

155 FERC ¶ 61,227
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Norman C. Bay, Chairman;
Cheryl A. LaFleur, Tony Clark,
and Colette D. Honorable.

National Fuel Gas Supply Corporation

Docket No. CP14-501-001

ORDER GRANTING AND DENYING IN PART REQUEST FOR REHEARING

(Issued June 1, 2016)

1. On December 17, 2015, the Commission issued an order granting in part and denying in part National Fuel Gas Supply Corporation's request to expand the reservoir and buffer boundaries for its Beech Hill, East Independence, and West Independence storage fields (collectively, Beech Hill Complex).¹ The December 2015 Order also denied National Fuel's request to convert Well 7451, which neighbors the Beech Hill Complex, from observation to withdrawal-only status. On January 15, 2016, National Fuel requested reconsideration or, in the alternative, rehearing.² National Fuel argues that the December 2015 Order erroneously limited the boundary expansion request and erroneously denied authority to convert Well 7451. For the reasons below, rehearing is granted in part and denied in part.

¹ *National Fuel Gas Supply Corp.*, 153 FERC ¶ 61,301 (2015) (December 2015 Order).

² Although National Fuel styles its filing as a request for clarification or, in the alternative, rehearing, in substance it is a request for rehearing and the Commission will exercise its discretion to treat it as such. *See North Carolina Waste Awareness and Reduction Network, Inc. v. Duke Energy Carolinas, LLC*, 153 FERC ¶ 61,189, at P 11 (2015).

I. Background

2. The Beech Hill Complex, located in Allegany and Steuben Counties, New York, is shaped like an elongated oval stretching from the southwest to northeast. Area 1 is located at the southwest end of the complex in the Beech Hill Annex, and Area 2 is located at the northeast end. Areas 3 and 5 are located to the north of the complex, and Areas 4, 6, and 7 are located to the south of the complex. A map depicting the Beech Hill Complex is attached to this order.

3. National Fuel stores gas in the Oriskany Sandstone layer of the Smethport Anticline, which is a former gas-producing layer located below the Onondaga Limestone and above the Helderberg Limestone. The Oriskany Sandstone, which is on average 30-feet thick throughout the storage field, lies roughly 2,700 feet subsea level. As currently certificated, the Beech Hill Complex holds 19.4 billion cubic feet (Bcf) of top gas or working gas and 21.8 Bcf of base gas at 2,000 pounds per square inch gauge (psig).³ The boundaries were last revised in 2002 when the Commission authorized an area southwest of the complex, referred to as the Beech Hill Annex, which is now used only to withdraw gas that has migrated from the Beech Hill reservoir to the Annex.⁴

4. On June 13, 2014, National Fuel filed an application pursuant to section 7(c) of the Natural Gas Act⁵ to expand the existing 14,548-acre Beech Hill Complex by 8,299.02 acres and the protective buffer by 4,654.67 acres, for a total expansion of 12,953.7 acres. Thus, National Fuel's proposal would have almost doubled the size of the storage field from 14,548 acres to 27,501.7 acres. The boundary modifications and well conversion sought by National Fuel would not change the capacity or deliverability of the storage field.

5. National Fuel asserted that the proposed boundary expansions were necessary to contain the migration of storage gas and to protect the integrity of the storage field. National Fuel contended that it needed to convert Well 7451 from an observation well to a withdrawal-only well in order to withdraw storage gas that had migrated to Area 6, located to the southeast of the Beech Hill Complex.⁶ In support, National Fuel filed

³ For further description of the Beech Hill Complex, *see* December 2015 Order, 153 FERC ¶ 61,301 at PP 2-8, 38-40.

⁴ *National Fuel Gas Supply Corp.*, 100 FERC ¶ 61,305 (2002) (2002 Order).

⁵ 15 U.S.C. § 717f(c) (2012).

⁶ Application at 7.

seismic data, records of wellhead pressures, and geochemical fingerprinting data. Despite its assertions of gas migration, National Fuel never substantiated recent losses of storage gas from the Beech Hill Complex.

