

Appendix D – Federal Consistency Determination

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Federal Consistency Determination
Decommissioning and Dismantlement of the Deactivated SM-1 Nuclear Reactor Facility
U.S. Army Garrison Fort Belvoir
Fairfax County, Virginia

Pursuant to Section 307 of the Coastal Zone Management Act of 1972, as amended, and 15 Code of Federal Regulations (CFR) Subpart C, this Federal Consistency Determination has been prepared for the United States Army Corps of Engineers (USACE) Baltimore District's Proposed Action to decommission and dismantle the Deactivated SM-1 Nuclear Reactor Facility at U.S. Army Garrison Fort Belvoir (Fort Belvoir) in Fairfax County, Virginia. USACE is required to determine the consistency of the Proposed Action and potential effects on Virginia's coastal resources or coastal uses with the enforceable policies of the Virginia Coastal Zone Management Program (VCP).

This consistency determination represents an analysis of the Proposed Action in light of established VCP Enforceable Policies and Programs. Submission of this consistency determination reflects the commitment of USACE to comply to the maximum extent practicable with those Enforceable Policies and Programs. The Proposed Action would be implemented in a manner consistent with the VCP. USACE has determined that the effects of the Proposed Action would be less than significant on land and water uses as well as natural resources of the Commonwealth of Virginia's coastal zone and is consistent to the maximum extent practicable with the enforceable policies of the VCP.

Background

The Deactivated SM-1 Nuclear Reactor Facility occupies an approximately five-acre site on Fort Belvoir's South Post along the shoreline of Gunston Cove, an embayment of the Potomac River (**Figures 1 and 2**). SM-1 began operation in 1957 and was deactivated in 1973. Following removal of the nuclear fuel and limited decontamination, SM-1 was placed into a safe storage (SAFSTOR) condition to allow for natural decay of residual radionuclides. U.S. Nuclear Regulatory Commission (NRC) and Army Reactor Office (ARO) regulations require nuclear facility decommissioning to be completed within 60 years of the facility's deactivation; thus, decommissioning of the Deactivated SM-1 Nuclear Reactor Facility must occur by 2033.

Proposed Action

USACE's Proposed Action is to decommission and dismantle the Deactivated SM-1 Nuclear Reactor Facility at Fort Belvoir. Decommissioning the facility consists of removing all radiologically and non-radiologically contaminated structures, equipment, and media associated with the operation of the reactor; restoration of the site to allow for unrestricted release and future use; and termination of the Army's reactor possession permit under which the facility is currently maintained. Three structures that extend into Gunston Cove would be removed under the Proposed Action: a water outfall pipe, an intake pier, and a pump house (situated on the pier).

Following the completion of decommissioning and restoration activities, the SM-1 site would be maintained as open/vegetated space. Any future development of the site would be at the discretion of Fort Belvoir and is not included in the Proposed Action.

The Proposed Action can be broken down into several components, as described below (some variability in the sequence of these activities is anticipated).

- **Site preparation.** Preparatory activities would include the establishment of radiological controls on and around the SM-1 site; the installation of temporary support facilities or modifications to existing facilities to support field activities throughout the duration of the Proposed Action; the removal of most vegetation

from the site and some non-contaminated structures and equipment; and potential upgrades and repairs to onsite roadways.

- **Removal of materials and equipment (M&E) from Building 372.** These activities would include the removal of regulated contaminated and clean M&E from the building. Areas where surface contamination has been detected would be decontaminated to the extent practicable to allow for open air dismantlement and minimize the amount of low-level radioactive waste (LLRW) to be transported and disposed of.
- **Dismantlement of Building 372.** Dismantlement would occur in two sequential phases starting with structural components in the Unrestricted Area (i.e., the area of the facility where residual radioactivity is below applicable regulatory thresholds). This phase of dismantlement would include the above ground structure and removal of the remaining floor slab, foundation, and any tanks and piping still present. The resultant debris from these activities would be disposed of as clean waste. The second phase of dismantlement would occur within the Restricted Area (i.e., the area of the facility with low levels of residual radioactivity above applicable regulatory thresholds) and result in the removal of structures around, and including, the Vapor Container (VC).
- **Dismantlement and removal of other structures.** This component includes the dismantlement or removal of the water intake pump house and pier, a sewage pump station, and a storage warehouse. It also includes the removal of the water intake pipe to Building 372, the water discharge piping from Building 372 to associated infrastructure on the site, including the water outfall pipe, and the unused sanitary sewer line associated with the sewage pump station.

