

**BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION**

**IN THE MATTER OF PUBLIC SERVICE )  
COMPANY OF NEW MEXICO'S )  
ABANDONMENT OF SAN JUAN ) Case No. 19-00018-UT  
GENERATING STATION UNITS 1 AND 4 )**

**REBUTTAL TESTIMONY**

**OF**

**JOHN HALE**

**November 15, 2019**

**NMPRC CASE NO. 19-00018-UT  
INDEX TO THE REBUTTAL TESTIMONY OF  
JOHN HALE**

**WITNESS FOR  
PUBLIC SERVICE COMPANY OF NEW MEXICO**

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PNM Exhibit JH-1 (Rebuttal)

Table of Comparison of Surface Water  
Sample Results

AFFIDAVIT

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1                   **I. INTRODUCTION AND PURPOSE OF TESTIMONY**

2   **Q. PLEASE STATE YOUR NAME, POSITION AND BUSINESS ADDRESS.**

3   **A.** My name is John Hale. I am a manager in PNM’s Environmental Services  
4 Department. My address is 2401 Aztec Rd. NE, Albuquerque, New Mexico  
5 87107.

6

7   **Q. PLEASE DESCRIBE YOUR RESPONSIBILITIES AS AN**  
8 **ENVIRONMENTAL MANAGER.**

9   **A.** I oversee various environmental compliance and permitting activities for PNM  
10 facilities and operations. I recommend and implement strategy and procedures for  
11 environmental planning, facility compliance, and resource protection programs. I  
12 manage personnel and programs for various environmental compliance activities  
13 at the power generation stations, including the San Juan Generating Station (“San  
14 Juan coal plant”).

15

16 **Q. PLEASE DESCRIBE YOUR EDUCATION AND EXPERIENCE.**

17 **A.** I have a Bachelor of Science degree in Environmental Engineering from  
18 California Polytechnic State University, San Luis Obispo, CA. I am a registered  
19 Professional Engineer in the State of New Mexico. I have been employed with  
20 PNM for approximately 25 years in the Environmental Services Department.

21

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1 **Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?**

2 **A.** My rebuttal testimony responds to certain assertions in the direct testimony  
3 submitted on behalf of New Energy Economy (“NEE”) by Sterling Grogan,  
4 Norman R. Norvelle and Mark A. Hutson, and to provide information regarding  
5 the environmental management program and water management at the San Juan  
6 Coal Plant.

7

8 **II. PNM’S ENVIRONMENTAL MANAGEMENT PROGRAM**

9 **Q. PLEASE DISCUSS PNM’S ENVIRONMENTAL MANAGEMENT**  
10 **PROGRAM.**

11 **A.** PNM strives every day to provide responsible leadership for the preservation of  
12 the environment and to continuously improve our operations to reduce  
13 environmental impact. As part of our ongoing commitment to environmental  
14 stewardship, PNM has implemented environmental management systems at all of  
15 our facilities. The San Juan coal plant was the first of our facilities to implement  
16 an Environmental Management System in 2001. These systems are a set of  
17 processes and practices that are consistent with the International Organization of  
18 Standardization’s (ISO) 14001 standard for environmental management systems.  
19 They assist us in maintaining environmental compliance, and help us identify and  
20 evaluate our environmental impacts and find ways to reduce, and, where possible,  
21 eliminate these impacts.

22

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**III. WATER MANAGEMENT AT SAN JUAN COAL PLANT**

**Q. PLEASE PROVIDE A BRIEF OVERVIEW OF WATER MANAGEMENT PROCESSES AT THE SAN JUAN COAL PLANT.**

**A.** Water used at the San Juan coal plant is pumped from the San Juan River to the Raw Water Reservoir located on and south of the plant site. From the reservoir, the water is pumped to the station to be used in plant operations for the purpose of generating electricity. San Juan utilizes a water management system in which the water is recycled and reused in various processes (“process water”) until it is ultimately discharged to synthetically-lined evaporation ponds where it is disposed of through evaporation.

**Q. DOES SAN JUAN DISCHARGE PROCESS WATER TO LOCATIONS OTHER THAN THE PERMITTED EVAPORATION PONDS ON THE PLANT SITE?**

**A.** No. The San Juan coal plant is a zero-discharge facility in which process water is managed and disposed of in on-site lined process and evaporation ponds, which are permitted and regulated under the relevant New Mexico Environment Department (“NMED”) requirements.

