DOE/EIS-0359-SA-02 and EIS-0360-SA-02

SUPPLEMENT ANALYSIS FOR BULK HYDROGEN STORAGE CONSTRUCTION AND OPERATION AT THE PADUCAH AND PORTSMOUTH DUF_6 SITES

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Introduction

The Department of Energy (DOE), Office of Environmental Management (EM) has prepared this Supplement Analysis (SA) to evaluate two existing Environmental Impact Statements (EISs) in light of changes that could have bearing on the potential environmental impacts previously analyzed. The Council on Environmental Quality (CEQ) NEPA regulations direct agencies to prepare a supplement to either a draft or final EIS if the "agency makes substantial changes in the proposed action that are relevant to environmental concerns" or there are "significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." (40 CFR 1502.9(c)(1)(i)–(ii)) DOE's NEPA regulations state that when it "is unclear whether or not an EIS supplement is required, DOE shall prepare a Supplement Analysis." (10 CFR 1021.314(c)) This SA provides sufficient information for DOE to determine whether (1) to supplement an existing EIS, (2) to prepare a new EIS, or (3) no further NEPA documentation is required. (10 CFR 1021.314(c)(2)(i)–(ii))

Existing EISs evaluated in this SA:

- *"Final Environmental Impact Statement for Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Paducah, Kentucky, Site"* (DOE/EIS-0359, www.energy.gov/node/264193)
- *"Final Environmental Impact Statement for Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Portsmouth, Ohio, Site"* (DOE/EIS-0360, www.energy.gov/node/3384040)

Proposed Change or New Information[1]

DOE is proposing to install a Bulk Hydrogen Storage backup supply to the plant hydrogen supply system at each DUF_6 facility such that uninterrupted hydrogen supply is maintained to plant operations. Hydrogen gas was originally supplied to plant operations via four (4) natural gas steam reformer units (H2GEN). Recently, a higher capacity hydrogen gas reformer unit (PRISM) has been added to provide a single, more consistent hydrogen supply. The Bulk Hydrogen Storage backup supply area will be utilized as a backup to the current PRISM units. The antiquated H2GEN units have proven to be unreliable and will no longer be used once the Bulk Hydrogen Storage backup supply is in place; however, the H2GEN units will remain in place in case of unanticipated need for an alternate backup hydrogen supply in the future. The new hydrogen system (PRISM and Bulk Hydrogen Storage) will provide a consistent method of generating hydrogen with a backup reserve, thereby reducing production limitations. The Bulk Hydrogen Storage backup supply will be supplied with hydrogen from excess production from the PRISM unit when in operation. This will reduce and/or eliminate the need for shipments of bulk hydrogen.

The project would consist of surveying, grading land, constructing an access road and concrete pad for situating hydrogen tube trailers and hydrogen storage tubes at each DUF_6 site. The pad at each site will be on the order of one acre. There would be temporary disturbance from excavation, and a permanent concrete pad and access road left in place. Three tube trailer manifold stations will be installed to receive tube trailers. The project also includes installation of equipment for the purpose of conveying hydrogen and nitrogen (from the on-site nitrogen separation and storage system) from the pad to the existing PRISM. This equipment includes nitrogen piping, hydrogen storage tubes, hydrogen piping,

[1] Throughout this document, the phrase "proposed change or new information" refers to a substantial change in a proposed action that may be relevant to environmental concerns or significant new circumstances or information that may be relevant to environmental concerns and have bearing on the proposed action or its impacts consistent with 40 CFR 1502.9(c).

manifolds, concrete piers, pipe bridges, and bollards similar to the original installation of general construction analyzed in the 2004 EISs. All proposed locations for access roads, pads and piping are within the current DUF_6 area footprints on previously disturbed property owned by the Department of Energy.

In 2018 and 2019, the options for locating the Bulk Hydrogen Storage Area were presented to the Portsmouth/Paducah Project Office and each Site's Shared Site Committee (this committee has representatives from each contractor at the Sites). Each Site's Shared Site Committee agreed on the proposed location for the Bulk Hydrogen Storage Area through a cooperative process involving representatives from each on-site contractor and DOE field representatives.

Background

On June 18, 2004, the U.S. Department of Energy (DOE) issued Environmental Impact Statements for the construction and operation of facilities to convert depleted uranium hexafluoride (DUF_6) to depleted uranium (DU) oxide at DOE's Paducah Site (Paducah) in Kentucky and Portsmouth Site (Portsmouth) in Ohio (69 FR 34161, www.energy.gov/node/264019). Both the Final Environmental Impact Statement for Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Paducah, Kentucky Site (DOE/EIS-0359, www.energy.gov/node/264193) and the Final Environmental Impact Statement for Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Portsmouth, Ohio Site (DOE/EIS-0360, www.energy.gov/node/3384040)(collectively, the "2004 EISs") were prepared to evaluate and implement DOE's DUF_6 long-term management program.

Records of Decisions (RODs) were published for the 2004 EISs on July 27, 2004 (69 FR 44654, www.energy.gov/node/255751; 69 FR 44649, www.energy.gov/node/256861). In the RODs, DOE decided that it would build facilities at both Paducah and Portsmouth and convert DOE's inventory of DUF_6 to DU oxide. DOE decided the aqueous hydrogen fluoride produced during conversion would be sold for use pending approval of authorized release limits. The calcium fluoride (CaF_2) produced during conversion operations would be reused, pending approval of authorized release limits, or disposed of as appropriate. DOE also decided that the DU oxide conversion product would be reused to the extent possible or packaged in empty cylinders for disposal at an appropriate disposal facility. Emptied cylinders would also be disposed of at an appropriate facility.

