State Office of Administrative Hearings

Cathleen Parsley
Chief Administrative Law Judge
March 9, 2015

Tucker Royall
General Counsel
Texas Commission on Environmental Quality
P.O. Box 13087
Austin Texas 78711-3087

Re: SOAH Docket No. 582-14-3427; TCEQ Docket No. 2013-2228-MWD; *The Application by DHJB Development, LLC for an Amendment to Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0014975001*

Dear Mr. Royall:

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 March 30, 2015. Any replies to exceptions or briefs must be filed in the same manner no later than April 9, 2015.

This matter has been designated **TCEQ Docket No. 2013-2228-MWD; SOAH Docket No. 582-14-1347**. 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://www10.tceq.state.tx.us/epic/efilings/ 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.

Sincerely,

Sarah G. Ramos

SARAH G. RAMOS
ADMINISTRATIVE LAW JUDGE
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STYLE/CASE: DHJB DEVELOPMENT LLC

SOAH DOCKET NUMBER: 582-14-3427

REFERRING AGENCY CASE: 2013-2228-MWD

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DHJB DEVELOPMENT, LLC

SOAH DOCKET NO. 582-14-3427
TCEQ DOCKET NO. 2013-2228-MWD

APPLICATION BY	§	BEFORE THE STATE OFFICE
DHJB DEVELOPMENT, LLC	§	
	§	OF
FOR AN AMENDMENT TO	§	
TPDES PERMIT NO. WQ0014975001	§	ADMINISTRATIVE HEARINGS

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SOAH DOCKET NO. 582-14-3427
TCEQ DOCKET NO. 2013-2228-MWD

APPLICATION BY	§	**BEFORE THE STATE OFFICE**
DHJB DEVELOPMENT, LLC	§	
	§	**OF**
FOR AN AMENDMENT TO	§	
TPDES PERMIT NO. WQ0014975001	§	**ADMINISTRATIVE HEARINGS**

PROPOSAL FOR DECISION

DHJB Development, LLC (DHJB or Applicant) seeks an amendment to Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0014975001 from the Texas Commission on Environmental Quality (TCEQ or Commission). TCEQ's Executive Director (ED) determined the application has satisfied statutory and regulatory requirements. Johnson Ranch Municipal Utility District (Johnson Ranch) supported the application. After adjoining and nearby landowners (Protestants) protested the application, the Commission referred four issues to the State Office of Administrative Hearings (SOAH) for a contested case hearing on the application. The Administrative Law Judge (ALJ) finds that the permit should not be issued because of adverse impacts the permit would have on Protestants' property and because the discharge route is not a watercourse through which effluent may flow.

I. PRELIMINARY HEARING AND HEARING ON THE MERITS

The preliminary hearing was held on August 19, 2014, during which the ALJ found that proper notice was provided and TCEQ and SOAH have jurisdiction over this case. Attorneys Edmond R. McCarthy, Jr. and Edmond R. McCarthy III represented Applicant. Johnson Ranch was aligned with Applicant and was represented by attorney Philip S. Haag.

The ALJ admitted Patricia Graham, Terrell Graham, Margie Hastings, Asa Dunn, and the Greater Edwards Aquifer Alliance as Protestants. They were represented by attorneys Charles Irvine and Michael P. McEvilly.[1] The ED, represented by Staff Attorneys Daniel Ingersoll and

[1] Ms. Graham, Ms. Hastings, and Mr. Dunn own property adjacent to or downstream of the proposed discharge. Mr. Graham is married to Ms. Graham.

Kathy Humphreys, and the Office of Public Interest Counsel (OPIC), represented by Staff Attorney Rudy Calderon, were admitted as statutory parties.

The hearing on the merits was conducted on November 17-19, 2014, at SOAH, 300 W. 15th Street, Austin, Texas. All parties participated in the hearing. The record closed on January 9, 2015, after briefs and reply briefs had been filed. No party contested notice or jurisdiction, and those matters are further discussed only in the Findings of Fact and Conclusions of law.

II. BACKGROUND

Applicant applied to TCEQ for a major amendment to its permit to authorize an increase in the discharge of treated domestic wastewater from a daily average flow not to exceed 75,000 gallons per day to a daily average flow not to exceed 350,000 gallons per day. The major amendment would also change the disposal method for the effluent. Currently, Applicant is authorized to dispose of treated effluent via subsurface drip irrigation under a Texas Land Application Permit (TLAP) over a minimum area of 750,000 square feet.[2] If issued, the draft permit (Draft Permit) as prepared by the ED would authorize Applicant to dispose of treated effluent via discharge pursuant to a TPDES permit. Applicant may later file an application for beneficial reuse of the treated effluent if the pending application is granted, but reuse is not part of the consideration in this application.

The proposed wastewater treatment facility would be located approximately 0.7 mile north of Farm-to-Market Road 1863 and 0.5 mile east of U.S. Highway 281 in Comal County, Texas 78163. The area Applicant hopes to develop as a residential subdivision is part of a tract of land of roughly 750 acres referred to by the parties as Johnson Ranch.

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[2] Currently, Applicant has not yet generated sufficient volume of effluent for collection and treatment within its service area to facilitate operation of its existing wastewater treatment plant and to dispose of the treated effluent in accordance with the permit. Tr. 1 at 19-20 (Hill). Instead, Applicant has contracted with a qualified "pump and haul operator" to collect untreated effluent pumped from a lift station to storage tanks on the site of the proposed treatment plant from where it is hauled offsite for appropriate treatment and disposal. Tr. 1 at 21-24, 36:10-13 (Hill).

If the amendment is authorized, the treated effluent will be discharged to what Applicant has characterized as an unnamed tributary and which the parties referred to as Cibolo Tributary 21. Applicant asserts Tributary 21 ultimately flows into Cibolo Tributary 20 and then to the Upper Cibolo Creek in Segment No. 1908 of the San Antonio River Basin. The so-called unnamed tributary of Cibolo Creek into which Applicant proposes to discharge treated effluent would pass across Applicant's property, then through property owned by Protestants Ms. Graham and Ms. Hastings.

The discharge route runs on the western portion of the Graham-Hastings properties. Mr. Dunn owns property with his sister, Coquina Dunn Kinzler, to the immediate east of Ms. Hastings' property, and the discharge will continue into Cibolo Creek, which runs adjacent to Mr. Dunn's property to the south. The affected landowner map (attached as Appendix A) shows the relationship between Applicant's and Protestants' properties. Ms. Graham, Ms. Hastings, and Mr. Dunn and his sister own three parcels of what was once owned by their ancestor, but this Proposal for Decision (PFD) typically refers to Protestants' properties in the singular because it appears that the land is typically managed as one plot. When the PFD refers to Protestants' property, this necessarily excludes the Greater Edwards Aquifer Alliance, a nonprofit corporation that does not own any land at issue in this proceeding.

Mr. Graham testified on behalf of the protesting family members. He explained that the Graham-Hastings-Dunn property has been in his wife's family for 110 years, and the original tract is about 200 acres in size.[3] Mr. and Ms. Graham have used and enjoyed her portion of the property for approximately 25 years.[4] The land is an anchor for family gatherings.[5]

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[3] Pr. Ex. 1 at 1:16-20.

[4] Pr. Ex. 1 at 1:17-18.

[5] Pr. Ex. 1 at 3:2.

The property has historically been used for farming and ranching, and the family members currently lease the property to an area rancher for grazing cattle.[6] When Mr. and Ms. Graham lived on the property in the 1990s, they tended the day-to-day operations of the ranch.[7]

III. REFERRED ISSUES AND HEARING WITNESSES

A. Issues

On April 9, 2014, the Commission referred four issues to SOAH for consideration at a contested case hearing:

- Whether the Proposed Permit Will Adversely Impact Use and Enjoyment of Adjacent and Downstream Property or Create Nuisance Conditions;
- Whether the Discharge Route Has Been Properly Characterized;
- Whether the Proposed Permit Complies with TCEQ Siting Regulations found in 30 Texas Administrative Code (TAC) Chapter 309; and
- Whether the Treated Effluent Will Adversely Impact the Cattle that Currently Graze in the Area.

This PFD discusses these issues in the order in which there were referred.

B. Witnesses

Because the PFD is organized by issue rather than by witness, the ALJ provides a brief description of the background of the witnesses who testified.

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[6] Pr. Ex. 1 at 2:27.

[7] Pr. Ex. 1 at 3:4-7.

1. Applicant's Witnesses

Charles Hill is the Vice President of Development and Chief Financial Officer of DH Investment Company, a real estate development and investment company that is the developer for Applicant's property.[8]

Gilbert P. Gregory, Applicant's Project Director, has an associate's degree in civil engineering and a Class "C" wastewater certification. He has extensive permitting project experience.[9]

Tracy Bratton, P.E., has a bachelor's degree in civil engineering. As a registered professional engineer, he has extensive experience in managing land development projects.[10]

Kemble White, Ph.D., P.G., specializes in land-use issues unique to the Austin-San Antonio growth corridor. In part, he focuses on water quality regulations pertaining to the Edwards Aquifer.[11]

Michael Urrutia, an aquatic biologist, holds a master's degree from Southwest Texas State University. He is Director of Water Quality Services for the Guadalupe-Blanco River Authority.

2. Protestants' Witnesses

Mr. Graham has a bachelor's degree in mechanical engineering, has worked in a broad range of engineering fields, and currently is self-employed as a cattle rancher.

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[8] App. Ex. 1.0 at 2.

[9] App. Ex. 2.1 at 1.

[10] App. Ex. 3.1.

[11] App. Ex. 4.1.

Lauren Ross, Ph.D., P.E., has designed many types of water-related systems, has published numerous articles related to water use and treatment, and is a certified professional in erosion and sediment control.[12]

George Rice holds a master's degree in hydrology and works as a groundwater hydrogeologist. Among other things, he designs and installs monitor well networks and performs and analyzes aquifer tests.[13] For about 20 years, he has worked on issues concerning the Edwards Aquifer, focusing primarily on water quality.[14]

Lawrence G. Dunbar, P.E., J.D., has a master's degree in environmental engineering.[15] For the past 25 years, he has been a consultant on water resources and environmental engineering, primarily dealing with flooding and drainage issues.[16]

3. ED's Witnesses

A TCEQ staff member since 1991, Phillip B. Urbany is the permit writer assigned to this application. He has a bachelor's degree in biology and is a registered sanitarian.

Brittany Lee is the TCEQ aquatic scientist who reviewed the application. She earned her bachelor's degree from Texas State University in 2009.

Mark A. Rudolph, P.E., is a modeler in the TCEQ' s Water Quality Division. A TCEQ staff member for approximately 25 years, he has a master's degree in petroleum engineering.

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[12] Pr. Ex. 2.1

[13] Pr. Ex. 3.1.

[14] Pr. Ex. 3 at 2.

[15] Pr. Ex. 4:2.

[16] Pr. Ex. 4 at 1.

IV. OVERVIEW OF APPLICABLE LAW

The Texas Water Code authorizes TCEQ to create and enforce water quality standards, issue permits, and conduct hearings "with respect to its jurisdiction under the [Texas Water] code and other laws and rules."[17] TCEQ rules in chapters 305 (Consolidated Permits), 307 (Texas Surface Water Quality Standards) and 309 (Domestic Wastewater Effluent Limitation and Plant Siting) include provisions applicable to the issues in this case. In addition, the parties relied on certain provisions in the rules pertaining to the Edwards Aquifer, 30 TAC ch. 213.

Commission rule 30 TAC § 309.2 provides that the effluent sets in § 309.4 are intended to represent standard levels of treatment normally required for domestic wastewater treatment plants. The rule allows modifications to the uniform sets of effluent criteria listed in § 309.4 when effluent limits more stringent than secondary treatment are required in order to maintain desired water quality levels.

Aesthetic parameters are addressed in 30 TAC ch.-307, the Texas Surface Water Quality Standards (TSWQS). Particularly applicable in this case, 30 TAC§ 307.4(b) states, in relevant part:

> (1) Concentrations of taste and odor producing substances must not interfere with the production of potable water by reasonable water treatment methods, . . . result in offensive odors arising from the waters, or otherwise interfere with the reasonable use of the water in the state.
> (2) Surface water must be essentially free of floating debris and suspended solids that are conducive to producing adverse responses in aquatic organisms or putrescible sludge deposits or sediment layers that adversely affect benthic biota or any lawful uses.
> (3) Surface waters must be essentially free of settleable solids conducive to changes in flow characteristics of stream channels or the untimely filling of surface water in the state. This provision does not prohibit dredge and fill activities that are permitted in accordance with the Federal Clean Water Act.
> (4) Surface waters must be maintained in an aesthetically attractive condition.

[17] Tex. Water Code §§ 5.013(a)(3), 5.102(b).

(5) Waste discharges must not cause substantial and persistent changes from ambient conditions of turbidity or color.

V. WHETHER THE PROPOSED PERMIT WILL ADVERSELY IMPACT USE AND ENJOYMENT OF ADJACENT AND DOWNSTREAM PROPERTY OR CREATE NUISANCE CONDITIONS

A. Overview of Issue

Protestants argue that the proposed permit amendment will adversely impact the use and enjoyment of adjacent and downstream property in a number of ways: the discharged effluent will reach the Graham and Hastings property; the effluent will nutrient load the creek, resulting in excessive growth of aquatic vegetation (e.g., algae); this algae growth will negatively impact Protestants' property; the effluent will impair groundwater use; the effluent flow will erode the channel; the effluent will carry silt, debris, and trash from the Johnson Ranch (as increased stormwater flows already have); and the discharged effluent will interfere with other ways Protestants use and enjoy their property. The issues related to nutrient loads and groundwater use are discussed in Section VIII. regarding siting regulations.

B. Will Effluent Reach Protestants' Property?

1. Evidence and Argument

It is about 1,900 feet or 0.4 miles from the discharge outfall location to Ms. Graham's property line.[18] Applicant's witnesses testified that much of the discharge would not reach the Graham property line because vegetation in the discharge route would take up water and expel it through evapotranspiration.[19] Nevertheless, Mr. Bratton testified that, even if all of the water reached the Graham's property, the depth of water would be approximately 7.44 inches at full permitted flow.[20]

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[18] App. Ex. 3.0, 8:6; Pr. Ex. 2 at 14:19-21.

[19] App. Ex. 2.0 at 7:21-8:2 (Gregory); App. Ex. 5.0 at 8:21-9:3 (Urrutia); App. Ex. 3.0 at 7:4-12, Tr. 1 at 175-176, Tr. 2 at 50:9-18 (Bratton).

[20] App. Ex. 3.2 at 5.

