January 14, 2016

Ms. Fariba Mahvi
Environmental Services
Pepco Holdings, Inc.
701 Ninth Street, N.W.
Washington, D.C. 20068

SUBJECT: Pepco Benning Road Facility Remedial Investigation Requirements

Ms. Mahvi:

The purpose of this letter is to document the District Department of Energy & Environment's (DOEE) requirements for the Pepco Benning Road Facility (Site) Remedial Investigation (RI) as determined during our meeting on November 9, 2015 in DOEE's offices. In that meeting, the project team, including Potomac Electric Power Company (Pepco), AECOM, DOEE, and Tetra Tech, Inc. (Tetra Tech) staff, discussed Pepco responses to DOEE comments on the Benning Road Facility Draft RI Report submitted for DOEE review in April 2015. The team identified the following action items for Pepco to address in order to finalize the draft RI Report and complete the RI phase of the project:

- Pepco shall complete preparation of the revised draft RI Report,
- Pepco shall expand and revise the conceptual site model (CSM),
- Pepco shall refine the background study to include more site-specific, site-relevant media concentration data,
- Pepco shall revise the baseline human health risk assessment (BHHRA) and ecological risk assessment (ERA) and prepare revised BHHRA/ERA Work Plans,
- Pepco shall prepare an addendum to the RI Work Plan to describe the additional sampling required to address remaining Site data gaps and uncertainties,
- Pepco shall update the RI Report (prepare draft final RI Report) to document the revised CSM, background study, site characterization results, hydrocarbon forensic analysis, and BHHRA and ERA.

Each of these action items is described below along with associated interim deliverables. The requirements for specifying the timeframe during which each action item will be completed as well as the revised final RI Report are also provided.

Prepare Revised Draft RI Report. DOEE will issue a revised version of the draft RI Report (revised draft RI Report) consistent with edits and comments by DOEE as reflected in track-changed edited Word document files. Pepco also will revise both the BHHRA and ERA consistent with DOEE's comments submitted to Pepco via email on July 30, 2015. These documents will be issued as "preliminary" versions as part of the revised draft RI Report. Once

Pepco has completed these revisions and the resulting documents are approved by DOEE, DOEE will issue the documents for public review.

Prepare Expanded and Revised CSM. Pepco will develop a revised CSM which will include a comprehensive list of the significant hazardous materials used or generated at the site, the historical timeline when each material was used, graphic displays showing the aerial footprint where each material was used, a description of the spill control measures implemented during the use/generation of each material and the timeframes in which such measures were in place. Integral to the CSM will be a narrative discussion of each source area including an accounting of any known spills and details regarding the associated cleanup performed (description of material spilled, hazardous constituents contained within the material, volume of material spilled, location, duration, type of cleanup performed, amount of hazardous material recovered, types and volume of environmental media impacted and treated/removed).

Pepco will submit a CSM technical memorandum for review and approval by DOEE. The memorandum will document all data and information gathered in support of developing the revised CSM. The memorandum will include all associated supporting graphics and tables.

Refine the Background Study. Pepco will revise the background study presented in the draft RI Report to include only data that is site relevant and site-specific. Specifically, soil background data needs to be reasonably representative of coastal plain soil found in the District that has not been known or suspected to be impacted by a site-specific source. Similarly, groundwater data should be representative of the uppermost contiguous aquifer that can be reasonably assumed to be un-impacted by an up-gradient contaminant source. With regard to sediment, only data collected within the last 10 years from the tidal Anacostia River is considered relevant to the background assessment. Earlier data is generally reflective of historical conditions in which elevated concentrations of Site constituents were more pervasive. From the forensic analysis perspective, the background analysis needs to defensibly characterize urban background contributions of site contaminant concentrations (PAHs [the complete list of alkylated PAHs and biomarker compounds shown in Tables 1, 2, and 3], PCBs [individual congeners and Aroclors], chlorinated dioxins and furans, metals, pesticides, semi-volatile organic compounds and volatile organic compounds) in Anacostia River site-specific background sediments (surface and subsurface), sediment pore water, surface water, soil (surface and subsurface), and groundwater. Specifically, the forensics site-specific background dataset should be sufficiently complete and accurate to support direct comparative analysis of the site-specific background dataset to any published urban background studies that Pepco may cite in the draft final RI Report.

