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Project No. DNA-210196

Ms. Karen Ortiz, Esq.
Puerto Rico Legal Counsel
PO Box 1890
Guayama, Puerto Rico 00785

2021 CCR Annual Groundwater Monitoring and Corrective Action Report
AES Puerto Rico LP, Guayama, Puerto Rico

Dear Ms. Ortiz:

DNA-Environment, LLC (DNA) has prepared this 2021 CCR Annual Groundwater Monitoring and Corrective Action Report (Annual Report) for the temporary staging area of manufactured aggregate (AGREMAX™) at AES Puerto Rico LP (AES-PR) in Guayama, Puerto Rico. This report has been prepared to comply with the reporting requirements described in the United States Environmental Protection Agency (USEPA) Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals (CCR) from Electric Utilities, 40 CFR Part 257, Subpart D (CCR Rule), as required by §257.90(e)(1) through §257.90(e)(6).

Overview of Current Status of Groundwater Monitoring and Corrective Action Program [40 CFR 257.90(e)(6)]:

At the beginning and the end of the 2021 reporting period, the CCR unit operated under the assessment monitoring program per §257.95. Pursuant to 40 CFR 257.94(e) and 257.95, the facility had established an assessment monitoring program on July 16, 2018. Therefore, statistical evaluation of the constituents listed in Appendix IV to 40 CFR Part 257 was performed as required under assessment monitoring, and evaluation of statistically significant increase over background levels for one or more constituents listed in Appendix III pursuant to 40 CFR 257.94(e) was not warranted. At the end of the 2021 reporting period, the most current statistical evaluation of groundwater monitoring data, which was completed in January 2021[1], determined statistically significant levels above the associated groundwater protection standards of selenium and molybdenum in groundwater samples collected from Monitoring Well MW-3, and lithium and molybdenum from Monitoring Well MW-4.

[1] The statistical evaluation was revised in February 2021 following revision by Pace Analytical Services (New Orleans, LA) of the October 2020 analytical results for metal analysis (EPA Method 6020) in the sample collected from Monitoring Well MW-5.

Section 257.90(e) of the CCR Rule specifies the following:

> *For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2018, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action report. For new CCR landfills, new CCR surface impoundments, and all lateral expansions of CCR units, the owner or operator must prepare the initial annual groundwater monitoring and corrective action report no later than January 31 of the year following the calendar year a groundwater monitoring system has been established for such CCR unit as required by this subpart, and annually thereafter. For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. For purposes of this section, the owner or operator has prepared the annual report when the report is placed in the facility's operating record as required by §257.105(h)(1).*

The following key actions were completed in 2021 to comply with the CCR Rule:

- Assessment-monitoring sampling events were conducted in April and October 2021 in accordance with 40 CFR §257.95.
- A statistical evaluation was completed in January 2021 per 40 CFR §257.93(h) and §257.95(h). This evaluation resulted in statistically significant levels above the groundwater protection standards (GWPS) of lithium, molybdenum, and selenium in groundwater samples collected from certain monitoring wells at AES-PR (see below).
- On January 12, 2021, AES-PR received approval of the Environmental Assessment Determination for the liner installation from the Puerto Rico Office of General Permits.
- On July 6, 2021, AES-PR received approval of the Construction Permit for the liner installation from the Puerto Rico Office of General Permits.
- In 2021, AES-PR continued to remove AGREMAX™ from the staging area to allow for liner installation.
- In 2021, the Phase I portion of the Agremax Staging Area was prepared for liner installation by removal of AGREMAX™ and placement of soil fill material.

To report on the activities conducted during the prior calendar year and document compliance with the CCR Rule, the specific requirements listed in §257.90(e)(1) through §257.90(e)(5) are provided below in bold/italic type, followed by a narrative addressing how that specific requirement has been met.