II. Preliminary Matters

A. Additional Affidavit

6. National Fuel's rehearing request includes an affidavit by its expert geologist, Steven Knapp, along with six attachments. The Knapp affidavit addresses Areas 6 and 7, and the request to convert Well 7451. While some of the information contained in the affidavit was in the record at the time of the December 2015 Order, some of the attachments and the affidavit itself were not. National Fuel does not assert that this information was unavailable earlier in these proceedings prior to the issuance of the December 2015 Order.

7. The Commission may reject evidence proffered for the first time on rehearing.⁷ "Such behavior is disruptive to the administrative process because it has the effect of moving the target for parties seeking a final administrative decision."⁸ Moreover, other parties are not permitted to respond to a request for rehearing.⁹ Accordingly, the Commission rejects National Fuel's attempt to supplement the record with the Knapp affidavit and attachments.

B. Conditional Request for a Technical Conference

8. In its rehearing request, National Fuel states that the paper hearing process used in these proceedings—which involved a large amount of technical data, Commission staff requests for additional explanation and data, and National Fuel's responses to those requests—did not allow for a substantive discussion and thus requests a technical conference.¹⁰

9. National Fuel does not provide valid reasons to conduct a technical conference beyond references to the general benefits that might result from an open discussion. The

⁷ *Entergy Nuclear Operations, Inc. v. Consolidated Edison Co. of New York, Inc.*, 112 FERC ¶ 61,117, at P 39 (2005).

⁸ *Id.*

⁹ *See* 18 C.F.R. § 385.713(d)(1) (2015).

¹⁰ Rehearing Request at 16-17.

Commission finds, however, that the record contains sufficient information to make a reasoned decision on the merits, and that the pleadings and data request responses contain a thorough discussion of the issues.¹¹ Because no purpose would be served by convening a technical conference, National Fuel's request for one is denied.

III. Analysis

10. The December 2015 Order set forth the standards applicable to storage expansion requests.¹² While geochemical data is not always required to support expansion of certificated boundaries, it is highly persuasive. And in all cases, the applicant's data must support any proposed modifications. As in any NGA section 7 certificate proceeding, the Commission balances the adverse effects of the project against the public benefits, and considers the avoidance of the exercise eminent domain in this analysis.¹³

A. Area 1

11. The December 2015 Order determined that the wellhead pressure data from Well SC-502 showed a hydraulic correlation¹⁴ with the storage field, and geochemical data showed the presence of storage gas. Accordingly, the Commission approved National Fuel's request to extend the reservoir boundary of Area 1 to include an observation well, Well SC-502, within the reservoir. The December 2015 Order authorized a buffer zone that was generally 700 feet wide, with the exception of the buffer zone at the location of Well SC-502 where the buffer zone was narrower. The narrower buffer zone at Well SC-502 excluded 16.09 acres sought by National Fuel.¹⁵

¹¹ See *Paiute Pipeline Co.*, 151 FERC ¶ 61,132, at P 50 (2015) ("Likewise, a technical conference would not add to our understanding of the issues raised in this proceeding; the pleadings before us contain a thorough discussion of the issues.").

¹² December 2015 Order, 153 FERC ¶ 61,301 at PP 34-35.

¹³ *Northern Natural Gas Co.*, 127 FERC ¶ 61,038, at P 30 n.25 (2009) (*Northern Natural*).

¹⁴ The Commission determined the hydraulic connection by comparing pressure data from Well SC-502 to a well representative of the Beech Hill Complex.

¹⁵ December 2015 Order, 153 FERC ¶ 61,301 at P 45.

12. On rehearing, National Fuel argues the Commission should have approved the additional 16.09 acre buffer boundary near Well SC-502.¹⁶ National Fuel reasons that the buffer boundary should maintain a uniform distance from the reservoir boundary. National Fuel adds that it already controls the storage rights to these 16.09 acres excluded from the buffer zone.