Pepco will document the background characterization approach in a technical memorandum submitted to DOEE for review and approval. The memorandum will detail the planned constituent list, all background sampling locations (including any existing locations from background investigations conducted by others), and the planned statistical analyses and sample statistic that will be used for comparison to constituent concentration data collected from the Site.

Prepare revised BHHRA and ERA Work Plans. Pepco will revise both the BHHRA and ERA Work Plans to be consistent with DOEE's RI Work Plan comments submitted to Pepco via email on July 30, 2015. In addition, Pepco will revise the BHHRA Work Plan to incorporate several additional risk assessment scenarios including the current construction worker, future construction worker, future industrial worker, and future recreational user scenarios. The Work Plan will identify the significant input parameters for each of the scenarios considered and the assumptions that will be used in quantifying each selected parameter value. The plan will include the sources that will be used for specifying parameter input for the BHHRA and the ERA. With regard to the ERA Work Plan, Pepco will note that the ERA will incorporate the pore water sampling results that will be generated from the additional sediment investigations planned by Pepco.

Pepco will document the revised BHHRA and ERA Work Plans in a technical memorandum submitted to DOEE for review and approval.

Prepare RI Work Plan Addendum. Pepco will prepare an additional RI Work Plan addendum (addendum) that will describe the additional sampling needed to complete the RI site characterization. The addendum will present the sampling locations for each medium included in the additional site investigation. As appropriate, each selected location will target a specific data gap or uncertainty identified in the CSM. The addendum will document the rationale for each location and the selected list of constituents for which the samples collected will be chemically analyzed. The addendum will incorporate the DOEE-approved CSM, background study approach, and risk assessment Work Plans.

As discussed in the November 9th meeting, DOEE's review of the draft RI Report revealed a number of remaining data gaps and uncertainties that require resolution. Table 4 lists selected sampling locations from the draft RI Report where elevated concentrations were observed but not delineated during the field work completed to date. The addendum will establish the additional sampling locations needed to complete the delineation of the elevated concentrations shown on Table 4, together with any additional sampling necessary to characterize any as yet unaddressed data gaps or uncertainties identified during the preparation of the revised CSM.

The addendum will also discuss the forensics component of the additional site investigation. Specifically, it will detail the additional sampling needed to accurately differentiate the Site contributions to constituent of interest (COI) concentrations in study area media from the contributions resulting from urban background. With regard to PAH COI forensic sampling, the analyte list will include the PAH and biomarker compounds shown on Tables 1, 2, and 3. PCB COI forensic sampling will include additional sampling for the full list of 209 PCB congeners. The forensics characterization will also include pentachlorophenol, chlorinated dioxins and furans, and di-, tri-, and tetrachlorobenzene isomers. The primary objective of the forensics investigation will be to support the assessment of the Site COIs contribution, both current and historical to Anacostia River surface and subsurface sediments.

Prepare Draft Final RI Report. Following the completion of the additional Site investigations, Pepco will review the preliminary results with DOEE prior to drafting the draft final RI Report. Once DOEE determines that characterization of the Site has been completed, Pepco will

complete the draft final RI Report for DOEE review. The draft final RI Report will include a discussion of the results of the refined background study and updated BHHRA and ERA. After any remaining issues are addressed, Pepco will submit the final RI Report and DOEE will issue the report for public review.

Project Schedule. As discussed, Pepco submitted the project schedule to DOEE on January 8, 2016. The project schedule includes a schedule for preparing the revised draft RI Report, completing the expanded CSM and preparing the associated technical memorandum, and completing the RI Work Plan addendum. In addition, Pepco will submit to DOEE along with the Final RI Work Plan Addendum, a detailed schedule covering the field investigation tasks, laboratory analysis, data validation, and draft revised RI Report.

DOEE believes that this letter documents the action items agreed upon in our November 9th meeting for Pepco to complete the RI phase of the Pepco Benning Road facility project. If you have any questions, please contact me at your earliest convenience.

