



RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

PROPOSAL FOR DECISION

OIL AND GAS DOCKET NO. 7C-0299181

COMPLAINT OF HENRY RESOURCES LLC REGARDING RBJ & ASSOCIATES, LP'S DELHI RANCH LEASE, WELL NOS. 1 AND 2, SPRABERRY (TREND AREA) FIELD, UPTON COUNTY, TEXAS

OIL AND GAS DOCKET NO. 7C-0303143

COMPLAINT OF RBJ & ASSOCIATES, LP REGARDING COG OPERATING LLC'S TXL T 27 NO. 1 WELL, SPRABERRY (TREND AREA) FIELD, UPTON COUNTY, TEXAS

APPEARANCES

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PROCEDURAL HISTORY:

Notice of Hearing:	January 9, 2017
Hearing on the merits:	March 1, 2, 3, 6, and 9, 2017
Record closed:	April 15, 2017
Proposal for Decision issued:	November 7, 2017
Heard by:	Ryan M. Lammert, Administrative Law Judge Karl Caldwell, Technical Examiner

SUMMARY

Henry Resources LLC (“Henry”) operates 28 vertical or horizontal wells on the Melinda Lease producing from the Spraberry (Trend Area) Field and other deeper formations (the “Melinda Lease”). The Melinda Lease is offset to the Disposal Wells.¹ In 2014, Henry experienced an increase in produced water from the Melinda Lease causing a decline in oil production and ultimately resulted in a cessation of production from multiple wells. As a result, Henry employed a third-party consultant to implement a study to identify the cause of the increased water production. The third-party consultant conducted a chemical tracer study—a non-toxic chemical tracer was placed in produced water sent to the Disposal Wells. The tracer appeared in produced water from the Melinda Lease approximately two months later.

On December 15, 2015, Henry filed with the Commission two complaints alleging RBJ & Associates, LP (“RBJ”) violated Statewide Rules 9(6)(A)(iii), 9(6)(A)(vii), and 9(6)(A)(v) on its Delhi Ranch Lease, Well Nos. 1 (API No. 42-461-35908) and 2 (API No. 42-461-37152), Spraberry (Trend Area) Field, Upton County, Texas (respectively, “Disposal Well 1” and “Disposal Well 2”). Disposal Well 1 and Disposal Well 2 are each permitted for a maximum

¹ See Henry Ex. 2.

surface injection pressure of 1,850 psi and a disposal interval of 3,600 to 5,500’—an interval more commonly referred to as the San Andres Formation.

In its complaint, Henry alleges: 1) RBJ is in substantial violation of the terms and provision of the Disposal Wells’ permits or of Commission rules; 2) injected fluids are escaping from the Disposal Wells’ permitted disposal zone; and 3) waste of oil, gas, or geothermal resources is occurring or is likely to occur as a result of permitted operations at the Disposal Wells. However, during discovery, RBJ identified a nearby plugged and abandoned well most recently operated by COG Operating LLC (“COG”)—the COG TXL T 27-1 (API No. 42-461-38325), (the “P&A Well”). The P&A Well is located nearest to Disposal Well 2 at a distance of 269’.

RBJ contends water from the disposal interval is entering the P&A Well’s wellbore through a casing collapse. RBJ asserts the P&A Well was not properly plugged by COG and, as a result, produced water enters the wellbore at the site of the casing collapse, migrates downhole, and exits through open perforations into the Spraberry, Wolfcamp, and Bend Formations causing increased water production at the Melinda Lease. RBJ characterizes the resulting action as a “dump-flood”, and filed a complaint against COG.

Summarily, COG states: 1) RBJ failed to prove that the TXL T 27-1 wellbore is the conduit for migration of injected fluids out of zone; 2) RBJ failed to offer evidence demonstrating that its pressure data analysis proved that the TXL T 27-1 Well is improperly plugged; and 3) RBJ failed to establish the existence of a pathway for horizontal migration from Section 27 to Section 25 through any of the producing formations.

The Administrative Law Judge and Technical Examiner (collectively, the “Examiners”) conclude the P&A Well is improperly plugged, is acting as a conduit for disposal fluids to escape the injection interval, and is causing significant waste of hydrocarbons as a result. The Examiners recommend the Commission 1) order the commercial disposal authority for Disposal Well 1 and Disposal Well 2 suspended; 2) order COG to immediately reenter and replug the P&A Well in strict accordance with Statewide Rules 7 and 14; and 3) order RBJ to conduct appropriate pressure tests on Disposal Well 1 and Disposal Well 2 to successfully demonstrate the disposal formation can maintain pressure and retaining injected fluids.

APPLICABLE AUTHORITY

SWR 7, titled *Strata To Be Sealed Off*:

Whenever hydrocarbon or geothermal resource fluids are encountered in any well drilled for oil, gas, or geothermal resources in this state, such fluid shall be confined in its original stratum until it can be produced and utilized without waste. Each such stratum shall be adequately protected from infiltrating waters. Wells may be drilled deeper after encountering a stratum bearing such fluids if such drilling shall be prosecuted with diligence and any such fluids be confined in its stratum and protected as aforesaid upon completion of the well. The

[C]omission will require each such stratum to be cased off and protected, if in its discretion it shall reasonably necessary and proper to do so.²

SWR 9(6)(A)(iii), (v), and (vii), titled *Subsequent [C]omission action*:

(A) A permit for saltwater or other oil and gas waste disposal may be modified, suspended, or terminated by the [C]omission for just cause after notice and opportunity for hearing, if:

...

(iii) there are substantial violations of the terms and provisions of the permit or of [C]omission rules;

...

(v) injected fluids are escaping from the permitted disposal zone; [or]

...

(vii) waste of oil, gas, or geothermal resources is occurring or is likely to occur as a result of the permitted operations.³

SWR 14(d)(2) and (7), titled *General plugging requirements*:

(2) Cement plugs shall be set to isolate each productive horizon and usable quality water strata. Plugs shall be set as necessary to separate multiple usable quality water strata by placing the required plug at each depth determined by the Groundwater Advisory Unit of the Oil and Gas Division. The operator shall verify the placement of the plug required at the base of the deepest usable quality water stratum by tagging with tubing or drill pipe or by an alternate method approved by the district director of the district director's delegate.⁴

(7) The district director or the director's delegate may require additional cement plugs to cover and contain and productive horizon or to separate any water stratum from any other water stratum if the water qualities or hydrostatic pressures differ sufficiently to justify separation. The tagging and/or pressure testing of any such plugs, or any other plugs, and respotting may be required if

² 16 TEX. ADMIN. CODE § 3.7.

³ 16 TEX. ADMIN. CODE § 3.9(6)(A)(iii), (v), and (vii).

⁴ 16 TEX. ADMIN. CODE § 3.14(d)(2).

necessary to ensure that the well does not pose a potential threat of harm to natural resources.⁵

Texas Natural Resources Code § 85.046(a)(2) defines “waste” to include:

(2) drowning with water a stratum or part of a stratum that is capable of producing oil or gas or both in paying quantities.