Removal of the water intake pump house and pier, which extends into Gunston Cove approximately 100 feet from the shoreline, would likely require the use of a barge-mounted crane and other vessels to provide the dismantlement crew and equipment with access to the structures. Superstructures would be removed first, followed by the piles if they are determined to be structurally sound. If the piles are determined to be in a condition that would not allow for complete removal, they may be cut at the mudline and the portions below the cut would be left in place. A containment boom and turbidity curtain would be placed around the work area to prevent the migration of disturbed sediment into the water, minimize turbidity, and ensure disturbed sediments settle near their original location. A containment boom and turbidity curtain would also be used to contain sediment disturbed by the removal of the underwater portion of the outfall pipe.

- **Soil remediation and restoration.** Contaminated soils around and below Building 372 would be removed following dismantlement. In addition to radiological contamination, surveys have shown the presence of lead around the building, likely from the deterioration of lead-based paint over time. Soils around the underground tanks and piping are also assumed to be contaminated and would be removed along with those structures.
- **Waste disposal and transportation.** The Proposed Action would generate large quantities of waste. All waste would be characterized, segregated, and disposed of as clean waste (i.e., no contamination and suitable for recycling or disposal at a regular landfill), LLRW, hazardous waste, or mixed waste. Permitted off-post disposal facilities appropriate for each category of waste would be identified and the waste would be shipped to those facilities by licensed contractors in accordance with applicable federal and state regulations.

All waste would be transported off post by trucks, including a 53-foot trailer truck for the Reactor Pressure Vessel (RPV) cask, which would be the most radioactive element of the SM-1 reactor and the

most significant in terms of weight. After leaving Fort Belvoir, the trucks would travel on public roads to either the disposal site or to a road-to-rail transfer location for rail transport to the final destination.

- **Safety, health, and environmental control measures.** The Proposed Action would involve disturbing, dismantling, and moving materials, structures, and soils that are hazardous or radiologically contaminated. These materials would be handled in a controlled manner that would minimize the risk of exposure to project personnel, the general public, and the environment.

Enforceable Policies

The Commonwealth of Virginia has developed and implemented the federally approved VCP encompassing nine enforceable policies for the coastal area pertaining to:

- Fisheries management
- Subaqueous lands management
- Wetlands management
- Dunes management
- Non-point source pollution control
- Point source pollution control
- Shoreline sanitation
- Air pollution control
- Coastal lands management

A summary analysis of how the Proposed Action would affect each of the enforceable policies is presented below. This analysis is based on the more detailed analyses presented in the environmental assessment (EA) being prepared by USACE in accordance with the National Environmental Policy Act of 1969 (NEPA).

Fisheries Management

The program stresses the conservation and enhancement of finfish and shellfish resources and the promotion of commercial and recreational fisheries to maximize food production and recreational opportunities. This program is administered by the Marine Resources Commission (MRC) (Virginia Code §28.2-200 through §28.2-713) and the Department of Game and Inland Fisheries (DGIF) (Virginia Code §29.1-100 through §29.1-570).

The State Tributyltin (TBT) Regulatory Program has been added to the Fisheries Management program. The General Assembly amended the Virginia Pesticide Use and Application Act as it related to the possession, sale, or use of marine antifoulant paints containing TBT. The use of TBT in boat paint constitutes a serious threat to important marine animal species. The TBT program monitors boating activities and boat painting activities to ensure compliance with TBT regulations promulgated pursuant to the amendment. The MRC, DGIF, and Virginia Department of Agriculture and Consumer Services share enforcement responsibilities (Virginia Code §3.1-249.59 through §3.1-249.62).

Consistent to the Maximum Extent Practicable? Not Applicable (NA)

Analysis

The Proposed Action does not involve the use of TBT. In-water dismantlement activities associated with the Proposed Action would have no potential to affect finfish or shellfish resources or commercial and recreational fisheries. Therefore, this enforceable policy is not applicable.

Subaqueous Lands Management

The management program for subaqueous lands establishes conditions for granting or denying permits to use state-owned bottomlands based on considerations of potential effects on marine and fisheries resources, wetlands, adjacent or nearby properties, anticipated public and private benefits, and water quality standards established by the DEQ Water Division. The program is administered by the MRC (Virginia Code §28.2-1200 through §28.2-1213).