**Q. HOW IS THE DISCHARGE OF WATER TO THE PROCESS AND EVAPORATION PONDS REGULATED?**

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1    **A.**    All discharges to the San Juan coal plant process and evaporation pond system are  
2            regulated by the NMED Ground Water Quality Bureau under a ground water  
3            discharge permit.

4

5    **Q.    WHAT IS THE PURPOSE OF THE NMED GROUND WATER**  
6            **DISCHARGE PERMIT?**

7    **A.**    In the San Juan coal plant discharge permit, NMED notes that its purpose in  
8            issuing the permit and in imposing the requirements and conditions of the permit  
9            are to control the discharge of water contaminants into ground and surface water  
10           so as to protect such waters for present and future use. Therefore, process water,  
11           which may contain elevated concentrations of regulated constituents, are managed  
12           by discharging the water into lined ponds.

13

14   **Q.    IS ANY GROUND WATER MONITORING REQUIRED BY THE NMED**  
15            **GROUND WATER DISCHARGE PERMIT?**

16   **A.**    Yes. The NMED discharge permit requires ground water quality monitoring, and  
17            PNM has a comprehensive program in place to monitor, through sampling and  
18            analysis, the ground water at the San Juan coal plant. The San Juan coal plant  
19            maintains ground water monitoring wells and leak detection systems at various  
20            locations on and off the plant site, many of which are adjacent to the lined  
21            evaporation ponds. PNM conducts quarterly ground water monitoring of these  
22            wells. In addition, PNM conducts semi-annual monitoring of the South  
23            Evaporation Ponds, process ponds and cooling tower basins. PNM submits

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1           quarterly discharge monitoring reports to NMED. The reports include ground  
2           water level measurements, discharge volumes to the various evaporation ponds  
3           and process ponds, and laboratory analytical data for the samples collected from  
4           the monitoring wells and ponds. Laboratory analyses of the samples are  
5           performed by a certified analytical laboratory.

6  
7   **Q.   HAS SAN JUAN ALWAYS DISCHARGED WATER TO ITS POND**  
8   **SYSTEMS?**

9   **A.**   No. During approximately the first decade of plant operations beginning in 1973,  
10       the original National Pollutant Discharge Elimination System (“NPDES”) permit  
11       issued by the U.S. Environmental Protection Agency (“EPA”) allowed for process  
12       water discharges to the Shumway Arroyo.

13  
14   **Q.   WHEN DID THE PERMITTED DISCHARGES TO THE SHUMWAY**  
15   **ARROYO CEASE?**

16   **A.**   In 1984, the NPDES permit was modified so that the San Juan coal plant became  
17       a zero-discharge facility for process water and discharges to the Shumway Arroyo  
18       ceased. Although the plant has been zero-discharge since 1984, PNM requested a  
19       formal permit modification, and the EPA granted approval to terminate the  
20       NPDES zero-discharge permit related to process water, in 2015.

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1 **Q. IS STORM WATER AT SAN JUAN REGULATED?**

2 **A.** Yes. The plant is also subject to an EPA NPDES Multi-Sector General Permit in  
3 the event of storm water discharges.

4

5 **Q. DOES PNM HAVE A SPILL RESPONSE PROGRAM?**

6 **A.** Yes. As part of its environmental management system, PNM has a  
7 comprehensive spill response program and performs spill response, evaluation  
8 and mitigation. PNM evaluates each spill to determine the appropriate mitigation  
9 strategy and as required, reports those incidents to the various environmental  
10 regulatory agencies.

11

12 **Q. HAS PNM IMPLEMENTED ANY PROJECTS TO MITIGATE THE  
13 POTENTIAL FOR IMPACTS TO GROUND WATER?**

14 **A.** Yes. The San Juan coal plant has evaporation and process ponds and an  
15 underground network of piping used to transport the fresh and process water at  
16 the plant. To address leaks or seeps from these sources of water that could  
17 potentially impact ground water, in 2008, PNM installed a ground water recovery  
18 trench designed to prevent ground water that may have been impacted by plant  
19 operations from moving off the plant site. This system was a proactive measure  
20 on PNM's part and approved by the NMED and became operational in 2010. The  
21 ground water recovery trench and pump-back system is located approximately  
22 4,000 ft. downstream of the plant adjacent to the Shumway Arroyo. The system is



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1           designed to capture any potential release of discharges from the San Juan coal  
2           plant and pump the water back to the South Evaporation Pond system.