EVIDENCE PRESENTED

HENRY RESOURCES LLC

Henry operates 28 vertical or horizontal oil and gas well located in Section 25, Blk. 41, A-499, Upton County, Texas—known as the Melinda Lease⁶—which produce from the “Spraberry (Trend Area) and deeper zones.”⁷ The Melinda Lease wells are assigned to either the Spraberry (Trend Area) Field, the Amacker-Tippett, East (Strawn) Field, or the Betty Sue Field.⁸ Henry previously obtained authority to downhole commingle 17 Melinda Lease wells.⁹

In mid-2014, Henry observed “abnormal water production” from the Melinda Lease.¹⁰ Henry testified it initially suspected a casing leak from a Melinda Lease well, but after inspection concluded the Melinda Lease was sound.¹¹ As a result, Henry expanded the search area to identify the source of the abnormal water production.¹² Based on proximity to the Melinda Lease and predominant fracture trends, Henry identified two disposal wells operated by RBJ as a potential source of excess water.¹³ Henry also identified the P&A Well which “appeared to have troubles during plugging ” as another potential source.¹⁴ After meeting with COG to review a wellbore diagram and other plugging information related to the P&A Well, Henry testified that it was “more nervous or suspicious that . . . [the P&A Well] was a problem.”¹⁵

To more accurately identify the problem, Henry employed the services of a third-party consultant to conduct a chemical tracer study.¹⁶ Henry testified “that we sent all of our produced water to the RBJ wells that we suspected were the problem wells.”¹⁷ Henry, in

⁵ 16 TEX. ADMIN. CODE § 3.14(d)(7).

⁶ See Henry Ex. A; see also Henry Ex. 2.

⁷ Tr., Vol. 1, pg. 16, lns. 4 – 5; see also Henry Ex. 3.

⁸ See Henry Exs. 4, 5, and 6.

⁹ Henry Ex. 7.

¹⁰ Tr., Vol. 1, pg. 33, lns. 6 – 7.

¹¹ Tr., Vol. 1, pg. 44, ln. 16 to pg. 45, ln. 19; Tr., Vol. 1, pg. 46, ln. 20 to pg. 47, ln. 22.

¹² Tr., Vol. 1, pg. 47, lns. 10 – 22.

¹³ Tr., Vol. 1, pg. 47, lns. 14 – 22; Tr., Vol. 1, pg. 48, lns. 1 – 7.

¹⁴ Tr., Vol. 1, pg. 49, lns. 2 – 8.

¹⁵ Tr., Vol. 1, pg. 50, lns. 16 – 17.

¹⁶ Tr., Vol. 1, pg. 51, lns. 16 – 21.

¹⁷ Tr., Vol. 1, pg. 51, lns. 7 – 9.

conjunction with the third-party consultant, designed a testing procedure by which a chemical tracer was injected into water produced from the Melinda Lease prior to transport to Disposal Well 1 and Disposal Well 2.¹⁸ Henry did not disclose to RBJ its intent to conduct a chemical tracer study.¹⁹

Approximately 60 days later, Henry testified that it observed “significant tracer levels” in the produced water from the Melinda Lease wells.²⁰ Henry concluded “several rounds” of additional testing were warranted, and Henry executed additional chemical tracer injections.²¹ The third-party consultant explained the chemical tracer testing development, procedure and protocol in detail during testimony.²²

Henry also offered numerous graphical representations of measured and observed chemical tracer levels produced at the Melinda Lease, photographs, and other evidence in support of the testimony.²³ Henry notes a return of the chemical tracer to the Melinda Lease approximately 60 days after the initial test injection with large spikes in returns thereafter.²⁴ Henry confirmed the chemical tracer utilized in the tracer study had not previously been injected by Henry into the Melinda Lease wells or water produced from the Melinda Lease.²⁵

On December 15, 2015, Henry filed with the Commission a request for immediate suspension of Disposal Well 1 and Disposal Well 2’s injection authority, and asked that the matter be referred to Enforcement.²⁶

Henry offered the testimony of an expert witness in the field of petroleum engineering to support its requested relief: 1) cancellation of amended *Permits to Dispose of Non-Hazardous Oil and Gas Waste by Injection into a Porous Formation Not Productive of Oil and Gas* No. 12686 and No. 13200 for Disposal Well 1 and Disposal Well 2, respectively; and 2) a permanent 7,000’ buffer radius around Disposal Well 2.²⁷ Henry’s expert witness offered a type well log to “identify the tops of the various formations” that are representative of the entirety of the subject area.²⁸ The expert witness identified both shallow and productive formations seen in the type log, being the “Santa Rosa, the Rustler Salado, the Tansill, the Yates, Seven Rivers, the Queen, and the San Andres which we have divided into an upper and lower San Andres interval, the Clear Fork, Spraberry, Wolfcamp, and the Strawn.”²⁹ Henry asserts Disposal Well 1 and Disposal

¹⁸ Tr., Vol. 1, pg. 51, ln. 3 to pg. 53, ln. 23.

¹⁹ Tr., Vol. 1, pg. 53, lns. 16 – 23.

²⁰ Tr., Vol. 1, pg. 55, lns. 6 – 18.

²¹ Tr., Vol. 1, pg. 55, lns. 19 – 22.

²² Tr. Vol. 1, pg. 62, ln. 18 to pg. 81, ln. 12; *see also* Henry Exs. 13, and 15 – 20.

²³ Henry Ex. 13.

²⁴ Tr., Vol. 1, pg. 54, ln. 19 to pg. 55, ln. 18.

²⁵ Tr., Vol. 1, pg. 83, ln. 17 to pg. 84, ln. 7.

²⁶ Henry Ex. 14.

²⁷ Tr., Vol. 1, pg. 89, ln. 24 to pg. 90, ln. 7.

²⁸ Tr., Vol. 1, pg. 91, lns. 19 – 23; Henry Ex. 21.

²⁹ Tr., Vol. 1, pg. 92, ln. 22 to pg. 93, ln. 1.

Well 2 injected produced fluid into “the Queen and Upper San Andres.”³⁰ Henry’s expert witness concludes injected fluid would not “move directly down from the San Andres . . . to the Clear Fork.”³¹ The uppermost perforations “are in the lower part of the Clear Fork Formation on the Henry Melinda Lease.”³²

Henry’s expert witness also sponsored a series of cross sections to demonstrate “potential migration pathways from [Disposal Well 1] and [Disposal Well 2] disposal intervals in the Queen and San Andres across to the Henry Melinda Lease.”³³ The expert witness concluded the overall disposal interval is “relatively flat” without “major structural changes” throughout the entirety of the subject area.³⁴ To be clear, the expert witness emphasized “no structural changes in the vicinity of the disposal wells that would lead me to consider natural geologic features that would allow the transmission of fluid from the disposal interval down to the producing formations.”³⁵

Henry’s expert witness conducted a study of the Melinda Lease’s wellbore integrity.³⁶ The study included an evaluation of “bond logs as well as pressures in these wells, their basic well construction, [and] mechanical construction.”³⁷ Henry’s expert witness concluded that “there was no well that could be a potential conduit for flow from the disposal interval down to the producing horizons on the lease itself.”³⁸

Henry’s expert witness also sponsored exhibits relating to Disposal Well 1 and Disposal Well 2’s application and permitting history, design, and historical fluid injection volumes.³⁹ The expert witness also confirmed RBJ shut-in Disposal Well 1 and Disposal Well 2 in December 2015 upon notice of the Henry complaint.⁴⁰

Next, Henry offered exhibits relating to the P&A Well application and permitting history, design, historical production, and plugging procedure.⁴¹ The expert opined that “the important things are . . . where [COG indicates the] producing interval . . . the gross completion interval in this well is 8,068 feet down to 10,980 feet, which essentially covers the Spraberry,

³⁰ Tr., Vol. 1, pg. 95, lns. 13 – 14.

³¹ Tr., Vol. 1, pg. 96, lns. 16 – 18; *see also* Henry Ex. 22.

³² Tr., Vol. 1, pg. 99, lns. 3 – 5; *see also* Henry Ex. 24.

³³ Tr., Vol. 1, pg. 99, ln. 24 to pg. 100, ln. 2; *see also* Henry Ex. 25.