Sincerely,

Richard Jackson
Deputy Director
Environmental Services Administration

Enclosures: 4

Table 1. Saturated Hydrocarbons (Alkanes/Isoprenoids Compounds) and Total Extractable Hydrocarbons

Abbr.	Analyte	Abbr.	Analyte
nC9	n-Nonane	nC23	n-Tricosane
nC10	n-Decane	nC24	n-Tetracosane
nC11	n-Undecane	nC25	n-Pentacosane
nC12	n-Dodecane	nC26	n-Hexacosane
nC13	n-Tridecane	nC27	n-Heptacosane
1380	2,6,10 Trimethyldodecane	nC28	n-Octacosane
nC14	n-Tetradecane	nC29	n-Nonacosane
1470	2,6,10 Trimethyltridecane	nC30	n-Triacontane
nC15	n-Pentadecane	nC31	n-Hentriacontane
nC16	n-Hexadecane	nC32	n-Dotriacontane
nPr	Norpristane	nC33	n-Tritriacontane
nC17	n-Heptadecane	nC34	n-Tetratriacontane
Pr	Pristane	nC35	n-Pentatriacontane
nC18	n-Octadecane	nC36	n-Hexatriacontane
Ph	Phytane	nC37	n-Heptatriacontane
nC19	n-Nonadecane	nC38	n-Octatriacontane
nC20	n-Eicosane	nC39	n-Nonatriacontane
nC21	n-Heneicosane	nC40	n-Tetracontane
nC22	n-Docosane	TRH	$\Sigma(C_9\text{-}C_{44})$ (All resolved peaks above the UCM over the entire hydrocarbon range from n-C9 to n-C44 after silica gel cleanup)
		TEH	$\Sigma(C_9\text{-}C_{44})$ (Integration of the FID signal over the entire hydrocarbon range from n-C9 to n-C44 after silica gel cleanup)
		TEM	$\Sigma(C_9\text{-}C_{44})$ (Integration of the FID signal over the entire hydrocarbon range from n-C9 to n-C44 no silica gel cleanup)

NOTE: TRH = Total Resolvable Hydrocarbons; TEH = Total Extractable Hydrocarbons with silica gel "clean-up"; TEM = Total Extractable Matter with no extract "clean-up"

Matrix	Target Method Detection Limit
Sediment (Alkanes) =	0.01 µg/g dry weight
Sediment (TEH) =	1 µg/g dry weight
Water (Alkanes) =	0.8 µg/L

Table 2. Extended PAH (Parent and Alkyl Homologues) and Other Related Compounds

	Compound
D0	**cis/trans-Decalin**
D1	**C1-Decalins**
D2	**C2-Decalins**
D3	**C3-Decalins**
D4	**C4-Decalins**
BT0	**Benzothiophene**
BT1	**C1-Benzo(b)thiophenes**
BT2	**C2-Benzo(b)thiophenes**
BT3	**C3-Benzo(b)thiophenes**
BT4	**C4-Benzo(b)thiophenes**
N0	*Naphthalene*
N1	*C1-Naphthalenes*
N2	*C2-Naphthalenes*
N3	*C3-Naphthalenes*
N4	*C4-Naphthalenes*
B	**Biphenyl**
DF	**Dibenzofuran**
AY	*Acenaphthylene*
AE	*Acenaphthene*
F0	*Fluorene*
F1	*C1-Fluorenes*
F2	*C2-Fluorenes*
F3	*C3-Fluorenes*
A0	*Anthracene*
P0	*Phenanthrene*
PA1	*C1-Phenanthrenes/Anthracenes*
PA2	*C2-Phenanthrenes/Anthracenes*
PA3	*C3-Phenanthrenes/Anthracenes*

	Compound
PA4	*C4-Phenanthrenes/Anthracenes*
RET	**Retene**
DBT0	*Dibenzothiophene*
DBT1	*C1-Dibenzothiophenes*
DBT2	*C2-Dibenzothiophenes*
DBT3	*C3-Dibenzothiophenes*
DBT4	*C4-Dibenzothiophenes*
BF	**Benzo(b)fluorene**
FL0	*Fluoranthene*
PY0	*Pyrene*
FP1	*C1-Fluoranthenes/Pyrenes*
FP2	**C2-Fluoranthenes/Pyrenes**
FP3	**C3-Fluoranthenes/Pyrenes**
FP4	**C4-Fluoranthenes/Pyrenes**
NBT0	**Naphthobenzothiophenes**
NBT1	**C1-Naphthobenzothiophenes**
NBT2	**C2-Naphthobenzothiophenes**
NBT3	**C3-Naphthobenzothiophenes**
NBT4	**C4-Naphthobenzothiophenes**
BA0	Benz[a]anthracene
C0	*Chrysene/Triphenylene*
BC1	*C1-Chrysenes*
BC2	*C2-Chrysenes*
BC3	*C3-Chrysenes*
BC4	*C4-Chrysenes*
BBF	*Benzo[b]fluoranthene*
BJKF	*Benzo[j]+[k]fluoranthene*
BAF	**Benzo[a]fluoranthene**