3  
4   **Q.   WHAT DOES THE GROUND WATER RECOVERY TRENCH**  
5   **MONITORING SHOW?**

6   **A.**   Ground water quality monitoring wells placed around the ground water recovery  
7           trench indicate no significant changes in water quality characteristics since  
8           monitoring began. Ground water quality monitoring results are regularly reported  
9           to the NMED in the quarterly discharge monitoring reports.

10  
11   **Q.   WHAT OTHER PREVENTATIVE MEASURES HAVE BEEN TAKEN**  
12   **WITH RESPECT TO GROUND WATER AT THE SAN JUAN COAL**  
13   **PLANT?**

14   **A.**   Between 2010 and 2015, the San Juan coal plant undertook several capital  
15           improvement projects to address potential sources of leaks and seeps. These  
16           included the closure of Cell 1 of the North Evaporation Pond, replacement of the  
17           cooling tower recirculating lines, installation of synthetic liners for the coal pile  
18           runoff basins 1 and 2 and other measures. The remaining two cells of the North  
19           Evaporation Pond were subsequently closed pursuant to NMED and New Mexico  
20           Office of the State Engineer requirements and final closure approval.

21

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1 **Q. WERE ANY ADDITIONAL MITIGATION ACTIONS TAKEN TO**  
2 **PROTECT GROUND WATER?**

3 **A.** Yes. PNM and the San Juan Coal Mine installed a much larger ground water  
4 recovery system consisting of an impermeable, subsurface concrete-like slurry  
5 wall and ground water recovery trench (“Recovery System”). The Recovery  
6 System was installed as part of a 2012 Consent Decree between Sierra Club, PNM  
7 and the San Juan Coal Mine related to San Juan operations and the placement of  
8 coal combustion residuals, or CCR, at the mine. The Recovery System is  
9 designed to capture ground water downstream of the San Juan coal plant and the  
10 San Juan Coal Mine.

11  
12 **Q. PLEASE DESCRIBE THE RECOVERY SYSTEM AND ITS**  
13 **EFFECTIVENESS.**

14 **A.** Construction on the Recovery System commenced in June 2017 after the  
15 complex technical design was completed and all of the proper permits and  
16 approvals were acquired from the various regulatory agencies and landowners.  
17 The Recovery System became operational in December of 2018. The system  
18 includes an 800 ft. long subsurface trench excavated along an east-west  
19 orientation across the saturated alluvium. The trench was excavated under slurry  
20 down into impermeable sandstone bedrock with a depth ranging from  
21 approximately a few feet to 35 ft. below the ground surface. A large diameter  
22 slotted plastic pipe was placed at the bottom of the trench. The pipe is sloped and  
23 connected to a wet well (located at the low point in the excavated trench). Ground

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1 water flowing downgradient through the saturated alluvium enters the pipe and  
2 then gravity flows to the wet well. The recovered ground water is then pumped to  
3 San Juan coal plant evaporation ponds.

4

5 **Q. IS THE RECOVERY SYSTEM PERMITTED BY ANY REGULATORY**  
6 **AGENCY?**

7 **A.** Yes. A separate ground water discharge permit from the NMED governs the  
8 operation and monitoring of the Recovery System. Analytical results from the  
9 recovery system are submitted to the NMED on a quarterly basis.

10

11 **Q. IS THE SAN JUAN COAL PLANT IN COMPLIANCE WITH ALL**  
12 **REGULATORY REQUIREMENTS AND PERMIT CONDITIONS?**

13 **A.** Yes. The plant meets the conditions of its federal and state permits. This is  
14 confirmed through regular environmental monitoring and reporting to federal and  
15 state agencies. PNM provides quarterly reporting to the NMED and the EPA as  
16 part of the compliance requirements of our storm water and ground water  
17 discharge permits. In addition, both NMED and EPA conduct inspections of the  
18 plant at various times.

19

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**IV. REBUTTAL TO NEE WITNESSES**

**Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?**

**A.** I address the direct testimonies of NEE Witnesses Grogan, Norvelle and Hutson.

**Q. WHAT DOES NEE WITNESS GROGAN COVER IN HIS DIRECT TESTIMONY?**

**A.** NEE witness Grogan relates that at some unspecified time in the 1980s there were two accidental spills at the San Juan coal plant. His testimony indicates that the spills were addressed. With regard to the latter accidental spill, he notes that the NMED and New Mexico Energy, Minerals and Natural Resources Department were involved in the resolution of this accidental spill, but that he does not know how the situation was resolved.