Hydrogen generation analyzed in each 2004 site EIS used Anhydrous NH_3 to produce hydrogen. However, hydrogen is produced using natural gas via steam methane reformers (PRISM unit and H2GEN units) at both sites. The 2004 EIS included this option, and noted that the accident impacts of using natural gas to produce hydrogen would be less than those discussed for Anhydrous NH_3 accidents.

The DUF_6 conversion facilities are operational at each facility.[2]

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[2] On December 28, 2018, DOE published a Notice of Availability for the Draft Supplemental Environmental Impact Statement for Disposition of Depleted Uranium Oxide Conversion Product Generated From DOE's Inventory of Depleted Uranium Hexafluoride (EIS-0359-S1; EIS-0360-S1, www.energy.gov/node/3747168) (Draft EIS). The Draft SEIS evaluates the potential environmental impacts associated with the transportation to final disposition of depleted uranium (DU) oxide conversion product from its depleted uranium hexafluoride (DUF_6) conversion facilities at the Paducah, Kentucky, and Portsmouth, Ohio, sites at three alternative offsite low-level radioactive waste disposal facilities. This Draft SEIS does not affect the DUF_6 conversion process, nor does it have any effect on the impacts analyzed in this SA.

Resource Areas Not Analyzed in this SA

See Table 1 – Summary of Potential Impacts for a summary of resource areas analyzed and the potential impacts of the proposed change and/or new information. The following resource areas will not be affected or will be negligibly affected by the proposed change or new information and, therefore, are not analyzed in further detail in this SA:

Human Health and Safety — Construction and Normal Facility Operations

At both locations, construction of the road, pad, and piping will utilize equipment and methods similar to those used to construct the conversion facility and supporting structures that were evaluated under the 2004 EISs. During operation, these facilities will be normally unoccupied, and therefore present minimal risk to personnel safety and health beyond those analyzed in the original EIS for each site. Human health and safety during construction and normal operations was not analyzed because there is no additional risk beyond the scenarios analyzed in the 2004 EISs.

Air Quality and Noise

- Air - The air quality from construction and operation of the Bulk Hydrogen Storage will be within current air quality permit limits. Additional air emissions would be generated from heavy equipment during the construction phase, as well as delivery vehicles making infrequent visits during operations. These emissions, including emissions of carbon dioxide and other greenhouse gases, are expected to be negligible and produce no additional impact beyond those analyzed in the 2004 EISs.
- Noise - Minor noise disturbance could occur in an already disturbed area. This would result in negligible additional noise impacts, resulting from compressor and storage tube operations, beyond those analyzed in the 2004 EISs, and only negligible temporary noise impacts from construction.

Water and Soil

During construction and operation of the proposed action, no additional impacts are anticipated on soil or groundwater (surface water is discussed on page 7). No contaminated liquid effluents are anticipated and airborne emissions are expected to be negligible or very low. Any soil which might be generated on-site would be excavated and managed in association with solid waste management unit (SWMU) 194 as acknowledged by Kentucky Department of Environmental Protection (KDEP) for the Paducah site. Similar measures will be utilized for the Portsmouth site in that potentially contaminated soil would be maintained on site, while additional construction and/or fill material would be kept on the delivery vehicle unless used. These actions were analyzed and presented in the 2004 EISs.

Wetlands

- *Paducah* Figure 1 below (Figure 5.2-1 in the 2004 Paducah EIS) shows no wetlands in the area of the Bulk Hydrogen Storage project. There have been no changes in last wetland survey. Construction and operation of the Bulk Hydrogen Storage project would not affect any wetlands.

- *Portsmouth* Figure 2 below (Figure 5.2-1 in the 2004 Portsmouth EIS) shows one north-south trending, drainage-related wetland south of the Bulk Hydrogen Storage project. There have been no changes in last wetland survey. Construction and operation of the Bulk Hydrogen Storage project would not affect any wetlands.

Socioeconomics

Construction would create temporary construction jobs and income with negligible impacts on housing, public finances, and employment in local public services. The predicted impacts are the same as those discussed in the 2004 EISs.

Environmental Justice

The 2004 EISs noted that there would be no disproportionately high and adverse impacts to minority or low-income populations in the general public during normal operations or from accidents. The Bulk Hydrogen Storage pad and road would involve activities similar to those analyzed in the 2004 EISs, and likewise would have no disproportionately high and adverse impacts to minority or low income populations in the general public during normal operations or from accidents.

