flores noted that Mr. Osting's QUAL2K model predicted E. coli concentrations of 45 CFU/100 mL at the confluence of Rucker Creek and the unnamed tributary, under critical conditions with full permit flow discharge in the 2.0 MGD phase.[343] During his September 15, 2021 and February 1, 2022 field visits, Mr. Flores collected water samples from this location. He said the average E. coli concentration from the two samples was 70 CFU/100 mL, confirming that E. coli levels are expected to decrease with the mixing/flushing effect of the discharge from the East Plant.[344] Similarly, he noted that the QUAL2K model predicts E. coli concentrations of 0.0 CFU/100 mL under critical conditions with full permit flow

[339] COG Ex. 706 at 10.

[340] COG Ex. 706 at 17; COG Ex. 700 at 34; Tr. Vol. 2 at 418.

[341] Tr. Vol. 2 at 419.

[342] Tr. Vol. 2 at 419.

[343] COG Ex. 700 at 34; COG Ex. 615 at 3.

[344] COG Ex. 700 at 35.

discharge in the 2.0 MGD phase at Lake Granbury near TCEQ Station 20222, where the current geometric mean for E. coli has been reported as 90 CFU/100 mL.[345]

2. Protestants' Evidence and Arguments

Protestants' evidence and arguments are mostly covered in Issue D. However, some technical aspects of the evidence are discussed here as pertinent to the nutrient screening.

Protestants reject the conclusion by Granbury and the ED that effluent phosphorus at the Draft Permit limits will not accelerate algae growth in a significant manner. They note that the study by Dr. King that Mr. Flores cited also states nuisance algae can start to grow with a concentration of 20-30 ug/L of total phosphorus.[346] Water samples Mr. Flores took in Rucker Creek and Rucker Creek Cove had phosphorus measurements of 115 ug/L and 118 ug/L, respectively, already higher than Dr. King's total phosphorus threshold.[347] Additional phosphorus thus poses a higher risk of encouraging algal growth.

In addition, Mr. Frossard testified that ED staff erred in modeling the impact of phosphorus on the receiving water bodies. ED staff projected that, with the nutrient limits in the Draft Permit, the expected increase in total phosphorus will be 2.09% in the 2.0 MGD phase.[348] The issue, Mr. Frossard said, is that staff used the surface area and volume of Lake Granbury to estimate the impact of the added phosphorus. Lake Granbury is much larger than Rucker Creek Cove, so phosphorus in the cove would be much less diluted and potentially have more

[345] COG Ex. 700 at 35.

[346] COG Ex. 706 at 10.

[347] Protestants' Closing Argument at 24.

[348] Ex. GF-506 at 1.

deleterious effects.[349] When he performed the same calculation using the volume and surface area of Rucker Creek Cove, Mr. Frossard predicted total phosphorus would increase by 651% in the Interim phase and by 661% in the Final phase.[350] He pointed out that for modeling DO concentrations, ED staff used the depths of Rucker Creek and Rucker Creek Cove as inputs (though he still believed the most critical low levels were not used as inputs). When it came to phosphorus, however, ED staff switched to using the volume and surface area of Lake Granbury, which "completely obfuscates the impact of the phosphorus on the receiving water."[351]

Further, Mr. Frossard found the phosphorus limit proposed by Mr. Paull was "arbitrary" and not based on the actual potential for harmful algal growth.[352] He noted that other TCEQ permits have been issued with total phosphorus limits as low as 0.15 mg/L, much lower than the Draft Permit's ultimate limit of 0.5 mg/L in the 2.0 MGD phase.[353]

Making things worse, Mr. Frossard said, there is no limit on nitrogen in the Draft Permit, and nitrogen will "become readily available for algal uptake."[354] Although phosphorus is generally the limiting nutrient in freshwater, unrestricted discharge of nitrogen could make nitrogen become the limiting nutrient.[355] In that circumstance, the Draft Permit offers no safeguard against algal growth. Mr. Frossard stated that other TCEQ permits have included a review of total nitrogen and have imposed total nitrogen limits.

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[349] Ex. GF-500 at 18-19.

[350] Ex. GF-500 at 19.

[351] Ex. GF-500 at 20.

[352] Ex. GF-500 at 21.

[353] Ex. GF-500 at 22.

[354] Ex. GF-500 at 21.

[355] Ex. GF-500 at 21-22.

As noted under Issue D, Protestants' witness Mr. Esmond disagreed with Mr. Osting's QUAL2K model predictions regarding E. coli. Protestants point out that the ED's witness Mr. Paull could not say whether the E. coli limit of 126 CFU/100 mL would prevent water quality from being lowered by more than a de minimis amount, or what a de minimis change would be with respect to E. coli levels.[356] They also question how Mr. Osting's model could predict 0.0 CFU/100 mL E. coli in Rucker Creek *with* the discharge when Mr. Flores's sampling estimated 70 CFU/100 mL E. coli in Rucker Creek *without* discharge.[357]

3. OPIC's Position

OPIC stated that it "appreciates and agrees with" the ED's decision to include a total phosphorus effluent limit, but contended that "the proposed limit is not low enough to prevent algae blooms caused by phosphorus in the discharge."[358] Rucker Creek Cove experiences less dilution than the main body of Lake Granbury, and "it would have been more appropriate to consider the volume and surface area of Rucker Creek Cove instead of the [entirety of] Lake Granbury."[359] Based on the use of the larger water volume and surface area to generate the Draft Permit limit, OPIC recommends that the phosphorus limit be lowered for both the Interim and Final phases.[360]

OPIC also concurs with Mr. Frossard's concern about total nitrogen and the risk that nitrogen could become the limiting nutrient when discharged without a permit limit. Based on considerations such as discharge volume, discharge route characteristics, the limited dilution in

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[356] Protestants' Closing Argument at 21 (citing Tr. Vol. 1 at 132).

[357] Protestants' Closing Argument at 18-19.

[358] OPIC's Closing Argument at 6.

[359] OPIC's Closing Argument at 7.

[360] OPIC's Closing Argument at 6-7.

Rucker Creek Cove, and the primary contact recreation and public water supply uses of Lake Granbury, a nitrogen limit is appropriate and necessary, OPIC states. Without the lowered phosphorus limit and the addition of a nitrogen limit, the nutrient limits in the Draft Permit will not meet SWQS.

4. ALJs' Analysis

Granbury met its burden of proof to show that the nutrient limits in the Draft Permit comply with the SWQS. Protestants and OPIC expressed concerns that the concentration of phosphorus in Rucker Creek and Rucker Creek Cove will become dramatically higher with the effluent, and will spur algae growth that degrades the fishable/swimmable waters and impairs the high aquatic use of the water bodies. They take issue with the ED's predicted percentage change in total phosphorus that refers to the volume of Lake Granbury. They also contend that the lack of a nitrogen limit could cause nitrogen to become the limiting nutrient and lead to algal proliferation. There are several reasons their arguments are unpersuasive.

First, Mr. Paull followed the directives in the IPs to perform a screening and decided, based on the screening results, to impose a phosphorus limit. He set the limit according to what the IPs state is typical for flows of 0.5 to 3.0 MGD, limiting phosphorus to 1.0 mg/L in the 1.0 MGD stage and 0.5 mg/L in the 2.0 MGD phase. Second, phosphorus in low concentrations can allow aquatic algae to grow, and levels already exist in Lake Granbury that are above the nuisance algae threshold in Dr. King's study (over 20-30 ug/L). As Mr. Osting said, there is no observation data for phosphorus levels in Rucker Creek Cove, so it is unknown whether the total phosphorus concentration there is above 20-30 ug/L. Yet, despite the potential for phosphorus sensitivity in Rucker Creek Cove, Mr. Flores did not observe any significant stands of aquatic vegetation during his field visits. He observed bottom algae and filamentous algae where it would be expected to occur: in the pools of Rucker Creek that did not have visible flow between them.