For Protestants, Dr. Ross testified that the discharged effluent from the proposed wastewater treatment plant will reach the Graham-Hastings property. She based her conclusion on the size of the area required to achieve evapotranspiration and plant uptake.[21] Based on an application limit of 0.1 gallon per square foot per day in Applicant's current TLAP permit, Dr. Ross determined that 3,500,000 square feet, or 80 acres would be required for 350,000 gallons per day to evaporate.[22] Dr. Ross testified that, even if the discharge route could achieve the same evapotranspiration as a vegetated field, and generously assuming that the channel bottom would be 50 feet wide, which it is clearly not, the stream length required to achieve infiltration and evapotranspiration would be "70,000 feet," or more than 13 miles in length.[23]

2. Analysis

The ALJ finds the effluent will reach Protestants' property. Dr. Ross' calculations, based on Applicant's existing TLAP, were unchallenged and convincing. Although Applicant may later seek a land application permit, this case cannot be based on what may transpire in the future. Therefore, the ALJ agrees with Protestants that further inquiry should be made as to how effluent would impact Protestants' property.

C. Flooding and Erosion

1. Evidence and Argument

Both Mr. Dunbar and Mr. Graham testified about flooding issues caused by stormwater flows from Applicant's property. However, the ALJ does not address those concerns because, thus far, Applicant has not yet discharged effluent and is using a pump and haul process to dispose of wastewater.

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[21] Pr. Ex. 2 at 14:2-8.

[22] Pr. Ex. 2 at 14:12-13.

[23] Pr. Ex. 2 at 14:14-17.

As for concerns regarding erosion, Mr. Dunbar testified for Protestants that the creek on the Graham-Hastings property is currently dry except during storm events.[24] Vegetation within a dry channel "helps protect the bed and banks from eroding,"[25] but moistened soils inhibit vegetative growth.[26] If the permit amendment is granted, discharged effluent will create a relatively constant flow, which will tend to "moisten or saturate the soils in the creek."[27] Mr. Dunbar concluded that the constant flow from the wastewater treatment plant will increase the potential for the exposed soils to erode,[28] and the existing erosion "will become much worse by the relatively constant wastewater effluent discharges."[29] Similarly, Mr. Graham testified that erosion "has already started and worsened since [the Applicant's] construction activities began."[30] (The construction activities appear to include building the plant, making channels for water to flow, and building concrete storm control features.)

The application does not discuss proposed controls for downstream erosion. Instead, it addresses proposed flows, which are assessed in relation to the need for the facility,[31] as well as the ability of the proposed treatment methods to achieve the effluent limits.[32] Applicant argued that any complaints about increased erosion are not within the Commission's jurisdiction.[33] The ED provided no evidence related to erosion, stating the issue was not referred to SOAH for consideration, and neither the TSWQS in 30 TAC ch, 307 nor the effluent limitation and plant siting rules in 30 TAC ch. 309 include criteria by which erosion impacts can be assessed.

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[24] Pr. Ex. 4 at 4:15-16.

[25] Pr. Ex. 4 at 4:18-19.

[26] Pr. Ex. 4 at 4:17-18.

[27] Pr. Ex. 4 at 4:16-17.

[28] Pr. Ex. 4 at 4:21-22.

[29] Pr. Ex. 4 at 4:27-28.

[30] Pr. Ex. 1 at 29:1-2; Tr. 2 at 114:22-23.

[31] App. Ex. 1.2A at 35.

[32] *Id.* at 37.

[33] *Citing* ED's response to comments, ED Ex. 13 at 9 (Urbany).

2. Analysis

The evidence supports Protestants' argument that effluent will erode vegetation on Protestants' property. Rule 30 TAC § 305.122(d) prohibits injury to private property and invasion of property rights. Even a flow that is 7.44 inches deep, as Mr. Bratton testified the flow in this case could be, will erode vegetation over time.

The ALJ agrees with the ED that the Commission did not ask SOAH to consider impacts of potential erosion. But in referring the issue of whether effluent discharged under the Draft Permit will adversely impact use and enjoyment of adjacent and downstream property or create nuisance conditions, the Commission did not restrict the parties to present evidence only as to water quality and siting under Chapters 307 and 309.

However, the fact that effluent will erode vegetation on Protestants' property does not suggest a specific change to the Draft Permit, such as enhanced water quality. For other reasons, the ALJ has recommended that the permit be denied. But in this section, the ALJ answers the Commission's inquiry in the affirmative: the discharge will erode vegetation in the channel. This is an adverse impact that can be expected from the permit if it is issued.

D. The Effluent Will Carry Silt, Debris, and Trash from the Johnson Ranch

1. Evidence and Argument

This issue is somewhat related to the previous issue in that no issues regarding stormwater are pertinent to this case. Protestants agree that the focus of this case is the impact of wastewater. Even so, they argue that the proposed effluent discharge will carry soil silt, debris, and other trash from the Applicant's property onto the Graham-Hastings property, and create nuisance conditions for them, thus violating the aesthetic parameters in the TSWQS.

As previously mentioned, 30 TAC ch. 307 requires that surface water must be essentially free of floating debris and suspended solids that are conducive to producing adverse responses in

aquatic organisms and essentially free of settleable solids conducive to changes in flow characteristics of stream channels or the untimely filling of surface waters in the state. Surface waters must be maintained in an aesthetically attractive condition, and waste discharges must not cause substantial and persistent changes from ambient conditions of turbidity or color.[34]

Mr. Graham has seen construction debris and soil silt being deposited on Protestants' property from the Johnson Ranch property. This debris and silt has flowed through the proposed discharge route from Applicant's property onto the Graham property. In fact, Applicant has constructed a concrete culvert on Protestants' property line that appears designed to channel water directly onto their property.[35] Applicant's silt fences and rock berms have failed to contain the sediment from entering the Graham-Hastings property.[36] In addition, a concrete wall that Applicant constructed next to the culverts under Johnson Way, a road on Applicant's property, failed and had to be reconstructed.[37]

On October 3, 2014, Mr. Graham and Dr. Ross observed "what appeared to be many thousands of gallons of silt laden water . . . forced from the Johnson Ranch development on to [the Graham property."[38] Earlier in the day, the channel had been dry.[39] While the discharged effluent at the outfall location most likely will not contain trash, silt, or construction debris, Protestants are concerned that effluent will carry solids in the discharge route channel onto the Graham-Hastings property. Additionally, as Mr. Graham testified, silt, trash, and debris have reduced the grasses that grow downfield of the point at which the Johnson Ranch creek meets the Graham property, where cattle graze on the native grasses.[40] Recurring occurrences would violate the TSWQS, Protestants argue. Protestants assert these incidents will adversely impact the Protestants' use and enjoyment of their property.

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[34] 30 TAC § 307.4(b)(2)-(5).

[35] Pr. Ex. 1 at 7:28, 22:4-10, Pr. Ex. 1.7.

[36] Pr. Ex. 1 at 24:29-25:2; Pr. Ex. 1.30.

[37] Pr. Ex. 1 at 25:2-5.

[38] Pr. Ex. 2 at 4:15-5:9 (Ross); Pr. Ex. 1 at 27:3-28:9 (Graham). The photographs at Pr. Exs. 1.33, 1.34, 1.35, 2.5, and 2.6 depict what Mr. Graham observed.

[39] Pr. Ex. 1 at 27:7.

[40] Pr. Ex. 1 at 27:25-27.

To illustrate the impact of having 350,000 gallons of effluent per day discharged, Mr. Graham testified that a semi-truck delivering gasoline at a gas station has a capacity of 9,000 gallons. When 350,000 gallons is divided by 9,000, the result is 38.8. He concluded by saying the wastewater volume would equate to one tanker discharging its entire contents every 37 minutes through the day and night.[41]

For the ED, Mr. Urbany testified that the proposed permit does not address stormwater because "stormwater is regulated under general permits, which are not a part of this permitting action."[42] The ED does not consider the impact of silt from development activities because silt is usually the result of construction activities and not a component of domestic wastewater effluent.[43] Similarly, Applicant argued that stormwater runoff issues have nothing to do with the requested permit. Moreover, Applicant contends, it would be impossible for any of Protestants' complaints to be resolved by changes to the permit.

2. Analysis

It is reasonable to conclude that if silt, soil, and trash are now being carried onto Protestants' property from the Johnson Ranch that effluent will pick up some of those items. Rule 30 TAC § 307.4(b) requires that surface waters be free of floating debris and suspended solids. But as for the application pending in this case, the pertinent issue is whether the discharge of effluent will contain these solids. Having that focus allows the Commission to consider effluent limits and other issues related to a TPDES permit. If the law expanded the scope of a TPDES application to include all that occurs during a subdivision development, much more evidence and many more reviews would be required. Therefore, while it appears that Protestants have valid concerns about the overall impact of the Johnson Ranch development on their property, the legal scheme and the record do not support a determination that contemplates these nuisance factors.

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[41] Pr. Ex. 1 at 37:16-25.

[42] ED Ex. 1 at 15:14-19; *see also* ED Ex. 1 at 16:8-13 (discussing the applicability of the Water Pollution Abatement Plan).

[43] ED Ex. 1 at 23:9-19.

VI. WHETHER THE PROPOSED PERMIT AMENDMENT WILL INTERFERE WITH OTHER USES AND ENJOYMENT OF THE PROTESTANTS' PROPERTY

A. Evidence and Argument

With respect to the portion of the Graham-Hastings property that would be directly impacted by the proposed discharge, Mr. Graham testified that the family has played in and along the dry creek,[44] and the family enjoys the native plants, including the wild fruits that grow there.[45]

Given the effluent discharge and the impacts it will have on Protestants' property, Mr. Graham explained that the family will no longer feel comfortable allowing children to play in the area of discharge.[46] With changes in vegetative growth, the family will have diminished opportunity to eat the wild plums that grow on the property and enjoy the coolness of the dry creek bed area in the summer.[47] Flowing effluent also will impair their access to the property line, where they repair fences.[48]

As for these concerns, the ED argued that some of these conditions are regulated by TPDES permits, but not as nuisances, while some of these conditions are not regulated under a TPDES permit at all. However, the ED did not specify which concerns are the subject of regulation applicable to this case.

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[44] Pr. Ex. 1 at 29:24-26.

[45] Pr. Ex. 1 at 29:26-28.

[46] Pr. Ex. 1 at 29:14-16.

[47] Pr. Ex. 1 at 29:24-30:7.

[48] Pr. Ex. 1 at 29:9-12.

B. Analysis

Protestants have presented evidence of several adverse impacts that effluent discharge will have on the use and enjoyment of their property, and no other witness contradicted Mr. Graham's testimony except for those who said the effluent will not reach the Graham property. As previously discussed, the effluent will reach the property. If children in the family attempted to play in the effluent, discharged only 0.4 a mile from them, they would be in direct contact with wastewater effluent. There was no evidence that it is safe for children to play in or drink effluent treated at the levels Applicant has proposed. Protestants would have to find another way to repair fencing or risk contact. Therefore, the ALJ finds that if the permit is issued, the effluent discharge will negatively impact Protestants' use and enjoyment of their property.

VII. WHETHER THE DISCHARGE ROUTE HAS BEEN PROPERLY CHARACTERIZED

Protestants argue that Applicant has mischaracterized the discharge route because the route has been changed significantly since the application was filed. Further, Protestants assert the discharge route is not actually a watercourse under Texas law; thus, no discharge of wastewater is permitted.

A. The Route Has Changed but the Change Should Not Impair Issuance of the Permit

1. Evidence and Argument

The Commission's rules in Chapter 309, Subchapter B, establish minimum standards for the location of domestic wastewater treatment facilities.[49] The location must minimize possible contamination of ground and surface waters, and minimize the possibility of exposing the public to nuisance conditions. A permit may not be issued for a facility to be located in an area

[49] 30 TAC § 309.10(a).

determined to be unsuitable or inappropriate, unless the design, construction, and operational features of the facility will mitigate the unsuitable site characteristics.[50]

Applicant reconfigured a portion of the unnamed tributary on its property which moved the outfall location; however, Applicant asserted the change was necessary to protect the treatment plant from flooding during rainfall events. Protection from flooding is required by the siting criteria in 30 TAC § 309.13(a). Even after the change, the proposed outfall and the point of discharge from the wastewater treatment plant will be into or adjacent to the unnamed tributary, Applicant contends.

With the changes Applicant has made, its buffer zone maps are inaccurate, Protestants assert. The second buffer zone map reflects Applicant's intent to reroute the creek around the proposed plant at a nearly 90-degree angle.[51] The map does not show the berm Applicant has constructed;[52] instead, it shows the banks of the recontoured creek bed.[53] The berm is at the north end of the proposed plant and south edge of the discharge route.[54] At the foot of the berm is a man-made channel.[55] The discharge route follows along the foot of the berm, and then it rejoins the creek channel as it gets to the end of the berm.[56] These changes are not reflected in the maps provided in the permit amendment application.

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[50] 30 TAC § 309.10(b).

[51] App. Ex. 1.2A at 54.

[52] *Id.*

[53] *Id.*

[54] Tr. 1, 80:13–19 (Mr. Hill testifying that a berm had been constructed); Tr. 1, 212:25-213:16 (Mr. Bratton testifying about construction of a berm); Pr. Ex. 1, 23:5-24:15 (Mr. Graham testifying that an earthen berm has been constructed on the north side of the plant, rerouting the flow of the creek); Tr. 3, 56:24-57:4 (Ms. Lee testifying that she recalls walking along the berm depicted in Pr. Ex. 9); Tr. 3, 58:11–24 (Ms. Lee testifying that there is a berm and a new route running next to it).

[55] Pr. Ex. 9; Tr. 1, 141:16142:16 (Mr. Gregory testifying that the outfall location is into a man-made ditch that flows into the creek).

[56] Tr. 1, 81:14-82:11.

Protestants' Exhibit 8 shows the location of the berm and updated proposed outfall structure.[57] It also shows that the proposed location of the wastewater treatment plant has shifted south on the Johnson Ranch property.[58]

In Protestants' view, Applicant has mischaracterized the immediate receiving waters in Domestic Technical Report Worksheet 2.0[59] because of the change in the outfall location. As a result, Protestants argued that the channel or ditch is the "receiving water" along which discharged effluent will flow until it rejoins the creek channel downstream.[60]

Mr. Gregory, the project director for Applicant's consultant, testified that the discharge would actually be into a man-made ditch.[61] He agreed that the "situation has changed" since the application was completed.[62] He testified that if he completed the application today, he would check "man-made ditch or channel" instead of a stream as the immediate receiving water on this worksheet.[63]

For the ED, Ms. Lee testified that she understands that the buffer zone map differs from the actual site conditions.[64] When reviewing an application, she needs to know the outfall location, and she said her review might change "if [the outfall location] was dug into a ditch or piped somewhere further away."[65] Ms. Lee agreed that Applicant had changed the outfall location and moved it from the stream to the ditch Applicant had constructed. But her

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[57] Pr. Ex. 8.

