

## **5.0 ENVIRONMENTAL CONSEQUENCES**

This section describes the environmental consequences associated with the proposed alternatives and is organized by potentially affected resource topics. Impacts to resources are generally assessed in a qualitative manner. If impact quantifications are provided, they are worst-case representations based on conceptual designs. The previous chapter identified that the following resources within the C&O Canal NHP do not require assessment of consequences: wetlands; Indian trust resources; ethnographic resources; community facilities and services; environmental justice and agricultural land. The intensity and duration of each impact was also considered in determining overall effects to a resource by a proposed alternative. Additionally, cumulative effects of the proposed alternative upon NPS resources are considered. Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions” (40 CFR 1508.7). Some environmental consequences can be mitigated to negate potential adverse effects. Mitigation measures are designed to offset or minimize the effects of an impact caused by an alternative.

For all evaluated resources, the No Build Alternative (Alternative 1) would not be constructed. Thus, adverse impacts to the evaluated resources would not occur as a result of the No Build Alternative.

The Alternative 2, New Design Raw Water Main and McKinney Treated Effluent Outfall alignment maximizes the use of existing Frederick County underground sewer utility permanent easements through the C&O Canal NHP. Existing utilities must remain in service during construction. The existing permanent County utility easement through the C&O Canal NHP encompasses approximately 1.6 acres over a length of 1,210 feet. For Alternative 2, an additional County easement totaling 0.01 acre will also be required on NPS land located near the CSX tracks. The new total permanent county easement for Alternative 2 will total 1.61 acres. Additional areas of temporary construction easements located outside the existing ROW on NPS land total 0.18 acre for Alternative 2.

The Alternative 3, CSX Alternative maximizes the use of existing Frederick County underground sewer utility permanent easements through the C&O Canal NHP where possible. Because of CSX concerns regarding proximity to the existing railroad crossing abutments, an additional permanent County utility easement totaling 0.14 acres will be required on NPS land located near the CSX tracks. The new total permanent county easement for Alternative 3 will total 1.74 acres. Additional areas of temporary construction easements located outside the existing ROW on NPS land total 0.03 acres for Alternative 3.

### **5.1 Wetlands and Streams**

#### Alternative 1 - No Build Alternative

The Alternative 1 - No Build would not require construction. Therefore, impacts to Waters of the U.S. would not occur as a result.