³⁴ Tr., Vol. 1, pg. 101, lns. 6 – 9.

³⁵ Tr., Vol. 1, pg. 101, lns. 14 – 18.

³⁶ Tr., Vol. 1, pg. 112, lns. 17 – 23.

³⁷ Tr., Vol. 1, pg. 114, lns. 3 – 7; *see also* Henry Ex. 26.

³⁸ Tr., Vol. 1, pg. 114, lns. 15 – 17.

³⁹ *See* Henry Exs. 27 – 34.

⁴⁰ Tr., Vol. 1, pg. 129, lns. 4 – 9.

⁴¹ *See* Henry Exs. 35 – 38.

Wolfcamp, and Bend geologic formations.”⁴² Henry’s expert also testified to the inadequacy of the plugging procedure used by COG to plug the P&A Well.⁴³ To that end, he stated:

This well does have mechanical integrity problems. There’s no assurance there’s any cement isolation from the disposal interval down to the producing horizons. And without that assurance, I think it’s a likely conduit for the fluid to move from the permitted disposal interval down to the producing horizons.⁴⁴

Henry offered an exhibit demonstrating the Melinda Lease’s well count, oil production, water production, and water cut histories.⁴⁵ The Melinda Lease experienced an uptick in water production in 2013:

In early 2013, we began to see the drilling of additional wells, and you can see the water production go up along with the oil production. In this same time period, you begin to see an increase in the water cut. Part of that increase, of course, is directly related to the additional frac water that’s being produced back. So that’s an extraneous water source. You would expect to it to begin to come back down into that 40, 50, 60 percent range.

Towards the end of ‘13, we’ve got through that kind of drilling spurt that you see going on in 2013. You see that the water cut beginning to come back to that 50 to 60 percent range. And then later in ’14 as we begin to add a few more wells, you see the water cut beginning to increase. And then in late ’14 to 2015, we begin to see it go up even more.

So on a lease basis, when I began to look at this information in 2016, it looks like there’s some extraneous water production that begins to appear in late 2014 into 2015.⁴⁶

Because of the increased water production, Henry elected to “shut in various wells at different times because the water cut had gotten so much that . . . [it] didn’t justify continuing to produce those wells economically.”⁴⁷

Henry also offered evidence showing RBJ’s “dip-in” pressure test data.⁴⁸ Based on the pressure data, the expert opined Disposal Well 1 and Disposal Well 2 are in pressure communication.⁴⁹

⁴² Tr., Vol. 1, pg. 133, lns. 13 – 20; *see also* Henry Ex. 36.

⁴³ Tr., Vol. 1, pg. 139, lns. 13 – 19.

⁴⁴ Tr., Vol. 1, pg. 139, lns. 13 – 19.

⁴⁵ Henry Ex. 40.

⁴⁶ Tr., Vol. 1, pg. 150, lns. 5 – 24.

⁴⁷ Tr., Vol. 1, pg. 151, lns. 18 – 22.

⁴⁸ Henry Exs. 41 – 46.

⁴⁹ Tr., Vol. 1, pg. 175, lns. 13 – 18.

More importantly, the expert observed “some kind of pressure sink or a link where fluids are leaving the disposal interval in [Disposal Well 2] out of the disposal interval going somewhere else.”⁵⁰ Further, “[Disposal Well 2] continued to lose pressure after being shut it for over – well, for roughly a year by the time we pulled the gauge out after the second test.”⁵¹ Disposal Well 2 and the P&A Well are approximately 269’ apart.⁵²

On cross examination, Henry’s expert witness adopted the following conclusion:

Dr. Wiggins is of the opinion that, to a reasonable degree of engineering certainty, it is more likely than not that the pathway for the injected water to get from [Disposal Well 1] and [Disposal Well 2] to the producing horizons on the Melinda Lease was through the [P&A Well], although Dr. Wiggins has not ruled out any other potential pathways.⁵³

RBJ & ASSOCIATES, LP

RBJ confirmed that it was served with the Henry complaint, and shut-in Disposal Well 1 and Disposal Well 2 in December 2015.⁵⁴ In 2016, through discovery, RBJ obtained COG internal documents related to the P&A Well.⁵⁵ RBJ also offered an area map depicting the entirety of the subject area, including representations of Melinda Lease wells that experienced “high tracer levels.”⁵⁶

Similar to Henry, RBJ also offered exhibits relating to Disposal Well 1’s applications and permitting histories, designs, and mechanical integrities.⁵⁷ RBJ then submitted a graph of Disposal Well 1 Form H-10 pressure data, wherein a comparison of daily injection volumes are compared to corresponding daily wellhead pressures (as extrapolated from monthly reports).⁵⁸ The data demonstrates Disposal Well 1 “hold[s] about 500 pounds wellhead pressure at the surface [when no injection taking place].”⁵⁹

RBJ then offered evidence relating to Disposal Well 2’s applications and permitting histories, designs, and mechanical integrities.⁶⁰ RBJ then submitted a graph of Disposal Well 2 Form H-10 pressure data, wherein a comparison of daily injection volumes are compared to

⁵⁰ Tr., Vol. 1, pg. 178, lns. 8 – 12.

⁵¹ Tr., Vol. 1, pg. 181, lns. 12 – 14.

⁵² Tr., Vol. 2, pg. 70, lns. 16 – 20; *see also* Henry Ex. A.

⁵³ Tr., Vol. 1, pg. 231, ln. 19 to pg. 232, ln. 3.

⁵⁴ Tr., Vol. 2, pg. 63, ln. 20 to pg. 64, ln. 22.

⁵⁵ Tr., Vol. 2, pg. 68, lns. 3 – 16.

⁵⁶ Tr., Vol. 2, pg. 68, ln. 22 to pg. 70, ln. 12.

⁵⁷ *See* RBJ Exs. 4 – 9.

⁵⁸ *See* RBJ Exs. 10 and 11.

⁵⁹ Tr., Vol. 2, pg. 84, lns. 3 – 16.

⁶⁰ *See* RBJ Exs. 12 – 17.

corresponding daily wellhead pressures (as extrapolated from monthly reports).⁶¹ RBJ confirmed Disposal Well 2 was shut-in December 18, 2015 and no subsequent injection has occurred since that date.⁶² RBJ demonstrated that, prior to the plugging P&A Well, Disposal Well 2 was holding approximately “750 pound pressure at the wellhead.”⁶³ RBJ testified that “shortly thereafter, beginning in April, May and August of ’16 Railroad Commission inspections indicated and reported that the wellhead pressure was zero or on a vacuum.”⁶⁴ Of particular concern, pressures continued to drop at the wellhead despite increased injection volumes to Disposal Well 1 and Disposal Well 2.⁶⁵

RBJ conducted a quarter-mile review of Disposal 1 and Disposal Well 2 to identify active and plugged/abandoned wells—the P&A Well was the only plugged and abandoned well identified in the review.⁶⁶ RBJ also offered a “well chronology report for the [P&A Well].”⁶⁷ The report identifies daily drilling events at the P&A Well.⁶⁸

RBJ submitted a “summary of the [P&A Well] plugging procedures during the time beginning August 19, 2013 when the initial phone call came in to the district off requesting to plug the well through August 26, 2013.”⁶⁹ RBJ’s expert witness concluded that the P&A Well does not have adequate plugs to prevent fluids from entering the wellbore.⁷⁰ COG internal correspondence was also submitted to corroborate RBJ’s conclusions.⁷¹ Form D-8 was also provided as evidence that the P&A Well is inadequately plugged.⁷² RBJ surmises cement pumped to plug the P&A Well was either lost “into the formation or it could have gone downhole.”⁷³

RBJ conducted a quarter-mile mile review to prepare its “Observed Pressure Loos of 67 psi in San Andres Formation to [P&A Well] Casing Collapse” study.⁷⁴ RBJ asserts “that the [P&A Well] experienced the casing collapse from 3670 to 3718, and that is the source of the pressure drop observed at [Disposal Well 2].”⁷⁵

⁶¹ RBJ Ex. 18.