Human Health and Safety - Facility Accidents and Intentional Destructive Acts

- Physical Hazards - Physical construction and operation activities associated with the proposed action are similar to those analyzed in the 2004 EISs and would add negligibly to industrial safety risks analyzed in the 2004 EISs. The Bulk Hydrogen Storage project has been assessed under a Consequence Analysis Report (Explosion Analysis) for Paducah and Portsmouth for potential explosion impacts. The explosion events were analyzed regardless of initiating event (severed pipe, impact, or intentional destructive acts). Blast and thermal loads were calculated for the Conversion and HF Storage Buildings, as well as the HF Storage Tanks, the DUF6 cylinders, HF Railcars, HF Tanker Trucks, and bulk hydrogen tubes. Results of these calculations and assessment of building structures and target materials show that the blast and thermal loads do not have a significant damage potential and will not cause catastrophic failure of these structures. Human health impacts were not analyzed in these Consequence Analysis Reports. The consequence analysis demonstrates that the scenarios analyzed were within the bounding events of previously documented safety analyses. Based on the consequence analysis, there is no increase predicted in the estimated accident statistics / injuries resulting from the proposed action.
- Facility Accidents Involving Radiation or Chemical Releases - Based on the consequence analysis, there is no increase in the number or severity of accidents that could release radiation or chemicals to the environment, workers, and members of the general public.
- Intentional Destructive Acts (IDAs) – IDAs include acts of sabotage or terrorism, as well as other malevolent acts such as vandalism and cyber-attacks. While there is no accepted basis for estimating the probability of an IDA, consequences of an IDA associated with the proposed Bulk Hydrogen Storage would be similar to those of accidents analyzed in the consequence analysis because the hazard, initiating forces, and consequence would be similar to the accidents analyzed in that analysis.

Human Health and Safety - Transportation

- The proposed action does not affect the amount of solid nonhazardous nonradioactive waste, nonradioactive hazardous and toxic waste, low-level radioactive waste, low-level radioactive mixed waste, U_3O_8, aqueous HF, or empty and heel cylinders analyzed in the 2004 EISs. Based on the consequence analysis, there are no additional risks resulting to these transportation actions.
- Anhydrous NH_3 - Hydrogen generation from Anhydrous NH_3 was analyzed in the 2004 EISs, but not installed during construction. Use of Hydrogen Bulk Storage and the onsite PRISM unit presents less hazards to the environment and worker safety and health than transporting and handling Anhydrous NH_3. Based on the consequence analysis, there would be no increase in impacts compared to those analyzed in the 2004 EISs.
- Bulk Hydrogen Truck Shipments - Deliveries of bulk hydrogen when necessary. Based on the consequence analysis, there is no adverse impact to the site.

Resource Areas Analyzed in this SA

See Table 1 – Summary of Potential Impacts for a summary of resource areas analyzed and the potential impacts of the proposed change and/or new information. The following resources areas could be affected by the proposed change or new information:

Land Use

- *Paducah* The Paducah GDP occupies a 750-acre complex. For the DUF_6 conversion plant, the 2004 Paducah EIS stated that up to 45 acres would be disturbed representing about 1% of available land already developed for industrial purposes resulting in negligible impacts to land use. The Bulk Hydrogen Storage pad and road would be approximately 1 acre.

  Potential disturbed area for the Bulk Hydrogen Storage areas at the DUF_6 conversion facility is within the disturbed acreage evaluated in the 2004 Paducah EIS and will result in no change in land use impacts relative to those evaluated in the 2004 Paducah EIS.

  During construction, sediment control measures will be in place to manage runoff from the leveled pad area and the spoil pile. No long-term land use impacts are anticipated as a result of constructing and operating the Bulk Hydrogen Storage project at the Paducah site beyond those analyzed and presented in the 2004 EIS.
- *Portsmouth* The Portsmouth GDP occupies an 800-acre complex. For the DUF_6 conversion plant, the 2004 Portsmouth EIS stated that up to 65 acres would be disturbed representing about 1% of available land already developed for industrial purposes resulting in negligible impacts to land use. The Bulk Hydrogen Storage pad and road would be approximately 1 acre.

  Potential disturbed area for the Bulk Hydrogen Storage areas at the DUF_6 conversion facility is within the disturbed acreage evaluated in the 2004 Portsmouth EIS and will result in no change in land use impacts relative to those evaluated in the 2004 Portsmouth EIS.

During construction, sediment control measures will be in place to manage runoff from the leveled pad area and the spoil pile. No long-term land use impacts are anticipated as a result of constructing and operating the Bulk Hydrogen Storage project at the Portsmouth site beyond those analyzed and presented in the 2004 EIS.

Water and Soil

- *Paducah* During construction and operation of the proposed action, no additional impacts are anticipated on surface water or groundwater. No contaminated liquid effluents are anticipated and airborne emissions are expected to be negligible or very low. The 2004 Paducah EIS noted that construction and operation of the entire DUF_6 conversion facility at the Paducah site would result in negligible impacts from changes to runoff, from floodplains, or from water use and discharge. Soil and vegetation would be replaced with either buildings or paved areas. The amount of increased runoff from the new, impermeable land surface (approximately 1 acre) would be negligible, and the total disturbed acreage would be within the bounds of that analyzed in the 2004 Paducah EIS. Construction and operation of the Bulk Hydrogen Storage project would occur on the same area analyzed in the 2004 Paducah EIS, and would only negligibly contribute to impacts from runoff or from water use and discharge associated with the DUF_6 conversion facility. At that time of the 2004 Paducah EIS, DOE determined that a floodplain assessment was not required for Paducah because the site was outside maximum historic flooding levels, and this has not changed. Therefore, no separate floodplain assessment is necessary for this proposed action.