13. The Commission grants rehearing. While ownership of the property rights is not alone sufficient to warrant expanding the boundary, the Commission does find property rights ownership to be a relevant factor. Given that National Fuel already controls the storage rights for these 16.09 acres, the Commission agrees that maintaining a uniform 700 feet buffer in Area 1 sufficiently justifies the small extension of the buffer boundary. This modification of the buffer boundary is authorized as depicted in Exhibit Z-2, Map 3 of National Fuel's application.

B. Area 2

14. In the December 2015 Order, the Commission rejected National Fuel's proposed expansion of the reservoir and buffer boundaries in Area 2 to include a fault within the reservoir that had been located in the buffer. National Fuel's proposed reservoir boundary followed the -2,660 contour line,¹⁷ which it believed to be the location of the gas/water contact.¹⁸ Because the Oriskany structure dips downward to the northeast at this point, National Fuel reasoned that its proposed reservoir boundary would protect the integrity of the storage field because the gas/water contact point would create a natural boundary, thereby blocking gas from migrating beyond the reservoir boundary and into the buffer zone and beyond.

15. The December 2015 Order expressed concern that, despite Commission staff's request, National Fuel failed to provide geochemical data from Well EC-537, which is located within the then-existing buffer boundary and close to, but outside of, National Fuel's proposed reservoir boundary. Without geochemical data, there was no evidence gas was actually migrating to the gas/water contact point, and thus no support for a further expansion. The Commission determined that a downward dip in the Oriskany structure, coupled with the lower porosity and permeability in this area,

¹⁶ Rehearing Request at 6-7.

¹⁷ Contour lines are lines on a map that connect points of a surface that have the same elevation. Throughout these proceedings, the surface represented by the contour lines is the top of the Oriskany Sandstone.

¹⁸ Rehearing Request at 8-9.

provides a barrier to gas movement.¹⁹ Nevertheless, based on National Fuel's reinterpreted contours of the Oriskany structure, the Commission authorized a limited modification of the reservoir boundary to follow the -2,625 contour line, and the buffer boundary to follow the -2,660 contour line.²⁰

16. On rehearing, National Fuel argues that the Commission should have approved its proposed reservoir and buffer boundaries in Area 2. National Fuel states that it based its proposed Area 2 boundaries on seismic data, which it believes showed that the elongated reservoir structure extends farther to the northeast than previously believed. National Fuel contends that strong performance of an injection/withdrawal well close to the pre-December 2015 Order reservoir boundary is evidence that there is substantial storage gas near the northeast edge of the storage field.²¹

17. With respect to the Commission's observation that National Fuel failed to produce geochemical data from Well EC-537, National Fuel explained that Well EC-537 could not produce a gas sample because it is completed below the gas/water contact where the sandstone is water saturated.²² National Fuel explains that it excluded Well EC-537 from its proposed reservoir boundary for the same reason.

18. National Fuel states that the -2,625 foot contour line, which forms the basis for the December 2015 Order's reservoir boundary, has no bearing on the actual location of storage gas within the storage reservoir. National Fuel's geological report shows that the gas/water contact in Area 2 occurs at -2,660 feet, i.e. 35 feet lower than the December 2015 Order's reservoir boundary. According to National Fuel, this means that the reservoir designated in the December 2015 Order excludes potentially gas-bearing portions of the formation. National Fuel contends that its proposed boundary should be approved on the basis of the structural and well performance analyses without the need for geochemical confirmation.

19. While National Fuel has explained why it could not produce a sample from Well EC-537, it has failed to explain how its seismic analysis alone provides sufficient support for its Area 2 request. The superior performance of a well near the pre-

¹⁹ December 2015 Order, 153 FERC ¶ 61,301 at P 48.

²⁰ *Id.* P 49.

²¹ Rehearing Request at 7.