#### Alternative 2 – New Design Raw Water Main and McKinney Treated Effluent Outfall

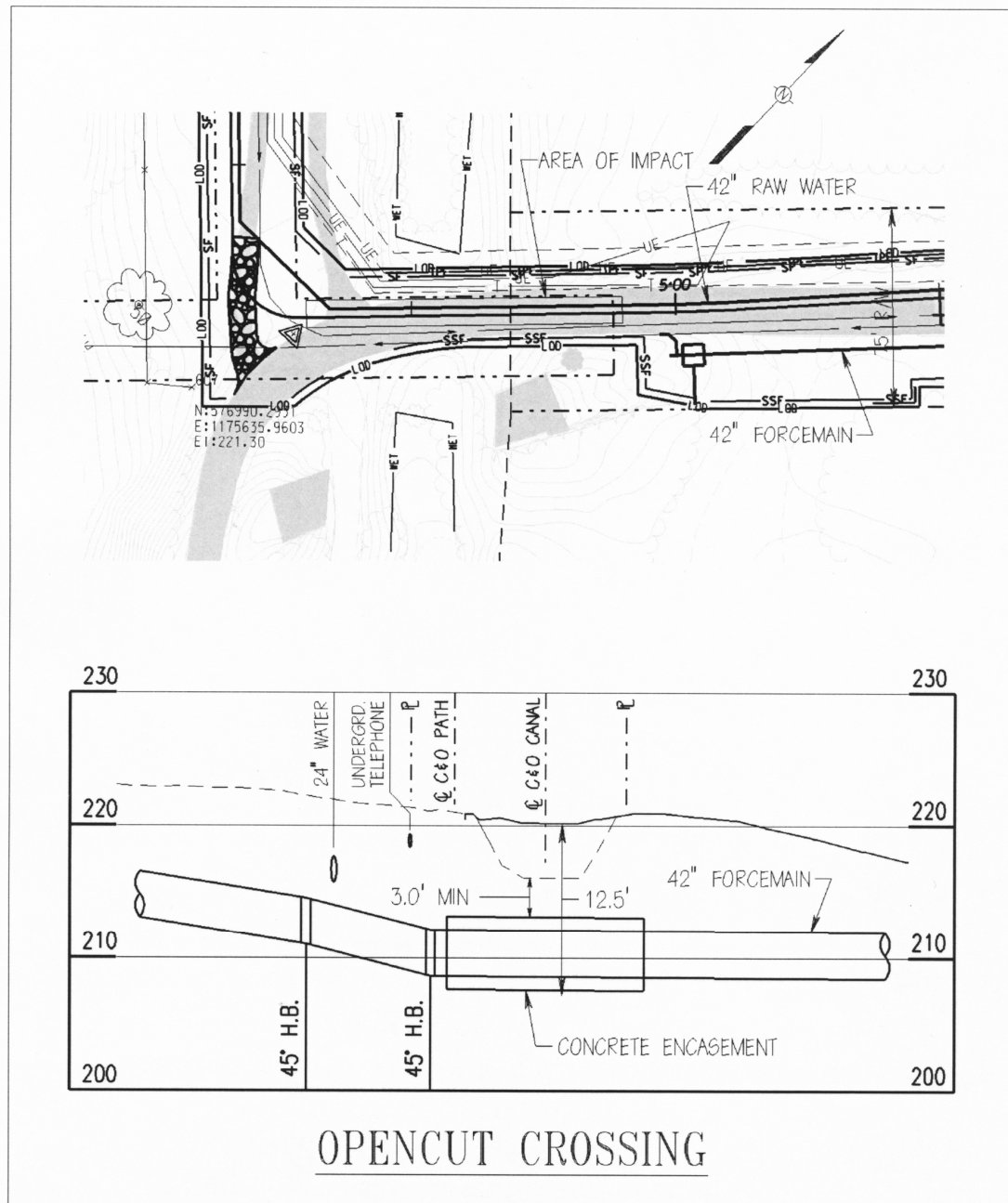
Alternative 2 will cross the Chesapeake & Ohio Canal within the existing New Design Road. Crossing of the C&O Canal is currently planned to be constructed by open cut and the proposed pipe will be installed approximately three (3) feet below the bottom elevation of the canal (Figure 7). The C&O Canal in this location is specifically protected under Section 10 of the Rivers and Harbors Act as a “navigable waters” regardless of the existing waterway conditions at this location. Because New Design Road does not include a culvert at the canal, the proposed pipe at this location requires only a Section 10 Rivers and Harbors Act permit from the USACOE. Alternative 2 will result in no permanent or temporary impacts to wetlands or streams within the C&O Canal NHP.


An erosion and sediment control plan will be prepared prior to the start of construction. Proper construction sequencing and implementation of control measures will minimize erosion and sedimentation impacts to the study area waterways and floodplains. Alternative 2 does not include

modification to the existing wastewater diffuser and will not involve in-stream construction within the Potomac River or C&O Canal.

Alternative 3 – CSX Alternative

Alternative 3 is functionally identical to Alternative 2. Alternative 3 will also result in no permanent or temporary impacts to wetlands or streams within the C&O Canal NHP.



 <b>WHITMAN, REQUARDT AND ASSOCIATES, LLP</b> 801 SOUTH CAROLINE STREET BALTIMORE, MARYLAND 410 - 235 - 3458	New Design Raw Water Main and McKinney Treated Effluent Outfall	1" = 10'	November 2006
	<b>OPENCUT CROSSING OF C&amp;O CANAL</b>	<b>Figure 7</b>	
		FILE NAME: m:\13474\images\FIGURE_6.dgn 8/21/2006	

## **5.2 Floodplains**

### Alternative 1 - No Build Alternative

The Alternative 1 - No Build would not implement the proposed improvements and would not require construction. Therefore, impacts to floodplains would not occur as a result.

### Alternative 2 - New Design Raw Water Main and McKinney Treated Effluent Outfall

Alternative 2 involves the installation of underground utilities within existing utility corridors. Within the C&O Canal NHP, Alternative 2 is entirely within the FEMA 100-Year floodplain of the Potomac River. An erosion and sediment control plan will be prepared prior to the start of construction. Proper construction sequencing and implementation of control measures will be used to avoid or minimize erosion and sedimentation impacts to the study area waterways and floodplains. Additionally, impacted areas would be returned to previously existing conditions. The project will require MDE approval for a project that impacts the FEMA 100-Year Floodplain. Due to the underground character of the proposed action and the use of tunneling where appropriate, Alternative 2 will not have adverse impacts upon floodplains.

### Alternative 3 – CSX Alternative

Alternative 3 involves the installation of underground utilities within existing utility corridors, except where the proposed mains diverge from these corridors near the CSX tracks. Within the C&O Canal NHP, Alternative 3 is entirely within the FEMA 100-Year floodplain of the Potomac River. Due to the underground character of the proposed action and the use of tunneling where appropriate, Alternative 3 will not have adverse impacts upon floodplains.