Third, the ED's predicted percentage change in total phosphorus is on a screening worksheet that indicates that the subject water body is the reservoir, i.e., Lake Granbury. It was not intended to model a percentage change for Rucker Creek Cove. Mr. Osting created a model that projected the impact of total phosphorus increases on algae in Rucker Creek Cove, using dispersion rates and other site-specific inputs, and his model predicted no local impact to algae growth in the cove. That is a much more nuanced and meaningful analysis for the cove than Mr. Frossard's use of the surface area and volume of Rucker Creek Cove to estimate phosphorus increases as high as 661%.

Fourth, the discharge is expected to have beneficial effects on chlorophyll-*a* levels. The QUAL2K model indicates the East Plant discharge will result in lower chlorophyll-*a* levels under critical conditions or with the lake at drought level because of the dispersive and flushing effects of the additional flow.

Nitrogen will promote the growth of aquatic algae, with or without phosphorus. Mr. Paull did not recommend a nitrogen limit because TCEQ focuses on phosphorus rather than nitrogen. Mr. Osting's QUAL2K model—calibrated for greater accuracy—indicates the discharge of nitrogen to the water may increase algal growth, but not to the extent of impacting existing uses. His model runs also did not predict a nuisance level of algae, which is one reasons the IPs state a nitrogen limit may be considered. Mr. Flores described Dr. King's 2019 study as novel in its attempts to set a nuisance algae threshold, and he noted that algae does not always prevent people from recreating in Texas rivers and lakes. However, the ALJs find it helpful that Dr. King's studies of the Blanco River (2019) as well as four Hill Country streams (2020) ground-tested the threshold and found that benthic chlorophyll values exceeding 150-200 mg/m2 are correlated with levels of algae that may be seen as a nuisance. The critical conditions runs by

Mr. Osting indicate there will be some increase in bottom algae, but the predictions are below the nuisance threshold even for the highest chlorophyll-*a* levels predicted.

Another reason a nitrogen limit may be considered is if existing or projected nitrogen levels would result in a substantial increase in nitrate-nitrogen that could adversely affect public drinking water supplies. Though Protestants and OPIC made reference to the public water use of Lake Granbury, there is no record evidence that nitrate-nitrogen is expected to increase in the manner contemplated by the IPs. Mr. Paull determined that the effluent limits in the Draft Permit satisfied the requirements for discharges within five miles upstream of public water supply reservoirs.

Regarding E. coli, the 2010 Lake Granbury WPP indicates there has been some degradation in ambient water quality since 1975 due to bacterial concentrations. However, as discussed under Issue D, there is no evidence of a Texas discharge permit requiring a stricter E. coli limit than 126 CFU/100 mL, which is also the EPA's standard for protecting human health through contact recreation.

Moreover, the site-specific data that is in the record indicates the East Plant discharge will be beneficial with respect to E. coli when the water bodies are under critical conditions. Mr. Flores's samples averaged an E. coli concentration of 70 CFU/100 mL, and the QUAL2K model predicts that the average concentration will be reduced to 0.0 CFU/100 mL at 2.0 MGD. Though Protestants questioned how this reduction is possible, the Lake Granbury WPP states that bacteria levels were elevated in Lake Granbury's dead-end coves and canals because stagnant conditions in those areas kept the water from circulating and mixing with the main body of the lake.[361] The addition of the East Plant discharge will increase circulation in stagnant areas. Also, shifting to centralized wastewater treatment instead of septic tanks, which the Lake Granbury

[361] Ex. GF-306 at 27.

WPP identified as a major contributor of bacteria to the lake, is consistent with the goals of the plan.

In sum, the ALJs find Granbury met its burden of proof to show the nutrient screening was appropriate and that the nutrient limits comply with water quality standards.

J. Whether the Commission Should Deny or Alter the Terms and Conditions of the Draft Permit Based on the Consideration of Need under Texas Water Code § 26.0282[362]

1. Granbury's and the ED's Evidence and Arguments

In considering whether to issue a permit to discharge waste, the Commission may "deny or alter the terms and conditions of the proposed permit . . . based on consideration of need, including the expected volume and quality of the influent and the availability of existing or proposed areawide or regional waste collection, treatment, and disposal systems not designated as such by [C]ommission order . . . ."[363] To establish its need for the East Plant, Granbury's application included a detailed explanation of why it needs each phase of the proposed project and why other domestic treatment facilities within three miles could not provide service in lieu of the proposed facility.[364] In approving the Draft Permit, the ED staff found that there was a need for the proposed facility.

At the hearing, Granbury presented additional evidence of both the current strains on its wastewater systems and existing South Plant, and the projected growth in Granbury that will require additional capacity. Rick Crownover, Granbury's Director of Public Works, and Chris Hay, P.E., lead consultant for planning and design of Granbury's wastewater system

[362] OPIC did not take a position on this issue.

[363] Tex. Water Code § 26.0282.

[364] Admin. Record at 681-91 (Attachments DTR 1.1-1.B.2 and DTR 1.1-1.B.3a).

improvements, explained that the city's wastewater treatment system has been under strain because several key lift stations are near capacity due to system growth and have had increasing difficulty keeping up with system surges, causing upstream backups and overflows.[365] Much of the increased demand stems from growth on the city's east side, with more effluent coming from the east than the lift stations were designed to accommodate.[366] The collection system is overwhelmed by the growing volumes of effluent that have to be moved from the east part of Granbury to the South Plant.

In addition, the South Plant lacks capacity to accommodate Granbury's growing demand. Granbury is currently operating at approximately 75% of its treatment capacity, based on existing conditions.[367] This does not include a significant number of committed connections that have already been approved and platted but have not yet been constructed; those committed connections would consume 100% of Granbury's wastewater treatment capacity if they came on line today.[368] Because there is currently no capacity to accommodate any more wastewater connections, Granbury has imposed a building moratorium since late 2020, bringing development in the city to a halt.[369]

After conducting a study, Granbury determined that the city's best option was to build the East Plant to ease these current and future strains on the system.[370] The East Plant would provide additional treatment capacity, relieving demand on the existing South Plant as the city

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[365] COG Ex. 100 at 2-3; COG Ex. 400 at 4, 8; *see also* Admin. Record at 681-89.

[366] COG Ex. 100 at 3; COG Ex. 400 at 4, 10.

[367] COG Ex. 400 at 9.

[368] COG Ex. 400 at 9.

[369] COG Ex. 100 at 9; COG Exs. 105-108; COG Ex. 400 at 9-10.

[370] COG Ex. 100 at 3-4; COG Ex. 400 at 12.

grows, and would also divert flow from the east away from the already-overwhelmed downstream collection system.[371]

Granbury's evidence shows that the current stress on the city's wastewater collection and treatment system is driven by notable local and regional growth over the last two decades, which has spurred increased wastewater demand. This growth is projected to continue in the future, but will be stymied without an increase in wastewater capacity.[372] Ray Perryman, PhD, an economist, testified that insufficient wastewater capacity will necessarily curtail Granbury's growth, causing permanent economic losses to the city and Hood County.[373] Dr. Perryman estimated that without additional wastewater capacity, by 2040 Granbury could lose an estimated $45.3 million in annual real gross product and 597 jobs, while the county would lose a projected $83.0 million in real gross product and 1,029 jobs.[374] New construction would continue to be stifled and tax revenues would be lost, resulting in significant impairment to Granbury's economic and social development.[375]

These losses can be avoided by approval of the Draft Permit, according to Granbury. The existing South Plant has a 2.0 MGD capacity, but adding the East Plant would increase Granbury's capacity to 3.0 MGD during the Interim phase and ultimately double the city's capacity to 4.0 MGD in the Final phase, easing current stresses on the wastewater system and creating capacity to accommodate future growth.[376]

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[371] COG Ex. 400 at 5, 13.