[58] *Id.*

[59] App. Ex. 1.2A, 40-42.

[60] Tr. 2 at 81:14-82:11.

[61] Tr. 1 at 146:8-9; Tr. 1 at 159:1-7.

[62] Tr. 1 at 146:13-15.

[63] Tr. 1 at 143:6-9. The "Instructions for Completing Domestic Wastewater Permit Applications" state that the applicant should check the item "that best describes the first receiving water into which the discharge will flow after it leaves the outfall." "Instructions for Completing Domestic Wastewater Permit Applications," 71-72 (July 2014).

[64] Tr. 3 at 56:23.

[65] Tr. 3 at 55:22-56:6-9.

characterization of the discharge route did not change because the discharge would be into the same unnamed tributary and the distance to the next waterbody was only minimally changed.[66]

The TCEQ water quality standards review team must "confirm or find the discharge route [and] assign the aquatic life and human health water quality criteria associated with the uses of unclassified receiving streams of a proposed discharge."[67] These individuals "determine if the discharge goes into receiving water that is classified or unclassified" and "assess any unclassified water bodies . . . to determine an aquatic life use and associated human health criteria according to their flow characteristics . . . and other available data."[68] Protestants argue that a man-made ditch is an unclassified segment because it is not listed in Appendix A of 30 TAC § 307.10 of the TSWQS, which describes site-specific uses and criteria for classified segments. Characteristics for unclassified streams "are determined by available data and uses are assigned accordingly."[69]

The ED argued that the final design of the facility will be subject to review under 30 TAC ch. 217, the Design Criteria for Domestic Wastewater Systems. The ED's staff will complete a "plans and specifications" review under those rules,[70] after the issuance of the permit.[71] The final engineering design report must demonstrate compliance with the setback provisions of 30 TAC § 309.13.[72]

Applicant argues that Protestants' Exhibit 8 is not the final footprint for the facility and does not show the facility as it will be built. Applicant represents that it communicated throughout the application process with the ED's staff and supplied additional information that modified or amended the application throughout the process. Moreover, the Draft Permit makes clear that the information in the application is not final.

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[66] Tr. 3 at 55:22-25.

[67] ED Ex. 20 at 4:10-12.

[68] ED Ex. 20 at 4:18-5:1 (Lee).

[69] ED Ex. 20 at 5:17-19 (Lee).

[70] *Citing* 30 TAC § 217.1 and ED Ex. 3 at 64 (Proposed Permit, Other Requirements No. 4).

[71] Citing 30 TAC § 217.6(a).

[72] 30 TAC §§ 217.10(f)(2)(C), 217.38.

2. Analysis

The ALJ agrees with the ED that the changed outfall location does not require an additional review. Ms. Lee's testimony was most convincing on this issue. Even though the location has changed, the characterization of the discharge route has not. If the permit is granted, Applicant will still discharge to the same tributary, albeit via a ditch it has dug rather than directly as was indicated in the application. The ED's staff is quite experienced in conducting this type of reviews and will be charged with the duty to see that Applicant complies with the design criteria in 30 TAC ch. 217. The final engineering design report must demonstrate compliance with the setback provisions of 30 TAC § 309.13.[73] Therefore, the permit should not be denied on the basis that the application incorrectly classifies the outfall location.

B. Is The Proposed Discharge Route a Watercourse of the State?

1. Evidence and Argument

Protestants assert effluent will not be discharged into a watercourse of the state because many parts of the discharge route have no indications of a bed and banks typical of a watercourse. Without these markers, discharge would violate Texas law, Protestants contend.

The seminal case establishing the criteria for a watercourse is *Hoefs v. Short*, 114 Tex. 501, 273 S.W. 785 (Tex. 1925). In *Hoefs*, the Texas Supreme Court defined a watercourse as having (1) a defined bed and banks, (2) a current of water, and (3) a permanent source of supply.[74] The channel in *Hoefs* was in denuded condition; it had an absence of soil and vegetation and the presence of boulders and gravel.[75] There was a depression on each side of the draw and the banks were higher than either side.[76] The creek was of such substantial, stable, and permanent character that it was easily recognized, and sufficient rainfall produced a flow of

[73] 30 TAC §§ 217.10(f)(2)(C), 217.38.

[74] *Id.* at 787.

[75] *Id.* at 786.

[76] *Id.* at 786.

water in the channel. However, the court recognized that the bed and banks could be slight, imperceptible, or absent in some instances and still be a watercourse.[77] As a general rule, swales are not watercourses but could sometimes be. However, there must be more than mere surface drainage over the entire surface of a tract of land. The current of water may be "intermittent as to flow" and still remain a watercourse.[78] Similarly, for a watercourse to have a permanent source of supply, the stream must "be such that similar conditions will produce a flow of water, and . . . these conditions [must] recur with some regularity."[79]

Another important case in determining the nature of a watercourse is *Domel v. the City of Georgetown*, 6 S.W.3d 349 (Tex. App.–Austin 1999). In that case, landowners complained that the discharge of effluent from a wastewater treatment plant would travel through a non-navigable unnamed tributary of Mankins Creek across their property. The Austin Court of Appeals held that under Texas law, the state has a right superior to private landowners to use a watercourse for the transport of state-owned water, which includes treated effluent that has been discharged into a watercourse.[80] They found that all the photographs in the summary judgment evidence depicted a channel with well-defined bank and beds.[81] Aerial photographs showed the tributary where it entered the Domel's property, and the tributary was clearly visible as a continuous stream or river bed with defined boundaries meandering through the surrounding farmland.[82] The Domel court found that if an applicant is discharging into something that, by the time it leaves the applicant's property, constitutes a watercourse, then the applicant may discharge effluent into that watercourse and send the effluent downstream.

In the application, Applicant included photographs of the outfall location taken in August 2012.[83] They do not show any beds or banks of a watercourse.

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[77] *Id.* at 787.

[78] *Id.* at 786.

[79] *Id.* at 787.

[80] *Id.* at 356.

[81] *Id.*

[82] *Id. at* 354.

[83] App. Ex. 1.2 at 64-66.

Ms. Lee, the TCEQ aquatic scientist assigned to review the application, testified that she reviewed a United States Geological Survey (USGS) map and other maps and determined there is currently an intermittent tributary that the discharge route would follow.[84] To ensure that Ms. Lee had correctly described and characterized the unnamed tributary, she visited the site before completing her prefiled testimony.[85] After her site visit, she said her prior determinations "would be incorrect taking drought conditions into consideration; however, during a normal period of rainfall, . . . the prior determination would be correct."[86] Several areas upstream of the concrete culvert on Applicant's property, *i.e.*, the discharge route, do not depict a defined bed and banks of a channel. However, she determined that slope patterns indicated that water flowed in a general direction. These areas could be considered to be more like swales than a defined stream, she said.[87]

Protestants' witness Mr. Dunbar also identified "portions of the discharge route that do not have defined bed and banks."[88] In part, his opinion was based on a report prepared by Applicant's consultant, SWCA Environmental Consultants, and photographs taken on the Johnson Ranch property.[89]

The SWCA report has photographs showing areas where "Ordinary High Water Marks" (OHWMs) were present and some areas where no OHWMs were present, Mr. Dunbar testified.[90] Several areas on the Johnson Ranch property lack OHWMs and thus lack bed and banks characteristics. The report describes aquatic resources on the Johnson Ranch as "ephemeral watercourses, an artificial waterbody, upland-vegetates swales, and areas of diffuse surface drainage."[91] Further, the report states that no aquatic resources are relatively permanent.

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[84] ED Ex. 20 at 10:9-9-11, 19:14.

[85] *Id.* at 182:8-9.

[86] ED Ex. 20 at 20:8-11.

[87] ED Ex. 20 at 19:1-5.

[88] Pr. Ex. 4 at 3:26-27.

[89] Pr. Ex. 4 at 3:25-4:2.

[90] Pr. Ex. 4 at 4:8-11.

[91] Pr. Ex. 1.9 at DHJB-2162.

"Rather, all resources are ephemeral with flows being infrequent as evident by the broken, fitful nature."[92] According to the report, OHWM indicators are inconclusive, unreliable, misleading, and otherwise not evident along many watercourse segments because of the infrequent flows and historical agricultural practices where slope terracing and other pasture improvements either attenuates all ordinary flows or completely severs connectivity.[93] Dr. White found only a short segment, in an area that he designated as WW4, where OHWM characteristics were maintained.[94] WW4 is the area where Applicant intends to discharge the effluent. A map Dr. White included in the report shows large areas in yellow, which he listed as disturbance areas. They show the brokenness of any possible flow.[95] Another map shows a large area of disturbance, *i.e.*, where there is no evidence of a steam, leading to WW4.[96]

Mr. Graham testified that the portion of Cibolo Tributary 21 north from Cibolo Tributary 20 to the property line of Johnson Ranch is a man-made ditch.[97] Mr. Graham identified, annotated, and described USGS topographical maps and aerial images dating from 1929 to 2011.[98] Many of the maps, though highly detailed, do not depict Cibolo Tributary 21 (*i.e.*, the proposed discharge route). The legends to these maps indicate that some cartographers did not consider it to be an intermittent stream.[99] What is shown as a line of trees down the property line between Applicant's and the Graham property most likely was part of a stormwater control or soil conservation project in earlier family generations.[100] Mr. Graham said it was not until recent years that cartographers elected to depict the stormwater drainage feature, some type of rock wall, on Protestants' property as intermittent streams.[101]

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[92] *Id.*

[93] *Id.*

[94] *Id.*

[95] *Id.* at DHJB-2166.

[96] *Id.* at DHJB-2167.

[97] Pr. Ex. 1 at 10:19-26.

[98] Pr. Ex. 1 at 11:19-19:16; Pr. Exs. 1.9-1.22 (maps).

[99] Pr. Ex. 1 at 10:17.

[100] Pr. Ex. 1 at 10:22-25.

[101] Pr. Ex. 1 at 17:8-14.

Mr. Graham testified that, during the 1990s when he ranched on the property, the "creek" along the western property lines was dry except during extreme rain events. Even after these events, it became dry again.[102] Now, it is best characterized as a swale with smooth banks, and is one of the areas where cattle graze. The grassy swale at the property line between the Johnson Ranch and Protestants' property has native grasses growing in it.[103] Moving south, the dry creek becomes narrower and rockier, and grasses do not grow. In the southern portion of the property, grasses and some wild plum trees grow.[104] On the southern end on Ms. Hastings' property, no defined bank is on the west side where cattle tend to be.[105] Grasses cover the soil and the land is relatively flat.[106] Mr. Graham concluded that Tributary 20 is the only natural area where water has flowed on the southern portion of Ms. Hastings' property.

Mr. Graham testified that Applicant made a channel through a grassy swale on the Johnson Ranch property in 2013. That channel leads directly to Protestants' fence where Applicant constructed a concrete culvert at the fence line.[107]

Based on Protestants' assertion that the discharge route lacks defined bed and banks, they argued that the discharged effluent passing over these portions of the property is better characterized as diffuse surface water that would flow over Applicant's property.

The ED argued that whether the discharge is into a grassy swale or a defined channel does not impact the proposed permit. The discharge route described in the proposed permit is to an unnamed tributary, then to Upper Cibolo Creek in Segment No. 1908 of the San Antonio River Basin. ED asserts that water moves downstream across Applicant's and Protestants' properties. Therefore, the ED asserted that the discharge route was properly described as to an

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[102] Pr. Ex. 1 at 3:27-31.

[103] Pr. Ex. 1 at 5:25-29.

[104] Pr. Ex. 1 at 7:19-22.

[105] Pr. Ex. 1 at 8:29-9:1.

[106] Pr. Ex. 1 at 9:1-6.

[107] Pr. Ex. 1 at 22:6-10.

unnamed tributary then to Upper Cibolo Creek in Segment No. 1908 of the San Antonio River Basin.

Applicant asserted the discharge route to Cibolo Creek is a watercourse, and the property owners own the bed and banks. Once discharged and allowed to flow into the watercourse, the effluent becomes state water that can legally flow across Protestants' property.

2. Analysis

The ALJ finds that the proposed discharge route is not a watercourse. While some maps have slight indications of an intermittent stream, most do not. On the map Ms. Lee used, she had to draw lines in blue to show what she thought was the tributary.[108] On the aerial map she used, no watercourse is evident.[109] The SWCA maps at Protestants Exhibit 1.9, pages DHJB-2166-2167 show large areas of "disturbance" that interrupt any evidence of a watercourse. Only a very small percentage of any OHWM are shown on those maps. In addition, large areas of swales are shown on the maps for Applicant's property. No bed and banks are visible in Applicant's 2012 photographs, and Applicant began making the channel in 2013.

The facts in this case are considerably different from those in in the *Hoefs* and *Domel* cases. *Hoefs* and *Domel* do not state that an applicant can construct a channel and characterize it as a watercourse for a particular purpose. In *Domel*, the court found that all the photographs depicted a channel with a well-defined bed and banks, and aerial photographs showed the tributary where it entered the Domel's property. The tributary was clearly visible as a continuous stream or river bed with defined boundaries meandering through the surrounding farmland. Unlike in the *Hoefs* case, the maps Mr. Graham identified do not show any tributary at all, so there is no long history of a watercourse. And, as the court stated in *Hoefs*, swales are generally not watercourses.

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[108] *See* ED Ex. 28.

[109] *See* ED Ex. 27.

Because of the very short distance from the outfall location of the Graham property, it is helpful to know what conditions are like as effluent enters that property. What witnesses interpreted from aerial photographs as a watercourse on Protestants' property is actually an old, man-made stormwater feature. A grassy swale is at the property line, and vegetation is growing there.

Given the conflicts in the maps and the photographs that depict no bed and banks features, the ALJ finds that Applicant has not met its burden of proof on this issue. Therefore, the discharge route is not properly characterized as a watercourse, and Applicant is not entitled to discharge effluent into it.

VIII. WHETHER THE PROPOSED PERMIT COMPLIES WITH SITING REGULATIONS IN 30 TAC CH. 309

Protestants make three arguments on this issue. First, they assert the site will not minimize possible contamination of groundwater based on requested effluent limits. Second, they argue Applicant has failed to demonstrate the effluent discharged will be adequately protective of the Edwards Aquifer and wells on Protestants' property. Third, because part of Applicant's property is on the Edwards Aquifer recharge zone and part is on the contributing zone, they argue any discharge is prohibited because the entire Johnson Ranch property should be considered as being in the Edwards Aquifer recharge zone.