## **5.3 Wildlife/Habitat**

### Alternative 1 - No Build Alternative

The Alternative 1 - No Build would not implement the proposed improvements and would not require construction. Therefore, impacts to wildlife and wildlife habitat would not occur as a result.

### Alternative 2 – New Design Raw Water Main and McKinney Treated Effluent Outfall

Alternative 2 involves the installation of underground utilities within existing utility corridors. Alternative 2 does not affect wetlands. Due to Alternative 2 maximizing existing utility easements, and location within an existing utility/road corridor, it will not have significant effects upon wildlife or wildlife habitat areas. Impacts to forested areas within the C&O Canal NHP are minimal.

### Alternative 3 – CSX Alternative

Alternative 3 involves the installation of underground utilities within existing utility corridors, except where the proposed mains diverge from these corridors near the CSX tracks. Alternative 3 does not affect wetlands. Alternative 3 will not have significant effects upon wildlife or wildlife habitat areas. Impacts to forested areas within the C&O Canal NHP are minimal.

As per the May 22, 2003 and December 13, 2004 correspondence from the USFWS, no federally proposed or listed species exist within the project area. No further Section 7 Consultation with the USFWS is required.

As per the January 5, 2005 correspondence from the MNDR, no State proposed or listed species exist within the project area.

## **5.4 Rare, Threatened, Endangered, and Species of Special Concern**

### Alternative 1 - No Build Alternative

The Alternative 1 - No Build would not implement the proposed improvements and would not require construction. Therefore, impacts to rare, threatened, and endangered species and habitat would not occur as a result.

### Alternative 2 – New Design Raw Water Main and McKinney Treated Effluent Outfall

As per the May 22, 2003 and December 13, 2004 correspondence from the USFWS, no federally proposed or listed species exist within the project area. No further Section 7 Consultation with the USFWS is required.

As per the January 5, 2005 correspondence from the MNDR, no State proposed or listed species exist within the project area.

### Alternative 3- CSX Alternative

As per the May 22, 2003 and December 13, 2004 correspondence from the USFWS, no federally proposed or listed species exist within the project area. No further Section 7 Consultation with the USFWS is required.

As per the January 5, 2005 correspondence from the MNDR, no State proposed or listed species exist within the project area.

## **5.5 Forests**

### Alternative 1 - No Build Alternative

The Alternative 1 - No Build would not implement the proposed improvements and would not require construction. Therefore, impacts to forests would not occur as a result.

### Alternative 2 – New Design Raw Water Main and McKinney Treated Effluent Outfall

Construction of Alternative 2 will occur along the existing entry road to the C&O Canal NHP, and along existing established open areas within the park to minimize disruption to forest resources. Based on engineering design, Alternative 2 will impact approximately 0.17 acres of forest within NPS boundaries. Impacts would be restricted to the forest edge resulting from additional right-of-way acquisition (either permanent or temporary construction) beyond the existing 30-foot right-of-way. Areas of forest edge disturbance within a temporary construction easement would be temporary in nature, as the area would be allowed to naturally revert back to forest. Permanent impacts would be the conversion of 0.11 acres of forested areas into County-maintained grassy right-of-way. Some indirect impacts may occur (such as: loss of adjacent trees and plants due to change of light conditions).

### Alternative 3 – CSX Alternative

Construction of Alternative 3 is identical to Alternative 2 extending from the Potomac River to approximately 200 feet from the CSX railroad crossing. At approximately 200 feet from the railroad crossing, both 42" mains diverge from New Design Road and extend on parallel alignments to perpendicular crossings of the CSX rail line. Based on engineering design, Alternative 3 will impact approximately 0.13 acres of forest within NPS boundaries. Impacts would be restricted to the forest edge resulting from additional right-of-way acquisition (either permanent or temporary construction) beyond the existing 30-foot right-of-way. Areas of forest edge disturbance within a temporary construction easement would be temporary in nature, as the area would be allowed to naturally revert back to forest. Permanent impacts would be the conversion of 0.06 acres of forested areas into County-maintained grassy right-of-way. Some indirect impacts may occur (such as: loss of adjacent trees and plants due to change of light conditions).

Best management practices including tree protection fencing and signage will be used as required by the Maryland Forest Conservation Act. These measures will be implemented to help reduce and avoid impacts to forest resources outside of the proposed construction areas.

## **5.6 Cultural Resources**

### Alternative 1 - No Build Alternative

The No Build Alternative would not require construction and would not adversely affect cultural resources.

### Alternative 2 – New Design Raw Water Main and McKinney Treated Effluent Outfall

Within the Park, Site 18FR839 was identified within the project area. Based on recommendations by R. Christopher Goodwin & Associates, the proposed underground electric duct bank corridor was relocated to avoid adverse effects to Site 18FR0017. Therefore, Alternative 2 will not adversely affect cultural resources within the C&O Canal NHP.

