UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street

San Francisco, CA 94105

MEMORANDUM

DATE: April 22, 2019

SUBJECT: Updated Reasonable Potential Analysis for NPDES Permit NN0000019

FROM: Gary Sheth

TO: Administrative Record for NPDES Permit NN0000019

Background

On November 10, 2014 the United Stated Environmental Protection Agency, Region 9 (EPA) included in the Administrative Record a memorandum summarizing its Reasonable Potential Analysis (RPA) for NPDES Permit NN0000019. That RPA was based data submitted by Arizona Public Service Company (APS) in its 2013 permit renewal application as well as a review of Data Monitoring Reports (DMRs)from the past five years, as well as priority pollutant scan data submitted by APS. The memorandum indicated that EPA had requested from the Navajo Nation EPA (NNEPA) available ambient data for the waters downstream from the discharge point, (i.e. No Name Wash, and Chaco River, and San Juan River near the confluence with Chaco River. EPA did not receive this data prior to issuance of the proposed permit in December 2014.

However, during the public comment period for the proposed permit following public notice NNEPA provided water quality data to EPA for the proposed APS Four Corners power plant permit which they collected over a period from 1998 to 2013 at a total of 23 locations in the vicinity of APS Four Corners power plant and the Navajo Mine ranging from Morgan Lake, the cooling lake used by the power plant, to the New Mexico/Colorado border on the San Juan River. Since it last submitted data in early 2015 NNEPA supplemented that data with additional data it collected between 2015 and 2017. The new data is mostly from parts of the watershed much further downstream of the APS FCPP and collected in response to the Gold King Mine spill, so is not directly relevant to this RPA. The following is an analysis of a subset of that data related to the APS Four Corners power plant NPDES permit.

The NPDES permit for APS Four Corners power plant authorizes discharge of cooling water from Morgan Lake via Outfall 001 to No Name wash a tributary to the Chaco River, which is itself a tributary to the San Juan River. The proposed permit also requires APS to identify and characterize seeps on the Chaco River down gradient from the fly ash ponds used by APS to store coal combustion residue. Therefore, only data collected from Morgan Lake, No Name Wash and Seeps to the Chaco down gradient from the fly ash pond were analyzed. NNEPA collected data from Morgan Lake seven times (2002, 2003, 2004, 2006, 2008, 2009, 2010) and once each from the No Name wash (2010) and Seeps down gradient of the fly ash ponds (2008).

Table 1. Mercury Data

Location	Species Sampled	Total Data Points	Method PQL	Average value of Data
Seep in Chaco near fly ash pond (06-32)	Total Mercury	1	0.2 nanograms/liter	0.63 nanograms/L
No Name Wash 1.5 miles downstream of Morgan Lake (06-35)	Total Mercury	1	0.2 nanograms/liter	9.2 nanograms/L
Morgan Lake west end of lake (06-21)	Total Mercury	4	0.2 nanograms/liter	1.36 nanograms/L
Morgan Lake east end of lake (06-22)	Total Mercury	4	0.2 nanograms/liter	1.84 nanograms/L

Table 2. Selenium Data

Location	Species Sampled	Total Data Points	Method PQL	Average value of Data
Seep in Chaco near fly ash pond (06-32)	Total Selenium	1	5 micrograms/L	2.5 micrograms/L
No Name Wash 1.5 miles downstream of Morgan Lake (06-35)	Total Selenium	1	0.5 micrograms/L	0.25 micrograms/L
Morgan lake west end of lake (06-21)	Total Selenium	7	1.0 micrograms/L	0.67 micrograms/L

Morgan Lake east end of lake (06-22)	Total Selenium	7	1.0 micrograms/L	0.80 micrograms/L

Analysis of Total Mercury Levels.

Of the seven samples each collected for mercury at the West end (near Outfall 001) and East end (near internal Outfall 01A) in Morgan Lake the four samples collected from 2006 onwards used the more sensitive method which has a Practical Quantitation Limit (PQL) of 0.2 nanograms per liter i.e. much below the 2 nanograms per liter most stringent applicable water quality standard for mercury. Therefore, only those eight samples (4 each from the East and West end of Morgan Lake) were used to analyze the mercury levels in Morgan Lake. Also note that non-detects were treated as half of the PQL and not as zero value. Based on these assumptions the levels of mercury on average were determined to be 1.36 nanograms per liter at the west end of Morgan Lake near the NPDES Outfall 001 and 1.84 nanograms per liter at the east end of Morgan Lake near the internal outfall 01A. The one sample each at the Seep downstream of the fly ash ponds and in the No Name wash a mile and a half downstream of Outfall 001 from Morgan Lake were also analyzed using the most sensitive method. The values detected were 0.63 nanograms per liter in the Seep and 9.2 nanogram per liter in No Name Wash a mile and a half downstream of Outfall 001 from Morgan Lake.

Analysis of Total Selenium Levels.

All seven samples for selenium collected both at the West end (near Outfall 001) and East end (near internal Outfall 01A) in Morgan Lake were analyzed using methods that had PQL of 1 microgram/liter, i.e. much below the 5 microgram per liter most stringent applicable water quality standard for selenium. Therefore, all fourteen samples were used to analyze the selenium levels in Morgan Lake. Also note that non-detects were treated as half of the PQL and not as zero value. Based on these assumptions the levels of selenium on average were determined to be 0.67 micrograms per liter at the west end of Morgan Lake near the NPDES Outfall 001 and 0.80 micrograms per liter at the east end of Morgan Lake near the internal outfall 01A. The one sample at the Seep downstream of the fly ash ponds was analyzed at a PQL of 5 micrograms per liter and was a non-detect. The average value was assumed to be 2.5 micrograms per liter (i.e. half of the PQL value). In the one sample collected from the No Name wash a mile and a half downstream of Morgan Lake the PQL of the analytical method was 0.5 microgram per liter. The result was a non-detect and so the average value was assumed to be 0.25 micrograms per liter (i.e. half of the PQL value).

Conclusion

The levels of total mercury and total selenium in Morgan Lake, on average, using conservative assumptions and based on sample sizes of 8 and 14 samples each indicate that the average level of mercury is below the 2 nanograms per liter mercury and the 5 micrograms per liter for

selenium. There is no reasonable potential for exceedance for either mercury or selenium from the permitted discharge of cooling water from Morgan Lake to the No Name Wash.

While the one sample collected in the No Name wash about a mile and a half downstream of the Outfall from Morgan Lake did have a value of 9.2 nanograms per liter it is very unlikely that the source of this mercury is solely or even mostly from discharge from Outfall 001 as the sampling point was over a mile and a half downstream from Outfall 001, and there are several other sources including runoff from other ephemeral washes and runoff from surrounding lands, as well as potential air deposition of mercury.