⁶² Tr., Vol. 2, pg. 94, lns. 16 – 23.

⁶³ Tr., Vol. 2, pg. 95, ln. 21 to pg. 97, ln. 2.

⁶⁴ Tr., Vol. 2, pg. 96, lns. 11 to pg. 97, ln. 9; *see also* RBJ Ex. 19.

⁶⁵ Tr., Vol. 2, pg. 97, lns. 10 – 25; *see also* RBJ Ex. 18

⁶⁶ *See* RBJ Exs. 20 and 21.

⁶⁷ RBJ Ex. 23; *see also* Tr., Vol. 2, pg. 106, ln. 5 to pg. 100, ln. 21.

⁶⁸ Tr., Vol. 2, pg. 106, ln. 5 to pg. 100, ln. 21.

⁶⁹ Tr., Vol. 2, pg. 111, lns. 13 – 17; *see also* RBJ Exs. 24 - 26.

⁷⁰ Tr., Vol. 2, pg. 127, ln. 17 to pg. 129, ln. 12.

⁷¹ RBJ Exs. 27 - 29.

⁷² *See* RBJ Exs. 30 – 32; *see also* Tr., Vol. 2, pg. 142, ln. 12 to pg. 146, ln. 20.

⁷³ Tr., Vol. 2, pg. 158, lns. 13 – 16.

⁷⁴ RBJ Ex. 39.

⁷⁵ Tr., Vol. 2, pg. 169, lns. 21 – 24; *see also* RBJ Exs. 40 and 41 (relating to mud weights).

RBJ offered testimony and a demonstrative to support “seeing a clear impact [fluid] movement down the axis of fracture pattern or fracture trend in a west to east direction.”⁷⁶ RBJ contends injected fluids may have arrived at the Melinda Lease as soon as 50 days after chemical tracer injection.⁷⁷

COG OPERATING LLC

COG asserts:

To prevail, RBJ was obligated to establish the following:

1. RBJ had to prove at hearing that the wellbore of the [P&A Well] is the sole vertical conduit. In other words, that, despite its extensive plugging, it means by which significant amounts of water injected into the RBJ injection zone (which spans the Seven Rivers, Queen, Grayburg and San Andres formations) can migrate downwards to the Spraberry, Wolfcamp or Bend formations. Not only did RBJ fail to prove this, but the persuasive evidence at hearing was that the [P&A Well] was plugged in manner to isolate the San Andres formation and prevent vertical migration.
2. RBJ also had to prove that the producing intervals in the [P&A Well] were the sole pathway, or the most likely pathway through which RBJ water could move horizontally across more than a mile of largely undeveloped Spraberry, Wolfcamp or Bend formation rock to Henry’s Melinda lease. As the Examiners will recall, Section 26 sits between COG’s section 27 and Henry’s Section 25, and the South half of Section 26 is undeveloped. RBJ failed to prove how horizontal migration through matrix rock might be possible in the producing zones, much less likely. Indeed, the persuasive evidence at hearing was that the horizontal migration on which RBJ’s case must rest is a geologic impossibility.
3. RBJ had to prove not only both components of migration described above, but also that the migration caused waste. RBJ failed to prove this. As a service company with rights flowing from the subservient surface estate, the notion that RBJ could suffer actionable waste of its own under the Natural Resources Code is a legal impossibility. In the absence of proof of vertical and horizontal migration of fluid through the [P&A Well] wellbore, there is no evidence that any COG actions have resulted in waste as defined by the Texas Natural Resources Code.⁷⁸

⁷⁶ Tr., Vol. 2, pg. 239, lns. 2 – 4; *see also* RBJ Ex. 52.

⁷⁷ *See* Tr., Vol. 2, pg. 239, ln. 17 to pg. 242, ln. 13; *see also* RBJ Ex. 53.

⁷⁸ *COG Operating LLC’s Closing Statement* filed with the Commission April 24, 2017.

COG demonstrated the proximity of the P&A Well to the Melinda Lease—all located within the Midland Basin⁷⁹ The P&A Well is approximately 1.8 miles from the Melinda Lease, with little to no structural change in geologic characteristics in the area separating the lease and well.⁸⁰ COG also offered evidence that significant faulting is absent in the area.⁸¹

COG contends that the Melinda Lease experienced an increase in water production prior to the date the P&A Well suffered a casing collapse and steadily declined thereafter.⁸² COG argues a connected fracture system was not observed during the development of COG's TXT T 27 lease (site of the P&A Well), despite RBJ's offer to the contrary.⁸³ Moreover, COG concludes waste is not occurring as testified to by a COG witness.⁸⁴

COG offered the testimony of the COG employee charged with and conducted with plugging the P&A Well. COG's witness contends that, based on completion and workover reports prepared by the witness, a Form D-8 issued by Commission staff, and his own personal observations, the P&A Well was properly plugged and abandoned.⁸⁵ Further, COG's expert witness testified that the P&A Well is adequately plugged and provided a wellbore schematic depicting, in his opinion, the current state of the P&A Well's casing behind cement.⁸⁶ As a result, COG's expert witness concluded the P&A Well is not a conduit for migration of injected fluids.⁸⁷

COG also offered expert witness testimony and microseismic data to demonstrate low permeability in the subject formations which would make horizontal migration difficult in the subject area.

EXAMINERS' OPINION

The Examiners conclude the P&A Well is not adequately plugged, is a conduit for injected fluids from Disposal Well 1 and Disposal Well 2 to escape the permitted disposal intervals, and is causing waste of hydrocarbons on the Melinda Lease. But for the P&A Well, injected fluids from Disposal Well 1 and Disposal Well 2 would have remained in the permitted disposal intervals.

Anomalous water production occurred from the Melinda Lease as early as 2013. Several Henry wells were watered out or became marginally productive. To investigate, Henry conducted a chemical tracer study that conclusively demonstrated a hydraulic connection between fluids

⁷⁹ COG Exs. 47 – 49.

⁸⁰ See COG Exs. 47 – 49, 52, and 94.

⁸¹ COG Ex. 52.

⁸² COG Exs. 41, 61, and 85.

⁸³ Tr., Vol. 4, pg. 109, lns. 1 – 18.

⁸⁴ Tr., Vol. 4, pg. 111, ln. 24 to pg. 112, ln. 8.

⁸⁵ See Tr., Vol. 3, pgs. 153 – 180.

⁸⁶ Tr., Vol. 5, pg. 144, ln. 11 to pg. 145, ln. 22; COG Ex. 67.

⁸⁷ See Tr., Vol. 4, pgs. 143 – 144.

injected at RBJ's disposal well and the Melinda Lease, 1.8 miles away, in 50 – 60 days. No party offered persuasive evidence to show any other credible pathway for the chemically-laden fluid to travel from the injection site to the Melinda Lease, except via the inadequately plugged P&A Well.

The record evidence indicates Disposal Well 2 are designed and built in accordance with Commission requirements and practices, and at all times operated within permitted injection pressures and volumes. When Disposal Well 2 was drilled, the P&A Well did not exist—COG elected to drill the P&A Well 269' from Disposal Well 2. Also, pressures in the disposal formation were appropriate for the locale prior to COG reworking and plugging operations.