Chapter 309 of TCEQ's rules addresses domestic wastewater effluent limitations and plant siting, including regulations on effluent limitations (Subchapter A), on location standards (*i.e.*, the siting regulations) (Subchapter C); and land disposal of sewage effluent (Subchapter C). Rule 30 TAC § 309.13(d) provides, in part, that a wastewater treatment facility surface impoundment may not be located in areas overlying the recharge zones of major or minor aquifers, unless certain requirements are met.[110]

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[110] 30 TAC § 309.13(d).

A. Will Effluent Contaminate Surface Water?

1. Protestants' Evidence and Argument

Testifying for Protestants, Dr. Ross stated the proposed permit conditions will not protect downstream water and adjacent property from adverse impacts because "[t]he proposed effluent discharge will provide significant nutrient loads into a channel that under ordinary flow conditions is naturally in a very low nutrient, oligotrophic state."[111] The nutrient concentrations allowed by the effluent limits in the Draft Permit are "significantly higher than those which would naturally occur in a channel downstream from the proposed discharge."[112] Dr. Ross said these higher concentrations will stimulate algae blooms in the downstream channel associated with increasing nutrient concentrations.[113]

As Dr. Ross explained, the nutrient loading would degrade the dissolved oxygen and create murky water,[114] stimulate microbial activity (*e.g.*, *Pfisteria*), which may be harmful to human health,[115] and produce anoxic dissolved oxygen concentrations during nighttime algae respiration.[116] Under resulting anoxic conditions, bacteria will reduce sulfate, producing black muck and a "rotten egg" odor associated with eutrophic water bodies.[117] Further, vegetation will impede access to the clean and open channel bottom[118] where decaying vegetation, decomposing algae, and anoxic dissolved oxygen concentrations may lead to unpleasant odors and migration of metal ions that would otherwise remain bound to sediments, she stated.[119]

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[111] Pr. Ex. 2 at 6:6-9. "Oligotrophic" means having a deficiency of plant nutrients that is usually accompanied by an abundance of dissolved oxygen. http://www.merriam-webster.com/dictionary/eutrophication (last visited March 4, 2015).

[112] Pr. Ex. 2 at 6:9-12; Pr. Ex. 2 at 7:20-22.

[113] Pr. Ex. 2 at 9:16-17.

[114] Pr. Ex. 2 at 12:1-3.

[115] Pr. Ex. 2 at 12:3-4.

[116] Pr. Ex. 2 at 12:5-6.

[117] Pr. Ex. 2 at 12:23-29.

[118] Pr. Ex. 2 at 12:6-7.

[119] Pr. Ex. 2 at 12:7-10.

Using thirty stream monitoring locations based on data maintained by the TCEQ, Dr. Ross determined that mean nitrate concentrations (as nitrogen) for Hill Country streams in the vicinity of the proposed discharge range from 0.02 to 0.95 milligrams per liter [mg/l].[120] She noted that the Environmental Protection Agency (EPA) recommends selecting the 75th percentile of measured concentrations for nutrient effluent limits as sufficiently protective.[121] Relying on this recommendation, Dr. Ross determined the 75th percentile value for 15,838 nitrate concentration measurements for samples from Cibolo Creek and surrounding Hill Country streams was 0.47 mg/l.[122] This value is significantly lower than the 2.0 mg/l ammonia-nitrogen allowed under the proposed effluent limits, Dr. Ross testified.[123]

According to Dr. Ross, virtually all of the ammonia-nitrogen in wastewater is oxidized to nitrate in the aerated activated sludge treatment process. Therefore, she concluded, the proposed discharge will contribute an amount of nitrate that will cause adverse impacts to the downstream channel.[124] Because the nitrate concentrations "would likely range from 10 to 30 milligrams per liter,"[125] she determined the effluent nitrate concentration would be 1,500 times greater than average nitrate concentrations measured in Texas Hill Country streams.[126]

Dr. Ross also analyzed TCEQ data for phosphorus concentrations in the same study area.[127] More than sixty percent of phosphorus measurements in the database for Texas Hill Country streams in the Edwards Aquifer drainage, recharge, and artesian zones were less than the detection limit.[128] The only values higher than 0.1 mg/l were for locations downstream of the

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[120] Pr. Ex. 2 at 7:24-8:2.

[121] Pr. Ex. 2 at 8:5-7.

[122] Pr. Ex. 2 at 8:8-11.

[123] Pr. Ex. 2 at 8:11-13.

[124] Pr. Ex. 2 at 8:13-15; 8:30-9:1.

[125] Pr. Ex. 2 at 9:2-7.

[126] Pr. Ex. 2 at 9:11-13-17.

[127] *See* Pr. Ex. 2.11.

[128] Pr. Ex. 2 at 10:19-21.

City of Boerne outfall location.[129] Yet, the total phosphorus effluent limit in the proposed permit is 0.5 mg/l. Dr. Ross concluded that limit would create higher than expected concentrations of phosphorus on the Graham-Hastings property by a factor of more than 10 and up to a factor of 100.[130]

Dr. Ross concluded that this nutrient loading will "include significant increases in the amount of vegetation, the occurrence of algae growth and blooms, and a loss of the very clear, high-quality water which would currently be present in the stream during times of flow."[131] She explained that several reasonable and prudent permit conditions—including a requirement for land application under certain circumstances, effluent limits on total nitrogen, and stricter effluent limits on total phosphorus—have been applied to similarly located wastewater discharges with respect to the Edwards Aquifer and areas where surface waters exhibit low-nutrient water quality. According to Dr. Ross, these terms, if incorporated into the proposed permit amendment, would provide "substantial protection to local groundwater and to the Edwards Aquifer."[132]

As an example of a more protective provision, Dr. Ross cited the TCEQ permit for Hays County Water Control and Improvement District No. 1 (Hays County).[133] That permit restricts total phosphorus to 0.15 mg/l as a daily average and 0.1 mg/l as a long-term average, which is significantly more restrictive than the 0.5 mg/l included in the Draft Permit prepared by the ED.[134] She said permit limits for phosphorus are commonly as low as 0.2 mg/l and advanced treatment wastewater plants are consistently producing effluent phosphorus concentrations lower than .005 mg/l.[135] The Hays County permit restricts nitrogen to 6.0 mg/l. It permits irrigation of

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[129] Pr. Ex. 2 at 10:22-26.

[130] Pr. Ex. 2 at 11:1-6.

[131] Pr. Ex. 2 at 11:14-18.

[132] Pr. Ex. 2 at 25:3-10.

[133] TPDES Permit No. WQ0014293001.

[134] App. Ex. 1.5.

[135] Pr. Ex. 2 at 21-22, citing "*Advanced Wastewater Treatment to Achieve Low Concentration of Phosphorus*," EPA 910-R-07-002, April 2007; Metcalf & Eddy/AECOM, *Wastewater Engineering, Treatment and Resource Recovery*, AECOM, McGraw Hill Education (2014) at 1160.

a number of acres with a beneficial reuse authorization.[136] The Hays County permit also requires ultraviolet light disinfection, rather that disinfection by chlorine, which is allowed by the Draft Permit at issue. Dr. Ross testified that disinfection with chlorine leaves chlorination by-products.[137]

In summary, Protestants argue, the evidence shows that effluent will reach the Graham-Hastings property, "nutrient-load" the creek, and pool on the property; this pooling will promote the growth of algae and other vegetation. The nutrient loading in the Graham-Hastings property would significantly change the trophic state of the dry creek. Given the absence of flow and the creek's naturally low nutrient state, it has a limited capacity to receive wastewater effluent.[138] A change in phosphorus concentrations at the level Applicant proposes would "signal a class change from oligotrophic [low-nutrient] to eutrophic [high-nutrient]."[139] Protestants argued that these nuisance impacts are prohibited by 30 TAC § 307.4.

2. Applicant's and ED's Evidence and Argument

In accordance with 30 TAC § 307.5 and the TCEQ implementation procedures for the TSWQS, the ED's staff performed a Tier 1 anti-degradation review that primarily determined the existing water quality uses will not be impaired by this permit.[140] Additionally, a Tier 2 review determined that no significant degradation of water quality is expected in Upper Cibolo Creek.[141] Thus, existing uses will be maintained and protected, the ED argued. The TCEQ's rules

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[136] Pr. Ex. 2 at 19:14-31.

[137] *Id.* at 11.

[138] Pr. Ex. 2 at 11:9-11.

[139] Pr. Ex. 2 at 11:11-14. Eutrophication is "the process by which a body of water becomes enriched in dissolved nutrients (as phosphates) that stimulate the growth of aquatic plant life usually resulting in the depletion of dissolved oxygen." http://www.merriam-webster.com/dictionary/eutrophication (last visited February 24, 2015).

[140] ED Ex. 24 at 682 (TCEQ Interoffice Memo from Standards Implementation Team to Municipal Permits Team, dated 1/11/13); see *also*, 30 TAC §307.5(b)(1).

[141] *Id.*

provide that "[d]issolved oxygen concentrations shall be sufficient to support existing, designated, and attainable aquatic life uses."[142]

Witnesses for Applicant and the ED testified a permit based on the application would ensure compliance with 30 TAC ch. 213 pertaining to the Edwards Aquifer[143] and the siting criteria regarding ~~buffers~~ buffer zones on adjacent properties and floodplains in 30 TAC ch. 309.[144] The ED acknowledged that Segment No. 1908 is currently listed on the state's inventory of impaired and threatened waters under the Clean Water Act due to elevated levels of bacteria.[145] However, Mr. Urbany testified that the facility would be designed to provide adequate disinfection by chlorination and the effluent should not add to the bacterial impairment. In all phases of the proposed permit, the effluent shall contain chlorine residual of at least 1.0 mg/l and not more than 4.0 mg/l after a detention time of at least 20 minutes based on peak flow.[146] Further, to ensure the proposed discharge meets the stream bacterial standard, the proposed permit includes an effluent limitation of 126 colony-forming units *E. coli* per 100 ml.

The ED has described the ditch to which Applicant's effluent would initially be discharged as an "unclassified receiving water," categorized as having "limited aquatic life use" in it. Downstream of the ditch, specifically in Segment No. 1908 of Cibolo Creek, the classification of the receiving water is "contact recreation, public water supply, aquifer protection, and high aquatic life use." The ED maintains that it included effluent limitations that would be adequate to maintain and protect those existing instream uses."[147]

As for the water quality and instream uses for Segment No. 1908 and the impact to the Edwards Aquifer, 30 TAC § 213.6(c)(1) provides that all new or increased discharges of treated

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[142] 30 TAC § 307.4(h)(1).

[143] Tr. 1 at 71 (Hill), 136; Tr. 3 at 22-23, 26, 21, 33, 40.

[144] Tr. 1 at 136:15-25 (Gregory).

[145] ED Ex. 4 at 68.

[146] Tr. 3 at 14-15; ED Ex. 7, "Statement of Basis/Technical Summary and ED's Preliminary Decision" at 80.

[147] ED Ex. 7, "Statement of Basis/Technical Summary and ED's Preliminary Decision"; 30 TAC § 213.6(c) (mandating a minimum effluent standard of 5-5-2-1).

wastewater into or adjacent to water in the state, other than industrial wastewater discharges, within 0 to 5 miles upstream from the Edwards Aquifer recharge zone, at a minimum, shall achieve a level of effluent treatment that produces no more than: (A) 5 mg/l of carbonaceous biochemical oxygen demand, based on a 30-day average; (B) 5 mg/l of total suspended solids, based on a 30-day average; (C) 2 mg/l of ammonia nitrogen, based on a 30-day average; and (D) 1.0 mg/l of phosphorus, based on a 30-day average.

The application includes a more stringent limit for phosphorus (*i.e.*, 0.5 mg/l). In Applicant's view, this will be more protective than the minimum standard mandated by the Chapter 213 rules. In 1996, when the Edwards Aquifer rules were adopted, commentators suggested that the effluent limits of 30 TAC § 213.6(c) should include a total phosphorus limit of 0.1 mg/l and a total nitrogen limit of less than 1.0 mg/l. However, the Commission concluded that those limits were not necessary.[148]

For Applicant, both Mr. Hill and Mr. Urrutia described personal observations of treated effluent from other wastewater treatment facilities with similar effluent limitations. In his testimony, Mr. Hill stated, "there is no odor from the treated effluent and it is extremely clear."[149] Similarly, Mr. Urrutia testified that such wastewater treatment produces a "high quality, odorless, colorless effluent that will not be harmful to plants, animals or people."[150]

For the ED, Mr. Urbany testified that the proposed permit contains specific effluent limits designed to address each of the aesthetic parameters in 30 TAC § 307.4.[151] Applicant proposes to use activated sludge, extended aeration, secondary clarification, alum injection, a filtration system, and chlorination. In Mr. Urbany's opinion, this treatment method is more advanced because alum injection further coagulates phosphorus and suspended solids.[152] He has visited

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[148] 21 Tex. Reg. 6562 (1996), *adopted* 21 Tex. Reg. 12125, 12160 (1996) (codified at 30 TAC §§ 213.1-213.14).

[149] App. Ex. 1.0 at 11:4-16.

[150] App. Ex. 5.0 at 8:19-21.

[151] ED Ex. 1 at 22:3-9 (Urbany); ED Ex. 3 at 33-35 (Effluent Limitation No. 4).

[152] ED Ex. 1 at 22:12-23.

permitted wastewater treatment facilities that use a similar treatment method where the resulting treated effluent is "clear water."[153]

From USGS maps, Applicant's and the ED's witnesses identified perennial pools in the ditch where effluent will flow.[154] Applicant's witness, Mr. Bratton, agreed that standing water and algae blooms "may occur" some of the time.[155] However, Applicant argued that the effluent limits in the Draft Permit standards were established to protect the higher standards applicable to Segment No. 1908, *i.e.*, contact recreation, high aquatic life use, public water supply, and aquifer protection.

ED witness Ms. Lee performed a nutrient screen on this application to determine whether a nutrient limit was necessary to maintain existing water quality.[156] The screening, ED Exhibit 25, included considerations of instream dilution, substrate type, depth, stream type, shading impoundments, water clarity, aquatic vegetation, whether the segment was impaired, and consistency with other permits.[157] She said the proposed permit with a limit of 0.5 mg/l for total phosphorus would not create nuisance conditions related to excessive nutrients.[158]

The ED argued that Ms. Lee's review conformed precisely to TCEQ's "Procedures to Implement the TSWQS" (Implementation Procedures), which are designed to protect water quality. The ED noted that Implementation Procedures regarding nutrient impacts focus on phosphorus instead of nitrogen[159] because nitrogen data is less readily available; phosphorus is a primary nutrient in freshwaters; although nitrogen can be limiting during parts of the year, nitrogen can be fixed from the atmosphere by most of the noxious forms of blue-green algae; and

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[153] ED Ex. 1 at 22:24-23:3.