**Q. WAS PNM ABLE TO IDENTIFY ANY INFORMATION ABOUT THESE ACCIDENTAL SPILLS?**

**A.** No. NEE Witness Grogan did not provide enough information to specifically identify the spills as described. However, it appears from the testimony of NEE Witness Grogan that the spills were cleaned up. There is nothing in his testimony to suggest that that there was any lasting environmental impact from these accidental spills.

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1 **Q. WHAT DOES NEE WITNESS NORVELLE STATE ABOUT THE SAN**  
2 **JUAN COAL PLANT?**

3 **A.** NEE Witness Norvelle discusses the former chemical plant at the San Juan coal  
4 plant that was operated in conjunction with the former Flue Gas Desulfurization  
5 (“FGD”) emission control system used to control SO<sub>2</sub> emissions. He states that  
6 wastes from the former chemical plant were disposed in an unlined pit on the San  
7 Juan Coal Mine Site.

8

9 **Q. HOW DOES PNM RESPOND TO NEE WITNESS NORVELLE?**

10 **A.** As NEE Witness Norvelle states, the FGD system was replaced in 1998, more  
11 than twenty years ago. There is no longer an operating chemical plant to generate  
12 the materials described by NEE Witness Norvelle. With regard to the mine pit  
13 referred to by NEE Witness Norvelle on the mine site, PNM does not own or  
14 operate the San Juan Coal Mine. PNM is informed that the San Juan Coal Mine  
15 addressed the placement of these materials in the mine pit.

16

17 **Q. NEE WITNESS NORVELLE ALSO DISCUSSES THAT WATER USED**  
18 **TO BE DISCHARGED FROM THE SAN JUAN COAL PLANT INTO THE**  
19 **SHUMWAY ARROYO. PLEASE ADDRESS THIS.**

20 **A.** As discussed previously, the San Juan coal plant was originally authorized under  
21 its EPA-issued NPDES permit to discharge process water to the Shumway  
22 Arroyo. It is not clear from the testimony of NEE Witness Norvelle when these  
23 discharges occurred. In any case, as discussed previously, the San Juan coal plant

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1 no longer discharges process water into the Shumway Arroyo or to any locations  
2 other than the NMED permitted lined evaporation ponds.

3  
4 **Q. NEE WITNESS NORVELLE STATES THAT HE ONCE TOOK**  
5 **MEASUREMENTS OF SLUDGE IN THE SAN JUAN EVAPORATION**  
6 **PONDS. IS THERE ANY PROBLEM WITH SLUDGE IN THE**  
7 **EVAPORATION PONDS?**

8 **A.** No. The evaporation ponds are intended to allow solids to settle out of the  
9 process water as the water evaporates. That is one of the functions of the  
10 evaporation ponds and is permitted under the discharge permit.

11  
12 **Q. NEE WITNESSES GROGAN AND NORVELLE STATE THAT IN THE**  
13 **PAST, EXTENSIVE AMOUNTS OF COAL DUST AND FLY ASH WERE**  
14 **PRESENT AT THE SAN JUAN COAL PLANT. HOW DOES PNM**  
15 **RESPOND?**

16 **A.** There is naturally going to be some coal dust associated with coal handling and  
17 there is going to be fly ash associated with the combustion of coal. However, the  
18 San Juan coal plant is subject to air emission limitations that require that dust  
19 from coal and fly ash be controlled. The San Juan coal plant has a dust  
20 suppression program that is included in its NMED-issued air permit and the plant  
21 complies with this program. In addition, with the conversion of the San Juan coal  
22 plant to a balanced draft configuration, fly ash emissions from ductwork in the  
23 plant have been virtually eliminated.

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1 **Q. NEE WITNESS NORVELLE STATES THAT IN 1981 THERE WAS A**  
2 **LEAK THROUGH WHICH CORROSION INHIBITOR ENTERED THE**  
3 **GROUND WATER AND ULTIMATELY FLOWED TO THE SHUMWAY**  
4 **ARROYO. HOW DOES PNM RESPOND?**

5 **A.** While a leak as described by NEE Witness Norvelle may have occurred, PNM is  
6 not aware of any such occurrence. Further, NEE Witness Norvelle provides no  
7 support for his opinion that any materials from the leak reached the Shumway  
8 Arroyo. Again, there is an extensive ground water monitoring network and  
9 program at San Juan that is used to assess any impacts to ground water from plant  
10 operations.