[372] Tr. Vol. 3 at 437-38; COG Ex. 800 at 2-3, 18-19, 27-29; Admin. Record at 688.

[373] Tr. Vol. 3 at 435.

[374] COG Ex. 800 at 3, 34-35.

[375] Ex. 800 at 36-42.

[376] COG Ex. 400 at 12; Admin. Record at 685-88.

Protestants urged that it would be more cost-effective to expand the South Plant instead of building the East Plant. Granbury's project engineer Mr. Berryhill noted there is "a common belief in the industry that one larger plant is going to be lower cost from a unit cost basis than two smaller plants."[377] While that may be true in the abstract, Granbury is in the position of needing to create more capacity while still serving the existing need. That leads to the challenge of "construction sequencing." Mr. Berryhill explained that there is a limited amount of space available within the fenced boundaries of the South Plant, and construction would have to be executed so that, as each new structure was built and took on some of the flow, an older structure could be decommissioned and the space recaptured to build the next new structure.[378] Construction sequencing adds complexity and cost, but it would be necessary because the South Plant cannot be taken out of service so that it can be expanded.[379] In other words, Mr. Berryhill said, "We don't get to just tell everybody, 'Sorry, you have to stop flushing your toilets for 18 months while we build this site.'"[380] He opined that the expansion of the South Plant alone would therefore be less cost-effective than an upgrade of the South Plant combined with the new East Plant.[381] Granbury's expert Mr. Hay concurred, noting that Granbury's plan secures up to 4.0 MGD of treatment capacity and collection system improvements "for only a relatively small amount of more money (less than 10% more) compared to [the] closest alternative, which only provides 3 MGD of capacity."[382]

Granbury thus contends that it considered other alternatives—including upgrading and expanding the existing South Plant or building a new plant to the north and either abandoning or

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[377] Tr. Vol. 2 at 253.

[378] Tr. Vol. 2 at 305.

[379] Tr. Vol. 2 at 253-54.

[380] Tr. Vol. 2 at 253.

[381] Tr. Vol. 2 at 253-54.

[382] COG Ex. 400 at 12.

repurposing the South Plant and making other infrastructure improvements—but ultimately determined that a new East Plant would add more capacity at less cost than other alternatives.[383]

2. Protestants' Evidence and Arguments

Protestants contend Granbury "has numerous alternatives it could pursue to expand wastewater treatment capacity," including expanding the city's existing South Plant. They note that in 2019, in the Environmental Information Document prepared for the application, the option of expanding the South Plant was described as "more cost effective" than other alternatives.[384] Protestants also state that because there are "ample other grounds justifying denial of the application" the issue of need "need not be reached."[385]

3. ALJs' Analysis

Granbury has made a prima facie showing that the city's need for the Draft Permit justifies its issuance without modification, while Protestants have not presented any evidence or supported arguments on this issue. Further, the preponderance of the evidence confirms that Granbury imminently needs additional wastewater capacity to meet current demand, that without additional capacity Granbury's economic and social development will be hampered, and that the East Plant is the best alternative for Granbury to meet the expanding need for wastewater capacity.

While Protestants made reference to a 2019 analysis that found expansion of the South Plant to be more cost-effective than building a new plant, Granbury's witnesses provided

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[383] COG Ex. 101 at 7-9; COG Ex. 400 at 12; Admin. Record at 691.

[384] As discussed above, the page of the Environmental Information Document that was referenced during the hearing does not appear to be in the record.

[385] Protestants' Closing Argument at 35-36.

persuasive explanations for why that cost estimate changed. The South Plant cannot be taken offline during its expansion, because the city must continue meeting the current wastewater treatment demand, meaning that complex and costly construction sequencing would be required. Granbury considered multiple alternatives to achieve the objective of increased capacity, and chose the most cost-effective plan that would also permit flexibility for growth.

Therefore, from both the affirmative evidence in the record, as well as the lack of any controverting evidence on this issue, the ALJs find that Granbury has met its burden of proving that there is no basis for denying or altering the terms and conditions of the Draft Permit based on considerations of need.

K. Whether the Applicant's Compliance History or Technical Capabilities Raise Any Issues Regarding the Applicant's Ability to Comply with the Material Terms of the Permit that Warrant Denying or Altering the Terms of the Draft Permit[386]

1. Granbury's and the ED's Evidence and Arguments

Granbury argues, and the ED agrees, that Granbury's compliance history and technical competency raise no concerns about the Granbury's ability to comply with the Draft Permit. In March 2020, Granbury's Compliance History Report reflected a classification "on the high end of the Satisfactory rating," and that rating had increased to a "High" rating in September 2021, with no repeat violations.[387] Granbury's Director of Public Works, Rick Crownover, testified that Granbury's Public Works Department is staffed with competent and capable employees who are committed to complying with applicable regulations and the conditions of the Draft Permit.[388] ED

[386] OPIC did not take a position on this issue.

[387] Tr. Vol. 1 at 68-69; Ex. ED-1 at 10-11, 18; Ex. ED-9.

[388] COG Ex. 100 at 10.

witness Gordon Cooper, Environmental Permit Specialist V, concluded that Granbury's compliance history is not a factor affecting the Draft Permit.[389]

2. Protestants' Evidence and Arguments

Protestants did not specifically stipulate that Granbury's compliance history is not in issue, but neither did they offer evidence that the Draft Permit should be denied or altered due to concerns about Granbury's ability to comply with its material terms. In their closing brief, Protestants argued that "[t]here are ample other grounds justifying denial of the application such that the issue of [Granbury's] compliance history need not be reached."[390]

3. ALJs' Analysis

The ED and Granbury have made a prima facie showing that Granbury's compliance history and technical capabilities are acceptable and do not warrant denying or altering the draft permit, while Protestants have not presented any evidence or arguments on this issue. Therefore, from both the affirmative evidence in the record, as well as the lack of any controverting evidence on this issue, the ALJs find that Granbury's compliance history raises no concerns regarding its ability to comply with the material terms of the draft permit that warrant denying or altering the terms of the draft permit.

L. Whether the Proposed Location for the Facility Complies with the 100-Year Flood Plain and Wetland Location Standards Found in 30 TAC § 309.13(a) and (b)

[389] Ex. ED-1 at 11.

[390] Protestants' Closing Arguments at 36.

A WWTP unit may not be located in the 100-year flood plain unless the unit is protected from inundation and damage that may occur during a flood event, and may not be located in wetlands.[391] Here, the WWTP authorized in the Draft Permit is not located in the 100-year floodplain,[392] and no plant unit will be located within wetlands.[393]

No party disputed this component of Granbury's prima facie case.[394] Accordingly the ALJs conclude that the preponderance of the evidence in the record demonstrates that the Draft Permit complies with the 100-year flood plain and wetland location standards.