At some point during reworking or plugging operations, the P&A Well experienced casing collapses at two separate depth intervals. COG provided information (in real time over the telephone) to Commission staff for purposes of obtaining Form D-8⁸⁸ (in lieu of Form W-3A). COG provided insufficient information for Commission staff to properly assess and approve an adequate plugging procedure for the P&A Well. Commission staff then approved a plugging procedure insufficient to properly isolate the casing collapses because it was unaware of the full scope of the issues.

No party disputes the existence of a pressure sink in the disposal formation near Disposal Well 2. Henry and RBJ surmise the pressure sink is most likely a result of inadequate isolation of the P&A Well from the disposal interval—only COG contests that conclusion. The Examiners also agree; the evidence in record indicates that reworking or plugging activities associated with the P&A Well resulted in the creation of an artificial conduit for the migration of the injected fluids out of the disposal interval and into underlying productive strata.

Again, Disposal Well 2 is a mere 269' from the P&A Well. The disposal interval for Disposal Well 2 is known. Disposal Well 2 was completed openhole. The intervals associated with perforations in the P&A Well are known. The depth interval for casing collapse 1 is known. The depth interval for casing collapse 2 is known. No party can identify the bottom of cement for any plug in the P&A Well. Therefore, the *most likely* cause of anomalous water production from the Melinda Lease is the inadequately plugged P&A Well.

As suggested by RBJ, Henry and RBJ do not dispute causation, but only the appropriate remedy to address the issue. Henry seeks Commission action ordering RBJ to plug and abandon Disposal Well 1 and Disposal Well 2 and requests a permanent buffer area of no less than 7,000' in radius of Disposal Well 2. RBJ requests the Commission order COG to re-enter and replug the P&A Well in strict accordance with Statewide Rule 14.

The Examiners conclude RBJ's remedy is appropriate. The record evidence shows that, despite Disposal Well 1 and Disposal Well 2 being shut-in, fluids continue to migrate to and cause

⁸⁸ Form D-8 is a Commission issued form provided to an operator (for purposes of approving plugging operations) in unusual circumstances where time is of the essence (i.e. plugging rig is on site) and does not allow for the filing of a Form W-3A. Form D-8 is not listed as an Oil and Gas Form on the Commission's website.

waste at the Melinda Lease. The Examiners conclude the P&A Well, as it currently exists, will continue to pose a significant threat to natural resources until it is adequately plugged. However, until the P&A Well can be re-entered and sufficiently replugged, the Examiners recommend the Commission suspend disposal authority for Disposal Well 1 and Disposal Well 2 so as to not frustrate COG's replugging efforts.

Henry failed to establish by a preponderance of the evidence that RBJ is in violation of Statewide Rules 9 and 14. However, RBJ successfully demonstrated by a preponderance of the evidence COG is in violation Statewide Rules 7 and 14.

Accordingly, the Examiners recommend the Commission order the commercial disposal authority for Disposal Well 1 and Disposal Well 2 suspended, order COG to immediately reenter and replug the P&A Well in strict accordance with Statewide Rules 7 and 14, and order RBJ to conduct appropriate pressure tests on Disposal Well 1 and Disposal Well 2 to successfully demonstrate the disposal formation is capable of maintaining pressure and retaining injected fluids.

CONCLUSION

The Examiners conclude the P&A Well is not adequately plugged, is acting as a conduit for disposal fluids to escape the injection interval, and is causing significant waste of hydrocarbons. The Examiners recommend the Commission adopt the following Findings of Fact and Conclusions of Law:

FINDINGS OF FACT

1. All things necessary to the Railroad Commission of Texas (the "Commission") attaining jurisdiction have occurred.
2. Proper notice of hearing was timely given to all persons legally entitled to notice.
3. Pursuant to agreement by all parties, Oil and Gas Docket Nos. 7C-0299181 and 7C-0303143 were consolidated. A hearing on the merits was conducted on March 1, 2, 3, 6, and 9, 2017.
4. On March 31, 2008, the *Permit to Dispose of Non-Hazardous Oil and Gas Waste by Injection into a Porous Formation Not Productive of Oil and Gas* for the Delhi Ranch Lease, Well No. 1, Spraberry (Trend Area) Field, Upton County, Texas ("Disposal Well 1") was administratively approved by Commission staff and issued to RBJ & Associates, LP ("RBJ").
 - a. Disposal Well 1 was permitted with a maximum daily disposal volume of 10,000 barrels per day, a disposal interval of 3,700 to 5,500', and a maximum surface pressure of 1,850 psi.

- b. On March 31, 2008, there were no wells within a 1/2-mile radius of Disposal Well 1.
5. On April 22, 2015, the amended *Permit to Dispose of Non-Hazardous Oil and Gas Waste by Injection into a Porous Formation Not Productive of Oil and Gas* for Disposal Well 1 was administratively approved by Commission staff and issued to RBJ.
 - a. The amended *Permit to Dispose of Non-Hazardous Oil and Gas Waste by Injection into a Porous Formation Not Productive of Oil and Gas* granted authority to RBJ to dispose of non-hazardous oil and gas waste into the San Andres Formation at a depth interval from 3,600 to 5,550', and a maximum surface pressure of 1,800 psi.
6. On January 25, 2011, the *Permit to Dispose of Non-Hazardous Oil and Gas Waste by Injection into a Porous Formation Not Productive of Oil and Gas* for the Delhi Ranch Lease, Well No. 2, Spraberry (Trend Area) Field, Upton County, Texas ("Disposal Well 2") was administratively approved by Commission staff and issued to RBJ.
 - a. Disposal Well 2 was permitted with a maximum daily disposal volume of 10,000 barrels per day, a disposal interval of 3,700 to 5,500', and a maximum surface pressure of 1,850 psi.
 - b. On January 25, 2011, there were no wells within a 1/2-mile radius of Disposal Well 2.
7. On April 22, 2015, the amended *Permit to Dispose of Non-Hazardous Oil and Gas Waste by Injection into a Porous Formation Not Productive of Oil and Gas* for Disposal Well 2 was administratively approved by Commission staff and issued to RBJ.
 - a. The amended *Permit to Dispose of Non-Hazardous Oil and Gas Waste by Injection into a Porous Formation Not Productive of Oil and Gas* granted authority to RBJ to dispose of non-hazardous oil and gas waste into the San Andres Formation at a depth interval from 3,600 to 5,550', and a maximum surface pressure of 1,800 psi.
8. The *Permit to Dispose of Non-Hazardous Oil and Gas Waste by Injection into a Porous Formation Not Productive of Oil and Gas* for Disposal Well 1 and the *Permit to Dispose of Non-Hazardous Oil and Gas Waste by Injection into a Porous Formation Not Productive of Oil and Gas* for Disposal Well 2 are conditioned upon the injected fluid remaining in the approved interval.
 - a. 16 Tex. Admin. Code § 3.9 provides that a permit for a disposal well may be suspended, amended, or revoked if injected fluids are escaping from the permitted disposal zone.