### Alternative 3 – CSX Alternative

Within the Park, Site 18FR839 was identified within the project area. Based on recommendations by R. Christopher Goodwin & Associates, the proposed underground electric duct bank corridor was relocated to avoid adverse effects to Site 18FR0017. Based on existing data, Alternative 3 will not adversely affect cultural resources within the C&O Canal NHP.

## **5.7 Aesthetics and Visual Resources**

### Alternative 1 - No Build Alternative

The Alternative 1 - No Build would not implement the proposed improvements and would not require construction. Therefore, aesthetic and visual resources would not be impacted as a result.

### Alternative 2 – New Design Raw Water Main and McKinney Treated Effluent Outfall

Alternative 2 involves the installation of underground utilities within existing utility corridors. Additional ground level manholes will be added within New Design Road. Crossings of the CSX Railroad is currently planned to be constructed by tunneling. Crossing of the C&O Canal is currently planned to be constructed by open-cut. Thus, Alternative 2 will not require significant impacts to view sheds, landscapes, visual resources or aesthetics of the C&O Canal NHP. A potential aesthetic/visual resource adverse impact associated with the project would be a temporary effect during construction of the main. Depending on one's vantage point, views within the Park and along the Canal will be temporarily affected during construction. Upon completion of construction, the impacted areas would be returned to previously existing conditions.

Alternative 2 will involve an underground vault to house an air release vacuum valve (ARV). The access to the vault would be provided via a 3-foot by 3-foot access hatch located in the road and would appear on the surface to match existing manhole pads at the Nolands Ferry C&O Canal region. The ARV vent stack would be a 6-inch diameter pipe. The ARV vent stack outlet cannot be submerged during flood events. The 100-year floodplain elevation at this location requires the vent stack to extend approximately 16 feet above ground elevation. However, the vent stack location at the surface can be moved a short distance from the vault. The proposed ARV stack is located at the edge of the existing County right-of-way as close to the tree line as possible to mitigate its visual effect. In addition, the vent stack will be painted to further mitigate its visual presence.

### Alternative 3 – CSX Alternative

Alternative 3 involves the installation of underground utilities within existing utility corridors except at the location where the proposed mains diverge from New Design Road. The manhole installation and ARV location will be identical to Alternative 2. Alternative 3 will not require significant impacts to view sheds, landscapes, visual resources or aesthetics of the C&O Canal NHP. A potential aesthetic/visual resource adverse impact associated with the project would be a temporary effect during construction of

the main. Depending on one's vantage point, views within the Park and along the Canal will be temporarily affected during construction. Upon completion of construction, the impacted areas would be returned to previously existing conditions.

## **5.8 Socioeconomic Environment and Land Use**

### Alternative 1 - No Build Alternative

The No Build Alternative would not adversely impact land uses within the C&O Canal NHP. The No Build Alternative would not require changes to the existing right-of-ways within the Park. The existing County utility easements would remain in their existing conditions.

### Alternative 2 – New Design Raw Water Main and McKinney Treated Effluent Outfall

Alternative 2 involves the installation of underground utilities within existing utility corridors. This alternative maximizes the use of existing Frederick County utility easements. Impacted areas will be returned to previously existing conditions. Alternative 2 will not have significant impacts to land use within the project area.

**Right-of-Way.** Alternative 2 will maximize use of the existing County permanent utility easements within the C&O Canal NHP. The project will remain in the permanent utility easements with the C&O Canal NHP.

### Alternative 3 – CSX Alternative

Alternative 3 involves the installation of underground utilities within existing utility corridors and maximizes the use of existing Frederick County utility easements except where the mains diverge from New Design Road. Alternative 3 will not have significant impacts to land use within the project area.

**Right-of-Way.** Alternative 3 will maximize use of the existing County permanent utility easements within the C&O Canal NHP where possible. Due to constructability issues, an additional 0.14 acres of County easement will have to be acquired to construct Alternative 3.

## **5.9 Air Quality**

### Alternative 1 - No Build Alternative

The No Build Alternative would not adversely impact air quality within the C&O Canal NHP.

### Alternative 2 – New Design Raw Water Main and McKinney Treated Effluent Outfall

Alternative 2 involves the construction of underground water and wastewater utilities (and associated underground infrastructure), within the same corridor as existing underground utilities within the Park. There are no relevant long-term air quality impacts associated within this alternative. Temporary impacts which may occur during construction of the new infrastructure are considered temporary. Long term addition of air pollutants would not occur.