11

12 **Q. WHAT ASPECTS OF THE DIRECT TESTIMONY OF NEE WITNESS**  
13 **HUTSON DO YOU ADDRESS?**

14 **A.** I address the portions of the direct testimony of NEE Witness Hutson related to  
15 ground water quality at San Juan.

16

17 **Q. PLEASE DISCUSS GROUND WATER QUALITY AT SAN JUAN.**

18 **A.** NEE Witness Hutson indicates that monitoring well QNT is the furthest  
19 upgradient well and is located in the Westwater Arroyo, and that the North  
20 Evaporation Ponds have been operated without an unimpacted, upgradient  
21 monitoring well since at least 2010. This is incorrect. Monitoring well MW-  
22 Westwater, which was installed in 2014 and is located over a mile north of well  
23 QNT and the North Evaporation Ponds, serves as the unimpacted, upgradient,

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1 background monitoring well. MW-Westwater is monitored quarterly as part of  
2 the San Juan coal plant discharge plan requirements. The well data show that  
3 background, unimpacted ground water in this area is generally of poor quality and  
4 in some cases may even exceed applicable regulatory standards for some  
5 constituents. For example, the October 2019 sampling results from the  
6 unimpacted, upgradient MW-Westwater well indicated a ground water total  
7 dissolved solids ("TDS") concentration of 21,800 mg/L. For comparison, the  
8 New Mexico Water Quality Control Commission domestic water supply TDS  
9 standard for ground water is 1,000 mg/L.

10  
11 **Q. NEE WITNESS HUTSON REFERENCES A NITRATE STUDY WHICH**  
12 **INDICATES THE PRESENCE OF NITRATES AT THE SAN JUAN COAL**  
13 **PLANT. HOW IS PNM ADDRESSING THE NITRATE**  
14 **CONCENTRATIONS IN THE GROUND WATER AT SAN JUAN?**

15 **A.** PNM is addressing the nitrate concentrations through ground water monitoring  
16 and monitored natural attenuation ("MNA"). MNA relies on natural processes to  
17 decrease or "attenuate" concentrations of constituents in soil and ground water  
18 over time. Natural attenuation occurs through a variety of processes including  
19 biodegradation, chemical reactions, sorption, dilution and evaporation. MNA is a  
20 viable and acceptable form of ground water and soil remediation by many



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1 agencies, including the EPA and the NMED,<sup>1</sup> and is routinely employed at  
2 hundreds of sites throughout the country.

3  
4 **Q. WHAT DOES NEE WITNESS HUTSON ASSERT WITH RESPECT TO**  
5 **THE USE OF MNA FOR THE NITRATES AT SAN JUAN?**

6 **A.** NEE Witness Hutson asserts that PNM has not conducted the necessary testing to  
7 determine that MNA is an appropriate remedy for the nitrate plume, and that  
8 PNM is not monitoring the nitrate plume. Both of these assertions are incorrect.  
9 The efficacy of MNA is dependent on the specific site conditions and, therefore,  
10 can be flexible in its application. Both EPA and NMED generally recognize  
11 MNA as an acceptable process, and PNM proposed the use of MNA in the final  
12 nitrate report submitted to NMED. The NMED has not indicated disagreement  
13 with PNM's proposed use of MNA or the report's conclusions, and has not  
14 required an alternative process.

15  
16 **Q. WHAT ADDITIONAL STEPS HAS PNM TAKEN WITH RESPECT TO**  
17 **THE USE OF MNA FOR THE NITRATES AT SAN JUAN?**

18 **A.** Monitoring of nitrate concentrations is still on-going. Monitoring wells NEP-3,  
19 NEP-4, and QNT are located within the nitrate plume area, are monitored  
20 quarterly and the results are reported to the NMED. Monitoring results indicate  
21 that nitrate concentrations in these wells are generally decreasing over time,  
22 which supports PNM's use of MNA as the preferred remedy. Furthermore, the

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<sup>1</sup> See for example 20.5.119.1915 NMAC.