M. Whether Applicant Substantially Complied with Applicable Public Notice Requirements[395]

1. Granbury's and the ED's Evidence and Arguments

Granbury and the ED both contend that Granbury complied with applicable notice requirements. Public notice requirements are set forth in the Commission's rule at 30 TAC § 39.551(c), which requires the applicant to publish notice of an application and of the ED's preliminary decision.

The Administrative Record, which was admitted into evidence at the preliminary hearing, shows that Granbury published the Notice of Receipt of Application and Intent to Obtain a Water Quality Permit in *The Hood County News*, the newspaper of largest circulation in Hood County,

[391] 30 TAC § 309.13(a)-(b).

[392] COG Ex. 400 at 16; Ex. ED-1 at 20.

[393] COG Ex. 200 at 13; Ex. ED-1 at 20.

[394] *See* Identification of Uncontested Issues (stipulating that Protestants do not contest Preliminary Order Issue L). To the extent Protestants argued otherwise in their closing brief, *see* Protestants' Closing Arguments at 36-37, the ALJs find those arguments were waived by their prior stipulation.

[395] OPIC did not take a position on this issue.

on November 16, 2019.[396] Spanish-language notice was published in *La Prensa Comunidad,* an alternative language newspaper generally circulated in Hood County, on November 25, 2019.[397] Hood County is the county where the proposed facility and its discharge point are both located.[398]

After the ED prepared the Draft Permit on May 4, 2020,[399] Granbury had the Notice of Application and Preliminary Decision published in English on May 9, 2020, in *The Hood County News,* and published in Spanish on May 11, 2020, in *La Prensa Comunidad.*[400] The application and Draft Permit were also placed in Granbury City Hall for public viewing and copying.[401]

Notice of Public Meeting was published on August 5, 2020, in *The Hood County News,* after which a public meeting was held on September 10, 2020.[402] When the case was referred by the Commission to SOAH, notice of the preliminary hearing was published in the *Hood County News* on November 6, 2021, more than 30 days prior to the December 13, 2021 preliminary hearing.[403]

2. Protestants' Evidence and Arguments

Protestants did not specifically stipulate that Granbury complied with applicable public notice requirements, but neither did they offer evidence that the Draft Permit should be denied

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[396] Admin. Record at 419-21.

[397] Admin. Record at 422-23.

[398] COG Ex. 102.

[399] Admin. Record at 65-67; Ex. ED-1 at 19.

[400] Admin. Record at 57-61.

[401] Admin. Record at 527.

[402] Admin. Record at 33-35.

[403] Admin. Record at 721-23.

or altered due to concerns about adequacy of any notice. In their closing brief, Protestants argued that "[t]here are ample other grounds justifying denial of the application such that the issue of the applicable public notice requirements need not be reached."[404]

3. ALJs' Analysis

The ED and Granbury have made a prima facie showing that Granbury has published all required public notices, while Protestants have not presented any evidence or arguments to the contrary. Therefore, from both the affirmative evidence in the record, as well as the lack of any controverting evidence on this issue, the ALJs find that Granbury has substantially complied with the applicable public notice requirements.

VI. TRANSCRIPT COSTS

Granbury incurred $8,053.05 in reporting and transcription costs for the three-day hearing on the merits.[405] Granbury proposes that the costs be divided in thirds between Granbury and the two Protestant groups, so that Granbury pays one third, Granbury Fresh and Victoria Calder pay one third, and Bennett's Camping Center and RV Ranch and Jim and Stacy Risk pay one third.[406] The Protestants urge that all transcript costs should be assessed against Granbury.

The Commission's rules require consideration of the following factors in assessing transcription costs:

(A) the party who requested the transcript;

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[404] Protestants' Closing Arguments at 37.

[405] Granbury's Closing Argument at Attachment A.

[406] Neither OPIC nor the ED may be assessed transcript costs. 30 TAC § 80.23(d)(2).

(B) the financial ability of the party to pay the costs;

(C) the extent to which the party participated in the hearing;

(D) the relative benefits to the various parties of having a transcript;

(E) the budgetary constraints of a state or federal administrative agency participating in the proceeding;

(F) in rate proceedings, the extent to which the expense of the rate proceeding is included in the utility's allowable expenses; and

(G) any other factor which is relevant to a just and reasonable assessment of costs.[407]

Though no party requested that the hearing be transcribed (this was required by the ALJs), all parties participated in the hearing and benefitted equally from having a copy of transcript. Neither Granbury nor Protestants presented evidence on their respective ability to pay costs. Protestants are individuals and small businesses or groups, which might suggest they lack resources compared to Granbury. However, Granbury is a city, not a for-profit corporation. Additionally, Protestants were represented in this case by several experienced lawyers and had the resources to retain several expert witnesses, which indicates they are able to bear litigation costs and expenses.

After considering the relevant factors, the ALJs recommend that the costs be split between Granbury and the Protestants on a 50/25/25 percent basis. Protestants questioned witnesses separately during the hearing, given that they had some differences in specific interests, but they consolidated their arguments and submitted joint post-hearing briefing. Thus, instead of Granbury's proposed split of one third of the costs allocated to each group, the ALJs recommend that Granbury pay half of the transcript costs; Protestants Victoria Calder and

[407] 30 TAC § 80.23(d)(1).

Granbury Fresh pay one quarter; and Protestants James and Stacy Rist and Bennett's Camping Center and RV Ranch pay one quarter.

VII. CONCLUSION & RECOMMENDATION

The ALJs find that Granbury has met its burden of proof on all thirteen questions referred by the Commission and recommend that the Draft Permit be issued without amendments.

SIGNED JUNE 20, 2022.

ALJ Signature(s):

Pratibha Shenoy,
Co-Presiding Administrative Law Judge

Sarah Starnes,
Presiding Administrative Law Judge

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

AN ORDER
GRANTING THE APPLICATION BY
THE CITY OF GRANBURY
FOR TPDES PERMIT NO. WQ0015821001
IN HOOD COUNTY, TEXAS;
SOAH DOCKET NO. 582-22-0585;
TCEQ DOCKET NO. 2021-1001-MWD

On _____, the Texas Commission on Environmental Quality (TCEQ or Commission) considered the application of City of Granbury (Granbury or Applicant), for a new Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0015821001 in Hood County, Texas. A Proposal for Decision (PFD) was presented by Pratibha J. Shenoy and Sarah Starnes, Administrative Law Judges (ALJs) with the State Office of Administrative Hearings (SOAH), who conducted an evidentiary hearing concerning the application on March 7-9, 2022, in Austin, Texas, via Zoom videoconference.

After considering the PFD, the Commission makes the following findings of fact and conclusions of law.

I. FINDINGS OF FACT

Application

1. Applicant filed its application (Application) for a new TPDES permit with the TCEQ on September 16, 2019.

2. The Application requested authorization to discharge treated domestic wastewater from a proposed new wastewater treatment facility located at 3121 Old Granbury Road in Granbury, Hood County, Texas, to an unnamed tributary of Rucker Creek, thence to Rucker Creek, thence to Lake Granbury in Segment 1205 of the Brazos River Basin.

3. The Application requests authorization to treat and discharge treated domestic wastewater from the proposed facility at a daily average flow not to exceed 1 million gallons per day (MGD) in the Interim phase and 2 MGD in the Final phase.

4. The Executive Director (ED) declared the Application administratively complete on November 12, 2019.

5. The ED completed the technical review of the Application, prepared a draft permit (Draft Permit) and made it available for public review and comment.