9. RBJ is the current Form P-4 *Certificate of Compliance and Transportation Authority* operator of record for Disposal Well 1 and Disposal Well 2.
10. On July 9, 2008, Disposal Well 1 was spudded and drilled to a depth of 5,161'.
 - a. Surface casing was set at 458' below surface and cemented to surface.
 - i. The base of usable quality water is located at 370' below surface.
 - b. Long string casing was set at 5,161' feet below surface and cemented back to 2,320' below surface.
 - c. Injection of non-hazardous oil and gas waste occurs through perforations between 4,831 to 5,150' below surface.
 - d. On August 20, 2014, Disposal Well 1 passed a mechanical integrity test, as performed by RBJ.
 - e. Approximately 20 million barrels of water have been injected into Disposal Well 1.
 - f. Since December 18, 2015, no injection of non-hazardous oil and gas waste has occurred into Disposal Well 1 other than approximately 85,000 barrels for Fesco pressure interference testing.
 - g. RBJ conducted Fesco pressure interference testing in October, November, and December 2016.
11. In January 2011, Disposal Well 2 was drilled to a depth of 5,500'.
 - a. In February 2011, Disposal Well 2 was completed with an open hole design from 3,700 to 5,500'.
 - b. Surface casing was set at 435' below surface and cemented to surface.
 - i. The base of usable quality water is located at 370' below surface.
 - c. Long string casing was set at 3,700' feet below surface and cemented back to 2,346' below surface.
 - d. Injection of non-hazardous oil and gas waste occurs through perforations between 3,700 to 5,550' below surface.
 - e. Injection of non-hazardous oil and gas waste began on or about May 1, 2011.

- f. On March 4, 2016, Disposal Well 2 passed a mechanical integrity test, as performed by RBJ.
 - g. Approximately 9.5 million barrels of water have been injected into Disposal Well 2.
 - h. Since December 18, 2015, no injection of non-hazardous oil and gas waste has occurred into Disposal Well 2.
 - i. RBJ conducted Fesco pressure interference testing in October, November, and December 2016.
- 12. Disposal Well 1 and Disposal Well 2 are located approximately 3,410' feet apart from each other.
 - a. Pressure interference testing confirms Disposal Well 1 and Disposal Well 2 are in pressure communication.
- 13. Disposal Well 2 is the nearest well to COG Operating LLC's ("COG") TXL T 27 No. 1 (the "P&A Well") at a distance of 269'.
- 14. On October 4, 2012, the P&A Well was spudded and drilled to a depth of 11,066'.
 - a. Prior to the P&A Well being spud, approximately 2.8 million barrels of non-hazardous oil and gas waste had been injected into Disposal Well 2.
 - b. Surface casing was set at 790' below surface and cemented to surface.
 - c. Long string casing was set at 11,066' feet below surface and cemented with a differential valve tool set at 6,909' below surface, with a top of cement at 5,606' below surface.
 - d. No cement exists behind the long string casing above 5,606'.
 - e. The P&A Well has no cement behind the long string casing in the depths equivalent to the disposal intervals of Disposal Well 1 and Disposal Well 2.
- 15. COG is the current Form P-4 *Certificate of Compliance and Transportation Authority* operator of record for the P&A Well.
- 16. In December 2012, the P&A Well was completed in the Spraberry (Trend Area) and David (Pennsylvanian) Fields.
 - a. Commingled production occurred from the Spraberry (Trend Area) and David (Pennsylvanian) Fields from perforations between 8,068 and 10,980'.

- b. On May 24, 2013, production ceased.
17. In July 2013, COG attempted to rework the P&A Well to reestablish production.
- a. Tubing and rods were cut off, with a top of fish at 4,323'.
 - b. After noting obstructions in the casing, COG attempted a swedge of the wellbore to expand the casing back to its original size.
 - c. The original casing size is an inside diameter of 4.892 inches.
 - d. On August 7, 2013, COG rigged up on the P&A well.
 - e. On August 7, 2013, the P&A well flowed back to surface 60 bbl of Spraberry and Wolfcamp oil.
 - f. On August 7, 2013, the P&A Well was in communication with the Spraberry and Wolfcamp formations.
 - g. On August 13, 2013, COG performed a caliper log which revealed casing collapses in two areas: 1) between the depth interval of 3,592 to 3,602'; and 2) between the depth interval of 3,670 to 3,718'.
 - i. The casing collapse between the depth interval of 3,592 to 3,602' reduced the inner diameter of the casing to 4.8 inches.
 - ii. The casing collapse between the depth interval of 3,670 to 3,718' reduced the inner diameter of the casing to 2.7 inches.
 - h. On August 19, 2013, COG reported to the Commission the casing collapse between the depth interval of 3,592 to 3,602'.
 - i. COG did not report to the Commission the casing collapse between the depth interval of 3,670 to 3,718'.
 - i. On August 19, 2013, COG tagged the top of fish at 4,323'.
 - j. On August 19, 2013, based on information provided by COG, the Commission set forth a plugging procedure for the P&A Well on Form D-8.
 - i. The Commission-approved plugging procedure was recorded on Form D-8, and then issued to COG.
 - ii. The Form D-8 cites remaining equipment left in the wellbore.

- iii. The Form D-8 cites a casing collapse between the depth interval of 3,592 to 3,602'.
 - iv. The Form D-8 does not cite a casing collapse between the depth interval of 3,670 to 3,718'.
 - k. On August 20, 2013, the P&A Well had 300 psi on the casing.
 - i. The P&A Well had 0 psi on the casing for the previous 18 days prior to August 20, 2013.
 - l. On August 20, 2013, the P&A Well and Disposal Well 2 were in pressure communication.
 - m. On August 20, 2013, the P&A Well was flowing at a rate of 4 barrels per minute.
- 18. On August 21, 2013, COG attempted to plug the P&A Well in accordance with Form D-8.
 - a. Form D-8 was assigned Commission Job No. 7105.
 - b. On August 19, 2017, Form D-8 was prepared by Commission District Office 7C based on information provided by COG.
 - c. Form D-8 was prepared prior to the discovery of pressure communication between the P&A well and Disposal Well 2.
 - d. Form D-8 lists a casing collapse from 3609' to 3619' and a fish in the hole with the top of fish at 4323'.
 - e. Form D-8 required COG to set a plug from 4000' to 4323' and tag the top of the plug.
 - f. COG was unable to get below 3650' with tubing.
 - i. A packer was set at 2878' with the end of tubing at a depth of 3638'.
 - ii. The end of tubing was below the reported casing collapse interval of 3609' to 3619'.
 - iii. The end of tubing was not below actual known casing collapse interval of 3,670' to 3,718'.
 - iv. The integrity of the casing below the depth 4,323' is unknown.

- v. The longstring casing was originally cemented with top of cement at 5,606'.
- vi. COG pumped 210 sacks of 14.8 lb per gal cement, with a slurry volume of 49 bbl.
- vii. COG displaced the cement with 29.5 bbl of fresh water, the amount of which was calculated by COG to put top of cement 4,000' below surface.
- viii. After waiting four hours for the cement plug to set, COG attempted to tag the top of cement, but upon opening the tubing, there was flow up the tubing. Upon running in the hole, COG tagged the top of the fish at a depth of 4,323' and did not tag any cement.
- ix. After an unsuccessful plugging attempt, the Commission directed COG to repeat the plugging process of pumping 210 sacks of cement.
 - 1. After pumping an additional 210 sacks of cement the well was shut in overnight.
- g. On August 22, 2013, the P&A Well tubing was opened.
 - i. The P&A Well flowed back one bbl of fluid.
 - ii. COG tagged the top of fish at 4323' and
 - iii. COG did not tag any cement.
- h. After an unsuccessful plugging attempt, the Commission directed COG to pump an additional 210 sacks of cement.
 - i. COG pumped an additional 210 sacks of cement.
 - ii. COG waited four hours before opening the tube.
 - iii. The tubing was opened and the P&A Well flowed back one bbl of fluid.
- i. After an unsuccessful plugging attempt, the Commission directed COG to repeat the process of pumping 210 sacks of cement (Plug No. 4).
 - i. COG pumped 210 sacks of the new cement blend (53 bbl slurry volume).