### Alternative 3 – CSX Alternative

Alternative 3 involves the construction of underground water and wastewater utilities (and associated underground infrastructure), within the same corridor as existing underground utilities within the Park except at the point where the proposed mains diverge from New Design Road. There are no relevant long-term air quality impacts associated within this alternative. Temporary impacts which may occur during construction of the new infrastructure are considered temporary. Long term addition of air pollutants would not occur.

## **5.10 Soils, Geology, and Topography**

### Alternative 1 - No Build Alternative

The No Build Alternative would not impact soils, geology, and topography.

### Alternative 2 – New Design Raw Water Main and McKinney Treated Effluent Outfall

Alternative 2 involves the construction of underground water and wastewater utilities (and associated underground infrastructure), within the same corridor as existing underground utilities within the Park. Construction of the existing underground utility corridor previously disturbed the soils of the project area. Alternative 2 is a shallow construction underground utility and will not adversely impact the geology of the region. Construction of Alternative 2 will result in minor temporary impacts to local soils and topography. Temporary impacted areas will be returned to existing grade and elevation upon completion of construction. Alternative 2 will not significantly impact soils, geology or topography.

### Alternative 3-CSX Alternative

Alternative 3 involves the construction of underground water and wastewater utilities (and associated underground infrastructure), within the same corridor as existing underground utilities within the Park except where the proposed mains diverge from New Design Road. Alternative 3 will not significantly impact soils, geology or topography

## **5.11 Greenways and Green Infrastructure**

### Alternative 1 - No Build Alternative

Under the No Build Alternative, the proposed pipelines and duct banks would not be constructed. Therefore, impacts to green infrastructure would not occur as a result of the No Build Alternative.

### Alternative 2 – New Design Raw Water Main and McKinney Treated Effluent Outfall

Because the location of Alternative 2 is directed based upon a pre-existing utility corridor, the impacts of Alternative 2 upon green infrastructure within the Park are minimized. Placing the utilities in the same corridor maximizes the use of existing utility easements and restricts construction impacts to previously disturbed areas. The existing utility easements occupy approximately 1.6 acres of the C&O Canal NHP. An additional County easement totaling 0.01 acre will also be required on NPS land located near the CSX tracks. The new total permanent county easement for Alternative 2 will total 1.61 acres. Additional areas of temporary construction easements located outside the existing ROW on NPS land total 0.18 acres for Alternative 2. Impacts would occur during construction of the utilities and would be temporary. The project design for Alternative 2 results in 1.19 acres of disturbance on C&O Canal NHP property. 0.18 acres of the total 1.19 would be from impacts associated with temporary construction easements. All impacts would be temporary as impacted areas would be returned to previously existing conditions upon completion of construction.

### Alternative 3- CSX Alternative

Impacts of Alternative 3 upon green infrastructure within the park are minimized to the extent possible. A majority of the construction will occur within existing utility easements except where the proposed mains diverge from New Design Road. An additional County easement totaling 0.14 acres on land near the CSX tracks will be required to construct Alternative 3. The new total permanent county easement resulting from Alternative 3 will total 1.74 acres.

Additional areas of temporary construction easements located outside the existing ROW on NPS land total 0.03 acres for Alternative 3. Impacts would occur during construction of the utilities and would be temporary. The project design for Alternative 3 results in 1.36 acres of disturbance on C&O Canal NHP property. 0.03 acres of the total 1.36 would be from impacts associated with temporary construction easements. All impacts would be temporary as impacted areas would be returned to previously existing conditions upon completion of construction.



## **5.12 Secondary Impacts and Cumulative Effects**

### Alternative 1 - No Build Alternative

The No Build Alternative can not contribute to secondary or cumulative impacts.

### Alternative 2 – New Design Raw Water Main and McKinney Treated Effluent Outfall

Alternative 2 is primarily an underground utility. Areas impacted by the construction of the line will be restored to pre-existing conditions. Additional facilities associated with this underground utility will not be required on NPS managed lands in the future. Therefore, Alternative 2 would not contribute to quantifiable secondary effects to the C&O Canal NHP.

Cumulative impacts associated with the project were determined by combining the impacts of the proposed alternative with known past, present and reasonable foreseeable future actions. Public Law 184 authorizes and directs the Department of the Interior to grant easements for rights-of-way through the C&O Canal for various utility purposes as long as the easements are designed to protect federal interests, which included the park. Due to the underground and temporary nature of the impacts associated with Alternative 2, it will not contribute to adverse cumulative environmental impacts.