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1 ground water recovery trench serves as an additional ground water protective  
2 measure. The ground water recovery trench has upgradient and downgradient  
3 monitoring wells, which are monitored quarterly in accordance with the discharge  
4 permit requirements. Therefore, should nitrate-impacted ground water move that  
5 far downgradient, it would be detected in the upgradient well, collected by the  
6 recovery systems and pumped to the San Juan South Evaporation Pond complex,  
7 and managed in accordance with the discharge permit requirements. Although  
8 unlikely, should nitrate-impacted ground water not be collected by the ground  
9 water recovery trench, the downgradient monitoring well would detect an increase  
10 in nitrate concentrations.

11  
12 Lastly, the larger Recovery System as described above, which is downgradient of  
13 the ground water recovery trench, consists of an impermeable subsurface barrier  
14 wall and a recovery trench. This system would collect nitrate-impacted ground  
15 water should it move this far and pump it to the South Evaporation Pond complex  
16 to be managed under the NMED discharge permit requirements. Both of these  
17 recovery systems are regulated under the NMED discharge permit program.  
18 These permits require routine monitoring and reporting to the NMED.

19  
20 **Q. PLEASE ADDRESS THE RESULTS OF THE SURFACE WATER**  
21 **SAMPLING CONDUCTED BY NEE DURING THE NEE SITE VISIT TO**  
22 **THE SAN JUAN COAL PLANT.**

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1    **A.**    In NEE Witness Hutson’s site findings noted on pages 9 and 10 of his testimony,  
2           sample results are provided for the single surface water sample he collected from  
3           the Shumway Arroyo at the direction of NEE’s lawyer.  However, no information  
4           was provided on which analytical methods were used for these analyses and,  
5           therefore, PNM is unable to determine if the appropriate analytical methods and  
6           related procedures were followed.  Using the appropriate analytical method and  
7           adherence to the method procedures is necessary to obtain valid sample results.

8  
9           Furthermore, the table on page 9 lists maximum contaminant levels (“MCLs”),  
10          which apply to drinking water supplies, for several of the detected parameters in  
11          the sample.  Although NEE Witness Hutson notes that the MCLs are listed for  
12          comparison purposes, PNM questions the purpose of listing these standards  
13          because they are not valid for comparison purposes since MCLs apply to drinking  
14          water, not to natural surface flow sources such as the water flowing in the  
15          Shumway Arroyo.

16  
17    **Q.**    **DID PNM TAKE A DUPLICATE SAMPLE OF THE WATER FROM THE**  
18            **SHUMWAY ARROYO AND WHAT WERE THE RESULTS OF THAT**  
19            **SAMPLE?**

20    **A.**    Yes.  PNM took a duplicate sample of water from the Shumway Arroyo during  
21            the NEE San Juan coal plant site visit.  A comparison of the results of the NEE  
22            sample results and the PNM sample results is shown in PNM Exhibit JH-1  
23            (Rebuttal).  The exhibit also shows the criteria for various water uses and

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1 constituents that have been established by New Mexico water quality agencies.  
2 For those constituents for which there are New Mexico surface water standards,  
3 all of the test results for both PNM's and NEE's samples were within these  
4 standards.

5  
6 **Q. NEE WITNESS HUTSON CHARACTERIZES SOME OF THE**  
7 **SAMPLING RESULTS AS DEMONSTRATING ELEVATED LEVELS OF**  
8 **CERTAIN CONSTITUENTS. DO YOU AGREE?**

9 **A.** No. Mr. Hutson states that the water in the Shumway Arroyo is characterized as  
10 high TDS water with elevated concentrations of various constituents. However,  
11 multiple samples taken at different times and locations are necessary to  
12 adequately characterize local water quality conditions, which NEE Witness  
13 Hutson did not do. Consequently, there is no validity to the characterization of  
14 elevated concentrations based on one sample taken at one location.

15  
16 **Q. FINALLY, PLEASE RESPOND TO THE CLAIM BY NEE WITNESS**  
17 **HUTSON THAT HE HAD INSUFFICIENT DATA AND TIME TO**  
18 **PERFORM AN ADEQUATE ANALYSIS AT SAN JUAN.**

19 **A.** The San Juan coal plant has been subject to environmental regulation, inspection  
20 and monitoring since its inception. PNM has provided thousands of pages of San  
21 Juan monitoring data and related reports to NEE in discovery in this case. In  
22 addition, virtually all of this information is submitted to the NMED and is  
23 publicly available. NEE sought entry on the San Juan plant site effective October