- ii. COG displaced the cement with 29.5 bbl of fluid, and shut the well in overnight.
- 19. On August 23, 2013, COG tagged the top of cement at 3,620'.
 - a. The bottom depth of plug is unknown.
- 20. The Commission-approved plugging procedure required COG to set a plug between the depth interval of 4,000 to 4,323'.
 - a. COG did not tag this plug.
 - b. COG tagged the top of plug at 3,620' below surface.
 - c. The depth and integrity of this plug is unknown.
 - d. Form W-3 *Plugging Record* reports bottom of tubing to be 4,000'.
 - e. After each attempt to set a plug between the depth interval of 4,000 to 4,323', COG either tagged the top of the fish or witnessed fluid flow at surface.
- 21. The P&A Well has a casing collapse between the depth interval of 3,670 to 3,718'.
 - a. The casing collapse occurred within Disposal Well 1 and Disposal Well 2's permitted disposal interval.
 - b. There is an unknown amount of cement inside the casing below 3,620'.
 - c. There is an unknown amount of cement behind the casing of the P&A Well across the entire disposal interval of Disposal Well 2.
 - d. There is no plug tagged below 3,620' below surface in the P&A Well.
 - e. Perforations in the P&A Well are open between the depth interval of 8,068 to 10,980'.
- 22. Henry Resources LLC ("Henry") is the current Form P-4 *Certificate of Compliance and Transportation Authority* operator of record for 28 oil and gas wells located on Section 25, Blk. 41, A-499, Upton County, Texas (the "Melinda Lease").
 - a. The wells produce from either the Spraberry (Trend Area), Betty Sue (Strawn), or Amacker-Tipper East (Strawn) Fields.

- b. The wells produce from either the Clearfork, Sprayberry, Wolfcamp, or Bend Formations.
 - c. The Melinda Lease is located approximately 1 ½ miles east of Disposal Well 2.
 - d. The Melinda Lease wells each passed a mechanical integrity test, as performed by Henry.
 - e. The Melinda Lease wells are not a conduit for flow from the disposal interval to producing intervals.
 - f. Water rates began to increase from the Melinda Lease after COG attempted to plug the P&A Well.
23. In 2014, the Melinda Lease began to produce an abnormal amount of water.
- a. From May – November 2015, Henry employed Cardinal Surveys Company to perform a tracer study under which chemical tracer 2-FBA was injected into produced water sent from the Melinda Lease to Disposal Well 2.
 - b. Henry sampled produced water stored in tank batteries located on the Melinda Lease and Melinda Lease wells to detect chemical tracer 2-FBA.
 - c. Approximately two months after chemical tracer 2-FBA was injected into produced water sent to Disposal Well 2, Henry detected chemical tracer 2-FBA at levels greater than expected background levels.
 - d. Chemical tracer 2-FBA was first detected in the Melinda No. 2525 Well.
 - e. Chemical tracer 2-FBA escaped the disposal interval and appeared in measurable quantities on the Melinda Lease.
 - f. The Melinda Nos. 2525, 2507, 2511, and 2516 Wells experienced the most anomalous water production.
 - i. Each well is completed in the Spraberry, Wolfcamp, and Bend Formations.
24. The disposal interval is continuous and relatively flat between Disposal Well 1, Disposal Well 2, and the Melinda Lease, with no major structural or stratigraphic changes, and no natural geographic pathways or features for water to travel from the disposal intervals to the producing formations.

- a. Injected non-hazardous oil and gas waste is not migrating from Disposal Well 1 or Disposal Well 2 to the Melinda Lease through the injection interval or formation.
 - b. The natural fracture orientation is approximately west to east across Disposal Well 1, Disposal Well 2, the P&A Well, and the Melinda Lease, with an azimuth of 105 degrees.
 - c. Fluid migration from Disposal Well 2 to the Melinda Lease occurs in a west to east direction.
 - d. There is approximately 1,200' of confining rock between the Clearfork Formation and the base of the disposal interval.
- 25. Non-hazardous oil and gas waste injected into Disposal Well 2 escaped the permitted disposal interval.
- 26. Excess water migrating to the Melinda Lease has resulted in the waste of oil, gas, or geothermal resources.
 - a. The P&A Well is a conduit for water to escape the injection interval and enter the producing formations.
 - b. The P&A Well has a casing leak, and is not adequately plugged.
 - c. Excess water produced from the Melinda Lease is a result of casing leak in the P&A Well.
 - d. Non-hazardous oil and gas waste injected into Disposal Well 1 and/or Disposal Well 2 has resulted and will result in fluid migration to the Melinda Lease via the casing leak in the P&A Well.
 - e. Chemical tracer 2-FBA was detected at the Melinda Lease in the same producing intervals as the perforations in the P&A Well.
- 27. Pressure in the producing formations is below normal.
- 28. Pressure in the disposal formation is greater than the pressure in the producing formations.
- 29. A pressure sink exists in the immediate vicinity of Disposal Well 2.
 - a. On August 31, 2016, Diamond D Slickline Service Company conducted a bottomhole pressure test.

- i. The bottom hole pressure test indicated the bottomhole pressure in Disposal Well 2 is 438 psi lower than that observed in Disposal Well 1.
 - b. During Fesco testing conducted between October and December 2016, Disposal Well 2 experienced a continual bottomhole pressure drop of approximately 40 psi.
30. The casing leak in the P&A Well must be adequately plugged to prevent future migration of injected fluids from the injected interval to the producing formations on the Melinda Lease.
31. At all times relevant, RBJ did not exceed permitted surface injection pressures or permitted injection volumes during the operation of Disposal Well 1 and Disposal Well 2.
32. The *Permits to Dispose of Non-Hazardous Oil and Gas Waste by Injection into a Porous Formation Not Productive of Oil and Gas* for Disposal Well 1 and Disposal Well 2 must be suspended until such time that the P&A Well is adequately plugged to prevent further migration of produced water from the permitted disposal intervals to the producing intervals.
33. But for the P&A Well being inadequately plugged, injected fluids from Disposal Well 1 and Disposal Well 2 would not have escaped the permitted disposal intervals.

CONCLUSIONS OF LAW


1. Proper notice of hearing was timely issued to the appropriate persons entitled to notice.
2. All things necessary to the Commission attaining jurisdiction have occurred.
3. There is legally sufficient evidence to support the suspension of the *Permits to Dispose of Non-Hazardous Oil and Gas Waste by Injection into a Porous Formation Not Productive of Oil and Gas* for Disposal Well 1 and Disposal Well 2 due to the escape of injected fluids from the permitted disposal intervals which are causing waste.
4. There is legally sufficient evidence to support the suspension of the *Permits to Dispose of Non-Hazardous Oil and Gas Waste by Injection into a Porous Formation Not Productive of Oil and Gas* for Disposal Well 1 and Disposal Well 2 in accordance with 16 Tex. Admin. Code § 3.9(6).
5. The amended *Permit to Dispose of Non-Hazardous Oil and Gas Waste by Injection into a Porous Formation Not Productive of Oil and Gas* No. 12686 for Disposal Well 1 is suspended until such time COG adequately plugs the P&A Well to prevent the further escape of injected fluids from the permitted disposal intervals.