²² *Id.*

December 2015 Order reservoir boundary cited by National Fuel²³ does not necessarily advance its position that gas is present outside the reservoir boundary. The presence of storage gas within the reservoir boundary is not surprising, and the strong performance of wells within the reservoir boundary indicates that these wells are efficiently withdrawing storage gas from the top of the Oriskany structure where porosity and permeability are higher, and not approximately 35 feet lower near the gas/water contact where permeability and porosity are lower.

20. The Commission agrees with National Fuel that the gas/water contact occurs at -2,660 feet, and that gas could theoretically be present at this depth. Portions of the reservoir boundary prior to the December 2015 Order coincided with the -2,660 contour and the buffer boundary extended from the reservoir boundary radially approximately 3,000 feet. Well SC-564, the most northeasterly lying well in Area 2, lies approximately 3,000 feet southwest of the newly certificated reservoir boundary. But the theoretical presence of gas is not sufficient to expand the reservoir boundary, especially in light of other factors that weigh against approving National Fuel's proposal. For example, the porosity and permeability in this location form a barrier to gas movement, thereby weakening National Fuel's claim that storage gas can reach the -2,660 contour line.²⁴

21. The Commission is concerned that National Fuel is not adequately monitoring the presence of storage gas in Area 2. Well EC-537, the only observation well downstructure between Well SC-564 and the certificated and buffer boundaries to the northeast, is below the gas/water contact and thus ineffective for monitoring the potential for gas migration. A structural saddle²⁵ exists at the northeast extreme of National Fuel's proposed reservoir boundary that dips downward to the northeast with the spill

²³ *Id.* at 7.

²⁴ December 2015 Order, 153 FERC ¶ 61,301 at P 39 (“In general, the porosity and permeability of the Oriskany Sandstone is higher on structural highs, while lower porosity and permeability is found lower in the structure, likely impeding gas movement.”).

²⁵ As explained in the December 2015 Order, a saddle is a structural low lying between two structural highs. In this case, Area 2 (East Independence) and the area to the northeast are the structural highs, with the saddle, or low point, separating these two structures. Without a pressure differential between the two structures, gas would generally not migrate between the two structural highs. However, if pressure in the Area 2 structure is higher than the pressure in the structure to the northeast, gas has the potential to migrate from the higher pressure area, through the saddle, into the other structurally high area.

point, or lowest point, existing at approximately -2,660 feet, thereby coinciding with National Fuel's proposed reservoir boundary and the boundary of the buffer zone designated in the December 2015 Order. National Fuel's proposed buffer boundary then extends even farther to the northeast and up the other side of the saddle. Thus, National Fuel's proposed reservoir boundary could potentially allow for migration of storage gas beyond the newly certificated boundary and into the neighboring structure to the northeast. By contrast, the December 2015 Order's buffer extension coincides with the -2,660 feet contour (and the lowest point of the structural saddle) and gives National Fuel the means to detect for gas presence and/or migration up to—but not beyond—the saddle spill point. These restrictive boundaries will do more to protect the integrity of the storage field.

22. The December 2015 Order designated a reservoir boundary that followed the -2,625 contour line. It is not true, as National Fuel asserts,²⁶ that the -2,625 contour line has no relevance to the storage reservoir. Several of National Fuel's wells located within the reservoir (EC-564, EC-435, EC-434, EC-433, and EC-430) are located close to the same contour line where porosity and permeability are the greatest. Data contained within National Fuel's application demonstrated for the first time that the -2,625 contour line breached the existing reservoir boundary, meaning the structural high extends to the northeast beyond the then existing reservoir boundary.²⁷ Logically, because these wells mark an elevation where storage gas actually resides in the Oriskany Sandstone, it was reasonable to expand the reservoir boundary to include the -2,625 contour line. Additionally, National Fuel does not assert that it has lost storage gas from the Beech Hill Complex in the past five years. National Fuel presented no data indicating that its proposed boundary and buffer expansions were necessary to maintain the integrity of the field. In fact, as noted above, the proposed expansions could damage the integrity of the field by potentially allowing gas to migrate to the neighboring geologic structure. Thus, the Commission declines to expand the reservoir boundary in Area 2 beyond the designation in the December 2015 Order.