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1           15, 2019. While PNM objected to entry, the Hearing Examiners ruled that NEE  
2           should be permitted to enter the San Juan plant site no later than October 22,  
3           2019. PNM granted NEE timely access to San Juan, but NEE indicated that its  
4           consultant was not available until October 25, 2019. PNM agreed to grant access  
5           on October 25, 2019. However, NEE then proposed that the site visit be further  
6           delayed until October 28, 2019. NEE claimed that it was essential for its  
7           consultant to conduct a site visit to the San Juan coal plant, and NEE chose to  
8           limit the site visit to the morning of October 28, 2019 and only a single surface  
9           water sample was gathered. Any suggestion that PNM somehow delayed or  
10          prevented NEE's consultant from completing any analysis is factually incorrect.

**V. CONCLUSION**

13   **Q. PLEASE SUMMARIZE YOUR REBUTTAL TESTIMONY.**

14   **A.** The San Juan coal plant is subject to numerous air and water quality regulations,  
15           and operates in accordance with its environmental permits, as demonstrated  
16           through periodic monitoring, inspections and reporting. NEE's witnesses have  
17           raised general concerns about past or potential environmental impacts, all of  
18           which are addressed and rebutted by PNM's existing environmental management  
19           system and processes.

21   **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

22   **A.** Yes it does.

Table of Comparison of Surface Water Sample Results

# PNM Exhibit JH-1 (Rebuttal)

Is contained in the following 1 page.

COMPARISON OF DETECTED CONSTITUENTS IN SURFACE WATER SAMPLES TO SURFACE WATER STANDARDS

| Sampling Date                   | 10/28/2019     | 10/28/2019     | Surface Water Criteria <sup>a</sup> |                   |         |         |                   |                   |         | PNM Analytical Method |
|---------------------------------|----------------|----------------|-------------------------------------|-------------------|---------|---------|-------------------|-------------------|---------|-----------------------|
| Sample Source                   | Shumway Arroyo | Shumway Arroyo | DWS                                 | IRR               | LW      | WH      | Aquatic Life      |                   |         |                       |
| Sample Delivery Group           | L1155420       |                |                                     |                   |         |         | Acute             | Chronic           | HH-OO   |                       |
| Sample ID                       | PNM-SW1        | Hutson Sample  | (µg/L)                              | (µg/L)            | (µg/L)  | (µg/L)  | (µg/L)            | (µg/L)            | (µg/L)  |                       |
| <b>Wet Chemistry Parameters</b> |                |                |                                     |                   |         |         |                   |                   |         |                       |
| Dissolved Solids                | 8,720,000      | 9,090,000      |                                     |                   |         |         |                   |                   |         | 2540 C-2011           |
| pH                              | 8.3            | NR             |                                     |                   |         |         |                   |                   |         | 9040C                 |
| <b>Inorganics</b>               |                |                |                                     |                   |         |         |                   |                   |         |                       |
| Antimony                        | <10.0          | <2.0           | 6                                   |                   |         |         |                   |                   | 640     | 6010C                 |
| Arsenic                         | <10.0          | 2.7            | 10                                  | 100               | 200     |         | 340               | 150               | 9.0     | 6010C                 |
| Barium                          | 47.6           | NR             | 2,000                               |                   |         |         |                   |                   |         | 6010C                 |
| Beryllium                       | <2.00          | NR             | 4                                   |                   |         |         |                   |                   |         | 6010C                 |
| Boron                           | 2,900          | 2,620          |                                     | 750               | 5,000   |         |                   |                   |         | 6010C                 |
| Cadmium                         | <2.00          | <1.0           | 5                                   | 10                | 50      |         | 2.98 <sup>b</sup> | 0.75 <sup>b</sup> |         | 6010C                 |
| Calcium                         | 385,000        | 311,000        |                                     |                   |         |         |                   |                   |         | 6010C                 |
| Chloride                        | 550,000        | 499,000        |                                     |                   |         |         |                   |                   |         | 9056A                 |
| Chromium                        | <10.0          | 2.6            | 100                                 | 100               | 1,000   |         |                   |                   |         | 6010C                 |
| Cobalt                          | <10.0          | 4.3            |                                     | 50                | 1,000   |         |                   |                   |         | 6010C                 |
| Fluoride                        | 1,040          | 1,300          |                                     |                   |         |         |                   |                   |         | 9056A                 |
| Lead                            | <5.00          | NR             | 15                                  | 5,000             | 100     |         | 140 <sup>b</sup>  | 5 <sup>b</sup>    |         | 6010C                 |
| Lithium                         | 265            | 205            |                                     |                   |         |         |                   |                   |         | 6010C                 |
| Manganese                       | NA             | 79.4           |                                     |                   |         |         | 3,761             | 2,078             |         | NA                    |
| Mercury                         | <0.2           | NR             | 2                                   | 10                | 0.77    |         | 1.4               | 0.77              |         | 7470A                 |
| Molybdenum                      | NA             | 3.2            |                                     | 1,000             |         |         | 7,920             | 1,895             |         | NA                    |
| Nitrate as N                    | NA             | 2,370          | 10                                  |                   |         |         |                   |                   |         | NA                    |
| Selenium                        | <10.0          | 14.3           | 50                                  | 0.25 <sup>c</sup> | 50      | 5.0     | 20.0              | 5.0               | 4,200   | 6010C                 |
| Sodium                          | NA             | 1,790,000      |                                     |                   |         |         |                   |                   |         | NA                    |
| Sulfate                         | 5,330,000      | 4,850,000      |                                     |                   |         |         |                   |                   |         | 9056A                 |
| Thallium                        | <10.0          | <1.0           | 2                                   |                   |         |         |                   |                   | 0.47    | 6010C                 |
| Vanadium                        | NA             | <5.0           |                                     | 100               | 100     |         |                   |                   |         | NA                    |
| <b>Radionuclides</b>            |                |                |                                     |                   |         |         |                   |                   |         |                       |
| Sample ID                       | PNM-SW1        | Hutson Sample  | (pCi/L)                             | (pCi/L)           | (pCi/L) | (pCi/L) | (pCi/L)           | (pCi/L)           | (pCi/L) | Method                |
| Radium 226 + Radium 228         | 0.9945         | NR             | 5                                   |                   | 30      |         |                   |                   |         | 9315/9320             |