### Alternative 3- CSX Alternative

Alternative 3 is identical to Alternative 2 except at the point where the proposed mains diverge from New Design Road. Additional facilities associated with this underground utility will not be required on NPS managed lands in the future. Therefore, Alternative 3 would not contribute to quantifiable secondary effects to the C&O Canal NHP. Due to the underground and temporary nature of the impacts associated with Alternative 3, it will not contribute to adverse cumulative environmental impacts.

## **5.13 Impacts to Visitor Use and Experience**

### Alternative 1 - No Build Alternative

The No Build Alternative would not change existing conditions at the park. The visitor use volumes/or patterns will not be impacted. Visitor experience would not be affected by Alternative 1.

### Alternative 2 – New Design Raw Water Main and McKinney Treated Effluent Outfall

Alternative 2 involves the construction of an underground utility, primarily within an existing underground utility and roadway corridor. Areas impacted by construction would be restored to pre-existing conditions upon completion of construction. The Park access road will remain open at all times. Construction will not affect parking areas. Examples of temporary construction related impacts include temporarily constrained vehicular access to the Nolands Ferry parking lot and boat ramp, redirected towpath use around construction activities, and construction noise. Alternative 2 would have no permanent or long-term impact upon C&O Canal NHP visitor use, use patterns, or the visitor experience.

### Alternative 3-CSX Alternative

Alternative 3 is identical to Alternative 2 except at the point where the proposed mains diverge from New Design Road. Areas impacted by construction would be restored to pre-existing conditions upon completion of construction. The Park access road will remain open at all times. Construction will not affect parking areas. Examples of temporary construction related impacts include temporarily constrained vehicular access to the Nolands Ferry parking lot and boat ramp, redirected towpath use around construction activities, and construction noise. Because Alternative 3 diverges from the park entrance road 200 feet from the CSX crossing, Alternative 3 post-construction conditions entail slightly less potential to impact visitor experience than Alternative 2. Alternative 3 would have no permanent or long-term impact upon C&O Canal NHP visitor use, use patterns, or the visitor experience.

## 5.14 Impacts To Park Operations

### Alternative 1 - No Build Alternative

The No Build Alternative would not change existing conditions at the park. C&O Canal NHP operations would not be affected by Alternative 1.

### Alternative 2 – New Design Raw Water Main and McKinney Treated Effluent Outfall

Alternative 2 involves the construction of an underground utility, within an existing underground utility and access road corridor. In general, Alternative 2 would not affect park operations. Minor expansions of the right-of-way may be required at areas where existing right-of-way is insufficient to accommodate the proposed activity. Areas impacted by construction would be restored to pre-existing conditions upon completion of construction. The Park access road will remain open at all times when the Park is open. Temporary closures would occur only at night. Construction will not affect parking areas. Construction within the Park should last approximately 8 weeks. As discussed in Section 5.13, Alternative 2 would have no long-term impact upon C&O Canal NHP operations.

### Alternative 3-CSX Alternative

Alternative 3 is identical to Alternative 2 except at the point where the proposed mains diverge from New Design Road. In general, Alternative 3 would not affect park operations. Minor expansions of the right-of-way may be required at areas where existing right-of-way is insufficient to accommodate the proposed activity. Areas impacted by construction would be restored to pre-existing conditions upon completion of construction. The Park access road will remain open at all times when the Park is open. Temporary closures would occur only at night. Construction will not affect parking areas. Construction within the Park should last approximately 8 weeks. As discussed in Section 5.13, Alternative 3 would have no long-term impact upon C&O Canal NHP operations.

## 5.15 Agency Coordination

Copies of all interagency correspondence are contained in Appendix B, Interagency Correspondence.

## 5.16 Summary of Environmental Consequences at C&O Canal National Historical Park

This section briefly summarizes the evaluated range of environmental consequences of Alternative 1, No Build, Alternative 2, New Design Raw Water Main and McKinney Treated Effluent Outfall within the C&O Canal NHP, and Alternative 3, CSX Alternative. To perform a standardized presentation of environmental consequences, impacts are defined in terms of intensity and duration. The following definitions characterize the intensity and duration of impacts:

**Intensity** – the thresholds that define the levels at which change or disturbance will occur (or is anticipated) within the evaluated environmental resource:

- Unknown – Insufficient data to determine the potential for an adverse effect to this resource.
- None – No impact to this resource is anticipated. No adverse effect is associated.
- Negligible – Impact is at the lowest level of detection – barely perceptible or not measurable. No adverse effect is associated.
- Minor – Some adverse effect or potential for adverse effect is likely to occur. Minimal adverse effect may or may not occur. Impact would not alter the character or defining features of the resource.
- Moderate – Adverse effect is known or likely to occur. Impact may degrade one or more functions of the resource, or compromise the character, integrity or defining feature of the resource. Impact may or may not require mitigation.
- Major – Adverse effect is known and significant. Impact would degrade, alter the character or defining feature of the resource, or otherwise compromise the resource integrity, or reduce the overall value or preclude existence. Mitigation is often associated with major adverse impacts.