23. In these proceedings, the Commission has attempted to make boundary adjustments when supported by sufficient data that has become increasingly sophisticated over time. However, the Commission must balance the rights of property owners against National Fuel's interests in maintaining the integrity of its storage field.²⁸ National Fuel

²⁶ Rehearing Request at 8-9.

²⁷ A structural high is a high place in the structure where gas has the potential to accumulate.

²⁸ *Northern Natural*, 127 FERC ¶ 61,038 at P 30 n.25.

owns approximately half of the proposed reservoir and buffer acreage that lies beyond the existing certificated buffer zone. In order for the Commission to authorize such a large expansion of the boundary and buffer zones, and with it the potential use of eminent domain, National Fuel must provide definitive scientific data that would justify the expansion to protect the integrity of its storage facilities. In regards to Area 2, National Fuel has failed to provide such data. Accordingly, rehearing is denied with regard to Area 2.

C. Area 3

24. National Fuel sought to expand the reservoir and buffer boundaries in Area 3 to include two southwest-northeast trending faults that are located near the saddle that separates the Beech Hill and Beech Hill Annex.²⁹ National Fuel believes these two faults form a pathway between Beech Hill and the Beech Hill Annex. Additionally, National Fuel sought to include another fault situated farther to the northeast between Wells NY766 and 540. The December 2015 Order authorized expansion of the reservoir boundary to align with what had been National Fuel's buffer boundary, but modified the expansion to include Wells SC-539, SC-561 and SC-568, all of which had demonstrated the presence of storage gas.³⁰ The Commission authorized a corresponding expansion of the buffer boundary. However, the Commission declined to authorize an additional expansion of the reservoir and buffer boundaries to include the two faults to the north of the saddle and the fault between Wells NY766 and 540. The December 2015 Order observed that the saddle between the Beech Hill and Beech Hill Annex most likely forms the passageway for gas between the two fields and that National Fuel failed to submit data to support gas migration into the proposed reservoir or buffer boundaries to the north of the faults near the saddle.³¹

25. On rehearing, National Fuel argues the Commission should have approved the proposed reservoir and buffer boundaries to include the entirety of the two faults it says connect and serve as a pathway between the Beech Hill and Beech Hill Annex pools.³² With respect to the fault between Wells NY766 and 540, National Fuel states that,

²⁹ December 2015 Order, 153 FERC ¶ 61,301 at P 4. *See* 2002 Order, 100 FERC ¶ 61,305 at P 11 (finding that the Beech Hill and Beech Hill Annex fields “are in direct communication with each other and are actually part of the same storage reservoir”).

³⁰ December 2015 Order, 153 FERC ¶ 61,301 at P 53.

³¹ *Id.* P 50.

³² Rehearing Request at 9-11.

although this third fault does not extend into Beech Hill pool, “its presence at the northern edge of the Beech Hill field suggests that it should be mapped within the reservoir area.”³³ Separately, National Fuel questions why the reservoir boundary designated in the December 2015 Order diverges inward where Areas 3 and 5 meet, and requests clarification that the Commission did not intend for the reservoir boundary to diverge inward at that location.³⁴

26. The Commission declines to grant rehearing as to Area 3. While National Fuel has established that faults exist, it has provided no evidence that gas is actually migrating through them. Wells 496 and 540 are located inside the December 2015 Order buffer zone, and Well SC-510 is located just outside the December 2015 Order buffer zone. Yet National Fuel did not submit any geochemical analysis from these wells to demonstrate the presence of storage gas.³⁵ Accordingly, National Fuel has not adequately supported its proposal to include these wells within the reservoir boundary.³⁶

27. Performance data from wells close to the middle of the saddle such as Well SC-490 suggest that migration is more pronounced through the middle of the saddle, as opposed to along the faults located approximately 2,500 feet north of Well SC-490. In the 2002 Order proceedings, National Fuel demonstrated the connection between Beech Hill and the Annex “through geochemical fingerprinting and analysis of pressure response.”³⁷ No similar analysis was provided here to support further expansion of the reservoir boundary to include the faults that are north of the saddle.