  There would be no alteration to the flow pattern in the catchments within which the pads are situated. Pads and access roads would be within previously disturbed areas. Best Management Practices would be used to prevent sediment transport during construction. The KPDES permit for Kentucky requires Best Management Practices during operation which include spill prevention, and response to spills of fluids from trucks that may enter the Bulk Hydrogen Storage pad.

  Any soil which might be generated on-site would be excavated and managed in association with solid waste management unit (SWMU) 194 as acknowledged by Kentucky Department of Environmental Protection (KDEP) for the Paducah site. These actions were analyzed and presented in the 2004 EISs. The volume of soil analyzed in the 2004 EISs remains bounding, including the proposed Bulk Hydrogen Storage project.
- *Portsmouth* During construction and operation of the proposed action, no additional impacts are anticipated on surface water or groundwater. No contaminated liquid effluents are anticipated and airborne emissions are expected to be negligible or very low. The 2004 Portsmouth EIS noted that construction and operation of the entire DUF_6 conversion facility at the Portsmouth site would result in negligible impacts from changes to runoff, from floodplains, or water use and discharge. Soil and vegetation would be replaced by either buildings or paved areas. However, these impacts would be negligible. The amount of increased runoff from the new, impermeable land surface (approximately 1 acre) would be negligible and the total disturbed acreage would be within the bounds of that analyzed in the 2004 Portsmouth EIS. Construction and operation of the Bulk Hydrogen Storage project would occur on the same area analyzed in the 2004 Portsmouth EIS, and would only negligibly contribute to impacts from

runoff or from water use and discharge associated with the DUF_6 conversion facility. At that time of the 2004 Portsmouth EIS, DOE determined that a floodplain assessment was not required for Portsmouth because the site was outside maximum historic flooding levels, and this has not changed. Therefore, no separate floodplain assessment is necessary for this proposed action.

There would be no alteration to the flow pattern in the catchments within which the pads are situated. Pads and access roads would be within previously disturbed areas. Best Management Practices would be used to prevent sediment transport during construction. The NPDES permit for Ohio requires Best Management Practices during operation which include spill prevention, and response to spills of fluids from trucks that may enter the Bulk Hydrogen Storage pad.

Potentially contaminated soil would be maintained on site, while additional construction and/or fill material would be kept on the delivery vehicle unless used. These actions were analyzed and presented in the 2004 EISs. The volume of soil analyzed in the 2004 EISs remains bounding, including the proposed Bulk Hydrogen Storage project.

Ecology

At both sites (Paducah and Portsmouth), the proposed action will occur on a small area of land (approximately 1 acre at each site) within an existing industrial complex that has been disturbed by previous land use. These areas have been evaluated for potential impacts on ecological resources (vegetation, wetlands, wildlife, threatened and endangered species, and cultural resources) as presented in the 2004 EIS for each site. From that time until the present, vegetation has been disturbed by continuous mowing; no wetlands exist in the immediate project areas (see attached maps); no change to wildlife communities have been observed (including no discovery of T&E species); no cultural resources have been discovered; and there has been no material change to land use. Although some increase to impacts might be observed, these impacts are reasonably expected to be of short duration (construction) and / or negligible (operation).

Vegetation

- *Paducah* The 2004 Paducah EIS noted that existing vegetation within the disturbed area (for DUF_6 construction) would be destroyed during land clearing activities. More specifically, it was estimated that constructing DUF_6 would result in the loss of approximately 10 acres of previously disturbed managed grassland vegetation that was, at the time the EIS was written, maintained. The facility would not displace undisturbed natural communities. At the time of the EIS, managed grassland comprised most of the vegetation set aside for the DUF_6 conversion facility.

  Construction and operation of the Bulk Hydrogen Storage project would occur on previously disturbed land on the same area analyzed in the 2004 Paducah EIS. For the Bulk Hydrogen Storage project, construction-related activities would affect managed grassland vegetation. There are no wooded areas in the project area. The Bulk Hydrogen Storage project would not threaten the local population of any species.

- *Portsmouth* The 2004 Portsmouth EIS noted that existing vegetation within the disturbed area (for DUF_6 construction) would be destroyed during land clearing activities. More specifically, it was estimated that constructing DUF_6 would result in the loss of approximately 10 acres of previously disturbed managed grassland vegetation that was, at the time the EIS was written, maintained. The facility would not replace undisturbed natural communities. The facility would not displace undisturbed natural communities. At the time of the EIS, managed grassland comprised most of the vegetation set aside for the DUF_6 conversion facility.

  Construction and operation of the Bulk Hydrogen Storage project would occur on previously disturbed land on the same area analyzed in the 2004 Portsmouth EIS. For the Bulk Hydrogen Storage project, construction-related activities would affect managed grassland vegetation. There are no wooded areas in the project area. The Bulk Hydrogen Storage project would not threaten the local population of any species.

Wildlife

- *Paducah* The 2004 Paducah EIS noted that wildlife species common to the greater Paducah Gaseous Diffusion Plant area and to the surrounding West Kentucky Wildlife Management Area (WKWMA) would be disturbed by land clearing, noise, and human presence. Wildlife with restricted mobility could be destroyed during land clearing activities, while more mobile individuals would relocate to adjacent available areas with suitable habitat. Some wildlife species would be expected to recolonize replanted areas near the conversion facility following completion of construction. The 2004 Paducah EIS concluded that construction of a conversion facility is not expected to threaten the local population of any wildlife species because similar habitat would be available in the vicinity of the site. Construction and operation of the Bulk Hydrogen Storage project will occur on previously disturbed land on the same area analyzed in the 2004 Paducah EIS. Construction and operation would result in similar activities as those analyzed in the 2004 Paducah EIS and would contribute negligibly to the impacts on wildlife discussed in that document.