Consistent to the Maximum Extent Practicable? YES

Analysis

Removal of the intake pier and water discharge pipe under the Proposed Action would have the potential to disturb subaqueous bottomlands in Gunston Cove. Gunston Cove is a tidal embayment of the Potomac River. Water depths in Gunston Cove vary from approximately 1 meter (m) in the northern portion to approximately 2.25 m in the center. The mean tidal range is approximately 0.64 m.

The area where in-water work associated with the Proposed Action would occur includes the portion of Gunston Cove that contains the water outfall pipe, pump house, and water intake pier footprint (390 square meters [m²]); adjacent work areas; and the estimated extent of the turbidity plumes that would result from removal of the structures (3.6 hectares [ha]) (**Figure 2**). This area is expected to encompass all of the direct and indirect effects of the Proposed Action.

USACE and its contractors would minimize disturbance of subaqueous bottomlands during in-water activities to the extent practicable. As noted above, containment booms and sediment curtains would be used during in-water and nearshore work to prevent the migration of disturbed sediment into the water column, minimize turbidity, and ensure disturbed sediments settle near their original location.

As determined necessary through continued project planning and ongoing consultation with the Virginia Department of Environmental Quality (VDEQ) and other applicable regulatory agencies, USACE would submit a Joint Permit Application (JPA) for review and/or authorization from the Virginia Marine Resources Commission (VMRC), VDEQ, and/or the Fairfax County Local Wetlands Board (LWB) to work in the tidal waters and wetlands of Gunston Cove. Work would be conducted in accordance with the applicable requirements of permits issued by applicable regulatory agencies.

For these reasons, the Proposed Action would be consistent to the maximum extent practicable with this enforceable policy.

Wetlands Management

The purpose of the wetlands management program is to preserve tidal wetlands, prevent their despoliation, and accommodate economic development in a manner consistent with wetlands preservation.

- (i) *The tidal wetlands program is administered by the MRC (Virginia Code §28.2-1301 through §28.2-1320).*
- (ii) *The Virginia Water Protection Permit program administered by the DEQ includes protection of wetlands – both tidal and non-tidal. This program is authorized by Virginia Code § 62.1-44.15.5 and the Water Quality Certification requirements of §401 of the Clean Water Act of 1972.*

Consistent to the Maximum Extent Practicable? YES

Analysis

The Proposed Action would not involve dredging, filling, or other permanent alteration of or impacts on tidal wetlands. As noted above, USACE would submit a JPA for review and/or authorization from applicable regulatory agencies prior to conducting in-water activities associated with the Proposed Action. USACE and its contractors would limit in-water activity and disturbance to that necessary to remove structures associated with SM-1. Measures would also be implemented voluntarily as well as in accordance with applicable permit requirements to minimize temporary impacts on tidal wetlands. Following completion of the Proposed Action, tidal wetlands in Gunston Cove adjacent to the SM-1 site would naturally return to a pre-disturbance condition.

Therefore, the Proposed Action would be consistent to the maximum extent practicable with this enforceable policy.

Dunes Management

Dune protection is carried out pursuant to the Coastal Primary Sand Dune Protection Act and is intended to prevent destruction or alteration of primary dunes. This program is administered by the Marine Resources Commission (Virginia Code §28.2-1400 through §28.2-1420).

Consistent to the Maximum Extent Practicable? NA

Analysis

The Proposed Action has no potential to affect sand dunes, as none are located on or in the vicinity of the project site. Thus, this enforceable policy is not applicable.

Non-point Source Pollution Control

Virginia's Erosion and Sediment Control Law requires soil-disturbing projects to be designed to reduce soil erosion and to decrease inputs of chemical nutrients and sediments to the Chesapeake Bay, its tributaries, and other rivers and waters of the Commonwealth. This program is administered by DEQ (Virginia Code §62.1-44.15:51 et seq.).

Consistent to the Maximum Extent Practicable? YES

Analysis

The Proposed Action would involve more than 2,500 square feet of land disturbance. Therefore, as required by Fort Belvoir's Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4), the decommissioning contractor would be required to prepare and adhere to an erosion and sediment control (E&SC) plan in accordance with 9VAC25-840-40, as well as a stormwater management (SWM) plan in accordance with 9VAC25-870-55. Because the Proposed Action would also disturb more than one acre of land, the decommissioning contractor would also obtain coverage under Virginia's General Permit for Discharges of Stormwater from Construction Activities (Construction General Permit [CGP]). Coverage under the CGP would require the contractor to submit a Registration Statement to VDEQ and prepare and adhere to a site-specific SWPPP. Adherence to the requirements of the CGP and E&SC and SWM plans would manage the quantity and quality of stormwater discharged from land-disturbing activities associated with the Proposed Action and would minimize adverse effects on water quality in receiving water bodies.