28. Nor has National Fuel provided evidence of migration within the third fault between Wells NY766 and 540. The presence of a fault alone does not provide a sufficient basis to expand the certificated reservoir boundary. Accordingly, where National Fuel requests extension of the reservoir boundary in Area 3 to include faults where there is no demonstrated presence of storage gas, the Commission denies rehearing.

³³ *Id.* at 10.

³⁴ *Id.* at 11.

³⁵ Application, Exhibit Z-2, Map 3.

³⁶ The Commission notes that the faults are included within the December 2015 Order buffer boundary.

³⁷ Application, Exhibit Z-1 at 11.

29. The Commission agrees that rehearing is appropriate with respect to the location between Areas 3 and 5 where the reservoir boundary diverges inward. In this location, the newly designated reservoir boundary should follow the pre-December 2015 Order buffer boundary. Further, the buffer boundary should be extended here as well. Both of these extensions are depicted on the attached map.

D. Area 5

30. National Fuel requested an extension of the reservoir boundary in Area 5 to follow the -2,675 contour line and an extension of the buffer boundary 25 feet lower to follow the -2,700 contour line.³⁸ National Fuel asserted that its proposed reservoir boundary would enclose the gas/water contact and based its request on seismic data and data from Well SC-546, which was located within the then-existing buffer zone. The Commission authorized the expansion of the reservoir boundary to include Well SC-546, samples from which had demonstrated presence of storage gas.³⁹ Also, the Commission extended the buffer boundary but not the reservoir boundary to include a high place in the structure where gas has the potential to accumulate, known as a structural high.⁴⁰

31. In asserting that the Commission should have approved the reservoir and buffer boundaries in Area 5 as proposed, National Fuel contends that the Commission set the evidentiary bar too high by requiring geochemical data, thereby ignoring seismic data that support conclusions about the geologic structure. National Fuel states that the reservoir boundary in the December 2015 Order “actually cuts through a structural high defined by 3D seismic data.”⁴¹ National Fuel reiterates that the 3D seismic survey data and gas/water contact depth determined from well logs support its proposed modification. National Fuel stresses that the structural analysis from the application, without resorting to geochemical analysis for confirmation, supports its proposed modification.

32. While the Commission generally does not dispute National Fuel’s seismic interpretation of the closed structure, we do not find a proposed reservoir boundary coinciding with the -2,675 foot contour to be reasonable. National Fuel has provided data indicating the gas/water contact in this location is above the contour forming the basis of National Fuel’s proposed reservoir boundary, meaning that the proposed Area 5 reservoir

³⁸ Rehearing Request at 11.

³⁹ December 2015 Order, 153 FERC ¶ 61,301 at P 57.

⁴⁰ *Id.* P 57.

⁴¹ Rehearing Request at 12.

includes locations where the structure is below the gas/water contact and where the presence of storage gas is therefore unlikely. Notably, in Area 2, National Fuel proposed a reservoir boundary that excluded locations below the gas/water contact. Thus, it appears that National Fuel recognizes that rock below the gas/water contact is not suitable for inclusion in a reservoir. That being the case, and acknowledging National Fuel's revised seismic data, the Commission will grant rehearing, in part, to expand the certificated reservoir boundary in Area 5 to coincide with the contour associated with the gas/water contact as depicted in the map attached to this order.⁴²

33. This order also expands slightly the buffer boundary in Area 5 where the buffer and reservoir boundaries from the December 2015 Order appeared to meet. This adjustment is reflected in the attached map. However, the Commission is satisfied that the remainder of the buffer boundary approved in the December 2015 Order will allow National Fuel to maintain the integrity of the field as the affected Oriskany Sandstone lies below the gas/water contact. Accordingly, the Commission declines to grant rehearing with respect the buffer boundary for Area 5.⁴³