At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:

§257.90(e)(1): A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

AES-PR is located in the municipality of Guayama on the south coast of Puerto Rico (Site). The Site is bordered to the north and west by an inactive pharmaceutical facility (formerly TAPI Puerto Rico) and by an undeveloped parcel of land, to the south by land owned by the Puerto Rico Ports Authority and Las Mareas Harbor, to the east by an inactive petroleum refinery (formerly Chevron Phillips Chemical Puerto Rico Core), and to the west by AES Ilumina (solar energy farm). Figure 1 shows a Site Location Map. Figure 2 shows the manufactured aggregate (AGREMAX^{TM}) temporary staging area and associated upgradient and downgradient CCR monitoring wells. Figure 3 shows the locations of temporary wells TW-101 through TW-109 installed during the 2019 nature and extent groundwater characterization study pursuant to §257.95(g)(1).

§257.90(e)(2): Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

No permanent CCR monitoring wells were installed or decommissioned during this reporting period.

***§257.90(e)(3): In addition to all the monitoring data obtained under §257.90 through §257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs*;**

Table 1 summarizes the number of samples collected at each monitoring well, sampling dates, and designation of whether the samples were required by detection or assessment monitoring program.

Groundwater analytical results and field monitoring data for the samples collected during the 2021 CCR monitoring events are summarized in Tables 2 and 3.

§257.90(e)(4): A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels);

AES-PR remained in the assessment monitoring program during 2021.

A statistical evaluation was completed in January 2021 in accordance with 40 CFR §257.93(h) and §257.95(h). This evaluation resulted in statistically significant levels above the groundwater protection standards (GWPS) of selenium and molybdenum in groundwater samples collected from Monitoring Well MW-3, and lithium and molybdenum from Monitoring Well MW-4 (see Table 4).

§257.90(e)(5): Other information required to be included in the annual report as specified in §257.90 through §257.98.

Assessment monitoring events were completed in April and October 2021 per §257.95(b) and §257.95(d). Tables 2 and 3 summarize the groundwater analytical results and field monitoring data for these events. Table 4 summarizes the groundwater protection standards and site background levels established in accordance with §257.95(d)(2) and §257.95(h). The analytical data collected from 2017 through 2020, which were provided in previous Annual Reports, were used in the computation of background levels.

Projected key activities to be completed during the 2022 calendar year include the following:

- Statistical evaluation inclusive of 2021 analytical results.
- Annual and semiannual assessment monitoring sampling events in accordance with §257.95.

AES-PR expects that the key activities listed below will occur in 2022. However, the timing of these activities may vary depending on factors including, but not limited to, the timing of regulatory agency approvals and permits, potential issues related to the COVID-19 global pandemic, contractor availability, AGREMAX™ shipment schedules, and other logistical considerations.

- Complete Phase 1 of liner installation;
- Initiate and complete liner installation for Phase 2; and
- Establish and implement the Corrective Action Groundwater Monitoring Program.

We appreciate the opportunity to assist with the CCR Rule groundwater monitoring program at AES-PR.

Sincerely,

Alberto Meléndez
Principal Environmental Consultant

Enclosure

c.: Ms. Angelique Collier, AES US Services, LLC – w/enclosure
Mr. Erick Rocher, AES Puerto Rico, LP - w/enclosure

TABLES

Table 1. Summary of 2021 CCR Groundwater Sampling Program, AES Puerto Rico LP, Guayama, Puerto Rico

Monitoring Well ID	Upgradient or Downgradient Well	Number of Samples Collected in 2021 *	Sample Collection Date	Monitoring Phase
MW-1	Upgradient	2	6-Apr-21 4-Oct-21	Assessment
MW-2	Upgradient	2	6-Apr-21 4-Oct-21	Assessment
MW-3	Downgradient	2	6-Apr-21 4-Oct-21	Assessment
MW-4	Downgradient	4	6-Apr-21 4-Oct-21	Assessment
MW-5	Downgradient	2	6-Apr-21 4-Oct-21	Assessment

Notes:

* One groundwater sample was collected per sampling event at Monitoring Wells MW-1, MW-2, MW-3 and MW-5, whereas two groundwater samples were collected per sampling event at MW-4 (these consisted of one sample and one field duplicate sample per event).