Thus, the Proposed Action would be consistent to the maximum extent practicable with this enforceable policy.

Point Source Pollution Control

The point source program is administered by the State Water Control Board pursuant to Virginia Code §62.1-44.15. Point source pollution control is accomplished through the implementation of the National Pollutant Discharge Elimination System (NPDES) permit program established pursuant to §402 of the federal Clean Water Act and administered in Virginia as the VPDES permit program. The Water Quality Certification requirements of §401 of the Clean Water Act of 1972 is administered under the Virginia Water Protection Permit program.

Consistent to the Maximum Extent Practicable? YES

Analysis

No new point source discharges of stormwater would be created as a result of the Proposed Action. The water outfall pipe at the Deactivated SM-1 Nuclear Reactor Facility that would be removed by the Proposed Action has not been active since the facility was deactivated in 1973. As determined necessary, Fort Belvoir would amend its VPDES permit following completion of the proposed decommissioning to reflect the removal of this outfall.

Therefore, the Proposed Action would be consistent to the maximum extent practicable with this enforceable policy.

Shoreline Sanitation

The purpose of this program is to regulate the installation of septic tanks, set standards concerning soil types suitable for septic tanks, and specify minimum distances that tanks must be placed away from streams, rivers, and other waters of the Commonwealth. This program is administered by the Department of Health (Virginia Code §32.1-164 through §32.1-165).

Consistent to the Maximum Extent Practicable? YES

Analysis

An inactive septic tank and associated leach field are suspected to be present immediately southwest of Building 372. If present, the septic tank would be removed during the Proposed Action in accordance with applicable state and Fort Belvoir requirements. Soils in the area of the septic tank and leach field would be replaced with clean fill soils during site restoration activities. No new septic tanks would be installed as part of the Proposed Action.

Thus, the Proposed Action would be consistent to the maximum extent practicable with this enforceable policy.

Air Pollution Control

The program implements the federal Clean Air Act to provide a legally enforceable State Implementation Plan for the attainment and maintenance of the National Ambient Air Quality Standards. This program is administered by the State Air Pollution Control Board (Virginia Code §10.1-1300 through 10.1-1320).

Consistent to the Maximum Extent Practicable? YES

Analysis

Dismantlement of the Deactivated SM-1 Nuclear Reactor Facility would generate increased emissions from heavy equipment, worker vehicles and fugitive dust. Adverse short-term impacts on air quality would be minimized through the use of standard best management practices (BMP) such as vegetating soils that would remain exposed for extended periods and sweeping or wetting pavements.

Dismantlement-related emissions would remain below thresholds for General Conformity Applicability, and no formal conformity determination is required. In the long term, the implementation of the Proposed Action would not involve the installation of new generators or boilers, nor would it result in an increase of vehicle trips to Fort

Belvoir. No new sources of emissions would be created and thus, no exceedances of applicable *de minimis* limits for criteria pollutants regulated under the Clean Air Act would occur. Short-term adverse impacts on air quality would be minor, and there would be no long-term impacts.

Therefore, the Proposed Action would be consistent to the maximum extent practicable with this enforceable policy.

Coastal Lands Management

Coastal Lands Management is a state-local cooperative program administered by DEQ's Water Division and 84 localities in Tidewater, Virginia established pursuant to the Chesapeake Bay Preservation Act (Virginia Code §§ 62.1-44.15:67 through 62.1-44.15:79) and Chesapeake Bay Preservation Area Designation and Management Regulations (Virginia Administrative Code 9 VAC 25-830-10 et seq.).

Consistent to the Maximum Extent Practicable? YES

Analysis

Consistent with the Deactivated SM-1 Nuclear Reactor Facility's location adjacent to Gunston Cove, a tidal embayment of the Potomac River, the Proposed Action would occur in Chesapeake Bay Resource Protection Areas (RPAs) recognized by Fort Belvoir. Fort Belvoir defines RPAs as vegetated buffers no less than 100 feet wide located adjacent to and landward of all tidal shores and tidal wetlands. RPAs on the installation also include 100-year floodplains and 35-foot buffers adjacent to all intermittent streams.

RPA disturbance resulting from the Proposed Action would consist of vegetation clearing and soil excavation, fill, and compaction. Vegetation clearing and soil disturbance would be temporary and limited to that needed to complete the proposed decommissioning activities. All disturbance of the RPA would be limited to the portion of the RPA within the Deactivated SM-1 Nuclear Reactor Facility perimeter.