E. Area 6 and Well 7451

34. The December 2015 Order denied National Fuel's request to (1) add 5,123.06 acres to the reservoir boundary of Area 6 and 990.34 acres to the buffer boundary, and (2) convert Well 7451 from an observation to a withdrawal-only well to recover migrated storage gas.⁴⁴ The Commission found that, although storage gas was present in Well 7451, the hydraulic connection between the Beech Hill Complex and the Shongo gas pool, where Well 7451 is located, was weak because Well 7451 did not appear to be influenced by the Beach Hill injection-withdrawal cycles.⁴⁵ Additionally, National Fuel failed to establish that further migration of storage gas from the Beech Hill Complex

⁴² In Area 2, the Commission has designated a *buffer boundary* that follows the gas/water contact contour, whereas here in Area 5, the *reservoir boundary* follows the gas/water contact contour. In the case of Area 2, the saddle to the northeast presented the concern that further migration outside of the storage field could occur. The Commission expects that National Fuel's operations consistent with this order will prevent storage gas from reaching the saddle in Area 2. No such saddle structure occurs in Area 5.

⁴³ This order requires National Fuel to file a detailed map showing the precise location of all boundaries determined in this order.

⁴⁴ December 2015 Order, 153 FERC ¶ 61,301 at PP 58-62.

⁴⁵ *Id.* P 60.

would cease if Well 7451 were to be authorized as a withdrawal-only well.⁴⁶ Nevertheless, the Commission found there to be a geologic connection between the Beech Hill Complex and the Shongo pool. To prevent third parties from inducing storage gas to flow from Beech Hill to Shongo, the Commission authorized the expansion of the buffer boundary, but not the reservoir boundary, to include the Shongo pool and Well 7451.⁴⁷

35. On rehearing, National Fuel argues that the record supports the proposed expansion of the reservoir and buffer boundaries and the conversion of Well 7451.⁴⁸ National Fuel stresses that geochemical analysis from Well 7451, which was completed in 2008, shows the presence of storage gas. With respect to the Commission's finding that the pressure in Well 7451, when not used for withdrawals, is not influenced by the pressure variances in Beech Hill, National Fuel contends that the Shongo pool is quite large in size. National Fuel states that Area 6 includes, in addition to the Shongo pool, an additional structural trap and faults that are likely in communication with the Shongo pool. National Fuel adds that storage gas migration beyond these areas is not likely. National Fuel states that failing to include the Shongo pool within the reservoir boundary would impede its ability to recover storage gas that has migrated into this pool.

36. The Oriskany structure within the Shongo pool is substantially lower than it is in the Beech Hill Complex, meaning gas could not naturally flow to the Shongo pool.⁴⁹ Further, the Commission believes gas could flow to the Shongo pool only by operation of a well such as Well 7451. Beginning in the 1940s and continuing for over 30 years, the Beech Hill Complex Well SC-468 produced native gas by inducing it to flow through a geologic pathway connecting the Shongo pool, where Well 7451 is located, to the Beech Hill field.⁵⁰ During this time, the operation of Well SC-468, assisted by the natural tendency for natural gas to flow upward, pulled native natural gas from the Shongo pool where it could be produced in the Beech Hill Complex. Thus, the geologic pathway connecting Well SC-468 to the source of native gas in the Shongo pool explains why Well SC-468 had such a long productive life. However, when Well 7451 produced gas in 2010, this process was reversed, and the same geologic pathway provided a means

⁴⁶ *Id.* P 68.

⁴⁷ *Id.* P 60.

⁴⁸ Rehearing Request at 13-16.

⁴⁹ *See* December 2015 Order, 153 FERC ¶ 61,301 at P 58 n.47.

⁵⁰ *Id.* P. 58.

by which Well 7451 induced storage gas to flow from the Beech Hill Complex to the Shongo pool when Well 7451 was in a withdrawal state. Thus, the operation of Well 7451 explains the presence of storage gas in the Shongo pool. National Fuel has not demonstrated that expanding the reservoir to include the Shongo pool is necessary to protect the integrity of Beech Hill.