The Draft Permit

6. The City of Granbury East Wastewater Treatment Facility (Facility) will be a Membrane Bioreactor (MBR) process operated in the continuous flow mode. Treatment units in the Interim phase will include bar screens, grit chamber, fine screens, anaerobic basin, anoxic basin, aeration basin, membrane basins, ultraviolet disinfection system, solid storage tank and solid dewatering system. Treatment units in the Final phase will include mechanical bar screens, manual bar screen, grit chambers, fine screens, anaerobic basins, anoxic basins, aeration basins, membrane basins, ultraviolet disinfection system, solid storage tanks and solid dewatering system. The Facility has not yet been constructed.

   The effluent limitations in the Draft Permit, based on a thirty-day average, are as follows for the Interim phase:

Five-Day Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	Total Suspended Solids	Ammonia Nitrogen	Total Phosphorous	Dissolved Oxygen (DO)	E. coli
5 mg/L (42 lbs/day)	12 mg/L (100 lbs/day)	1.6 mg/L (13 lbs/day)	1.0 mg/L (8.34 lbs/day)	6.0 mg/L minimum	126 colony forming units (CFU) or most probable number (MPN) per 100 mL

7. The effluent limitations in the Draft Permit, based on a thirty-day average, are as follows for the Final phase:

Five-Day Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	Total Suspended Solids	Ammonia Nitrogen	Total Phosphorous	Dissolved Oxygen (DO)	E. coli
5 mg/L (83 lbs/day)	12 mg/L (200 lbs/day)	1.0 mg/L (17 lbs/day)	0.5 mg/L (8.3 lbs/day)	6.0 mg/L	126 CFU/ 100 mL

8. For both the Interim and Final phases, the pH must be in the range of 6.0 to 9.0 standard units.

9. The permittee will utilize an Ultraviolet Light (UV) system for disinfection purposes. An equivalent method of disinfection may be substituted only with prior approval of the ED.

Notice and Jurisdiction

10. The Notice of Receipt of Application and Intent to Obtain a Water Quality Permit was published in English on November 16, 2019, in *The Hood County News,* and was published in Spanish on November 25, 2019, in *La Prensa Comunidad*.

11. The ED completed the technical review of the Application on March 18, 2020, and prepared the Draft Permit on May 4, 2020.

12. The Notice of Application and Preliminary Decision was published in English on May 9, 2020, in *The Hood County News,* and was published in Spanish on May 11, 2020, in *La Prensa Comunidad.*

13. A notice of Public Meeting was published on August 5, 2020, in *The Hood County News.*

14. A public meeting was held on September 10, 2020, via webcast. The public comment period closed the same day.

15. The ED filed its Response to Public Comment on May 26, 2021.

16. On September 22, 2021, the Commission considered during its open meeting the requests for a contested case hearing and request for reconsideration concerning the Application

by the City of Granbury. After evaluation of all relevant filings, the Commission determined that Bennett's Camping Center and RV Ranch, Walter Shaw and Victoria Calder, Debra and Peter Cook, Doris and John Faber, Woody Frossard, Judith Gagliardo, Cynthia and Norman Gookins, George and Cynthia Griffin, Ronnie and Dianne Hasty, Kay and Bud Lowack, John and Susan Meche, David and Kathy Montgomery, Keith and Colleen Nielsen, Jason Nolte, Stacy and Jim Rist, and Paul Williams were affected persons and granted their requests for hearing.

17. At its September 22, 2021 open meeting, the Commission considered the issues to be referred to SOAH. The Commission issued an Interim Order on September 29, 2021, directing that the following thirteen issues be referred to SOAH (Referred Issues):

N. Whether the draft permit complies with applicable requirements to abate and control nuisance odors, as set forth in 30 TAC § 309.13(e);

O. Whether the draft permit is protective of water quality;

P. Whether the draft permit is protective of groundwater and wells;

Q. Whether the draft permit is protective of the health of the requesters and their families, livestock, and wildlife, including endangered species;

R. Whether the proposed discharge will adversely impact recreational activities;

S. Whether the Application is accurate and complete;

T. Whether the modeling complies with applicable regulations to ensure the draft permit is protective of water quality;

U. Whether the ED's antidegradation review was accurate;

V. Whether the nutrient limits in the draft permit comply with applicable Texas Surface Water Quality Standards;

W. Whether the Commission should deny or alter the terms and conditions of the draft permit based on the consideration of need under Texas Water Code § 26.0282;

X. Whether the Applicant's compliance history or technical capabilities raise any issues regarding the Applicant's ability to comply with the material terms of the permit that warrant denying or altering the terms of the draft permit;

Y. Whether the proposed location for the Facility complies with the 100-year flood plain and wetland location standards found in 30 TAC § 309.13(a) and (b); and

Z. Whether Applicant substantially complied with applicable public notice requirements.

18. At its September 22, 2021 open meeting, the Commission also denied all requests for reconsideration and set the maximum duration of the hearing at 180 days from the date of the preliminary hearing until the date the PFD is issued by SOAH. The parties subsequently agreed to extend the PFD deadline to June 21, 2021, 190 days from the preliminary hearing.

19. On November 6, 2021, notice of the preliminary hearing was published in English in *The Hood County News*. The notice included the time, date, and place of the hearing, as well as the matters asserted, in accordance with the applicable statutes and rules.

Proceedings at SOAH

20. On December 13, 2021, a preliminary hearing was convened in this case via Zoom videoconference by SOAH ALJ Ross Henderson. The following parties appeared and were admitted as parties: attorney Jason Hill appeared for Granbury; attorneys Anthony Tatu and Mattie Isturiz appeared for the ED; attorney Garrett Arthur appeared for the Office of Public Interest Counsel (OPIC); attorney Michael J. Booth represented Protestants James and Stacy Rist, and Bennett's Camping Center and RV Ranch; and attorneys Eric Allmon and John Bedecarre represented Protestants Victoria Calder and Granbury Fresh, an organization comprised of individuals previously identified by the Commission as affected persons.

21. The Administrative Record (Admin. Record Exhibits A and B) was admitted into the record and jurisdiction was noted by the ALJ.

22. A prehearing conference was held via Zoom videoconference on March 3, 2022, with SOAH ALJs Pratibha J. Shenoy and Sarah Starnes presiding. All parties appeared through their respective representatives and the ALJs ruled on the parties' pending motions and evidentiary objections.

23. On March 7-9, 2022, SOAH ALJs Pratibha J. Shenoy and Sarah Starnes convened the hearing on the merits via Zoom videoconference and all parties appeared through their respective representatives. The record closed on April 19, 2022, after the parties submitted written closing arguments.

Overview of the Facility

24. The Facility is designed to use a MBR process operated in the continuous flow mode with a biological nutrient removal (BNR) system.

25. Influent will enter from the wastewater collection system and will be pretreated through mechanical and manual bar screens, grit removal units, and fine screens before moving into the influent lift station.

26. From the influent lift station, wastewater will flow through a BNR anaerobic basin to a BNR anoxic basin to a BNR aeration basin, and then into MBR basins.

27. The BNR process uses anaerobic, anoxic, and aerobic selector zones to reduce five-day $CBOD_5$, total suspended solids, ammonia, and total phosphorus so that the discharge can meet applicable nutrient limits.

28. In the MBR system, membrane filters separate clean effluent from the suspended solids, resulting in lower bacteria concentrations than compared to conventional wastewater treatment plants.

29. From the MBR basins, wastewater will be subject to UV disinfection before being discharged into an unnamed tributary to Rucker Creek.

Issue A: Whether the draft permit complies with applicable requirements to abate and control nuisance odors, as set forth in 30 TAC § 309.13(e).