[154] 30 TAC §§ 305.122(c) and (d); *see also* ED Ex. 3 at 45 (Proposed Permit, Permit Condition No. 8) and *see* Tr. 3 at 70-71.

[155] Tr. 1 at 199:14-20.

[156] ED Ex. 20 at 179:2-8.

[157] ED Ex. 20 at 179:11-14.

[158] ED Ex. 20 at 186:9-12, 5-24.

[159] ED Ex. 23 at 428.

available technology makes reducing phosphorus more effective as a means of limiting algal production.[160]

As for Protestants' evidence that eutrophication[161] might cause excessive algae growth, create an anoxic condition in the receiving water, and thereby produce odors, ED witness ~~Mark~~ Mr. Rudolph agreed that extremely low dissolved oxygen conditions can create conditions that produce odor.[162] However, Mr. Rudolph does not believe that the discharge in this case will create nuisance conditions with the levels of dissolved oxygen predicted.[163]

In reaching this opinion, Mr. Rudolph reviewed the QUAL-TX dissolved oxygen modeling results produced by another TCEQ water quality modeler.[164] The model predicted a minimum value of 4.34 mg/l for dissolved oxygen in the unnamed tributary, which is above the assigned dissolved oxygen criteria of 3.0 mg/l, and comfortably above a condition of complete oxygen depletion, Mr. Rudolph said.[165]

3. Analysis

The greater weight of evidence supports the effluent treatment levels in the Draft Permit. The levels used in the Hays County permit would have less environmental impact, but the Commission has considered these issues in rulemaking proceedings and through the Implementation Procedures and determined the levels Applicant proposes are sufficiently protective. It is true that effluent discharged pursuant to the permit would not match the quality of water currently in Hill Country streams, as Dr. Ross determined. But the ED's witnesses found that the effluent limits will not degrade water quality to an extent that public health and

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[160] *Id.* at 428-29.

[161] *See* 30 TAC § 307.4(h)(1), requiring dissolved oxygen concentrations to be sufficient to support existing, designated, presumed, and attainable aquatic life uses.

[162] ED Ex. 40 at 708:10.

[163] ED Ex. 40 at 708:15-17 (stating that "with dissolved oxygen levels in the receiving waters at levels predicted by the modeling, nuisance conditions related to low dissolved oxygen are not likely to occur.").

[164] *Id.* at 705:10-15.

[165] *Id.*

welfare are compromised. Ms. Lee and Mr. Rudolph determined the effluent levels with the lowered phosphorus limit would not create nuisance conditions. Based on their testimony and the standards in the Commission's rules, particularly the effluent levels in Chapter 213, the ALJ finds that Applicant has met its burden of proof on this issue.

B. Will Protestants' Wells and the Edwards Aquifer Be Affected?

1. Evidence and Argument

A permit applicant is required by rule to provide a buffer zone map.[166] A "wastewater treatment plant unit may not be located closer than . . . 250 feet from a private water well."[167] The maps in the application depict an existing private water well south of the proposed Johnson Ranch wastewater treatment plant, but Applicant has drawn a 250-foot radius around this private water well in order to demonstrate compliance with the rules.

Mr. Graham testified that all of the homes on the family property, except the original home, are currently rented,[168] and the water for these rented homes is supplied by wells on the property.[169] The Grahams are concerned "that the water wells will be contaminated by the wastewater treatment plant effluent."[170] On the new map shown in Protestants Exhibit 8, the north boundary, south boundary, and fence line of the plant are all closer to the existing water well than the maps in the permit application.[171] Protestants assert these changes have actually shifted the location of the proposed plant south, and units of the wastewater treatment plant will be less than 250 feet from a private water well,[172] thus making issues of water quality more pressing.

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[166] 30 TAC § 309.13(e).

[167] 30 TAC § 309.13(c).

[168] Pr. Ex. 1 at 8:6-8.

[169] Pr. Ex. 1 at 8:12.

[170] Pr. Ex. 1 at 8:12-14.

[171] *Compare* Pr. Ex. 8 *with* ED Ex. 30.

[172] Pr. Ex. 8; Tr. 3, 59:14-21 (admission of Protestants Exhibit 8).

Applicant and the ED asserted that the proposed facility meets the siting requirements of 30 TAC ch. 309. That chapter establishes siting criteria for new domestic wastewater treatment facilities[173] and includes general considerations related to site selection in 30 TAC § 309.12 and specific criteria for site characteristics in 30 TAC § 309.13 (related to "unsuitable site characteristics"). The unsuitable site characteristics rule includes specific setback and siting provisions for wastewater treatment plant units from wetlands, flood plains, public water wells, private water wells, surface impoundments over certain aquifers, and property lines (*i.e.*, buffer zones for nuisance odor abatement).

For the ED, Mr. Urbany testified that the application included all necessary information related to unsuitable site characteristics of 30 TAC ch. 309.[174] Under the rules, a wastewater treatment plant unit may not be located closer than 500 feet from a public water well or 250 feet from a private water well.[175] In his testimony, Mr. Urbany stated that the application contained information sufficient to show compliance with the rule.[176] He said Application Exhibits 4A and 4B appear to indicate the nearest existing private well is more than 250 feet from the nearest treatment unit.[177]

Mr. Rice described the wells of the Graham-Hastings property. The highly productive "Betty Dunn well" serves two houses and also is used to water cattle.[178] It is 180 feet deep and the depth to water when it was drilled was 115 feet.[179] According to the well report, the well penetrated "honeycomb" limestone between depths of 125 feet and 145 feet.[180] Mr. Rice said the

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[173] *See* 30 TAC §§ 309.10(a) and (b).

[174] *See generally* ED Ex. 1 at 24:25-27:1.

[175] 30 TAC § 309.13(c).

[176] ED Ex. 1 at 23: 8-20.

[177] ED Ex. 1 at 26:12-20; *see also* App. Ex. 1.2A at 52- and 4.6-4.7.

[178] Pr. Ex. 3 at 12:13-16, 20-21.

[179] Pr. Ex. 3 at 12:16-17.

[180] Pr. Ex. 3 at 12:18-19.

term "honeycomb limestone" means the geology is karstified.[181] The well is approximately 1,300 feet from the outfall location.[182]

The second well is about 500 feet southwest of the Betty Dunn well and approximately 900 feet from the dry creek, but it does not currently have a working pump.[183] The third well is about 1,200 feet southwest of the Betty Dunn well and 700 feet from the outfall location.[184] Although it is in good condition, it is not currently used.[185]

Mr. Rice said the three wells likely derive their water from the Upper Glen Rose formation, which is about 300 feet thick in this area.[186] The upper member of the Glen Rose has been subdivided into five intervals (A through E),[187] and the uppermost interval, A, is "often highly karstified, containing caves and other features that allow water to rapidly flow through it," Mr. Rice testified.[188] In 2004-2005, dye tracer tests conducted by the Edwards Aquifer Authority measured groundwater flow that ranged from 0.03 miles per day to a little over 3.0 miles per day.[189] Based on these tests and Mr. Rice's knowledge of groundwater hydrogeology, he concluded that as soon as the discharged effluent comes in contact with a karst feature, it can travel rapidly through the formation and into the aquifer system.[190]

Similarly, Dr. Ross reviewed available drilling logs for wells in the vicinity of the proposed site (*i.e.*, well logs in grid numbers 68-13-8 and 68-13-9).[191] The logs included numerous descriptions of karst features such as "caves," "cavities," "lost returns," "crevices,"

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[181] Pr. Ex. 3 at 12:19-20.

[182] Pr. Ex. 3 at 12:22-24.

[183] Pr. Ex. 3 at 12:25-28.

[184] Pr. Ex. 3 at 12:29-31.

[185] Pr. Ex. 3 at 12:30-31.

[186] Pr. Ex. 3 at 13:10-12.

[187] Pr. Ex. 3 at 5:12-13.

[188] Pr. Ex. 3 at 5:13-15.

[189] Pr. Ex. 3 at 5:23-29.

[190] Pr. Ex. 3 at 13:16-17.

[191] *See* Pr. Exs. 2.14-2.15.

and "honeycombs" within the top 200 feet below ground surface.[192] The presence of these features "indicates potential for wastewater effluent transmission through underlying karst Glen Rose limestone to local water wells completed in that formation," she testified.[193]

During Mr. Rice's site visit, he noted that the creek bed in which effluent would be discharged was composed of "cobbles, gravel, and coarse sand (alluvium)," and was quite permeable.[194] Many of the rocks in the creek bed are "honeycombed," *i.e.*, they have solution channels formed by water.[195] The presence of sand and gravel in the creek bed indicates that water will "readily infiltrate into the creek bed," he said.[196]

Applicant has argued that the alluvial cover on the property is impenetrable such that recharge is unlikely to occur,[197] but Mr. Rice said alluvium is generally quite permeable.[198] One map shows that Cibolo Creek and other streams that demonstrably recharge the Edwards Aquifer are mapped as alluvium.[199] As Mr. Rice explained, if alluvium were an impediment to recharge, water flowing along Cibolo Creek would not enter the underlying aquifer, and the streams crossing the Edwards Aquifer recharge zone would not be considered a major water source to the aquifer.[200] Instead, Cibolo Creek is a "losing" stream along many stretches, including downstream of the Johnson Ranch development, meaning that water is lost to seepage and infiltration into the underlying aquifer systems, Mr. Rice testified.[201] Furthermore, he opined that groundwater recharge and subsurface migration may occur even in areas where no surface recharge features are apparent.[202]

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[192] *Id.*

[193] Pr. Ex. 2 at 23:11-14.

[194] Pr. Ex. 3 at 11:20-22.

[195] Pr. Ex. 3 at 11:22-23.

[196] Pr. Ex. 3 at 12:1-2.

[197] *See, e.g.*, App. Ex. 4.2, 5.

[198] Pr. Ex. 3 at 10:8-10.

[199] Pr. Ex. 3.6.

[200] Pr. Ex. 3 at 10:12-16.

[201] Pr. Ex. 3 at 8:4-22.

[202] Pr. Ex. 3 at 9:10-12.

Mr. Rice admitted that the Commission's rules do not require wastewater to be treated to potable water standards, and he was not aware of any wastewater permits that require this level of effluent treatment.[203] But, based on the evidence, he recommended that the effluent should be treated to potable water standards to protect groundwater quality.[204]

Groundwater issues are particularly important in the area of the proposed plant because of its proximity to the Edwards Aquifer recharge zone. The proposed discharge point is less than 600 feet from the Edwards Aquifer recharge zone,[205] and the Johnson Ranch development and the Graham-Hastings property are located above the upper member of the Glen Rose Formation.[206] Mr. Rice testified that this upper member of the Glen Rose is part of the Trinity Aquifer.[207] The Trinity Aquifer system and the Edwards Aquifer system are hydrologically connected,[208] and groundwater in the Trinity Aquifer flows regionally coastward towards the Edwards Aquifer. If the Trinity Aquifer is contaminated—be it on the Graham-Hastings property or as the discharge flows along Cibolo Creek—this groundwater poses a risk of contaminating the Edwards Aquifer towards the southeast through interformational flows.[209]

Based on this evidence, Protestants argued that the discharged effluent poses a strong risk of infiltrating into the Upper Glen Rose formation and thereby impacting the wells on Protestants' property. As Dr. White testified for Applicant, water in the Trinity Aquifer system flows south and east, coastward towards the Edwards Aquifer system (although there are local exceptions depending on karst features).[210] The three wells on the Graham-Hastings property are situated south and east of the discharge route.[211] Therefore, Protestants conclude, effluent that

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[203] Tr. 2 at 194:13-23.

[204] Tr. 2 at 194:5-7.

[205] Tr. 2 at 173:6-18 (Dr. Ross, based on a GIS tool); ED Ex. 20, 26:17–20 (Ms. Lee stating that the proposed outfall is "approximately 565 stream feet from the Edwards Aquifer Recharge Zone").

[206] Pr. Ex. 3 at 7:1-2.

[207] Pr. Ex. 3 at 5:12-14.

[208] Tr. 1, 239:2-3 (White).

[209] Pr. Ex. 3 at 3:28-30.

[210] Tr. 1 at 237:25-238:1.

[211] *See* Pr. Ex. 3.9.

infiltrates beyond the root zone should migrate generally towards the wells. They argued the contamination of these water wells would substantially interfere with the use of their land in violation of the siting regulations at 30 TAC § 309.

Applicant relied on the testimony of Dr. White who conducted soil and groundwater assessments on the Johnson Ranch. He said the Glen Rose Aquifer characteristics are such that infiltration beyond the root zone would be minimal, and the ability to produce effluent that reached Upper Trinity Aquifer would be unlikely, given the distance of the wells from the Johnson Ranch discharge route.[212] Dr. White testified that the effluent would have to travel from the proposed discharge point down the unnamed tributary of Cibolo Creek, which is an intermittent stream, and thereafter, enter Cibolo Creek where it would be diluted then travel several miles further downstream to the location of the recharge feature. By the time any portion of the effluent reached the recharge feature on Cibolo Creek it would be significantly diluted and should have little or no discernable effect on the Aquifer.[213]

Rule 30 TAC § 309.12 conditions issuance of a permit on a finding that the site, when evaluated in light of the proposed design, construction or operational features, minimizes possible contamination of surface water and groundwater. In making this determination, the Commission may consider active geologic processes, groundwater conditions, soil conditions, and climatological conditions.

Because the proposed treatment plant is so near the Edwards Aquifer recharge zone, Protestants and OPIC conclude that Applicant and the ED should have considered the factors in 30 TAC § 309.12 in determining whether a permit should be granted. That rule, entitled "Site Selection to Protect Groundwater or Surface Water," prohibits the Commission from issuing a permit for a new facility "unless it finds that the proposed site, when evaluated in light of the proposed design, construction or operational features, minimizes possible contamination of

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[212] *See* App. Ex. 4.0 at 10:19-20.

[213] App. Ex. 5.0 at 10: 6-15.

surface water and groundwater."[214] Specific factors may be considered in making this determination, including "groundwater conditions such as groundwater flow rate, groundwater quality, length of flow path to points of discharge and aquifer recharge or discharge conditions," "soil conditions such as . . . hydraulic conductivity of strata," and "separation distance from the facility to the aquifer and points of discharge to surface water."[215]

When Mr. Urbany was asked if he had applied the factors in 30 TAC § 309.12 to his analysis, Mr. Urbany said "they do not appear to apply to the types of factors we consider in a TPDES discharge permit application."[216] Instead, he considers them for TLAP applications.[217] However, he agreed that nothing in the rule indicates that it should not be considered in all domestic wastewater effluent discharge applications.[218] Furthermore, when asked if there was a separate section in Chapter 309 that dealt with TLAPs, he acknowledged there is another section for that type of permit.[219]

The ED argued that the factors in 30 TAC § 309.13 are more stringent and cover all the issues required to determine the issues in § 309.12, thereby rendering the issue regarding a § 309.12 review moot in this case.