  Federal- and state-listed threatened and endangered species in the vicinity of the Paducah site were also identified in the 2004 Paducah EIS. Although no occurrence of federal-listed plant or animal species on the Paducah site itself had been documented, the Indiana bat (federal- and state-listed as endangered) has been found near the confluence of Bayou Creek and the Ohio River 3 mi (5 km) north of the Paducah GDP. Indiana bats use trees with loose bark (such as shagbark hickory or standing dead trees) in forested areas as roosting sites during spring or summer. No trees exist in the Bulk Hydrogen Storage area, and no impact is expected.
- *Portsmouth* The 2004 Portsmouth EIS noted that wildlife species common to the greater Portsmouth Gaseous Diffusion Plant (PGDP) area would be disturbed by land clearing, noise, and human presence. Wildlife with restricted mobility could be destroyed during land clearing activities, while more mobile individuals would relocate to adjacent available areas with suitable habitat. Some wildlife species would be expected to recolonize replanted areas near the conversion facility following completion of construction. The 2004 Portsmouth EIS concluded that construction of a conversion facility is not expected to threaten the local population of any wildlife species because similar habitat would be available in the vicinity of the site. Construction and operation of the Bulk Hydrogen Storage project will occur on previously

disturbed land on the same area analyzed in the 2004 Portsmouth EIS. Construction and operation would result in similar activities as those analyzed in the 2004 Portsmouth EIS and would contribute negligibly to the impacts on wildlife discussed in that document.

Federal- and state-listed species in the vicinity of the Portsmouth site were also identified in the 2004 Portsmouth EIS. No occurrence of federal-listed plant or animal species on the Portsmouth site has been documented. The Indiana bat, both federal- and state-listed as endangered, has been reported in the vicinity of the Portsmouth site and may occur on the site during spring or summer. Roosting and nursery sites may include forested areas with loose barked trees (such as shagbark hickory) and standing dead trees. However, most of the Portsmouth Gaseous Diffusion Plant was found to have poor summer habitat because of the small size, isolation, and insufficient maturity of the few woodlands on the site. Further, no tress exist in the Bulk Hydrogen Storage area, and no impact is expected.

The sharp-shinned hawk, listed by the State of Ohio as endangered, and the rough green snake, a species of special interest in Ohio, have been observed on the Portsmouth site. Both of these species inhabit moist woods. The timber rattlesnake, listed by the State of Ohio as endangered, occurs in the vicinity of the Portsmouth site but has not been found on the site.
Habitat for the timber rattlesnake is found on and near high, dry ridges. None of these habitats exist in the Bulk Hydrogen Storage area and no impact to any of these species is expected.

Cultural Resources

- *Paducah* The 2004 Paducah EIS reported 32 archaeological sites at the Paducah GDP. No archaeological sites are known from the current DUF_6 facility or the proposed project location. Several temporary buildings were located at this site during the construction of the Paducah GDP. These buildings have since been removed, but their foundations may remain. The present DUF_6 facility and proposed project area were not included in the 1994 survey of the site. In 1994, a 20% stratified random sample archaeological survey was conducted at the Paducah GDP. Results of a sensitivity analysis based on this survey indicate that, for the most part, the candidate DUF_6 construction locations had a "low" to "very low" sensitivity index (low to very low probability of containing archaeological resources).

  Minor construction associated with the Bulk Hydrogen Storage project would occur in an area already disturbed from temporary structures during construction of Paducah Gaseous Diffusion Plant, and of DUF_6 facility. Past ground disturbance resulting from grading and construction made it unlikely that intact archaeological remains are present at DUF_6. Additional impacts to cultural resources would be negligible. For the Bulk Hydrogen Storage project, if archaeological resources were discovered or if traditional properties were identified, a mitigation plan would be prepared and executed in consultation with the Kentucky State Historic Preservation Office (SHPO) and appropriate Tribal governments.
- *Portsmouth* Archaeological and architectural surveys were undertaken for Portsmouth in 1996. The findings from these surveys had not been finalized by the time of the 2004 Portsmouth EIS and had not received concurrence from the Ohio SHPO. Past ground disturbance resulting from grading and construction made it unlikely that intact archaeological remains are present at

DUF_6. Preliminary results from the 1996 archaeological survey suggest that these locations are too disturbed to warrant subsurface testing.

Minor construction associated with the Bulk Hydrogen Storage project may occur in an area already disturbed from temporary structures during construction of Portsmouth Gaseous Diffusion Plant, and of DUF_6 facility. Additional impacts would be negligible. For the Bulk Hydrogen Storage project, if archaeological resources are encountered, or historical or traditional cultural properties are identified, a mitigation plan would be prepared and executed in consultation with the Ohio State Historic Preservation Office (SHPO) and appropriate Tribal governments.

Cumulative Impacts

Impacts from this proposed action would range from no impact to negligible or minor impacts. There would be no meaningful change in cumulative impacts from those analyzed in the 2004 EISs.