30. The Facility's wastewater-treatment plant units will be located at least 150 feet from the nearest property line.

31. The Facility will have a temporary equalization (EQ) basin that will be a permanent part of the Facility, but it is designed to hold wastewater only temporarily during occasional storm surges, when stormwater would otherwise inundate and infiltrate the collection system.

32. In normal conditions, there would be no water in the temporary EQ basin.

33. The temporary EQ basin will typically empty within 90 minutes, which is not long enough for an anaerobic zone to develop and produce nuisance odors.

34. The temporary EQ basin is not a lagoon with zones of anaerobic activity.

35. The BNR anaerobic basin will reduce the oxygen level of the influent wastewater so that it will efficiently convert phosphorous to a form that can then be effectively removed without allowing the influent to stagnate and produce odor-causing gases.

36. The influent will constantly flow through the BNR anaerobic basin and will be mixed during the process, with influent passing in, through, then out of the BNR anaerobic basin within 90 minutes.

37. Unlike a pool or lagoon, wastewater will not stagnate or accumulate as standing water in the BNR anaerobic basin.

38. The BNR anaerobic basin will maintain wastewater in a range that is anoxic but not truly anaerobic.

39. The BNR anaerobic basin is not a lagoon with zones of anaerobic activity.

40. The Facility will not have lagoons with zones of anaerobic activity that would trigger a 500-foot buffer-zone requirement.

Issue B: Whether the draft permit is protective of water quality.

41. The effluent limits set in the Draft Permit will be protective of water quality to protect people, animals, and wildlife (Issue D); the modeling complies with applicable regulations (Issue G); the ED's antidegradation review was accurate and shows no more than a de minimis reduction in water quality (Issue H); and the nutrient limits in the Draft Permit are sufficiently stringent to comply with the applicable Texas Surface Water Quality Standards (Issue I).

42. The Draft Permit is protective of water quality.

Issue C: Whether the draft permit is protective of groundwater and wells.

43. No party presented evidence rebutting the prima facie demonstration that the Draft Permit is protective of groundwater and wells in the area.

44. The Draft Permit is protective of groundwater and wells.

Issue D: Whether the draft permit is protective of the health of the requesters and their families, livestock, and wildlife, including endangered species.

45. The receiving waters have incidental and sustainable fisheries uses and limited and high aquatic life uses, which are subject to toxics criteria. The toxics criteria in the Draft Permit are protective of human health and aquatic life.

46. End-of-pipe bacterial limits in the Draft Permit will help preclude any adverse impacts on contact recreation uses of the receiving waters.

47. For waters where activities are presumed to involve a significant risk of water ingestion (including swimming, kayaking, canoeing, and rafting), the Commission's E. coli criterion is 126 CFU/100 mL.

48. The Draft Permit has an E. coli limit of 126 CFU/100 mL. This limit is standard in wastewater discharge permits in Texas.

49. The EPA considers 126 CFU/100 mL to be protective of contact recreation activities.

50. A 2010 Lake Granbury Watershed Protection Plan found that elevated concentrations of E. coli were periodically observed in the coves of Lake Granbury, but that elevated bacteria concentrations did not occur in the lake itself, nor were periods of high concentration persistent.

51. The main contributors of bacteria for the Lake Granbury watershed were found to be livestock, failing septic tanks, feral hogs, and pets.

52. One of the plan's recommendations for addressing this problem was to move residents away from on-site sewage facilities (septic systems) in favor of regional wastewater treatment options. Constructing the Facility is consistent with this goal and will reduce the risk of bacterial discharges from failing residential septic systems.

53. The Lake Granbury Watershed Protection Plan explained that bacteria levels were elevated in dead-end coves and canals because stagnant conditions in those areas kept the water from circulating and mixing with the main body of the lake. Discharge flow from the Facility will improve those stagnant conditions.

54. The E. coli limit in the Draft Permit is protective of human health and, by extension, the health of livestock or wildlife who may ingest or have contact with the receiving water.

55. The Draft Permit includes a total phosphorus effluent limit of 1.0 mg/L in the Interim phase and 0.5 mg/L in the Final phase of the Draft Permit. Consistent with the TCEQ publication RG-194, Procedures to Implement the Texas Surface Water Quality Standards, it does not include a total nitrogen limit.

56. The phosphorus limit will help prevent the excess accumulation of algae in the receiving waters.

57. There have been no harmful algal blooms in the Brazos River Basin in 25 years and no known fish kills in Lake Granbury arising from cyanobacteria.

58. While golden algae species have been documented in Lake Granbury to contribute to fish kill events, more recent studies have shown that there are now low levels of golden algae in Lake Granbury.

59. The Facility's discharged effluent will not result in significant algae growth that poses a risk to humans, animals, or livestock.

60. The Facility's discharge is not expected to affect any federal endangered or threated aquatic or aquatic-dependent species or their habitat.

Issue E: Whether the proposed discharge will adversely impact recreational activities.

61. Bennett's Camping Center, Inc. owns and operates an RV park that abuts the property where Granbury proposes to build the East Plant. It shares a property line with the side of the site where the temporary EQ basin and BNR basin will be situated.

62. The RV park is a park-like setting used for recreational purposes. It includes a playground and campsites with RVs parked right at the property line shared with Granbury.

63. Bennett's Camping Center and RV Park does not abut and is not crossed by any of the receiving waters for the Facility.

64. Odors from the East Plant's temporary EQ basin and BNR basins could interfere with guests' recreational activities at Bennett's Camping Center if foul odors emanated from those plant units.

65. Recreational activities of other Protestants with homes on Rucker Creek, along the discharge route for the Draft Permit, could be affected if foul odors emanated from the East Plant.

66. The Facility is designed to have a cover on the temporary EQ basin, as well as mixing, foul-air piping, and air scour blowers that will reduce and move any foul air from the EQ basin to the aerobic selector zone and the MBR tanks.

67. These features will provide continuous biological treatment of any foul air that might arise during the short time wastewater could be stored in the temporary EQ basin.

68. While the Draft Permit does not expressly require these features, it does state that the Draft Permit relies on Granbury's representations in the Application regarding those features.

69. The Draft Permit will not adversely impact recreational activities.

Issue F: Whether the Application is accurate and complete.

70. Under administrative review by ED staff, Granbury corrected minor inaccuracies identified by staff and timely provided all additional information staff requested, after which the Application was declared administratively complete.

71. Staff from the Wastewater Permitting and Water Quality Assessment Section, the Municipal Permits Team, the Standards Implementation Team, and the Water Quality Assessment Team performed reviews and modeling before the ED declared the Application to be technically complete.

72. To promote regionalization of wastewater disposal systems, the Commission's Instructions for Completing Domestic Wastewater Permit Applications suggest that applicants should send letters to permitted domestic wastewater treatment facilities or sanitary sewer collection systems located within a three-mile radius of the proposed wastewater treatment facility to determine whether those facilities or systems can provide wastewater service to the proposed service area.

73. As Granbury explained in the Application, there are no permitted domestic wastewater treatment facilities or sanitary sewer collection systems located within a three-mile radius that could meet the need in the Facility's proposed service area.

74. Granbury was not required to send letters to a sewer system that could not provide additional capacity for Granbury or otherwise facilitate a regionalization policy.

75. The Application is accurate and complete.

Issue G: Whether the modeling complies with applicable regulations to ensure the draft permit is protective of water quality.

76. The applicable water quality standards are the Texas Surface Water Quality Standards (TSWQS) in 30 Texas Administrative Code chapter 307. The TSWQS apply to surface water in the state and are set by the Commission at levels designed to be protective of public health, aquatic resources, terrestrial life, and other environmental and economic resources.