Table 2. Analytical Results and Monitoring Data for Groundwater Samples Collected in April 2021
AES Puerto Rico, LP in Guayama, Puerto Rico

	Well ID	MW-1	MW-2	MW-3	MW-4	MW-4-Dup	MW-5
	Well Location	Upgradient	Upgradient	Downgradient	Downgradient	NA	Downgradient
	Sample ID	AES-MW1-040621	AES-MW2-040621	AES-MW3-040621	AES-MW4-040621	AES-MW4-DUP-040621	AES-MW5-040621
	Sampling Date	4/6/2021	4/6/2021	4/6/2021	4/6/2021	4/6/2021	4/6/2021
Static Water Elevation (ft MSL)		8.97	9.24	0.85	3.75	NA	1.33
Field Parameters	**Units**						
pH	SU	7.08	6.58	6.75	7.02	NA	6.44
Conductivity	mS/cm	2.434	1.374	16.00	42.32	NA	13.22
Redox Potential	mV	178.6	148.0	-25.5	-133.3	NA	-22.5
Dissolved Oxygen	mg/L	2.35	2.18	1.91	0.75	NA	2.24
Turbidity	NTU	5.12	11.31	3.79	22.51	NA	29.45
Temperature	°C	29.5	30.7	30.4	32.4	NA	29.1
Analytical Results	**Units**						
Antimony	mg/L	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U
Arsenic	mg/L	0.00081 J	0.00067 J	0.0022	0.0037	0.0033	0.016
Barium	mg/L	0.043	0.16	0.22	0.043	0.044	0.034
Beryllium	mg/L	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U
Cadmium	mg/L	0.00017 U	0.00017 U	0.00017 U	0.00017 U	0.00017 U	0.00017 U
Chromium	mg/L	0.0011 U	0.0011 U	0.0011 U	0.0020 J	0.0017 J	0.0011 U
Cobalt	mg/L	0.00090 J	0.00050 J	0.0022	0.0013	0.0013	0.0027
Fluoride	mg/L	0.76	0.64	1.9	0.61	0.62	0.46
Lead	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00030 J	0.00019 U	0.00019 U
Lithium	mg/L	0.0015 J	0.00075 J	0.0024	0.66	0.61	0.0048
Mercury	mg/L	0.000098 U	0.000098 U	0.000098 U	0.000098 U	0.000098 U	0.000098 U
Molybdenum	mg/L	0.0025 U	0.0025 U	0.19	0.98	0.91	0.0025 U
Selenium	mg/L	0.0049	0.00098 U	0.16	0.0052	0.0051	0.00098 U
Thallium	mg/L	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U
Radium 226 and 228 combined	pCi/L	0.353 U	-0.0401 U	0.315 U	-0.258 U	0.222 U	0.0546 U
Boron	mg/L	0.21	0.17	0.98	2.9	2.8	0.37
Calcium	mg/L	160	130	320	610	590	660
Chloride	mg/L	370	180	4800	9800	9800	3800
pH (field)	SU	7.08	6.58	6.75	7.02	NA	6.44
Sulfate	mg/L	460	27	2400	14000	14000	2300
Total Dissolved Solids	mg/L	1700	710	11000	34000	36000	9200

Notes:
mg/L - milligrams per Liter
SU - Standard Units
pCi/L - picocuries per Liter
ft MSL - Feet above Mean Sea Level
mS/cm - millisiemens per centimeter
mV - millivolts
NTU - Nephelometric Turbidity Units
°C - degrees Celsius
Analytical results of metal elements are "Total Recoverable".
Sample ID format is: "Site_Name-MW_ID-Sampling_Date" (Sampling Date format is mmddyy).
Sample AES-MW4-DUP-040621 is the field duplicate sample of AES-MW4-040621.
NA - Not Applicable to the field duplicate sample.
U - Not detected at the indicated Method Detection Limit (MDL). For Radium 226 and 228 combined, 'U' indicates that the result shown is below the Minimum Detectable Concentration (MDC).
J - Result is less than the Reporting Limit, but greater than or equal to the MDL; concentration is an approximate value.
Static water elevations were calculated from depth to water measurements conducted on 6-April-2021, using land survey data of September 2020.