**Duration** – the duration of impacts is analyzed as follows:

- Short-term – associated with the construction period, less than 8-months within the Park. Short-term effects are temporary in nature (not permanent).
- Long-term – associated with prolonged conditions within the Park extending beyond the construction period of the project (8 months and longer).

A comparison of the environmental consequences of the Alternative 1 – No Build, Alternative 2 – New Design Raw Water Main and McKinney Treated Effluent Outfall within the C&O Canal NHP, and Alternative 3-CSX Alternative is provided below in Table 3.

**Table 3**  
**Environmental Consequences Matrix for C&O Canal National Historical Park**

<b>Environmental Feature</b>	<b>Alternative 1 – No Build Alternative</b>	<b>Alternative 2 –Raw Water Main/Treated Effluent Outfall</b>	<b>Alternative 3-CSX Alternative</b>
Wetlands	No short-term impact No long-term impact	No short-term impact No long-term impact	No short-term impact No long-term impact
Waterways	No short-term impact No long-term impact	Moderate short-term impact Negligible long-term impact	Moderate short-term impact Negligible long-term impact
Floodplains	No short-term impact No long-term impact	Minor short-term impact No long-term impact	Minor short-term impact No long-term impact
Wildlife/Habitat	No short-term impact No long-term impact	Minor short-term impact Negligible long-term impact	Minor short-term impact Negligible long-term impact
Rare, Threatened and Endangered Species	No short-term impact No long-term impact	Negligible short-term impact No long-term impact	Negligible short-term impact No long-term impact
Forests	No short-term impact No long-term impact	Negligible short-term impact No long-term impact	Negligible short-term impact No long-term impact
Right-of-Ways	No short-term impact No long-term impact	Minor short-term impact No long-term impact	Minor short-term impact No long-term impact
Historic Structures	No short-term impact No long-term impact	No short-term impact No long-term impact	No short-term impact No long-term impact
Archeological Resources	No short-term impact No long-term impact	No short-term impact No long-term impact	No short-term impact No long-term impact
Cultural Landscapes	No short-term impact No long-term impact	Minor short-term impact No long-term impact	Minor short-term impact No long-term impact
Indian Trust Resources	No short-term impact No long-term impact	No short-term impact No long-term impact	No short-term impact No long-term impact
Ethnographic Resources	No short-term impact No long-term impact	No short-term impact No long-term impact	No short-term impact No long-term impact
Air Quality	No short-term impact No long-term impact	No short-term impact No long-term impact	No short-term impact No long-term impact
Aesthetics and Visual Resources	No short-term impact No long-term impact	Moderate short-term impact No long-term impact	Moderate short-term impact No long-term impact
Socioeconomic Environment	No short-term impact No long-term impact	No short-term impact No long-term impact	No short-term impact No long-term impact
Land Use	No short-term impact No long-term impact	No short-term impact No long-term impact	No short-term impact No long-term impact
Community Facilities and Services	No short-term impact No long-term impact	No short-term impact No long-term impact	No short-term impact No long-term impact
Environmental Justice	No short-term impact No long-term impact	No short-term impact No long-term impact	No short-term impact No long-term impact
Agricultural Land	No short-term impact No long-term impact	No short-term impact No long-term impact	No short-term impact No long-term impact
Soils, Geology, Topography	No short-term impact No long-term impact	Minor short-term impact No long-term impact	Minor short-term impact No long-term impact
Green Infrastructure	No short-term impact No long-term impact	No short-term impact No long-term impact	No short-term impact No long-term impact

Environmental Feature	Alternative 1 – No Build Alternative	Alternative 2 –Raw Water Main/Treated Effluent Outfall	Alternative 3-CSX Alternative
Cumulative Impacts	No short-term impact No long-term impact	No short-term impact No long-term impact	No short-term impact No long-term impact
Visitor Use and Experience	No short-term impact No long-term impact	Minor short-term impact No long-term impact	Minor short-term impact No long-term impact
Park Operations	No short-term impact No long-term impact	Minor short-term impact Negligible long-term impact	Minor short-term impact Negligible long-term impact

### 5.17 Statement of Impairment to Park Resources

All construction activities within the C&O Canal NHP will occur within a 6-week to 10-week timeframe. Because the location of Alternative 2 is directed based upon a pre-existing utility corridor, the impacts of this Alternative within the Park are minimized. Placing the utilities in the same corridor maximizes the use of existing utility easements and restricts construction impacts to previously disturbed areas. The proposed action will result in no (zero) permanent impairment to park resources. The proposed activity will result in nominal short-term impairment of the following park resources located at the Nolands Ferry portion of the C&O Canal NHP:

- **Park Access** – Portions of New Design Road may be closed during construction. Construction within C&O Canal will be conducted at night and managed and staged to avoid or minimize complete public access denial.
- **Visual Impacts** – During construction, the operation and staging of heavy equipment will impair the perception of the aesthetics of the project area. Upon completion, the construction area will be fully restored to pre-existing conditions. Staging construction within the C&O Canal at night will further mitigate temporary visual impacts.