77. To protect and maintain the aquatic life use of a water body, TCEQ evaluates a proposed discharge's effect on the DO in the water body.

78. Pursuant to the TSWQS, the receiving water bodies have DO criteria of 3.0 mg/L (unnamed tributary) and 5.0 mg/L (Rucker Creek and Lake Granbury).

79. Using TCEQ's preferred modeling tool, QUAL-TX, the ED staff modeled the effluent limits necessary to maintain the DO criterion for each water body. The modeling was conducted assuming critical conditions of high temperatures, low flow of the receiving water body, and the flow of effluent at permit limits.

80. Based on the modeling, ED staff determined that effluent limits of 5.0 mg/L $CBOD_5$, 1.6 mg/L ammonia nitrogen, and a minimum of 6.0 mg/L DO in the effluent was required in the Interim phase to maintain the DO criteria of 5.0 mg/L.

81. Based on the modeling, ED staff determined that effluent limits of 5.0 mg/L $CBOD_5$, 1.0 mg/L ammonia nitrogen, and a minimum of 6.0 mg/L DO in the effluent was required in the Final phase to maintain the DO criteria of 5.0 mg/L.

82. QUAL-TX is an inherently conservative tool and uses inputs for discharge flows and environmental conditions that are unlikely to occur simultaneously. ED staff have studied and documented that there is a margin of safety in default QUAL-TX modeling analyses such that a predicted DO value of up to 0.20 mg/L below the DO criterion is considered consistent with the criterion.

83. The QUAL-TX model predicted DO values of 4.84 mg/L in the Interim phase and 4.81 mg/L in the Final phase, within the margin of safety for the model.

84. The modeling complies with applicable regulations to ensure the Draft Permit is protective of water quality.

Issue H: Whether the ED's antidegradation review was accurate.

85. Two tiers of the Commission's three-tier antidegradation policy apply to Lake Granbury and Rucker Creek.

86. Tier 1 requires that existing uses and water quality sufficient to protect those existing uses must be maintained. In this case, Lake Granbury and Rucker Creek have high aquatic use life with mean DO criteria of 5.0 mg/L. Lake Granbury and Rucker Creek are also primary contact recreation waters.

87. The existing water quality uses of the receiving water bodies will not be impaired by the Draft Permit, provided that Applicant complies with the effluent limits and all other requirements, satisfying the Tier 1 antidegradation requirements.

88. Tier 2 applies to any activity subject to regulatory action that would cause degradation of waters that exceed fishable/swimmable quality, unless the lowering of water quality is shown to the Commission's satisfaction to be necessary for important social or economic development.

89. Lake Granbury and Rucker Creek are fishable/swimmable waters.

90. Degradation for fishable/swimmable waters is defined as a lowering of water quality by more than a de minimis extent, but not to the extent that an existing use is impaired.

91. Whether water quality is lowered by more than a de minimis extent is determined by reference to the water body's assimilative capacity, which is its natural ability to dilute, disperse, and assimilate a pollutant or waste material without adverse effects on its biological users.

92. The State threatened species that have potential habitat in the area of the Facility will not be impacted by the discharge from the Facility, provided that Applicant complies with the effluent limits and all other requirements of the Draft Permit.

93. The fish species found in the receiving water bodies can tolerate lower DO levels and higher ammonia nitrogen levels than are predicted to occur in Rucker Creek and Lake Granbury.

94. The Draft Permit will cause a lowering of water quality by no more than a de minimis extent and will not exceed the assimilative capacity of the receiving water bodies, provided that Applicant complies with the effluent limits and all other requirements, satisfying the Tier 2 antidegradation requirements.

Issue I: Whether the nutrient limits in the draft permit comply with applicable Texas Surface Water Quality Standards.

95. TCEQ's general approach for setting nutrient limits for wastewater discharges is to focus on phosphorus instead of nitrogen because there is less data on total nitrogen in Texas water bodies; phosphorus is a primary nutrient in freshwaters; most of the noxious forms of blue-green algae can fix nitrogen directly from the atmosphere; and available technologies make reduction of phosphorus more effective than reducing nitrogen.

96. Based on nutrient screening, ED staff determined a total phosphorus limit was appropriate to help prevent excess accumulation of algae in the receiving waters.

97. Conditions under which TCEQ considers a nitrogen limit do not exist because the existing or projected nitrogen levels will not result in growth of nuisance aquatic vegetation or a substantial increase in nitrate-nitrogen that could adversely affect public drinking water supplies.

98. The combined effluent limits in the Draft Permit for $CBOD_5$, total suspended solids, ammonia nitrogen, total phosphorus, minimum effluent DO are, respectively, 5/12/1.6/1.0/6.0 mg/L in the Interim Phase, and the E. coli limit is 126 CFU/100 mL.

99. The combined effluent limits in the Draft Permit for $CBOD_5$, total suspended solids, ammonia nitrogen, total phosphorus, minimum effluent DO are, respectively, 5/12/1.0/0.5/6.0 mg/L in the Final Phase, and the E. coli limit is 126 CFU/100 mL.

100. The effluent limits in the Draft Permit will not permit growth of aquatic algae that impairs designated uses for the receiving water bodies.

101. The effluent limits in the Draft Permit satisfy the requirements for discharges within five miles upstream of public water supply reservoirs.

102. The nutrient screening was appropriate and the nutrient limits in the Draft Permit are sufficient to comply with the TSWQS.

Issue J: Whether the Commission should deny or alter the terms and conditions of the draft permit based on the consideration of need under Texas Water Code § 26.0282.

103. The Application included a detailed explanation of why it needs each phase of the proposed project and why other domestic treatment facilities within three miles could not provide service in lieu of the proposed facility.

104. Granbury's wastewater treatment system has been under strain because several key lift stations are near capacity due to system growth and have had increasing difficulty keeping up with system surges, causing upstream backups and overflows.

105. The current stress on Granbury's wastewater collection and treatment system is driven by notable local and regional growth over the last two decades, which has spurred increased wastewater demand.

106. Much of the increase in demand stems from growth on the city's east side, with more effluent coming from the east than the lift stations were designed to accommodate.

107. The existing South Plant is currently operating at approximately 75% of its treatment capacity, a figure which does not include a significant number of committed connections

that have already been approved and platted but have not yet been constructed. Those committed connections would reach or exceed 100% of the City's wastewater treatment capacity if they came on line today.

108. Because there is currently no capacity to accommodate any more wastewater connections, Granbury has imposed a building moratorium since late 2020, bringing development in the city to a halt.

109. Granbury's population and economic growth is projected to continue in the future, but will be stymied without an increase in wastewater capacity.

110. Without additional wastewater capacity, Granbury is projected to lose an estimated $45.3 million in annual real gross product and 597 jobs by 2040, while Hood County would lose a projected $83.0 million in real gross product and 1,029 jobs. New construction would continue to be stifled and tax revenues would be lost.

111. The Facility would increase Granbury's capacity from 2.0 MGD to 3.0 MGD during the Interim phase and ultimately double the City's capacity to 4.0 MGD in the Final phase, easing current stresses on the wastewater system and creating capacity to accommodate future growth.

112. Granbury considered other alternatives but ultimately determined that a new Facility would add more capacity at less cost than other alternatives.