Table 3. Analytical Results and Monitoring Data for Groundwater Samples Collected in October 2021
AES Puerto Rico, LP in Guayama, Puerto Rico

	Well ID	MW-1	MW-2	MW-3	MW-4	MW-4-Dup	MW-5
	Well Location	Upgradient	Upgradient	Downgradient	Downgradient	NA	Downgradient
	Sample ID	AES-MW1-100421	AES-MW2-100421	AES-MW3-100421	AES-MW4-100421	AES-MW4-DUP-100421	AES-MW5-100421
	Sampling Date	10/4/21	10/4/21	10/4/21	10/4/21	10/4/21	10/4/21
Static Water Elevation (ft MSL)		6.84	7.03	2.22	3.42	NA	2.87
Field Parameters	**Units**						
pH	SU	6.99	6.72	6.79	7.07	NA	6.49
Conductivity	mS/cm	1.97	1.08	15.78	43.9	NA	14.01
Redox Potential	mV	44.1	29.1	-66.0	-158.7	NA	-64.6
Dissolved Oxygen	mg/L	0.58	0.31	0.17	0.09	NA	0.70
Turbidity	NTU	7.86	3.52	1.86	6.20	NA	24.27
Temperature	°C	30.2	31.0	31.1	33.5	NA	30.1
Analytical Results	**Units**						
Antimony	mg/L	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U
Arsenic	mg/L	0.00073 J	0.00059 J	0.0026	0.0033	0.0034	0.022
Barium	mg/L	0.042	0.13	0.11	0.042	0.044	0.033
Beryllium	mg/L	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U
Cadmium	mg/L	0.00017 U	0.00017 U	0.00019 J	0.00017 U	0.00017 U	0.00017 U
Chromium	mg/L	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U
Cobalt	mg/L	0.00099 J	0.00093 J	0.0022	0.0010	0.0011	0.0027
Fluoride	mg/L	0.64	0.55	1.7	0.58	0.58	0.41
Lead	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Lithium	mg/L	0.00070 J	0.00052 J	0.0036	0.81	0.79	0.0046
Mercury	mg/L	0.000098 U	0.000098 U	0.000098 U	0.000098 U	0.000098 U	0.000098 U
Molybdenum	mg/L	0.0025 U	0.0025 U	0.21	0.54	0.55	0.0025 U
Selenium	mg/L	0.0062	0.0045	0.23	0.011	0.012	0.0023 J
Thallium	mg/L	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U
Radium 226 and 228 combined	pCi/L	0.302 U	-0.0380 U	0.145 U	0.182 U	-0.122 U	0.0553 U
Boron	mg/L	0.26	0.16	0.97	2.3	2.4	0.36
Calcium	mg/L	140	94	320	550	580	790
Chloride	mg/L	280	99	3800	9900	9900	4000
Field pH	SU	6.99	6.72	6.79	7.07	NA	6.49
Sulfate	mg/L	290	26	2400	14000	14000	2500
Total Dissolved Solids	mg/L	1300	560	11000	39000	40000	11000

Notes:
mg/L - milligrams per Liter
SU - Standard Units
pCi/L - picocuries per Liter
ft MSL - Feet above Mean Sea Level
mS/cm - millisiemens per centimeter
mV - millivolts
NTU - Nephelometric Turbidity Units
°C - degrees Celsius

Analytical results of metal elements are "Total Recoverable".

Sample ID format is: "Site_Name-MW_ID-Sampling_Date" (Sampling Date format is mmddyy).

Sample AES-MW4-DUP-100421 is the field duplicate sample of AES-MW4-100421.

NA - Not Applicable to the field duplicate sample.