Adherence to requirements of the CGP and associated SWPPP, E&SC, and SWM plans during ground-disturbing activities would minimize or prevent the erosion of exposed soils and manage the quantity and quality of stormwater generated on the site, which would be ultimately discharged to Gunston Cove and further downstream, the Potomac River and Chesapeake Bay. The extent and intensity of RPA disturbance would vary over the five-year decommissioning process and not all ground disturbance would occur simultaneously, further minimizing adverse effects.

RPA disturbance during the Proposed Action would be mitigated through the planting of two new trees for the removal of every tree four inches in diameter and breast height (dbh) or greater in accordance with Fort Belvoir Policy Memorandum #27, *Tree Removal and Protection*. Vegetation replacement in the RPA would also adhere to the requirements of VDCR's *Riparian Buffers Modification and Mitigation Guidance Manual*.

In the long term, restoration and re-vegetation of the site following the completion of ground-disturbing activities in the Proposed Action would have a beneficial effect on RPAs in this part of Fort Belvoir. No ongoing or permanent activities with potential to disturb RPAs would be established by the Proposed Action.

For these reasons, the Proposed Action would be consistent to the maximum extent practicable with this enforceable policy.

Figure 1

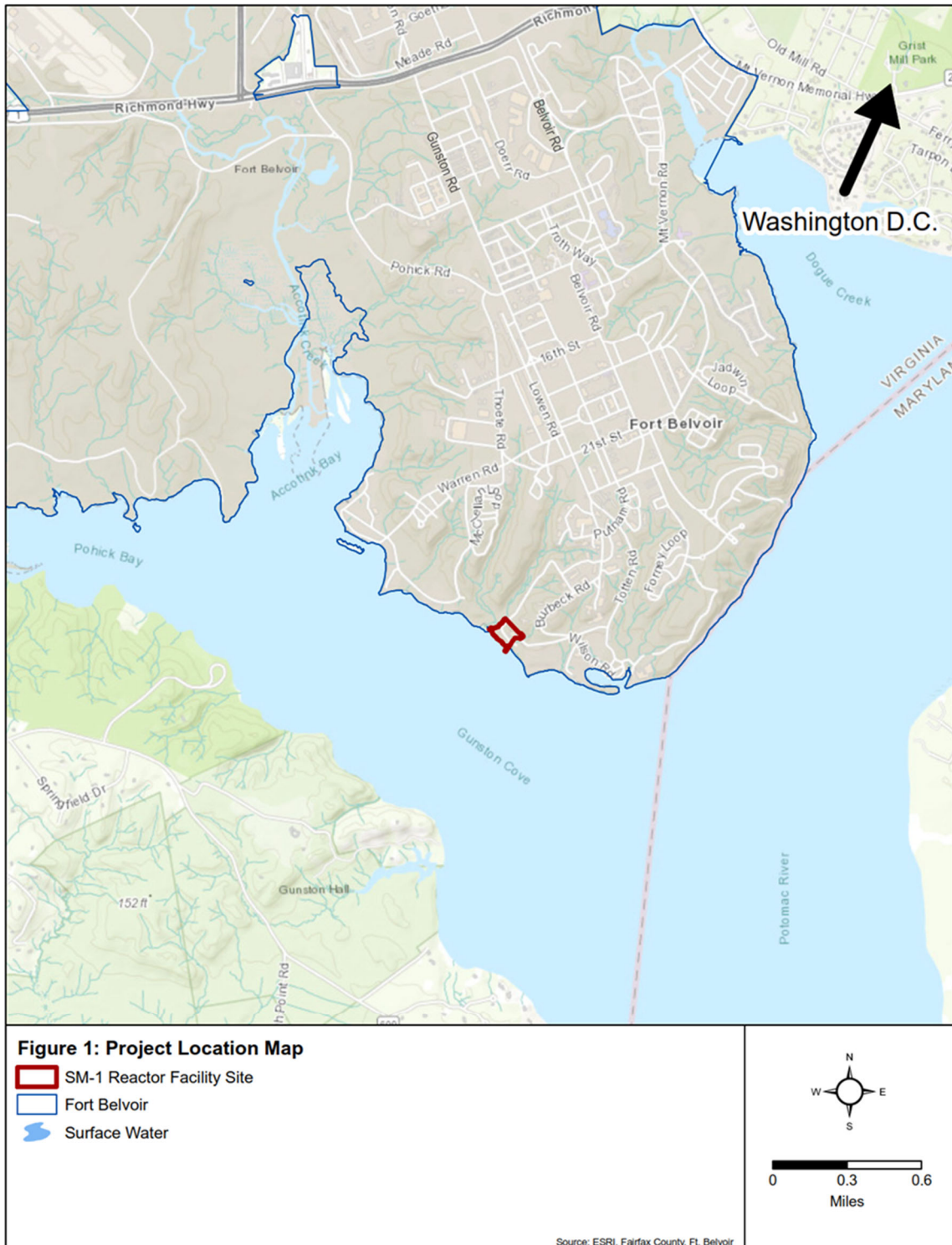
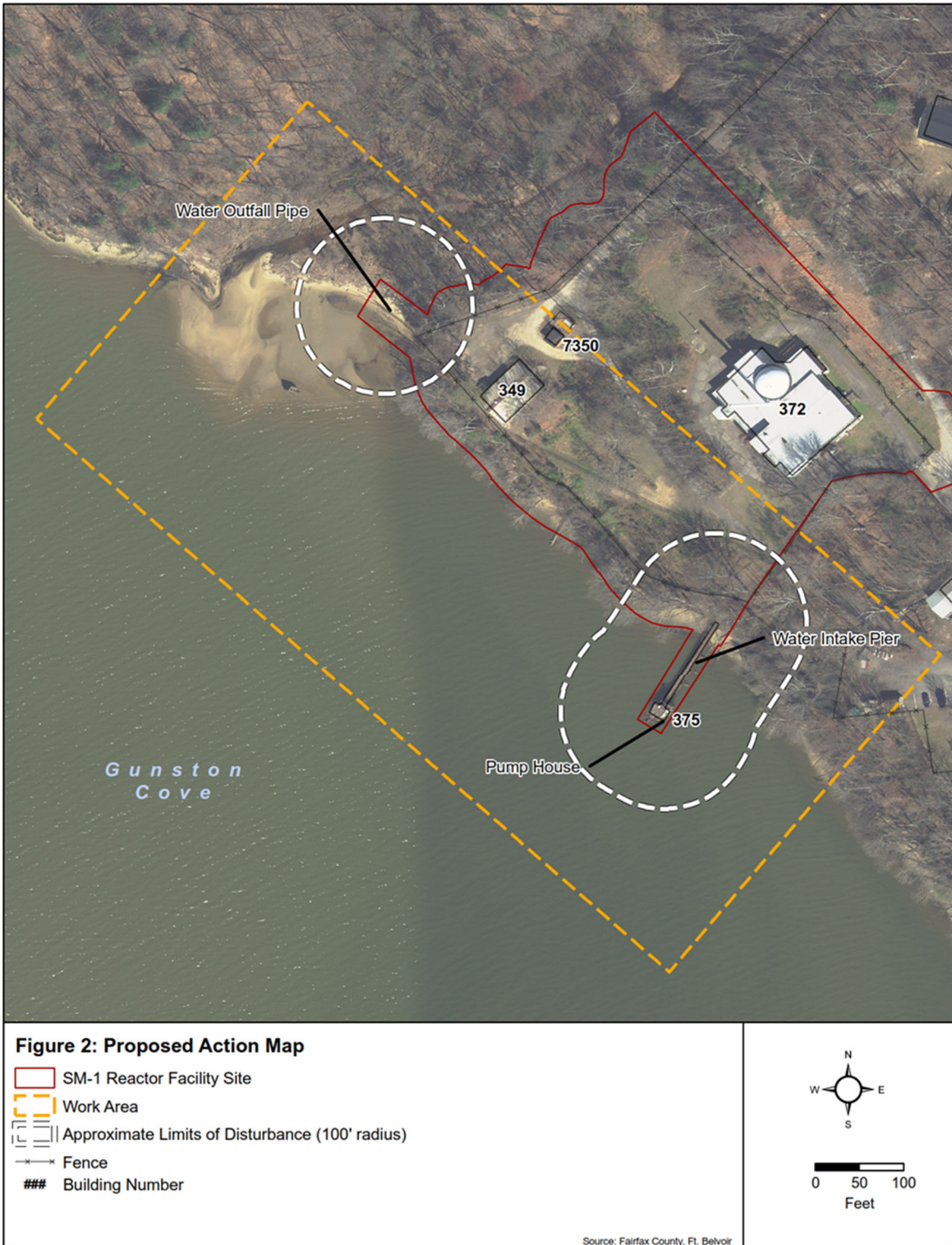


Figure 2



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