RCRA Consideration at Paducah and Portsmouth

The DUF_6 facility at Paducah is located in an area that has been designated as SWMU 194 under RCRA. SWMU 194 previously was the site of several support facilities (e.g. administration building, hospital, boiler house, two leach fields) during the construction of the Paducah Gaseous Diffusion Plant. These facilities were no longer present at the time of DUF_6 construction. The construction of the Bulk Hydrogen project is completely within SWMU 194. Excavated soil will be returned within the SWMU. This will be within both the excavation permit and a within the Contractor scope of work. SWMU notification has been acknowledged by KDEP. No change to waste management capabilities. The proposed action does not affect the nature or products generated from the conversion process. Potential small increase to remove additional concrete pad and dismantle pipes and bridges.

The DUF_6 facility at Portsmouth is not within a SWMU.

Process Safety

The cumulative weight of hydrogen in the Bulk Hydrogen System area, PRISM area, and H2GEN area will not exceed the 10,000 pound threshold at either site, which would require reporting under Superfund Amendment and Reauthorization Act (SARA) Section 311, and will not be subject to Environmental Protection Agency Risk Management Plan rules.

Table 1 - Summary of Potential Impacts

Environmental Consequence	Original EISs *	Addition of Bulk Hydrogen Storage
Human Health and Safety _ Normal Facility Operations • ***Radiation exposure*** • ***Chemical exposure***	Potential external radiation exposures (above background) because of proximity to cylinder storage yards. Chemical exposure to the public was expected to be well below levels expected to cause health effects	No additional impact expected.
Human Health and Safety — Facility Accidents and Intentional Destructive Acts	Various accident frequencies presented	No additional impact expected.
Human Health and Safety — Transportation	Less than 1 fatality expected from exposure to vehicle exhaust emissions, external radiation, and accidents. Up to 4 individuals with irreversible adverse effects (0 fatalities) due to chemical exposure from transportation accident. Up to 60 individuals affected (workers and public) due to radiation exposure from transportation accident.	No additional impact expected.
Air Quality and Noise	Slight increase in particulate during construction, negligible at nearest residence. Other criteria pollutants within standards. No concentration increment would exceed applicable prevention of significant deterioration increments at the site boundary. Noise would be below the EPA guideline of 55 dB(A) as DNL during construction and operation.	No additional impact expected. Noise - Negligible additional impact expected.
Water and Soil	Negligible impacts from changes to runoff, from floodplains, or from water use and discharge, groundwater recharge, depth, flow direction,	Water - No additional impact expected.

	and impact to groundwater is unlikely. Local and temporary increase in erosion; impacts to soil quality unlikely. Potentially contaminated soil associated with solid waste management unit (SWMU) 194 could be excavated (Paducah).	Soil - No additional impact expected.
Socioeconomics	Direct employment of 190 people in peak year of construction; 290 total jobs in the region of influence (ROI); total personal income of $9.5 million in peak year. Direct employment of 160 people; 330 total jobs in ROI; total personal income of $13 million per year; Marginal impacts on public services.	Proposed action will employ a small number of sub-contractors: no change to number of permanent total jobs. Negligible impact on public services in ROI.
Ecology • Ecological resources (habitat loss, vegetation, wildlife) • Concentrations of chemical or radioactive materials • Wetlands • Threatened or endangered species	• Total area disturbed during construction: 45 acres at Paducah and 65 acres at Portsmouth. Vegetation and wildlife communities impacted and potential loss of habitat; • Concentrations of chemical or radioactive materials would be well below harmful levels; negligible impacts on vegetation and wildlife. • Potential direct and indirect impacts to wetlands from facility construction. • No direct impacts from construction or operations to T&E species.	• Approx. 1 acre disturbed at each project site, within the total disturbed area analyzed in the 2004 EISs. • No change to vegetation or wildlife impacts. • No changes to impacts. • No effect on wetlands - no wetlands in project area. • No impact to T&E species.
Waste Management *(RCRA Consideration at Paducah and Portsmouth)*	• Minimal impacts to site waste management capabilities from construction-generated waste. Potentially contaminated soil associated with SWMU 194	No change to waste management capabilities.

	could be excavated and require management and disposal. • Waste generated from the conversion process was considered negligible to site management capabilities.	The proposed action does not affect the nature or products generated from the conversion process. Potential small increase to remove additional concrete pad and dismantle pipes and bridges.
Resource Requirements	No effects on local, regional, or national availability of materials required are expected.	No change to resource requirements
Land Use	Negligible impacts to land use. Total area disturbed during construction: 45 acres at Paducah and 65 acres at Portsmouth.	No change in land use. Potential disturbed area is within the acreage evaluated in the 2004 EISs.
Cultural Resources	Impacts to cultural resources are possible; archaeological and architectural surveys have not been completed and must be initiated prior to initiation of the proposed action.	Impacts would be unlikely because the project areas are located in previously disturbed areas already dedicated to industrial uses.
Environmental Justice	No disproportionately high and adverse impacts to minority or low income populations in the general public during normal operations or from accidents.	Not analyzed, no additional impact expected.
Cumulative Impacts	• Cumulative collective and individual radiological doses would be well below DOE dose limits. Cumulative impacts would not affect air quality attainment status. • Indirect cumulative impacts on groundwater associated with the conversion facility would be minimal. • Cumulative ecological impacts on habitats and biotic communities, including wetlands, would be negligible to minor. • No cumulative land use impacts are anticipated for any of the alternatives. • It is unlikely that any noteworthy cumulative impacts on cultural	There would be no meaningful change in cumulative impacts from those analyzed in the 2004 EISs.

	resources would occur under any alternative, and any such impacts would be adequately mitigated before activities for the chosen action would begin. • No environmental justice cumulative impacts are anticipated for the Paducah site. Socioeconomic impacts under all alternatives considered minor and temporary.	