U - Not detected at the indicated Method Detection Limit (MDL). For Radium 226 and 228 combined, 'U' indicates that the result shown is below the Minimum Detectable Concentration (MDC).

J - Result is less than the Reporting Limit, but greater than or equal to the MDL; concentration is an approximate value.

Static water elevations were calculated from depth to water measurements conducted on 4-October-2021, using land survey data of September 2020.

Table 4. Statistical Evaluation through 2020 Data: Comparison of Lower Confidence Limits to Groundwater Protection Standards
CCR Groundwater Monitoring Program, AES Puerto Rico LP, Guayama, Puerto Rico

	Comparison Criteria	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Fluoride (mg/L)	Lead (mg/L)	Lithium (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Selenium (mg/L)	Thallium (mg/L)	Radium 226 + 228 Combined (pCi/L)
	GWPS (greater of MCL, USEPA Amendments Level, or Site Background)	**0.006**	**0.010**	**2**	**0.004**	**0.005**	**0.1**	**0.006**	**4.0**	**0.015**	**0.040**	**0.002**	**0.100**	**0.05**	**0.002**	**5**
	MCL	0.006	0.010	2	0.004	0.005	0.1	-	4.0	-	-	0.002	-	0.05	0.002	5
	USEPA Amendments to the National Minimum Criteria*	-	-	-	-	-	-	0.006	-	0.015	0.040	-	0.100	-	-	-
	Site Background Level**	0.001	0.0018	0.1633	0.001	0.001	0.0039	0.0025	0.8696	0.0013	0.005	0.0002	0.015	0.013	0.0005	0.8573
Monitoring Well ID[1]	**Through Monitoring Date[2]**	**Lower Confidence Limit[3]**														
MW-3	27-Oct-2020	0.0012	0.002274	0.211	0.001	0.00063	0.0024	0.002038	1.583	0.001	0.005302	0.0002	**0.1677**	**0.1083**	0.0005	0.253
MW-4	27-Oct-2020	0.0019	0.002896	0.04738	0.0017	0.00036	0.0012	0.0011	0.63	0.001	**0.6315**	0.0002	**0.4206**	0.005064	0.0005	0.2016
MW-5	27-Oct-2020	0.001	0.004272	0.03406	0.001	0.000091	0.001	0.0029	0.42	0.001	0.0038	0.0002	0.0036	0.002137	0.0005	0.2514

Notes:

mg/L = milligrams per Liter

pCi/L = picocuries per Liter

GWPS = Groundwater Protection Standard

MCL = USEPA Maximum Contaminant Level

*USEPA Amendments to the National Minimum Criteria (Phase One, Part One), Disposal of Coal Combustion Residuals from Electric Utilities; effective August 29, 2018.

** Site background levels for each constituent were computed based on the Upper Tolerance Limit (UTL) of the pooled groundwater data from upgradient wells MW-1 and MW-2. Parametric tolerance limits were constructed with a target of 95% confidence and 95% coverage. The confidence and coverage of nonparametric tolerance limits were dependent upon the number of available background observations.

[1]Downgradient Monitoring Well Identification

[2]Statistical evaluation of groundwater analytical results from all groundwater monitoring events through October 27, 2020.

[3]Lower Confidence Limit (LCL): the confidence interval was set at 95% for Parametric and Nonparametric distributions.

Values in bold font and gray shading indicate a Lower Confidence Limit exceeding the corresponding GWPS.