Notes:

Results are in micrograms per liter (µg/L) or picroCuries per liter (pCi/L).

**Bold - Analyte detected.**

NA - Not analyzed.

NR - Not reported.

DWS - domestic water supply.

IRR/IRR storage - irrigation or irrigation storage.

LW - livestock watering.

WH - wildlife habitat.

HH-OO - human health-organism only.

Designated uses for intermittent waters include LW, WH, marginal warmwater aquatic life, and primary contact. [20.6.4.99]

<sup>a</sup> Criteria are based on dissolved concentration unless total recoverable concentration available. [20.6.4.900]

<sup>b</sup> Criterion is hardness-based, using hardness value of 200 mg/L. [20.6.4.900]

<sup>c</sup> Criterion for selenium in presence of >500 mg/L sulfate (SO<sub>4</sub>). [20.6.4.900C]

Hardness calculated as 2.5[Ca<sup>2+</sup>] + 4.1[Mg<sup>2+</sup>] using 385 mg/L Ca (from PNM SW1 sample analysis) and 477 mg/L Mg (from RTWW2 sample analysis on 7/16/2019) = 204 mg/L

Hutson sample analytical methods were not made available and are not reported.

**BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION**

IN THE MATTER OF PUBLIC SERVICE )  
COMPANY OF NEW MEXICO'S )  
ABANDONMENT OF SAN JUAN ) Case No. 19-00018-UT  
**GENERATING STATION UNITS 1 AND 4** )

**AFFIDAVIT**

STATE OF NEW MEXICO )  
 ) ss  
COUNTY OF BERNALILLO )

**JOHN E. HALE, Manager, Environmental Services at PNMR Services**

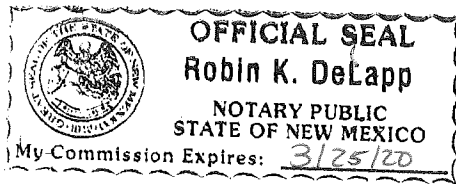
**Company**, upon being duly sworn according to law, under oath, deposes and states: I have read the foregoing **Rebuttal Testimony of John E. Hale**, and it is true and correct based on my personal knowledge and belief.



SIGNED this 12<sup>m</sup> day of November, 2019.

John E. Hale  
JOHN E. HALE

SUBSCRIBED AND SWORN to before me this 12<sup>m</sup> day of November, 2019.



Robin K. DeLapp  
NOTARY PUBLIC IN AND FOR  
THE STATE OF NEW MEXICO

My Commission Expires:

3/25/20