6. The amended *Permit to Dispose of Non-Hazardous Oil and Gas Waste by Injection into a Porous Formation Not Productive of Oil and Gas* No. 13200 for Disposal Well 2 is suspended until such time COG adequately plugs the P&A Well to prevent the further escape of injected fluids from the permitted disposal intervals.
7. COG is ordered to plug and abandon the P&A Well in accordance with the requirements of 16 Tex. Admin. Code § 3.14 within 120 days of the date the Final Order becomes final.
8. COG is in violation of 16 Tex. Admin. Code § 3.14.
9. COG is in violation of 16 Tex. Admin. Code § 3.7.
10. COG inadequately plugged and abandoned the P&A Well which has resulted and continues to result in waste of hydrocarbons, as defined in Tex. Nat. Res. Code § 85.046(a)(2).
11. The re-entry and replugging of the P&A well is necessary and proper to prevent the waste of hydrocarbons, as defined in Tex. Nat. Res. Code § 85.046(a)(2).
12. RBJ is the current Form P-4 *Certificate of Compliance and Transportation Authority* operator of record for Disposal Well 1 and Disposal Well 2.
13. COG is the current Form P-4 *Certificate of Compliance and Transportation Authority* operator of record for the P&A Well.

RECOMMENDATIONS

The Examiners recommend the Commission 1) order the commercial disposal authority for Disposal Well 1 and Disposal Well 2 suspended; 2) order COG to immediately reenter and replug the P&A Well in strict accordance with Statewide Rules 7 and 14; and 3) order RBJ to conduct appropriate pressure tests on Disposal Well 1 and Disposal Well 2 to successfully demonstrate the disposal formation can maintain pressure and retaining injected fluids.

RESPECTFULLY SUBMITTED,

A handwritten signature in blue ink, appearing to read "Ryan Lammert", written over a horizontal line.

RYAN M. LAMMERT
Administrative Law Judge

A handwritten signature in blue ink, appearing to read "Karl Caldwell", written over a horizontal line.

KARL CALDWELL
Technical Examiner

**RAILROAD COMMISSION OF TEXAS
HEARINGS DIVISION**

OIL AND GAS DOCKET NO. 7C-0299181

COMPLAINT OF HENRY RESOURCES LLC REGARDING RBJ & ASSOCIATES, LP'S DELHI RANCH LEASE, WELL NOS. 1 AND 2, SPRABERRY (TREND AREA) FIELD, UPTON COUNTY, TEXAS

FINAL ORDER

The Commission finds that after statutory notice the captioned proceedings were heard by an Administrative Law Judge and Technical Examiner ("Examiners") on March 1, 2, 3, 6, and 9, 2017. The Examiners have circulated a Proposal for Decision containing Findings of Fact and Conclusions of Law. Having been duly submitted to the Railroad Commission of Texas at conference held in its offices in Austin, Texas, the Findings of Fact and Conclusions of Law are hereby adopted and made a part hereof by reference.

IT IS HEREBY ORDERED that the complaint of Henry Resources LLC regarding RBJ & Associates, LP's Delhi Ranch Lease, Well Nos. 1 and 2, Spraberry (Trend Area) Field, Upton County, Texas be **DISMISSED WITH PREJUDICE**.

It is further **ORDERED** by the Commission that this order shall not be final and effective until 25 days after the Commission's order is signed, unless the time for filing a motion for rehearing has been extended under TEX. GOV'T CODE § 2001.142, by agreement under TEX. GOV'T CODE § 2001.147, or by written Commission Order issued pursuant to TEX. GOV'T CODE § 2001.146(e). If a timely motion for rehearing of an application is filed by any party at interest, this order shall not become final and effective until such motion is overruled, or if such motion is granted, this order shall be subject to further action by the Commission. Pursuant to TEX. GOV'T CODE § 2001.146(e), the time allotted for Commission action on a motion for rehearing in this case prior to its being overruled by operation of law is hereby extended until 90 days from the date Commission Order is signed.

Each exception to the Administrative Law Judge's proposal for decision not expressly granted herein is overruled. All requested findings of fact and conclusions of law which are not expressly adopted herein are denied. All pending motions and requests for relief not previously granted or granted herein are denied.

ENTERED in Austin, Texas on this _____ 2017.

RAILROAD COMMISSION OF TEXAS

CHAIRMAN CHRISTI CRADDICK

COMMISSIONER RYAN SITTON

COMMISSIONER WAYNE CHRISTIAN

ATTEST

SECRETARY

**RAILROAD COMMISSION OF TEXAS
HEARINGS DIVISION**

OIL AND GAS DOCKET NO. 7C-0303143

COMPLAINT OF RBJ & ASSOCIATES, LP REGARDING COG OPERATING LLC'S TXL T 27 No. 1 WELL, SPRABERRY (TREND AREA) FIELD, UPTON COUNTY, TEXAS

FINAL ORDER

The Commission finds that after statutory notice the captioned proceedings were heard by an Administrative Law Judge and Technical Examiner ("Examiners") on March 1, 2, 3, 6, and 9, 2017. The Examiners have circulated a Proposal for Decision containing Findings of Fact and Conclusions of Law. Having been duly submitted to the Railroad Commission of Texas at conference held in its offices in Austin, Texas, the Findings of Fact and Conclusions of Law are hereby adopted and made a part hereof by reference.

IT IS HEREBY ORDERED that, with 90 days from the date immediately following the date this order becomes final, COG Operating, LLC shall commence operations to reenter and replug the abandoned wellbore of COG Operating LLC's TXL T 27 No. 1 Well, Spraberry (Trend Area) Field, Upton County, Texas (the "Well") (API No. 42-461-38325) in accordance with a plan approved by Commission District Office 7C, and it is further **ORDERED** by the Commission that COG Operating LLC shall diligently proceed with replugging operations until the Well is isolated to the Commission's satisfaction from geologic formations in communication with the Delhi Ranch Lease, Well No. 2, Spraberry (Trend Area) Field, Upton County, Texas disposal intervals.

It is further **ORDERED** by the Commission that COG Operating, LLC shall replug the Well in strict accordance with 16 Tex. Admin. Code §§ 3.7 and 14.

It is further **ORDERED** by the Commission that the *Permits to Dispose of Non-Hazardous Oil and Gas Waste by Injection into a Porous Formation Not Productive of Oil and Gas* for the Delhi Ranch Lease, Well Nos. 1 and 2, Spraberry (Trend Area) Field, Upton County, Texas are hereby **SUSPENDED** until such time that RBJ & Associates, LP can successfully demonstrate to the Commission's satisfaction that the San Andres Formation can maintain pressure and retain injected fluids.

It is further **ORDERED** by the Commission that RBJ & Associates, LP shall conduct appropriate pressure tests on Delhi Ranch Lease, Well Nos. 1 and 2, Spraberry (Trend Area) Field, Upton County, Texas to successfully demonstrate to the Commission's satisfaction that the disposal formation can maintain pressure and retaining injected fluids.

It is further **ORDERED** by the Commission that this order shall not be final and effective until 25 days after the Commission's order is signed, unless the time for filing a motion for rehearing has been extended under TEX. GOV'T CODE § 2001.142, by agreement under TEX. GOV'T CODE § 2001.147, or by written Commission Order issued pursuant to TEX. GOV'T CODE § 2001.146(e). If a timely motion for rehearing of an application is filed by any party at interest, this order shall not become final and effective until such motion is overruled, or if such motion is granted, this order shall be subject to further action by the Commission. Pursuant to TEX. GOV'T CODE § 2001.146(e), the time allotted for Commission action on a motion for rehearing in this case prior to its being overruled by operation of law is hereby extended until 90 days from the date Commission Order is signed.

Each exception to the Administrative Law Judge's proposal for decision not expressly granted herein is overruled. All requested findings of fact and conclusions of law which are not expressly adopted herein are denied. All pending motions and requests for relief not previously granted or granted herein are denied.

ENTERED in Austin, Texas on this _____ 2017.

RAILROAD COMMISSION OF TEXAS

CHAIRMAN CHRISTI CRADDICK

COMMISSIONER RYAN SITTON

COMMISSIONER WAYNE CHRISTIAN

ATTEST

SECRETARY