	Compound
BEP	Benzo[e]pyrene
BAP	Benzo[a]pyrene
PER	Perylene
IND	Indeno[1,2,3-cd]pyrene
DA	Dibenz[a,h]anthracene
GHI	Benzo[g,h,i]perylene
4MDT	**4-Methyldibenzothiophene**
2MDT	**2/3-Methyldibenzothiophene**
1MDT	**1-Methyldibenzothiophene**
3MP	**3-Methylphenanthrene**
2MP	**2Methylphenanthrene**
2MA	**2-Methylanthracene**
49MP	**4/9-Methylphenanthrene**
1MP	**1-Methylphenanthrene**
	2-Methylnaphthalene
	1-Methylnaphthalene
	2,6-Dimethylnaphthalene
	1,6,7-Trimethylnaphthalene
	Carbazole

Matrix	**Target Method Detection Limit Range**
Sediment/Soil =	0.1 – 0.5 ng/g dry weight
Tissue =	0.2 – 1.0 ng/g wet weight
Water =	1 – 5 ng/L

Table 3. Petroleum Biomarkers for Quantitative Analysis

Compound *	Quant Ion m/z
C23 Tricyclic Terpane (T4)	191
C24 Tricyclic Terpane (T5)	191
C25 Tricyclic Terpane (T6)	191
C24 Tetracyclic Terpane (T6a)	191
C26 Tricyclic Terpane-22S (T6b)	191
C26 Tricyclic Terpane-22R (T6c)	191
C28 Tricyclic Terpane-22S (T7)	191
C28 Tricyclic Terpane-22R (T8)	191
C29 Tricyclic Terpane-22S (T9)	191
C29 Tricyclic Terpane-22R (T10)	191
18a-22,29,30-Trisnorneohopane-Ts (T11)	191
C30 Tricyclic Terpane-22S (T11a)	191
C30 Tricyclic Terpane-22R (T11b)	191
17a(H)-22,29,30-Trisnorhopane-Tm (T12)	191
17a/b,21b/a 28,30-Bisnorhopane (T14a)	191
17a(H),21b(H)-25-Norhopane (T14b)	191
30-Norhopane (T15)	191
18a(H)-30-Norneohopane-C29Ts (T16)	191
17a(H)-Diahopane (X)	191
30-Normoretane (T17)	191
18a(H)&18b(H)-Oleananes (T18)	191
Hopane (T19)	191
Moretane (T20)	191
30-Homohopane-22S (T21)	191
30-Homohopane-22R (T22)	191
T22a-Gammacerane/C32-diahopane	191
30,31-Bishomohopane-22S (T26)	191
30,31-Bishomohopane-22R (T27)	191
30,31-Trishomohopane-22S (T30)	191

* Peak identification provided in parentheses.

Compound	Quant ion m/z
30,31-Trishomohopane-22R (T31)	191
Tetrakishomohopane-22S (T32)	191
Tetrakishomohopane-22R (T33)	191
Pentakishomohopane-22S (T34)	191
Pentakishomohopane-22R (T35)	191
13b(H),17a(H)-20S-Diacholestane (S4)	217
13b(H),17a(H)-20R-Diacholestane (S5)	217
13b,17a-20S-Methyldiacholestane (S8)	217
14a(H),17a(H)-20S-Cholestane/ 13b(H).17a(H)-20S-Ethyldiacholestane (S12)	217
14a(H),17a(H)-20R-Cholestane 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	217
Unknown sterane(S18)	217
13a,17b-20S-Ethyldiacholestane (S19)	217
14a,17a-20S-Methylcholestane (S20)	217
14a,17a-20R-Methylcholestane (S24)	217
14a(H),17a(H)-20S-Ethylcholestane (S25)	217
14a(H),17a(H)-20R-Ethylcholestane (S28)	217
14b(H),17b(H)-20R-Cholestane (S14)	218
14b(H),17b(H)-20S-Cholestane (S15)	218
14b,17b-20R-Methylcholestane (S22)	218
14b,17b-20S-Methylcholestane (S23)	218
14b(H),17b(H)-20R-Ethylcholestane (S26)	218
14b(H),17b(H)-20S-Ethylcholestane (S27)	218
C26,20R- +C27,20S- triaromatic steroid(TAS1)	231
C28,20S-triaromatic steroid(TAS2)	231
C27,20R-triaromatic steroid(TAS3)	231
C28,20R-triaromatic steroid(TAS4)	231
Sesquiterpane EICPs	123