FIGURES

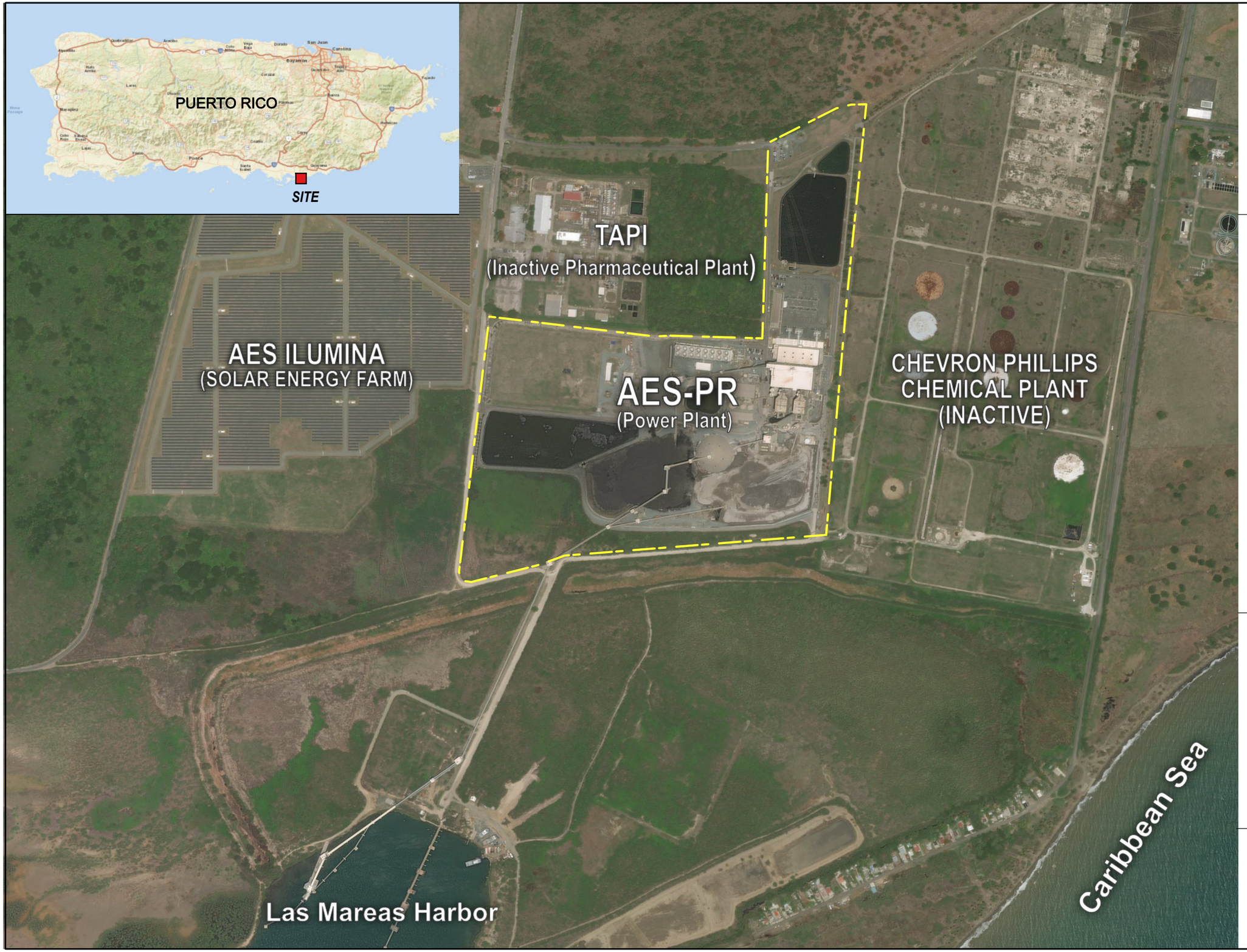

Figure 1

Site Location Map

AES Puerto Rico, LP
Guayama, Puerto Rico

Legend

AES Puerto Rico
Approximate Property Boundary

N

0 250 500 750 1000 1250 ft

DNA-ENVIRONMENT, LLC

Figure 2

CCR Groundwater Monitoring System