2. Analysis

The ALJ agrees that an applicant should present evidence of compliance with Rule 309.12. While Rule 309.13 lists various buffer distances that one could assume would be generally protective of groundwater, Rule 309.12 requires a more thorough analysis. However, the ALJ finds that Applicant met its burden of proving the effluent discharged from the outfall location will not harm the wells or Protestants' property or the Edward Aquifer. Dr. White

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[214] 30 TAC § 309.12 (emphasis added).

[215] 30 TAC § 309.12(2)-(3).

[216] Tr. 3 at 25:14-16.

[217] App. Ex. 5 at 22:13-17.

[218] Tr. 3 at 29:13.

[219] Tr. 3 at 29:17.

studied the soil and geology of the site. While Mr. Rice's opinion of the possibility for effluent migration was also well supported, the ALJ found evidence presented by Dr. White more convincing because the Edwards Aquifer recharge features are so far from the treatment plant.

In addition, the only well in use on Protestants' property is approximately 1,300 feet from the dry creek. This is significantly further than the distance presumed to be protective in Rule 309.13. Even accepting as true that the Upper Glen Rose is highly karstified, it seems unlikely that effluent will reach Protestants' producing well.

For these reasons, the ALJ finds that Applicant has met its demonstrating it would comply with 30 TAC §§ 309.12-.13.

C. Is Discharge Prohibited by Edwards Aquifer Rules?

1. Evidence and Argument

The parties agree that the Johnson Ranch land lies partially on the recharge zone and partially on the contributing zone of the Edwards Aquifer.[220] Ms. Lee testified that the recharge zone begins 565 feet from the outfall location.[221] Dr. White agreed the recharge zone begins on the southern tip of Applicant's property.[222] But he determined that the nearest Edwards Aquifer recharge feature is approximately 5 or 6 river miles downstream on Cibolo Creek to the east. Dr. White testified that before any portion of the effluent reached the recharge feature on Cibolo Creek, it would be significantly diluted and in most likelihood have little or no discernable effect on the aquifer.[223]

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[220] Tr. 1 at 34:15-18 (Hill); Tr. 1 at 233:4 (White); Pr. Ex. 2 at 24:9-13 (Ross). Tr. 3 at 71:22-72:3 (Lee's testimony that the recharge zone is 565 feet from this location).

[221] Tr. 3 at 71:22-72:3.

[222] Tr. 1 at 244:21.

[223] App. Ex. 4.0 at 10:4-15.

Subchapter A of 30 TAC ch. 213, the Edwards Aquifer rules, addresses regulated activities on the recharge zone, defined as "that area designated as such on official maps located in the agency's central office and in the appropriate regional office."[224] New municipal wastewater discharges "into or adjacent to water in the state that would create additional pollutant loading are prohibited on the recharge zone."[225]

Subchapter B applies to "regulated activities" on the aquifer's contributing zone, which includes all remaining areas within Comal County that are not mapped as being in the recharge zone.[226] The subchapter defines "site" to include "[t]he entire area within the legal boundaries of the property described in the application."[227] "Regulated activity" is defined as "any construction-related or post-construction activity on the recharge zone having the potential for polluting the Edwards Aquifer and hydrologically connected surface streams." This includes construction of buildings; clearing, excavating, or any activities that alter or disturb the topographic, geologic, or existing recharge characteristics of a site; and installing aboveground or underground storage tank facilities.[228]

In Protestants' view, these definitions indicate that regulated activities on a site located partially on the recharge zone and partially on the contributing zone must be treated as if the entire site is located on the recharge zone on which pollutants may not be discharged.

Based on this evidence and the definition of "site," Protestants contend that regulated activities on the site "must be treated as if the entire site is located on the recharge zone, subject to the requirements under Subchapter A."[229]

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[224] 30 TAC § 213.3(27).

[225] 30 TAC §§ 213.6(a)(1), 213.8(a)(4), (6) (emphasis added).

[226] 30 TAC § 213.22(2)(B).

[227] 30 TAC § 213.22(7).

[228] 30 TAC § 213.3(28)(A).

[229] 30 TAC § 213.212(7).

At the hearing, Dr. Ross testified that she interprets these rules to require that when a site spans both the recharge zone and the contributing zone, the site owner must operate under the requirements of Subchapter A, including all the requirements for a Water Pollution Abatement Plan (WPAP).[230] On the other hand, Applicant pointed out that the only legal boundary of the property described in the application is the treatment plant site itself, "0.7 miles north of Farm-to-Market Road 1863 and 0.5 miles east of US Highway 281."[231] Thus, Applicant implied that none of the area under consideration is on the recharge zone.

Nevertheless, Applicant applied for a WPAP, which was approved by letter dated October 24, 2007.[232] TCEQ approved a modification of this WPAP and, therefore, approved a modification to the approved Edwards Aquifer Protection Plan (EAPP), by letter dated October 10, 2012.[233] The approval letter for the EAPP states the site is 751.3 acres of land, which is equal to the 767.32 acres described in an attached exhibit, except for 16.05 acres of land that was deeded to Comal Independent School District in 2007.[234] Mr. Hill testified that the EAPP for the development covers the entire Johnson Ranch (less the deeded school site).[235]

Applicant and the ED argue that only the area used for "regulated activities" is to be considered when determining whether the site is located on the recharge zone. The only regulated activity in this case is the wastewater treatment plant. Therefore, they argued, the site includes only the wastewater treatment plant and outfall location. To the extent that groundwater may be impacted by the treated effluent itself, compliance with the Edwards Aquifer rules is adequate, the ED argued.

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[230] Tr. 2 at 176:17-177:23.

[231] App. Ex. 1.2 at 14.

[232] Pr. Ex. 5 at 4.

[233] Pr. Ex. 5 at 4-8.

[234] Pr. Ex. 5 at 3, 9.

[235] Tr. 1 at 33:24-34:8.

2. Analysis

The ALJ agrees with Applicant and the ED. While the definitions in the Edwards Aquifer rules in Chapter 213 appear to include the entire site and prohibit any discharge on Applicant's property, they can as easily be read to refer to the site as the portion of the property where the wastewater treatment plant will be located. This is the most reasonable interpretation of the rules, particularly in light of Dr. White's testimony about the distance to a recharge feature. Also, given the large number of acres on Johnson Ranch and the relatively small area the plant would occupy, it appears more reasonable that the regulated activity at issue is what will be occurring at the treatment plant, not the residential development area. Therefore, the ALJ finds that Applicant is not prohibited by the Chapter 213 rules from discharging treated effluent on its property.

IX. WHETHER THE TREATED EFFLUENT WILL ADVERSELY IMPACT CATTLE THAT CURRENTLY GRAZE IN THE AREA

The Texas Water Code provides that "[i]t is the policy of this state . . . to maintain the quality of water in the state consistent with the public health and enjoyment, the propagation and protection of terrestrial and aquatic life . . ."[236] The Commission does not have specific water quality effluent limitations for water consumed by livestock. However, the TSWQS provide that water in the state must be maintained to preclude adverse toxic effects on aquatic life, terrestrial life, livestock, or domestic animals, resulting from contact, consumption of aquatic organisms, consumption of water, or any combination of the three.[237]

A. Evidence and Argument

OPIC, Applicant, and the ED agreed that the facility would produce high quality effluent that would not interfere with Protestants' use and enjoyment of their land or create any nuisance conditions downstream.

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[236] Tex. Water Code § 26.003.

[237] 30 TAC § 307.1.

The Grahams, Ms. Hastings, and Mr. Dunn currently lease their land to a rancher, and approximately twenty head of cattle are ranched on the property.[238] Protestants argue that issuance of the wastewater permit will have adverse impacts to the cattle that graze on the property. They contend the cattle will be adversely impacted by the high nitrogen content, presence of bacteria, and growth of algae that will result from the discharged effluent. As a result of these direct adverse impacts, there will be indirect impacts to the management of the cattle and to the business viability of maintaining a cattle ranch.

Mr. Graham has been associated with raising livestock for nearly his entire life. The Grahams own a separate ranch where they have raised cattle for approximately 14 years.[239] They also worked cattle at the Graham-Hastings property for a few years in the 1990s.[240] The Grahams come from long ranching traditions dating back several generations and have extensive knowledge both about livestock ranching generally and livestock behavior at this property, in particular.[241]

Mr. Graham testified that the flow of discharged effluent will become a new and easily accessible source of water for the cattle to drink.[242] The dry "creek" is the only source of shade in the pasture, and, in the hot summer sun, cattle seek shade along the proposed discharge route.[243] In the winter, they shelter there to harbor themselves from cold winds.[244] Cattle will drink water that is available to them, regardless of its source, he said.[245]

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[238] Pr. Ex. 1 at 33:29-31.

[239] Pr. Ex. 1 at 33:26-27.

[240] Pr. Ex. 1 at 33:14-16.

[241] *See* Pr. Ex. 1 at 33:14-27.

[242] Pr. Ex. 1 at 36:7-9.

[243] Pr. Ex. 1 at 36:13-14.

[244] Pr. Ex. 1 at 36:14-15.

[245] Pr. Ex. 1 at 34:28.

Undiluted discharged effluent is not a high quality source of water for cattle, Mr. Graham stated.[246] Drinking effluent with any regularity will impact the cattle's health and growth.[247] Protestant Exhibit 1.40, a Texas Agricultural Extension Service bulletin entitled, "Water Quality: Its Relationship to Livestock," states that "[s]afe supplies of water are absolutely essential for livestock" because if livestock do not drink enough safe water, "intake of feed . . . will drop" and the livestock "may have health problems resulting from substandard quality water."[248] The bulletin identifies the most common water quality problems affecting livestock production as high nitrogen content (nitrates, nitrites), bacterial contamination, and heavy growth of blue-green algae.[249]

As Dr. Ross testified, the proposed discharged effluent will have a nitrate concentration range of 10 to 30 mg/l, which is 10 to 1,500 times greater than natural nitrate concentrations in Texas Hill Country streams.[250] These nitrate concentrations, along with the phosphorus in the discharge, will stimulate algae blooms.[251] Dr. Ross also testified that excessive nutrients can stimulate harmful microbial activity.[252] The effluent limitations also allow single grabs of the bacteria *E. coli* of up to 399 colony-forming units and a daily average of 126 colony-forming units.[253]

In addition to these health impacts, Mr. Graham said the discharge will adversely impact the cattle in other ways. First, if the cattle drink discharged effluent, this will limit their drinking from the troughs at the property where the rancher places mineral supplements next to the troughs. Clean, high-quality water and mineral supplements "promote healthy growth and good

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[246] Pr. Ex. 1 at 36:21-24.

[247] Pr. Ex. 1 at 36:22.

[248] Pr. Ex. 1.40 at 1.

[249] *Id.*

[250] Pr. Ex. 2 at 9:11-13.

[251] Pr. Ex. 2 at 9:16-17.

[252] Pr. Ex. 2 at 11:3-4.

[253] ED Ex. 3 at 2-2b (Draft Permit).

weight gain for the cattle."[254] Second, if the dry creek is wet all or much more of the time, cattle will "likely contract hoof rot," a condition that causes "sores in the hoof area and makes it very painful for cattle to walk."[255]

Some of Applicant's witnesses stated that the effluent was "Type 1 effluent," suggesting that the effluent was safe for animal consumption.[256] But, as Mr. Urbany testified, the Type I effluent limitations are for reuse water,[257] and he confirmed that the Type I effluent limits are more stringent than the limits proposed in the Draft Permit.[258] More specifically, wastewater treated to Type I effluent standards has a more stringent turbidity requirement, the *E. coli* limit is lower, there is an *enterococci* standard, and there are additional limits on how reuse water can be used.[259] Type I effluent standards are designed to protect for certain uses, including irrigation of food crops and pastures for milking animals.[260]

Mr. Gregory testified that the effluent limitations would be protective of the environment, aquatic life, contact recreation, and human health.[261] However, he later stated that he did not review any documents to reach his conclusion about cattle, was not aware of any studies relating to impacts to cattle from drinking effluent water, and did not rely on agricultural documents to inform his ranching of cattle.[262] Mr. Bratton stated that he has no formal training as it relates to cows or agriculture.[263] Mr. Urrutia, who also rendered an opinion about impacts to cattle, stated that he has no experience with cattle and wastewater.[264]

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[254] Pr. Ex. 1 at 34:28-35:1.

[255] Pr. Ex. 1 at 36:15-18.

[256] App. Ex. 1.0 at 14:10-12 (Mr. Hill stating that the plant will "produce what is called Type I Effluent"); App. Ex. 5.0 at 9:17-19 (Mr. Urrutia testifying that the permit conditions "will produce a Type I effluent which is safe for human and animal contact, as well as irrigation of grasses and plants anticipated to be ingested").

[257] Tr. 3 at 14:7-12.

[258] Tr. 3 at 14:13-18.

[259] Tr. 3 at 14:19-16:20.

[260] 30 TAC § 210.32(1).

[261] Tr. 1 at 121:6-123:20.

[262] Tr. 1 at 131:18-32:10.

[263] Tr. 1 at 168:13-14.

[264] Tr. 2 at 42:1.

As for Mr. Graham's concerns that the cattle might drink from the creek containing the effluent and be harmed by the content of the effluent, Applicant noted that Mr. Graham provides water for the cattle in troughs that are up gradient from the dry creek. Mr. Graham acknowledged that cattle and wildlife waste could also contaminate the creek, regardless of the presence of effluent.

Mr. Graham testified that the adverse impacts to cattle will make it "much less viable, if not impossible to run cattle on the property."[265] The rancher who currently leases the land may decide to terminate the lease due to the presence of the wastewater effluent, and it will be more difficult, if not impossible, to lease the land to other ranchers.[266] Mr. Graham testified that he does not want to become a "test case" for what happens when cattle drink undiluted wastewater treatment plant effluent.[267]

The ED argued that the Draft Permit does not allow for the discharge of high levels of toxic constituents. As a preventative measure, Applicant must comply with all testing and monitoring requirements of the proposed permit to ensure that high levels of bacteria and toxic constituents are within the effluent limitations of the permit.[268] In addition, the chlorination of the treated effluent is required to provide adequate disinfection and reduce pathogenic organisms.[269]

B. Analysis

The ALJ finds that Applicant did not meet its burden of proof on this issue. Effluent will travel only a very short distance before pouring out of a concrete culvert onto the Graham property in a greasy swale where cattle graze. But for effluent discharged on Protestants'

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[265] Pr. Ex. 1 at 37:8-9.