* selected diagnostic compounds with alternate method performance criteria

Table 4

Additional Site Characterization Needs (Excluding Forensics Analyses) Identified from the RI Report
Pepco Benning Road Facility

Location	Chemical	Media	Delineation needed?		Rationale	Concentration	Unit
			Horizontal	Vertical			
SUS08	Vanadium	surface soil	yes	No	TA-1 former lagoon area, Tetra Tech 2009 report collected 13 samples in this area, highest concetration detected was 17,000 mg/kg.	1700	mg/kg
SUS05	PCB	surface soil	yes	No	Cooling tower	5700	ug/kg
SUS06	PCB	surface soil	yes	No	TA-14 Former railroad switch yard, CTI did investigation in 2009, where is the data	1900	ug/kg
SUS08	PCB	surface soil	yes	No	TA-1 former lagoon area, Tetra Tech 2009 report collected several samples in this area, analyzed for only aroclor 1254 and 1260, two samples SS-02 (2700ug/kg) and SS-09(1100 ug/kg)	840	ug/kg
SUS10	PCB	subsurface soil	yes	delineated at 9 ft. No samples between 3.5 to 9 ft, conc at 3.5 is 3100	TA-10 (Red tag storage bldg) and TA-11 (PCB bldg), DP44 in the vicinity	1000	ug/kg
DP44 (2.5 to 3.5)	PCB	subsurface soil	yes	yes	TA-10 (Red tag storage bldg) and TA-11 (PCB bldg)	3100	ug/kg
SUS12	PCB	surface soil	yes	No	TA-4, 2003 salvage yard investigation area, formerly used for storing used electrical equipment.	2,900	ug/kg
SUS18	PCB	surface soil	yes	No	TA-9 Green Tag station area	1400	ug/kg
SUS20	PCB	surface soil	yes	No	TA-7 (1998 parking lot cleanup area is on the other end (east side) of the TA, which was historical storage area 10,000 gallon PCB holding tank.	5100	ug/kg
SUS21	PCB	suface soil	yes	No	TA-12 Building 57, 2-10,000 waste oil ASTs, No DP-21, but collected samples from DP-35, no detects.	7200	ug/kg
SUS19	Benzo(a)pyrene	surface soil	yes	delineated at 14 ft, conc high at 10 ft-14000	Parking lot	2800	ug/kg
SUS08	Dioxin	surface soil	yes	No	TA-1 former lagoon area,	36.4	pg/g

Table 4

Additional Site Characterization Needs (Excluding Forensics Analyses) Identified from the RI Report
Pepco Benning Road Facility
Page 2 of 2

Location	Chemical	Media	Delineation needed?		Rationale	Concentration	Unit
			Horizontal	Vertical			
SUS10	Dioxin	surface soil	yes	No	TA-10 (Red tag storage bldg) and TA-11 (PCB bldg),	27	pg/g
SUS11	Dioxin	surface soil	yes	No	Behind east corner of cooling tower	58.7	pg/g
SUS18	Dioxin	surface soil	yes	No	TA-9 green tag storage area	22.3	pg/g
SB-3	Total PAHs Benzo(a)anthracene	subsurface soil	yes	yes	Corner of TA-5; also DRO and ORO exceed screening levels	1400 79 J	ug/kg
MW-01B MW-01A	PCE	Groundwater	yes	yes	Down-gradient of power station building and detected in both aquifers	110	ug/L
MW-02A MW-02B MW-01A MW-01B	Naphthalene	Groundwater	yes	yes	Down-gradient of power station building and detected in multiple well nests	13 J	ug/L
MW-13B DP-09	MTBE	Groundwater	yes	yes	Down gradient of Kenilworth Fueling Island (TA-18), characterization of MTBE and other oxygenates (ETBE, TAME, DIPE)	190 740	ug/L
MW-09A MW-09B MW-12A MW-12B	TCDD TEQ	Groundwater	yes	yes	Down gradient of Building #57 (TA-12)	2.65 0.122 14.1 3.34	pg/L