* The full summary of impacts is available in table S-6 in the 2004 EISs.

Mitigation

DOE reviewed the mitigation commitments in both *"Final Environmental Impact Statement for Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Paducah, Kentucky, Site"* (DOE/EIS-0359) and *"Final Environmental Impact Statement for Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Portsmouth, Ohio, Site"* (DOE/EIS-0360), and it was determined that there would be no change in mitigation commitments for the proposed Bulk Hydrogen Storage.

Determination

In accordance with the National Environmental Policy Act (NEPA) and CEQ's and DOE's implementing NEPA regulations, DOE prepared this supplement analysis to evaluate whether the Bulk Hydrogen Storage construction and operation at the Paducah and Portsmouth DUF_6 Sites requires supplementing the existing EIS or preparing a new EIS.

DOE concludes that the Bulk Hydrogen Storage construction and operation at the Paducah and Portsmouth DUF_6 sites is not a substantial change relative to the proposal analyzed in either the *"Final Environmental Impact Statement for Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Paducah, Kentucky, Site"* (DOE/EIS-0359) or the *"Final Environmental Impact Statement for Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Portsmouth, Ohio, Site"* (DOE/EIS-0360), nor are there significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

Therefore, no further NEPA documentation is required.

DATE 11/19/2019

/Betsy Connell
Associate Principal Deputy Assistant Secretary for Regulatory and Policy Affairs
U.S. Department of Energy
Washington, DC