[266] Pr. Ex. 1 at 37:9-12.

[267] Pr. Ex. 1 at 37:13-15.

[268] ED Ex. 3 at 33-35; 30 TAC §§319.1-319.11; *see also*, Pr. Ex. 1.40.

[269] 30 TAC §309.3(g).

property, the cattle would have access to water only in troughs provided by the rancher. No witness testified that the effluent will be the same quality as what the cattle consume at the troughs provided by the rancher.

While the effluent limits have been set for receiving waters classified as "contact recreation, public water supply, aquifer protection, and high aquatic life use," no one testified that animals could consume it directly, as it will be provided to them. On the contrary, the evidence indicates that cattle need clean water. Given that the effluent is not Type I, there is no evidence that the limits in the Draft Permit will be adequately protective of the cattle. Granted, the TSWQS were promulgated with the idea of protecting livestock. However, having water flow over some distance where water from other sources may be mixed with effluent and the concentrations of pollutants become diffused is a very different matter than having effluent almost directly poured into an area where cattle routinely graze. For these reasons, the ALJ finds that Applicant failed to demonstrate that the discharge of effluent on Protestants' property will not adversely impact the cattle.

X. ASSESSMENT OF TRANSCRIPTION COSTS

Although not among the four issues referred to SOAH by the Commission in its Interim Order, the costs of the two court reporters and the transcript must be allocated. In compliance with the ALJ's order, Applicant arranged for the attendance of a court reporter and instructed the court reporters to prepare the original and copies of the transcript for delivery to the ALJ and TCEQ Chief Clerk.[270] Applicant advanced total costs of $4,931.40 for those services. Protestants paid for their own copy of the transcript at a cost of $1,000.

Pursuant to 30 TAC § 80.23(d)(1), factors to be considered in assessing 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

[270] Two court reporters prepared the transcript. The first court reporter prepared Volumes I and II but did not provide a copy to the ALJ. The ALJ's assistant contacted Mr. McCarthy, and he forwarded a copy of the transcript to her for the ALJ's use. The second court reporter did provide a copy of Volume III to the ALJ.

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.

Section 80.23(d)(2) prohibits 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. Therefore, no costs should be assessed against the ED or OPIC.

Applicant, its aligned party Johnson Ranch, and Protestants were represented by counsel and retained expert witnesses, and this is some evidence that all parties have some financial ability to pay these costs. Protestants and Applicant participated equally in the proceedings.

Applicant recommended that the Commission assess seventy-five percent of the costs against the party that prevails and twenty-five percent of the costs against the other party. In the alternative, Applicant recommended that the costs be allocated equally among the aligned groups of Protestants and Applicant/Johnson Ranch. Johnson Ranch is a municipal utility district, a governmental entity with limited resources.

Protestants noted that Applicant is a residential development company while Protestants are landowners (and, in the case of the Greater Edwards Aquifer Alliance, a 501(c)(3) nonprofit corporation) without the apparent resources that Applicant has. They asked that costs be assessed against Applicant, or in the alternative that Protestants be required to pay no more than the $1,000 they have already paid.

Protestants also argued that Applicant had the burden of proof and would benefit the most from having the ability to cite to the transcript. A favorable ruling for Protestants on the application will mean that Protestants may return to life without the discharge requested. Applicant, on the other hand, would gain a significant financial benefit by having a permit to operate its facility if the permit is granted.

The ALJ finds that Protestants' payment of these costs should be limited to the $1,000 already paid. The most convincing reason for Applicant to pay the remainder of the costs is the potential benefit to Applicant if the application is granted. But for the application, Protestants would not have had to expend any resources, including hiring attorneys and paying for expert witnesses. Therefore, it is a more equitable resolution of this issue for Applicant to pay for the court reporter and transcripts, except for the copy that Protestants purchased

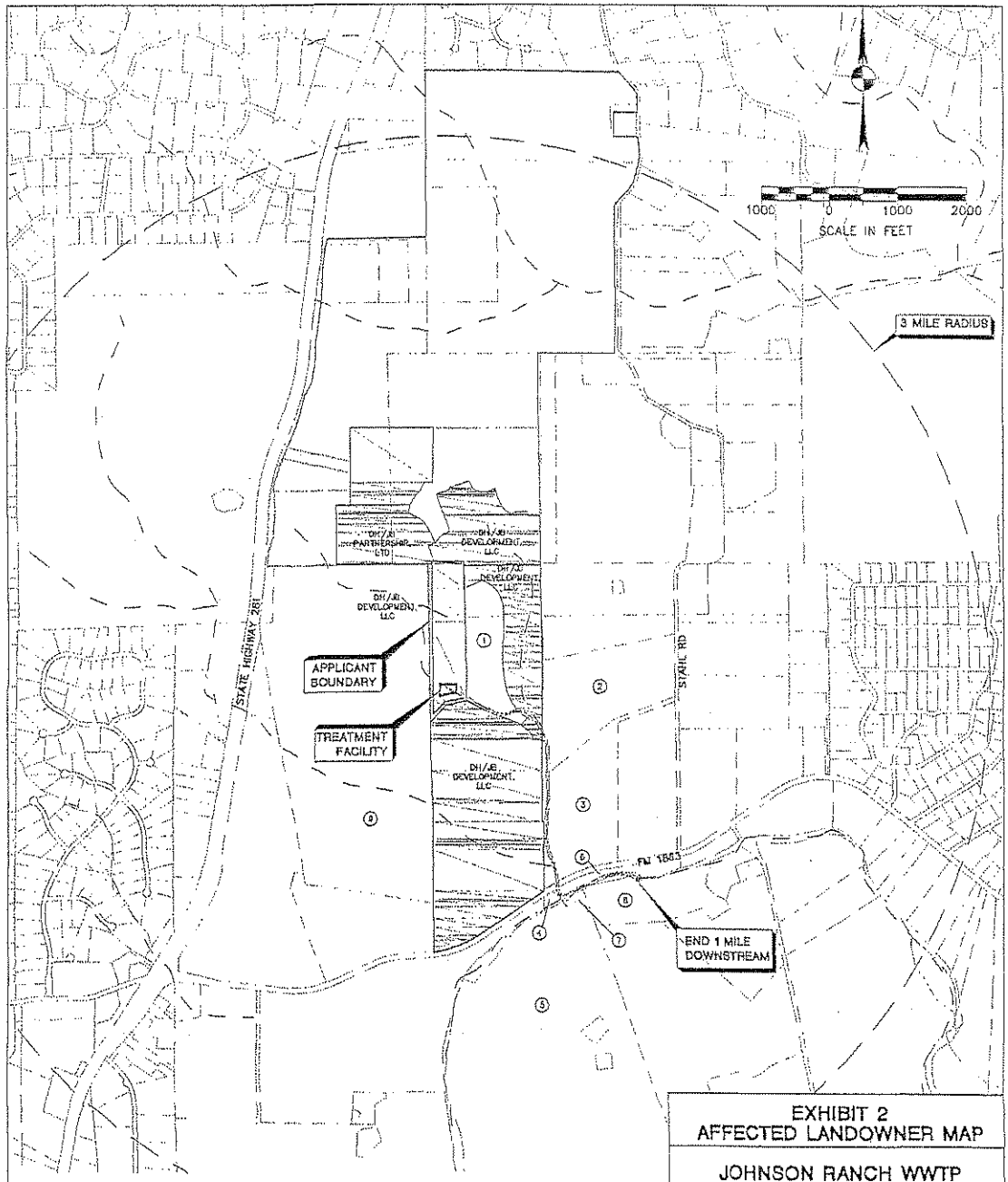
XI. CONCLUSION

The ALJ finds that the proposed permit complies with applicable statutory and regulatory requirements pertaining to TCEQ's Siting Regulations in 30 TAC ch. 309. However, the proposed permit would adversely impact Protestants' use and enjoyment of their property and may adversely affect the cattle that graze there. In addition, Applicant's proposed discharge route was not properly characterized as a watercourse. Therefore, the permit should be denied.

SIGNED March 9, 2015.

SARAH G. RAMOS
ADMINISTRATIVE LAW JUDGE
STATE OFFICE OF ADMINISTRATIVE HEARINGS

Appendix A



	Property ID	Owner Name	Mailing Address	Geo-ID	Acreage
1	75075	Clyde Johnson and Sons Herford Ranch LTD.	420 Baltimore Ave, San Antonio, TX 78215-1944	740174002500	85.11
2	75118	Patricia Lox Graham	102 Alma Ln, Rockport, TX 78382-8004	740174006307	52.45
3	75111	Margie Hastings	PO BOX 34601, San Antonio, TX 78265-4601	740174005300	49.46
4	268305	Beverly Maynard	3781 FM 1863 #1, Bulverde, TX 78163-4302	04874-000-0013	210.33
5	75116	Beverly Maynard	3780 FM 1863 #1, Bulverde, TX 78163-4302	740174005305	1.17
6	75115	Geosource Inc.	29768 Bulverde Ln, Bulverde, TX 78163-2015	740174005304	5.25
7	268306	Geosource Inc.	29769 Bulverde Ln, Bulverde, TX 78163-2015	04874-000-0014	1.17
8	268307	Geosource Inc.	29769 Bulverde Ln, Bulverde, TX 78163-2015	04874-000-0160	26.00
9	75059	Juan Joaquin Kibler Halme	31310 US highway 281 N, Bulverde, TX 78163-3100	740174001400	238.03

EXHIBIT 2
AFFECTED LANDOWNER MAP

JOHNSON RANCH WWTP

DH/JB DEVELOPMENT, INC.

Bury+Partners

221 East Sixth Street, Suite 600
Austin, Texas 78701
Tel. (512)328-0011 Fax (512)328-0325
TBPE Registration Number F-1046
Bury+Partners, Inc. ©Copyright 2012

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

ORDER CONCERNING THE APPLICATION BY DHJB DEVELOPMENT, LLC FOR AN AMENDMENT TO TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM (TPDES) PERMIT NO. WQ0014975001

On _____, the Texas Commission on Environmental Quality (TCEQ or Commission) considered the application of DHJB Development, LLC (DHJB or Applicant) for a permit to discharge treated wastewater effluent in Comal County, Texas. Sarah G. Ramos, Administrative Law Judge (ALJ) with the State Office of Administrative Hearings (SOAH), presented a Proposal for Decision (PFD).

The following are parties to the proceeding: Applicant; Johnson Ranch Municipal Utility District (Johnson Ranch MUD); Patricia Graham, Terrell Graham, Margie Hastings, Asa Dunn, and the Greater Edwards Aquifer Alliance (Protestants); the Executive Director (ED); and the Office of Public Interest Counsel (OPIC).

After considering the PFD, the Commission makes the following Findings of Fact and Conclusions of Law.

I. FINDINGS OF FACT

Procedural History

1. On August 20, 2012, Applicant applied to TCEQ to amend its Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0014975001.

2. TCEQ's ED received the permit application on September 24, 2012, and declared it administratively complete on November 7, 2012.

3. The Notice of Receipt of Application and Intent to Obtain a Water Quality Permit (NORI) was published on November 21, 2012 in the *New Braunfels Herald-Zeitung.*

4. The application was declared technically complete on May 2, 2013.

5. The Notice of Application and Preliminary Decision (NAPD) was published on May 17, 2013 in the *New Braunfels Herald-Zeitung.*

6. The combined Spanish language NORI/NAPD was published in the *La Voz* newspaper on August 30, 2013.

7. The public comment period ended on September 30, 2013, T

8. The ED's Final Decision Letter and Response to Comments was mailed on November 21, 2013.

9. The hearing request period ended on December 23, 2013.

10. Patricia Graham timely requested a hearing.

11. By Interim Order dated April 21, 2014, TCEQ referred the application to SOAH to consider four issues:

    - Whether the proposed permit will adversely impact use and enjoyment of adjacent and downstream property or create nuisance conditions;
    - Whether the discharge route has been properly characterized;
    - Whether the proposed permit complies with TCEQ siting regulations found in 30 Texas Administrative Code (TAC) Chapter 309; and
    - Whether the treated effluent will adversely impact the cattle that currently graze in the area.

12. TCEQ's Chief Clerk certified that the Notice of Hearing was mailed on June 26, 2014 to the individuals on the mailing list maintained by the Chief Clerk for this matter.

13. The notice stated the time, date, and place of the hearing; the legal authority and jurisdiction under which the hearing was to be held; the particular sections of the statutes and rules involved; and the matters asserted.

14. The Notice of Hearing was published in the *New Braunfels Herald-Zeitung* on July 1, 2014.

15. At the preliminary hearing held on August 19, 2014, Terrell Graham, Patricia Graham, Margie Hastings, Asa Dunn, and the Greater Edwards Aquifer Alliance requested and were granted party status opposing the permit; Johnson Ranch MUD was granted party status and was aligned with DHJB.

16. Ms. Graham, Ms. Hastings, and Mr. Dunn own property that is adjacent on the east or downstream of the proposed discharge route where effluent would flow.

17. The Greater Edwards Aquifer Alliance is a 501(c)(3) nonprofit corporation.

18. The hearing on the merits, held at the SOAH offices at the William Clements Building, 300 West 15th Street, Austin, Texas 78701, began November 17, 2014, and concluded November 19, 2014.

Requested Permit

19. Applicant applied to TCEQ for a major amendment to its Permit No. WQ0014975001 to authorize an increase in the discharge of treated domestic wastewater from a daily average flow not to exceed 75,000 gallons per day to a daily average flow not to exceed 350,000 gallons per day (GPD).

20. The major amendment would convert the existing permit from authorizing Applicant to dispose of treated effluent via subsurface drip irrigation under a Texas Land Application Permit (TLAP) to authorizing Applicant to dispose of treated effluent via discharge into water in the state via a TPDES permit.

21. The TLAP permit authorizes the disposal of treated domestic wastewater via a public access subsurface drip irrigation system with a minimum area of 750,000 square feet.

22. This permit amendment would not continue the authorization for Applicant to use a subsurface drip irrigation system.

23. Applicant currently collects wastewater at its wastewater treatment plant site and has the same hauled off-site by an authorized "pump and haul" operator for disposal of wastewater.

24. An amended permit would authorize a wastewater discharge from a treatment plant that will be an activated sludge process plant operated with extended aeration.

25. The wastewater treatment facility is located approximately 0.7 mile north of Farm-to-Market Road 1863 and 0.5 mile east of U.S. Highway 281 in Comal County, Texas 78163.

26. Applicant intends for the plant to serve residential customers at a residential subdivision being developed by Applicant.

27. The parties referred to the proposed subdivision as Johnson Ranch.

28. Applicant proposes to discharge the treated effluent at an outfall on Applicant's property into what Applicant described as an unnamed tributary of Cibolo Creek and what was sometimes referred to as Tributary 21.