AES Puerto Rico, LP
Guayama, Puerto Rico

N

0 200 400 600 ft

DNA-ENVIRONMENT, LLC

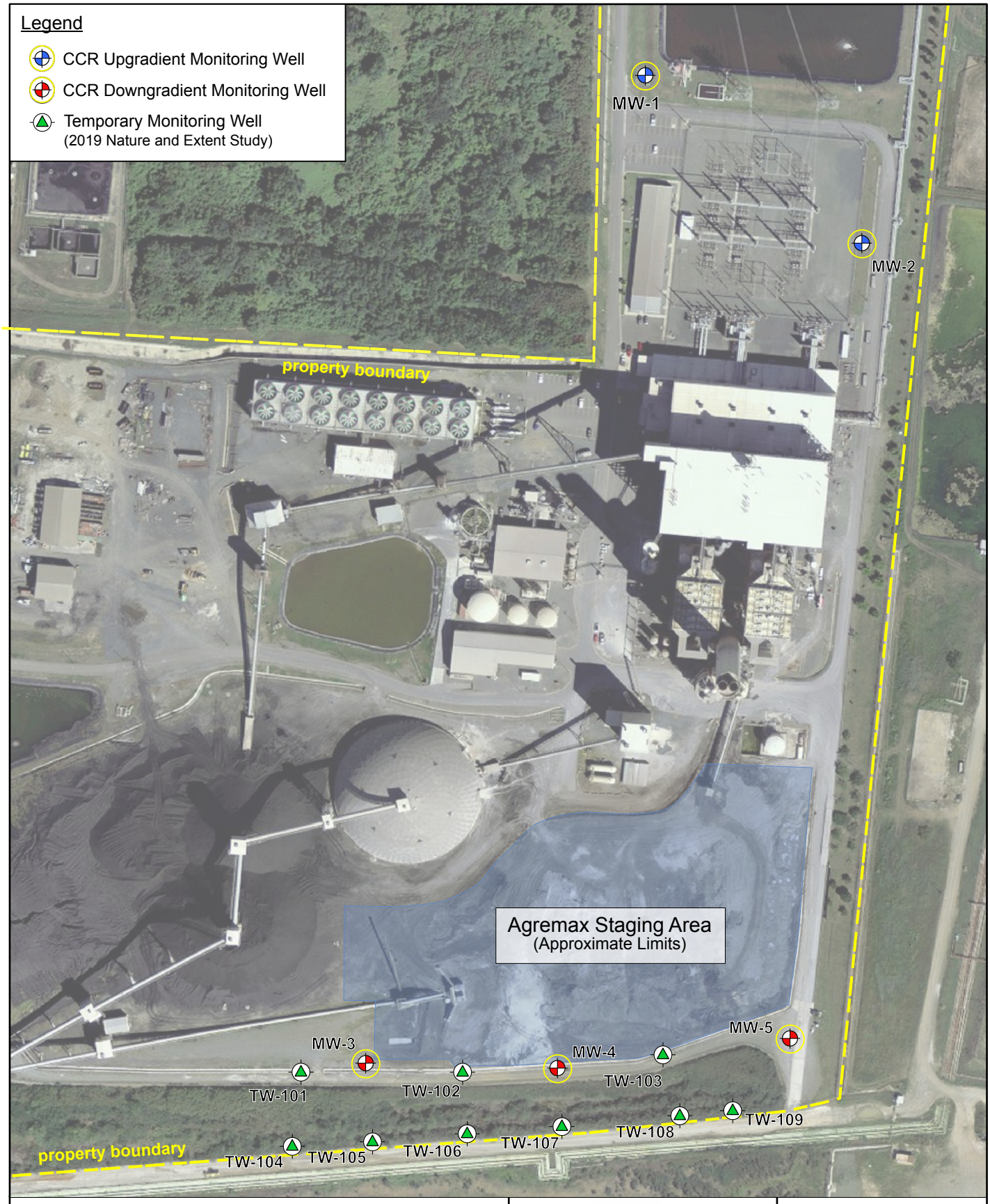

Figure 3

CCR Groundwater Monitoring System and Nature and Extent Temporary Wells

AES Puerto Rico, LP in Guayama, PR

N

0 100 200 300 ft

DNA-ENVIRONMENT, LLC