113. Without the additional capacity of the Facility, Granbury's economic and social development will be impaired.

114. Granbury adequately demonstrated a need for the proposed Facility, as required by Texas Water Code § 26.0282.

Issue K: Whether the Applicant's compliance history or technical capabilities raise any issues regarding the Applicant's ability to comply with the material terms of the permit that warrant denying or altering the terms of the draft permit.

115. No party presented evidence rebutting the prima facie demonstration that Granbury is technically capable of complying with the material terms of the permit.

116. Granbury's compliance history and technical capabilities are acceptable and do not warrant denying or altering the draft permit.

Issue L: Whether the proposed location for the Facility complies with the 100-year flood plain and wetland location standards found in 30 TAC § 309.13(a) and (b).

117. No party presented evidence rebutting the prima facie demonstration that the proposed location for the Facility complies with the Commission's 100-year flood plain and wetland location standards.

Issue M: Whether Applicant substantially complied with applicable public notice requirements.

118. No party presented evidence rebutting the prima facie demonstration that Granbury has published all required public notices.

Transcription Costs

119. Reporting and transcription of the hearing on the merits was warranted.

120. All parties fully participated in the hearing by presenting witnesses and cross-examining witnesses.

121. All parties benefitted from preparation of a transcript.

122. There was no evidence that any party subject to allocation of costs is financially unable to pay a share of the costs.

123. Transcript costs cannot be assessed against the ED or OPIC because they are statutory parties who are precluded from appealing the decision of the Commission.

124. The total cost for recording and transcribing the hearing on the merits was $8,053.05.

125. Applicant should pay 50% of the transcription costs; Protestants James and Stacy Rist and Bennett's Camping Center and RV Ranch should pay 25%; and Protestants Victoria Calder and Granbury Fresh should pay 25%.

II. CONCLUSIONS OF LAW

1. TCEQ has jurisdiction over this matter. Tex. Water Code, chs. 5, 26.

2. SOAH has jurisdiction to conduct a hearing and to prepare a PFD in contested cases referred by the Commission under Texas Government Code § 2003.047.

3. Notice was provided in accordance with Texas Water Code §§ 5.114, 26.028; Texas Government Code §§ 2001.051-.052, and 30 Texas Administrative Code §§ 39.405 and .551.

4. The Application is subject to the requirements in Senate Bill 709, effective September 1, 2015. Tex. Gov't Code § 2003.047(i-1)-(i-3).

5. Applicant's filing of the Administrative Record established a prima facie case that: (1) the Draft Permit meets all state and federal legal and technical requirements; and (2) a permit, if issued consistent with the Draft Permit, would protect human health and safety, the environment, and physical property. Tex. Gov't Code § 2003.047(i-1); 30 Tex. Admin. Code § 80.17(c)(1).

6. Applicant retains the burden of proof on the issues regarding the sufficiency of the Application and compliance with the necessary statutory and regulatory requirements. 30 Tex. Admin. Code § 80.17(a).

7. Prior to construction of the Facility, Applicant must satisfy one of three alternative compliance requirements to abate and control a nuisance of odor. 30 Tex. Admin. Code § 309.13(e)

8. The alternative means of complying with 30 Texas Administrative Code § 309.13(e) include satisfying a buffer-zone requirement. Lagoons with zones of anaerobic activity may not be located closer than 500 feet to the nearest property line, and all other wastewater treatment plant units may not be located more than 150 feet to the nearest property line. 30 Tex. Admin. Code § 309.13(e)(1).

9. The Draft Permit complies with applicable requirements to abate and control nuisance odors, as set forth in 30 Texas Administrative Code § 309.13(e)(1).

10. The Draft Permit is protective of water quality and the existing uses in the receiving waters under the applicable surface water quality standards in 30 Texas Administrative Code Chapter 307.

11. To ensure adequate protections to potable water sources and supplies, a wastewater treatment plant unit may not be located closer than 500 feet from a public water well, nor 250 feet from a private water well. 30 Tex. Admin. Code § 309.13(c).

12. The Draft Permit is protective of groundwater and wells in the area. 30 Tex. Admin. Code § 309.13(c).

13. The Draft Permit is protective of the health of nearby residents, their families, livestock, and wildlife, including endangered species. Tex. Water Code § 26.003; 30 Tex. Admin. Code § 307.1.

14. The Draft Permit will not adversely affect recreational uses.

15. The modeling complies with applicable regulations to ensure the Draft Permit is protective of water quality.

16. The ED's Tier 1 and Tier 2 antidegradation review was accurate.

17. The nutrient limits in the Draft Permit comply with the TSWQS.

18. In considering the issuance of a permit to discharge waste, the Commission may deny or alter the terms and conditions of the proposed permit based on consideration of need, including the expected volume and quality of the influent and the availability of existing or proposed areawide or regional waste collection, treatment, and disposal systems not designated as such by Commission order. Tex. Water Code § 26.0282.

19. There is no basis to deny or alter the terms and conditions of the Draft Permit based on consideration of need. Tex. Water Code § 26.0282.

20. Applicant's compliance history and technical capabilities do not raise any issues regarding Applicant's ability to comply with the material terms of the permit that warrant denying or altering the terms of the permit.

21. The proposed location for the Facility complies with the 100-year flood plain and wetland location standards found in 30 Texas Administrative Code § 309.13(a)-(b).

22. Applicants substantially complied with applicable public notice requirements. 30 Tex. Admin. Code § 39.551(c).

23. No transcript costs may be assessed against the ED or OPIC because the TCEQ's rules prohibit the assessment of any cost to a statutory party who is precluded by law from appealing any ruling, decision, or other act of the Commission. 30 Tex. Admin. Code § 80.23(d)(2).

24. Factors to be considered in assessing transcript costs include: the party who requested the transcript; the financial ability of the party to pay the costs; the extent to which the party participated in the hearing; the relative benefits to the various parties of having a transcript; the budgetary constraints of a state or federal administrative agency participating in the proceeding; and any other factor which is relevant to a just and reasonable assessment of the costs. 30 Tex. Admin. Code § 80.23(d)(1).

25. Considering the factors in 30 Texas Administrative Code § 80.23(d)(1), a reasonable assessment of hearing transcript costs against parties to the contested case proceeding is 50% to Applicant; 25% to Protestants James and Stacy Rist and Bennett's Camping Center and RV Ranch; and 25% to Protestants Victoria Calder and Granbury Fresh should pay 25%.

NOW, THEREFORE, BE IT ORDERED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, IN ACCORDANCE WITH THESE FINDINGS OF FACT AND CONCLUSIONS OF LAW, THAT:

1. Applicant's Application for Texas Pollutant Discharge Elimination System Permit No. WQ0015821001 is granted as set forth in the Draft Permit.

2. Applicant must pay 50% of the transcription costs. Protestants James and Stacy Rist and Bennett's Camping Center and RV Ranch must pay 25% of the transcription costs. Protestants Victoria Calder and Granbury Fresh must pay 25% of the transcription costs.

3. The Commission adopts the ED's Response to Public Comment in accordance with 30 Texas Administrative Code § 50.117(f).

4. All other motions, requests for entry of specific Findings of Fact or Conclusions of Law,

and any other requests for general or specific relief, if not expressly granted herein, are hereby denied.

5. The effective date of this Order is the date the Order is final, as provided by Texas Government Code § 2001.144 and 30 Texas Administrative Code § 80.273.

6. TCEQ's Chief Clerk shall forward a copy of this Order to all parties.

7. If any provision, sentence, clause, or phrase of this Order is for any reason held to be invalid, the invalidity of any provision shall not affect the validity of the remaining portions of this Order.

ISSUED:

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

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Jon Niermann, Chairman, For the Commission