29. Johnson Ranch overlies the Edwards Aquifer contributing zone, except for the southern 50 acres which overlie the Edwards Aquifer recharge zone.

30. Outfall from the proposed water treatment plant site would be over the Edwards Aquifer contributing zone.

31. The distance from the discharge point to the boundary of the mapped Edwards Aquifer recharge zone is less than 565 feet.

32. A portion of the discharge route on the Johnson Ranch is in the Edwards Aquifer recharge zone.

33. The entire portion of the discharge route on the Graham-Hastings-Dunn properties is in the Edwards Aquifer recharge zone.

Impact on Protestants' Property

34. The distance from the discharge point to the Graham-Hastings property is approximately 1,900 feet (about 0.4 miles).

35. The distance from the discharge point to Cibolo Creek is approximately 0.8 miles.

36. If the effluent is discharged at the rate of 350,000 GPD, the effluent will reach the Graham-Hastings property.

37. Discharged effluent from the proposed facility will moisten or saturate soils on Protestants' property.

38. The moistened soils will inhibit vegetative growth on Protestants' property.

39. The flow of effluent will increase the potential for exposed soils to erode.

40. Applicant has concretized a channel it plans to use for the discharge of effluent, and the channel is aimed directly at and very near to Ms. Graham's property line.

41. Erosion on the Graham-Hastings property will impact the Grahams use and enjoyment of the property.

42. Erosion on the Graham-Hastings property will cause the loss of pastureland used for cattle grazing.

43. The proposed permit amendment will diminish Protestants' opportunities to walk along their property and to eat the wild fruits that grow there.

44. Access by the Grahams and Ms. Hastings to their western property line to tend to fence repairs and other property management issues will be made more difficult because of the presence of discharged effluent.

45. The proposed permit amendment will impair the Protestants' access to and enjoyment of the western portion of the property.

Buffer Zones

46. Applicant's wastewater treatment plant site and all wastewater treatment plant units are more than 150 feet from the nearest property line.

47. The wastewater treatment plant unit is protected from inundation and damage during a flood event.

48. The wastewater treatment plan unit is not located in wetlands.

49. The wastewater treatment plant unit is not located within 500 feet of any public water supply well.

50. The wastewater treatment plant unit is not located within 250 feet of any private water well.

Effluent Limits

51. The proposed discharge outfall is within 0 and 5 miles of the Edwards Aquifer recharge zone. Accordingly, the effluent limits of 30 TAC § 213.6(c)(1) apply.

52. The proposed effluent limits for any permit based on a 30-day average would be: 5 milligrams per liter (mg/l) 5-day carbonaceous biochemical oxygen demand (CBOD5), 5 mg/l total suspended solids (TSS), 2 mg/l ammonia nitrogen (NH3-N), 0.5 mg/l total phosphorus, 126 *E. coli* colony forming units (CFU) or most probable number per 100 ml, and 4.0 mg/l minimum dissolved oxygen.

53. The effluent must contain a chlorine residual of at least 1.0 mg/l, and not more than 4.0 mg/l, after a detention time of at least 20 minutes based on peak flow.

54. The pH limit in the permit is 6-9.

55. The proposed limit for total phosphorus is more stringent than the standard TPDES permit effluent limits for domestic wastewater treatment plants in both Segment No. 1908 of the Upper Cibolo Creek and on the contributing zone of the Edwards Aquifer, which is where the plant will be located.

Surface Water Quality Standards

56. Pursuant to the Texas Surface Water Quality Standards (TSWQS), the specified uses for any unassigned tributary of Cibolo Creek (Segment 1908) include contact recreation, high aquatic life use, public drinking water supply, and aquifer protection.

57. To protect and maintain a stream's high aquatic life use, TCEQ evaluates a discharge's effect on the dissolved oxygen in the receiving stream.

58. The dissolved oxygen criterion for the unnamed tributary of Cibolo Creek is 5.0 mg/l.

59. The proposed effluent limits of 5.0 mg/l CBOD5, 2.0 mg/l NH3-N, and 4.0 mg/l minimum dissolved oxygen are adequate to ensure that the dissolved oxygen level in the receiving stream will be maintained above the 5.0 mg/l criterion and, therefore, the high aquatic life use will be maintained and protected.

60. The proposed discharge will not violate the dissolved oxygen standards for a tributary of Cibolo Creek.

61. Compliance with the recreational use standard is evaluated solely through application of the bacteria standard.

62. For freshwater, the geometric mean of *E. coli* should not exceed 126 CFUs per 100 milliliters of water, which is the same as the specific numeric criteria for unnamed tributaries of Cibolo Creek.

63. For stream segments that are classified as a public water supply, TCEQ evaluates the discharge to ensure that it will not prevent a public water supplier from treating the surface water through conventional treatment methods to drinking water standards and evaluates the presence of toxic materials.

64. The TSWQS establish numeric criteria for toxic materials, and those criteria apply regardless of whether they are in the permit.

65. Applicant's proposed discharge does not require inclusion of specific effluent limits on toxic materials because its proposed permitted average flow would be less than one million gallons per day (MGD), it will not have an approved pretreatment program, it is not an industrial facility, and it will serve residential customers, and it will not likely have any industrial facilities discharging into the proposed plant.

66. Applicant must provide notice to the ED if there is a substantial change in the volume or character of the wastewater, including the introduction of toxic materials by an industrial user of Applicant's plant.

67. The proposed discharge meets the TSWQS and the Edwards Aquifer rules necessary to maintain the public water supply use and the toxic pollutant numeric criteria, and provide for aquifer protection.

68. All TPDES permits must be reviewed for compliance with the TSQWS antidegradation policy.

69. Tier 1 of an antidegradation review confirms that the effluent quality is consistent with the designated uses of the receiving stream segment and that no in-stream surface water quality standards (either numeric or narrative) will be exceeded.

70. A Tier 2 review is conducted on waterbodies with intermediate, high, or exceptional aquatic life uses to ensure that the water quality will not be diminished.

71. A Tier 1 and Tier 2 antidegradation review found that no significant degradation of water quality is expected in the receiving water and that the existing uses will be maintained and protected.

72. The proposed discharge would not impact Cibolo Creek's ability to meet the TSWQS.

Bacteria and Chlorine

73. To meet the bacteria limits for the proposed plant, Applicant will disinfect the effluent using chlorination and will expose the effluent to the chlorine for at least 20 minutes.

74. With the proper dosage of chlorine for the proper detention time, the bacteria levels will be reduced to levels that comply with TCEQ requirements.

75. Applicant must monitor the chlorine residual levels five times per week by grab sample and monitor the bacteria levels once a week by grab sample.

76. Applicant must submit plans, specifications, and a final engineering design report to TCEQ for review and approval to ensure that the facility is designed to meet the permitted limits, including disinfection requirements and the bacteria limits.

77. The proposed discharge would not contribute excess bacteria to a tributary of Cibolo Creek.

Additional Public Use and Enjoyment Issues

78. Ms. Grahams, Ms. Hastings, and Mr. Dunn currently lease their property to a rancher for cattle ranching.

79. Approximately twenty head of cattle are ranched on the property currently.

80. The discharge route is the only source of shade in the pasture on the Graham-Hastings property.

81. The cattle seek shade and protection from colder winds along the proposed discharge route.

82. The discharged effluent will become a new source of water for the cattle to drink.

83. Cattle will drink water that is available to them, regardless of its source.

84. Undiluted discharged effluent is not a high quality source of water for cattle.

Discharge Would Not Be to a Watercourse

85. What may appear to be a watercourse on some maps of Protestants' property is actually a rock wall used for either stormwater control or soil conservation.

86. Although some maps indicate that Cibolo Tributary 21 is an intermittent stream, it is not depicted at all on a large number of the maps.

87. The grassy swale at the property line between Applicant and Protestants' properties has native grasses growing in it.

88. Grasses and some wild plum trees grow along the southern portion of Protestants' property where effluent would flow.

89. On the southern end on Ms. Hastings' property, the soil is relatively flat, and there is no regular flow of water.

90. Photographs of Johnson Ranch from 2012 do not show any beds or banks at the proposed outfall location.

91. Aquatic resources on the Johnson Ranch include ephemeral watercourses, an artificial waterbody, upland-vegetates swales, and areas of diffuse surface drainage.

92. No aquatic resources on Johnson Ranch are relatively permanent, rather they are ephemeral with flows being infrequent as evident by the broken, fitful nature.

93. High water mark indicators on Johnson Ranch are inconclusive, unreliable, misleading, and otherwise not evident along many areas because of the infrequent flows.

94. Historical agricultural practices have either attenuated all ordinary flows or completely severed connectivity.

95. Discharged effluent passing over these portions of the Johnson Ranch property would be diffuse surface water.

96. Only a short segment in an area designated for discharge has high water marks, but these are interrupted by large areas of disturbance.

Transcript Costs

97. The cost for recording and transcribing the hearing on the merits by a court reporter and producing transcripts for Applicant, the ALJ, and the Commission totaled $4,931.40.

98. Johnson Ranch MUD is a municipal utility district, a governmental entity with limited resources.

99. Applicant is a residential development company while Protestants are individual landowners and, in the case of the Greater Edwards Aquifer Alliance, a 501(c)(3) nonprofit corporation.

100. Protestants ordered a copy of the transcript for which they paid $1,000.

101. Applicant had the burden of proof and would benefit the most from having the ability to cite to the transcript.

102. A favorable ruling for Protestants on the application will mean that Protestants may return to life without the discharge requested. A favorable ruling for Applicant would provide the significant financial benefit of having a permit to operate its facility.

103. Except for the copy of the transcript ordered by Protestants, Applicant should pay court reporting and transcription costs.

104. Applicant should be ordered to pay $4,931.40 for these costs.

II. CONCLUSIONS OF LAW

1. The Commission has jurisdiction over this matter. Texas Water Code chs. 5 and 26.

2. SOAH has jurisdiction over this hearing process and the authority to issue a proposal for decision with findings of fact and conclusions of law. Texas Water Code §§ 5.311 and 26.021; Texas Gov't Code ch. 2003.

3. Under 30 TAC § 80.17(a), Applicant has the burden of proof, by a preponderance of the evidence, on the referred issues.

4. Pursuant to 30 TAC § 307.1, it is the policy of this state and the purpose of Chapter 307 to maintain the quality of water in the state consistent with, among other things, public health and enjoyment and protection of terrestrial life. All reasonable methods are to be used to implement this policy.

5. If a permit is issued to Applicant, it will impair the use and enjoyment of the Graham-Hastings-Dunn properties and would provide water that has not been deemed safe for cattle consumption.

6. 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 and are supplemented by the applicable Commission rules protecting the Edwards Aquifer in the contributing zone and recharge zone published in 30 TAC ch. 213 (the Edwards Aquifer rules).

7. The TSWQS establish specific uses for each classified water body in the state and provide numeric criteria for each classified stream.

8. In accordance with TCEQ's regulations implementing the TSWQS at 30 TAC ch. 307, Applicant's discharge under the terms of the revised Draft Permit will not comply with all the general criteria, antidegradation policy, toxic material provisions, and site-specific uses and criteria because of the impact on Protestants' use and enjoyment of their property.

9. A watercourse has a well-defined channel with well-defined banks and bed. *Hoefs v. Short*, 114 Tex. 501, 273 S.W. 785 (Tex. 1925).

10. A watercourse generally contains little, if any, vegetation. *Hoefs v. Short*, 114 Tex. 501, 273 S.W. 785 (Tex. 1925).

11. The location of a channel and banks in a watercourse are not ephemeral in character. They are, in some form, more or less defined, in their present location, in every part of the stream. *Hoefs v. Short*, 114 Tex. 501, 273 S.W. 785, 786 (Tex. 1925).

12. The channel of a watercourse has a denuded condition, absence of soil and vegetation, and presence of boulders and gravel. *Hoefs v. Short*, 114 Tex. 501, 273 S.W. 785, 786 (Tex. 1925).

13. A watercourse must be of such substantial, stable, and permanent character that its existence is easily recognized, and that rainfall on its watershed in sufficient quantities will produce a flow of water in this channel. *Hoefs v. Short*, 114 Tex. 501, 273 S.W. 785, 787 (Tex. 1925).

14. A watercourse has an absence of soil and vegetation in the channel bottom. *Hoefs v. Short*, 114 Tex. 501, 273 S.W. 785 (Tex. 1925).

15. As a general rule, swales are not watercourses. *Hoefs v. Short*, 114 Tex. 501, 273 S.W. 785, 787 (Tex. 1925).

16. Portions of the so-called Cibolo Tributary 21 were part of a stormwater control project, soil conservation project, or were otherwise man-made.

17. Many United States Geological Survey topographical maps and aerial images from 1929 to 2011 do not include Cibolo Tributary 21 at all.

18. For a watercourse to have a permanent source of supply, the stream must be such that similar conditions will produce a flow of water, and these conditions must recur with some regularity. *Hoefs v. Short*, 114 Tex. 501, 273 S.W. 785 (Tex. 1925).

105. The "unnamed tributary," also sometimes referred to as Tributary 21, is not a watercourse of the state. *Hoefs v. Short*, 114 Tex. 501, 273 S.W. 785 (Tex. 1925).

106. The discharge route in the proposed permit has not been properly characterized as a watercourse.

19. In accordance with TCEQ's regulations regarding Domestic Wastewater Effluent Limitation and Plant Siting at 30 TAC ch. 309, Applicant's discharge under the terms of the revised Draft Permit will not comply with all the general criteria, antidegradation policy, toxic material provisions, and site-specific uses and criteria.

20. In accordance with TCEQ's regulations regarding the Edwards Aquifer at 30 TAC ch. 213, Applicant's discharge under the terms of the revised Draft Permit will comply with the general criteria, antidegradation policy, applicable aquifer protection requirements, and site-specific uses and criteria relating the contributing zone and recharge zone of the Edwards Aquifer.

21. Allocating court reporting and transcription costs of $4,931.40 to Applicant is a reasonable allocation of costs under the factors set forth in 30 TAC § 80.23(d).

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. The application of DHJB Development, LLC for Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0014975001 is denied.

2. In accordance with 30 TAC § 50.117, the Commission issues this Order and the attached permit as its single decision on the permit application. Information in the agency record of this matter, which includes evidence admitted at the hearing and part of the evidentiary record, documents the ED's review of the permit application, including that part not subject to a contested case hearing.

3. 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.

4. The effective date of this Order is the date the Order is final, as provided by Tex. Gov't Code § 2001.144 and 30 TAC § 80.273.

5. The Commission's Chief Clerk shall forward a copy of this Order to all parties.

6. If any provision, sentence, clause, or phase 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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Bryan W. Shaw, Ph.D., Chairman