37. Data collected from Well 7451 demonstrates the presence of storage gas, but gas can be “pulled” from Beech Hill when Well 7451 is in a withdrawal state.⁵¹ However, the Commission finds that migration to the Shongo pool ceased based on the fact that Well 7451 pressures do not change in synch with the Beech Hill Complex injection/withdrawal cycles.⁵² Additionally, if storage gas was actively migrating to the Shongo pool, the percentage of storage gas from Well 7451 should have increased over time. To stop storage gas from being siphoned by third parties in the future, the Commission expanded the buffer zone to halt further migration of gas. Geochemical analysis from Well 7451 showed, however, that the 65 percent concentration of storage gas had remained constant from initial production in 2010 through National Fuel’s withdrawal period in 2013.⁵³ Accordingly, rehearing is denied with respect to conversion of Well 7451 in addition to expansion of the reservoir boundary in Area 6.

F. Area 7

38. The December 2015 Order denied National Fuel’s request to expand the reservoir and buffer boundaries in Area 7 because no gas of any origin had been documented in that location.⁵⁴ On rehearing, National Fuel states the inclusion of Area 7 is required because it has a structural trap of similar characteristics to that within Area 6.⁵⁵ That a geologic structure may feature a structural trap is not a reasonable basis to expand the certificated reservoir boundary. Unlike Area 6, National Fuel has not documented any

⁵¹ In 2008, Pennsylvania General Energy Corporation began producing gas from Well 7451. National Fuel acquired Well 7451 in 2011 and did not produce gas from the well, with the exception of a four-month period in 2013. *Id.* PP 6, 59.

⁵² By contrast, in Area 1, the Commission authorized expansion of the storage field to include a well that had demonstrated a hydraulic connection and pressure correlation.

⁵³ December 2015 Order, 153 FERC ¶ 61,301 at P 59.

⁵⁴ *Id.* PP 63-64.

⁵⁵ Rehearing Request at 15.

gas, whether native or storage, in Area 7.⁵⁶ Accordingly, the Commission declines to grant rehearing for Area 7.

G. Conclusion

39. This order adopts modifications to the reservoir boundary and buffer boundary as described above and as depicted on the attached map. Therefore, National Fuel is ordered to revise Tables 1 and 2 from the December 2015 Order to reflect the determinations herein, and submit the revised tables to the Commission within 30 days of issuance of this order. Additionally, National Fuel is ordered to file a detailed map reflecting the determinations herein.

40. The December 2015 Order referenced National Fuel's poor performance managing storage gas migration issues at the Beech Hill Complex.⁵⁷ The Commission reminds National Fuel that it must comply with Ordering Paragraph (D) of the December 2015 Order requiring it to file a specific storage gas containment and management plan describing how it will effectively mitigate any flow of storage gas from the Beech Hill to Shongo, as well as additional assessment and mitigation efforts designed to prevent the flow of any storage gas from the Beech Hill Storage Complex in general. The plan should be designed to go into effect within six months of issuance of this order.⁵⁸

The Commission orders:

- (A) National Fuel's rehearing request is granted in part and denied in part as set forth above and as shown in the attached map.
- (B) National Fuel's request to supplement the record is denied.
- (C) National Fuel's request for a technical conference is denied.

⁵⁶ December 2015 Order, 153 FERC ¶ 61,301 at P 64.

⁵⁷ *Id.* P 69 (“The Commission is concerned by National Fuel's continued inability to manage its storage gas migration issues, beginning in 2002 when we authorized the Beech Hill Annex expansion.”).

⁵⁸ We encourage National Fuel to consult with Commission staff within the Office of Energy Projects prior to developing this plan.

(D) National Fuel is directed, within 30 days of issuance of this order, to file revised version of Tables 1 and 2 from the December 2015 Order to reflect the determinations herein, along with a detailed map showing the precise location of all boundaries determined in this order.

By the Commission.

(S E A L)

Kimberly D. Bose,
Secretary.