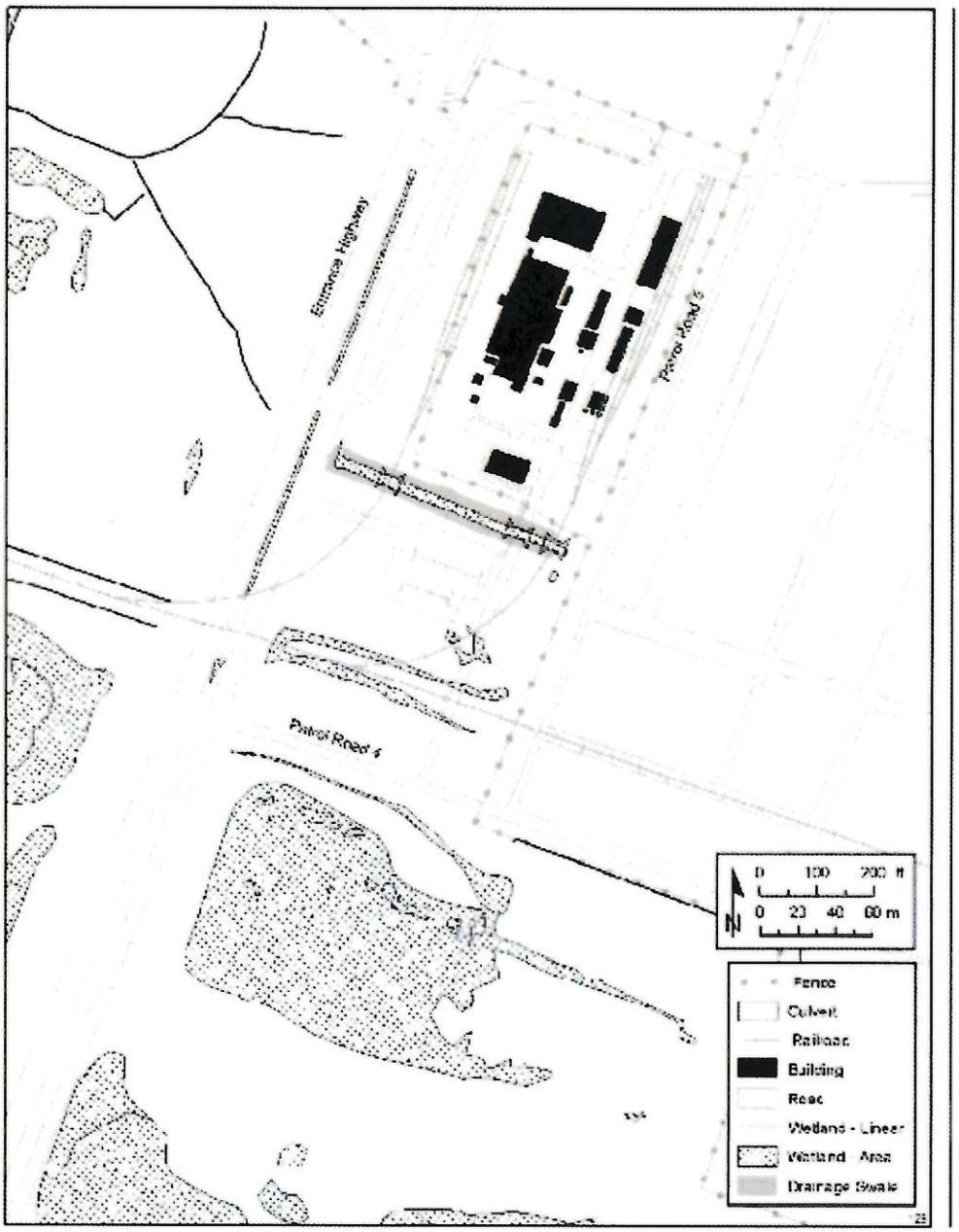

Figure 1: **Wetlands within Location A at the Paducah Site**

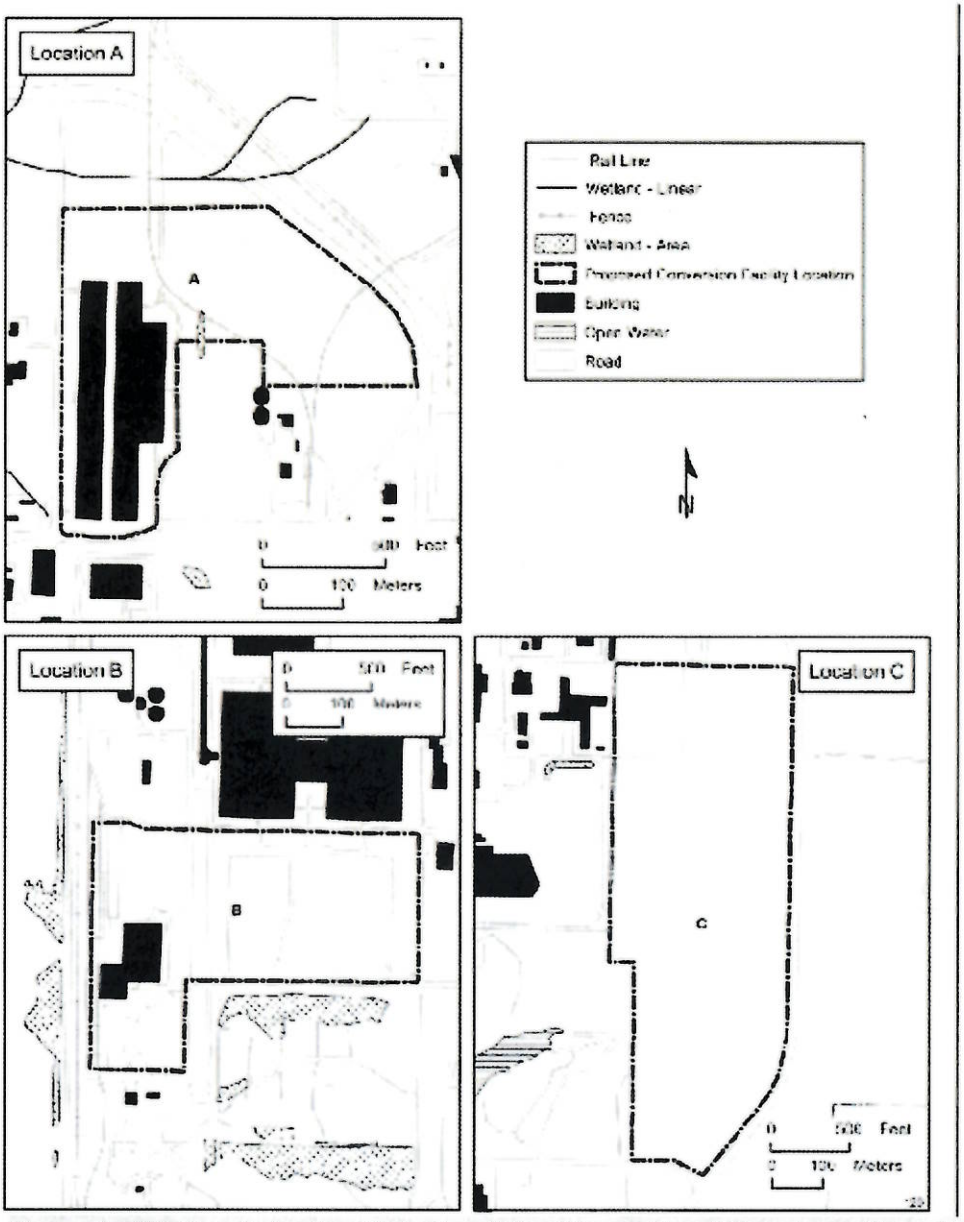

Figure 2: **Wetlands in the Vicinity of the Three Candidate Locations for the Portsmouth Conversion Facility**

SUPPLEMENT ANALYSIS FOR BULK HYDROGEN STORAGE CONSTRUCTION AND OPERATION AT THE PADUCAH AND PORTSMOUTH DUF_6 SITES

PPPO Concurrence Sheet

Concurrences:

Cynthia Zvonar — 10/22/2019

Cynthia Zvonar
NEPA Compliance Officer
Portsmouth/Paducah Project Office

6/27/19

Reinhard M. Knerr
Federal Project Director
Portsmouth/Paducah Project Office

10/24/19

Joel B. Bradbure
Deputy Manager
Portsmouth/Paducah Project Office

Robert E Edwards III — 10/24/2019

Robert E. Edwards, III
Manager
Portsmouth/Paducah Project Office