### 5.18 Applicable Federal and State Regulations

*National Environmental Policy Act (NEPA)* (Public L. 91-90, 42 U.S.C. 4321-4347, July 1, 1970)

NEPA was enacted in 1969 for the purpose of creating a national policy to make people aware of their environment, to prevent further endangerment to the environment, and to create a Council on Environmental Quality (CEQ). The resulting policy holds all government branches accountable for environmental impacts that may occur as a result of a Federal action. NEPA requires documentation of the evaluation of environmental impacts from the Federal agency involved in the form of an Environmental Impact Statement (EIS) or an Environmental Assessment (EA).

#### *Endangered Species Act (ESA)*

The ESA was enacted in 1973 with the purpose to protect endangered and threatened species and to provide a means to conserve their ecosystems. The law is administered by the USFWS and the National Marine Fisheries Service. Any federal agency action that may affect endangered, threatened, or proposed species must be evaluated in consultation with these two agencies. The federal agency involved must work to conserve listed species and make sure that their actions do not jeopardize the continued existence of a listed species. Development of a plan to modify a federal project is developed in conjunction with the USFWS and the National Marine Fisheries Service so minimal impact will occur to listed species and their habitat.

#### *Clean Water Act; Section 404*

Section 404 of the Clean Water Act regulates the placement of dredged and fill material into waters of the United States. The Act authorizes the issuance of permits from the Corps for such discharges as long as the proposed activity complies with environmental requirements specified in Section 404(b)(1) of the Act.

To grant a permit, the Corps must weigh the need to protect aquatic resources against the benefits of the proposed development. Corps policy requires applicants to avoid impacts to waters of the U.S. and

wetlands to the extent practicable, then minimize the remaining impacts, and finally take measures to compensate for unavoidable impacts.

*Clean Water Act; Section 401*

Section 401 of the Clean Water Act, the State Water Quality Certification program, requires that states certify compliance of federal permits or licenses with state water quality requirements and other applicable state laws.

Under Section 401, states have authority to review any federal permit or license that may result in a discharge to wetlands and other waters under state jurisdiction, to ensure that the actions would be consistent with the state's water quality requirements. Federal permits that do not meet these requirements will not receive a State Water Quality Certification, and thus cannot be issued.

*Rivers and Harbors Act; Section 10*

Section 10 of the Rivers and Harbors Act requires authorization from the U.S. Army Corps of Engineers (Army Corps) for the construction of any structure in or over any navigable water of the United States, the excavation/dredging or deposition of material in these waters or any obstruction or alteration in a navigable water. Navigable waters of the U.S. are those subject to the ebb and flow of the tide shoreward to the mean high water mark and/or presently used, or have been used in the past, or are susceptible for use to transport interstate or foreign commerce.

*MD Forest Conservation Act (FCA)*

The MD FCA was enacted in 1991 to reduce the number of forested acres cleared when land is changed from forests or agriculture to residential, commercial, or industrial development. The FCA provides guidelines for the amount of forest land retained or planted after the completion of development projects. The Act applies to all activities requiring a permit for subdivision, grading, or sediment control that is larger than 40,000 square feet. Information on the condition of the existing forest and a plan for conserving the most valuable portions of the forest are required to be prepared by a qualified professional.

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## **8.0 LIST OF ABBREVIATIONS**

C&O Canal	Chesapeake and Ohio Canal
CEQ	Presidential Council on Environmental Quality
CWA	Section 404 Clean Water Act, Code of Federal Regulations
DM	Department Manual, National Park Service
DOI	U.S. Department of the Interior
DUSWM	Division of Utilities and Solid Waste Management, Frederick County
EA	Environmental Assessment
EIS	Environmental Impact Statement
FCA	Forest Conservation Act, State of Maryland
FIRM	Flood Insurance Rate Map
HUD	U.S. Department of Housing and Urban Development
LOD	Limits of Disturbance
MDE	Maryland Department of the Environment
MGD	Million Gallons per Day
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHP	National Historical Park
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
TCE	Temporary Construction Easement
USACOE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WR&A	Whitman, Requardt & Associates, LLP
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant