

TO: FHWA
FROM: Mr. Brian S. Reid, VDOT Environmental Program Manager
DATE: July 29, 2020

CATEGORICAL EXCLUSION (CE)

Date CE level document approved by VA FHWA Division: July 23, 2018

FHWA Contact: Mr. John Simkins

Route: 337

Route Type: Multiple

Project Type: Construction

State Project Number: U000-133-415

Federal Project Number: HSIP-5A03(875)

UPC: 110634

From: Nansemond Parkway approximately 0.24 miles Southeast of the Wilroy Road/Nansemond Parkway Intersection to realigned Wilroy Road overpassing Commonwealth Railroad

To: Nansemond Parkway North of Bridlewood Lane to Wilroy Road approximately 0.42 miles South of the Wilroy Road/Nansemond Parkway intersection on new alignment

County/City: Suffolk, VA

District / Residency: Hampton Roads District

Project in STIP: Yes No
Project in Long Range Plan: Yes No N/A Project Outside of MPO Area
Next Phase of Funding Available: Yes No

Project Description: The project includes construction of a flyover of the existing railroad in order to realign Wilroy Road from just north of Bridlewood Lane to approximately 0.42-miles south of the existing Wilroy Road/Nansemond Parkway intersection. The flyover includes the construction of an approximately 200-foot long bridge structure with adequate height to allow for passage of double stacked rail transport containers. The new construction project includes sidewalks to accommodate multiple modes of transportation, drainage improvements, stormwater management facilities, and signalization.

CE Category 23 CFR 771.117: (d)(13)
Description of CE Category: Actions prescribed in 23 CFR 771.117 (c)(26), (c)(27), and (c)(28) that do not meet the constraints as outlined in paragraphs (e) of 23 CFR 771.117.

USGS Map Attached Yes

Logical Termini and Independent Utility:
Yes N/A (For Non-highway construction only, explain in comments below)

Purpose and Need Statement:
The purpose of this project is to address congestion and safety concerns with the construction of a new railroad overpass and elimination of an existing at-grade crossing on Nansemond Parkway. Wilroy road will be realigned to facilitate the new overpass and a new signalized intersection will be provided at the new Wilroy Road and Nansemond Parkway alignment. The need for the project is to address the existing at-

grade railroad crossing at Nansemond Parkway and Wilroy Road which poses a safety risk and causes significant congestion and delay for motorists on both Nansemond Parkway and Wilroy Road. All movements, including right turns onto Wilroy Road are blocked when a single vehicle wishing to proceed southbound on Nansemond Parkway arrives at the intersection during a train crossing. This has resulted in unsafe driver decisions to sometimes risk driving into opposing traffic to go around queued vehicles. As rail traffic continues to grow in frequency and in length of trains, safety concerns and congestion are expected to increase.

Typical Section: The proposed typical section of the realigned Nansemond Parkway-Wilroy Road corridor consists of a two lane undivided roadway with 12' lanes. A five foot sidewalk is proposed on the west side of the roadway and 10' sidewalk to the east. The section widens to accommodate right and left turn lanes at intersecting streets. The proposed typical section of the realigned Nansemond Parkway corridor and railway overpass also consists of a two lane undivided roadway with 12' lanes. A five foot sidewalk is proposed on the north side of the corridor and a 10' sidewalk to the south side. The corridor widens to three lanes at the intersection of the realigned Nansemond Parkway/Wilroy Road corridor to allow for separate left and right turn lanes. The bridge structure over the Commonwealth Railway will provide for two 14' lanes, a 10' sidewalk on the southside of the bridge and 6' 6" sidewalk on the north side.

Structures: A 220' long triple span bridge structure is proposed to cross the Commonwealth Railway and the old Wilroy Road right of way. No MSE walls are proposed with the structure.

SOCIO-ECONOMIC	PRESENT		IMPACTS	
	YES	NO	YES	NO
Minority/Low Income Populations: Present with no impact (EJ Analysis (attached)).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Disproportionate Impacts to Minority/Low Income Populations: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				
Existing or Planned Public Recreational Facilities	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Source: City of Suffolk Department of Planning, review of City of Suffolk GIS mapping, Census data (U.S. Census Bureau) https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml , Environmental Justice Analysis (Appendix A)				
Community Services	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Source: City of Suffolk Department of Planning, review of City of Suffolk GIS mapping.				
Consistent with Local Land Use: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Source: City of Suffolk Department of Planning, City of Suffolk GIS data, City of Suffolk Comprehensive Plan.				
Existing or Planned Bicycle/Pedestrian Facilities:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Source: City of Suffolk Department of Planning, Proposed Project Plans (Appendix I)				
Comments: Based on the Environmental Justice Analysis (Appendix A), minority populations are present within the study area, but are not anticipated to be disproportionately impacted as the project does not involve relocations or changes in access. The project proposes to construct improvements including new sidewalks to increase mobility for pedestrians and bicyclists.				

SECTION 4(f) and SECTION 6(f)	YES	NO
Use of 4(f) Property: Acres of use: 4.9566 acres of fee simple and 0.3705 acres of temporary construction easement and 0.0240 acres of non ingress/egrss easement	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Name of Resource: VDHR # 133-5039 (Siege of Suffolk)		

Type of Resource: VDHR # 133-5039 (Siege of Suffolk)		
Individually Eligible Historic Property:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Contributing Element to Historic District	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Public Recreation Area:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Public Park:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Public Wildlife/Waterfowl Refuge:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Planned Public Park, Recreation Area, Wildlife or Waterfowl Refuge:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Source: Proposed Project Plans (Appendix I); Suffolk Department of Parks & Recreation; Virginia Department of Conservation and Recreation; Suffolk Department of Planning; Coordination with Virginia Department of Historic Resources (VDHR) correspondence dated 8-30-2018.		
De Minimis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Type of Use:		
Permanent:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Temporary:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
*Constructive:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
*Temporary Non 4(f) Use	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Section 4(f) Evaluation Attached:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Conversion of 6(f) Property: Acres of Conversion: N/A	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Source: Suffolk Department of Parks & Recreation; Virginia Department of Conservation and Recreation; Suffolk Department of Planning; City of Suffolk, Coordination with Virginia Department of Historic Resources (VDHR), Parcel Viewer: http://webmap.suffolk-va.net/finder/s2/html?app=app2/finder ; FHWA de minimis determination for Section 4(f) for the project (per email from VDOT dated January 15, 2020).		
<p>Comments:</p> <p>Section 4(f): Per review of project plans and coordination with the aforementioned sources, there will be no permanent or temporary use of lands of public parks, recreation areas or waterfowl/wildlife refuges.</p> <p>Based on the Proposed Project Plans (Appendix I) and VDHR determination dated 8-30-2019, the project will have No Adverse Effect on historic resources. Per email dated 1-15-2020, FHWA made a de minimis determination for Section 4(f) for the project.</p> <p><i>Parks/Recreational:</i> Based on a review of Suffolk Department of Parks & Recreation, Virginia Department of Conservation and Recreation mapping, Suffolk Department of Planning and City of Suffolk GIS data, no impacts to any existing or planned Parks/Recreational properties are anticipated.</p> <p>Section 6(f): Based on a review of City of Suffolk GIS data, no impacts to Section 6(f) properties are anticipated.</p>		

*Note that a Constructive Use and a Temporary Non 4(f) Use do not apply with a De Minimis finding.

CULTURAL RESOURCES	COMPLETE	N/A
Source:		
"No Effect" Pursuant to 1999 DHR Agreement	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Phase I Architecture Conducted	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Phase II Architecture Conducted	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Phase I Archaeology Conducted	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Phase II Archaeology Conducted	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Section 106 Effect Determination: No Adverse Effect		
DHR Concurrence on Effect: Yes	<input checked="" type="checkbox"/>	Date: 8/30/2019
MOA Attached: Yes	<input type="checkbox"/>	N/A <input checked="" type="checkbox"/> Execution Date: / /
Name of Historic Property: Wilroy House (133-0217) and Siege of Suffolk (133-5039)		
Comments: Per coordination with VDHR letter dated 8/30/2019, as well as subsequent letter dated 12/23/2019, the project has been determined to have No Adverse Effect on the resource.		

NATURAL RESOURCES	PRESENT		IMPACTS	
	YES	NO	YES	NO
Surface Water (Name:) None	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Source: "The National Map" topographic mapping produced by the United States Geological Survey (USGS); U.S. Fish and Wildlife Service National Wetlands Inventory map (Appendix E).				
Federal Threatened or Endangered Species: Terrestrial: Northern Long-Eared Bat (NLEB), Red-Cockaded Woodpecker. Aquatic: None Plants: Walter's paspalum (located within the transmission line right-of-way on the eastern side of Rt. 337 – no work will be done within the transmission line right-of-way on the eastern side of Rt. 337).	<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Source: U.S. Fish and Wildlife Service; Department of Conservation and Recreation (Appendix D).				
100 Year Floodplain: If "Yes" then identify the regulatory floodway zone: Zone AE and Zone X	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Source: Federal Emergency Management Agency (Appendix E).				
Tidal Waters/Wetlands: None	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Wetlands:Present with Impacts.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Source: U.S. Fish and Wildlife Service National Wetlands Inventory map (Appendix E).				
	Yes		No	
Permits Required: Nationwide Permit or State Programmatic General Permit will be required for this project	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
Source: Proposed Project Plans (Appendix I).				
Comments: Information regarding the Threatened or Endangered Species can be found in Appendix D. Based on a review of the Proposed Project Plans (Appendix I), less than 1.00-acre of jurisdictional wetlands are anticipated to be impacted by the project, so it is assumed that a State Programmatic General Permit or Nationwide Permit would be secured for this project before construction. Additionally, there will not be an increase of the flood level greater than one foot per 23 CFR Part 650. Compensatory mitigation will be coordinated with the regulatory agencies during the permit acquisition process.				

AGRICULTURAL/OPEN SPACE	PRESENT		IMPACTS	
	YES	NO	YES	NO
Open Space Easements	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Source: Suffolk Department of Planning; Suffolk Parcel Viewer: http://webmap.suffolkva.net/finder/s2.html?app=apps2/finder				
Agricultural/Forestral Districts	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Source: Proposed Project Plans (Appendix I); Suffolk Department of Parks & Recreation; Virginia Department of Conservation and Recreation; Suffolk Department of Planning; Suffolk Parcel Viewer: http://webmap.suffolkva.net/finder/s2.html?app=apps2/finder				
Comments: Based on a review of the Proposed Project plans (Appendix I), no Open Space Easements or Agricultural/Forestral Districts are impacted by this project.				

FARMLAND	YES	NO
NRCS Form CPA-106 Attached: Rating: 79	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Alternatives Analysis Required:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If Form CPA-106 is not attached check all that are applicable:		
Land already in Urban use:	<input type="checkbox"/>	<input type="checkbox"/>
Entire project in area <i>not</i> zoned agriculture:	<input type="checkbox"/>	<input type="checkbox"/>
NRCS responded within 45 days:	<input type="checkbox"/>	<input type="checkbox"/>
NRCS Determined no prime or unique farmland in the project area.	<input type="checkbox"/>	<input type="checkbox"/>
Source: Coordination with NRCS representative Allison Leopard on September 17, 2019, and resulting NRCS Form CPA-106 in Appendix F.		
Comments: Based on a NRCS rating of 79 (NRCS Form CPA-106 – Appendix F), U.S. Department of Agriculture recommends that “sites receiving a total score of less than 160 need not be given further consideration for protection and no additional sites need to be evaluated.” (7 CFR 658.4)		

INVASIVE SPECIES	PRESENT		
	YES	NO	UNKNOWN
Invasive Species in the project area:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
There is potential for invasive species to become established along the limits of disturbance of the project during and following construction. Section 244.02(c) of VDOT’s Road and Bridge Specifications (2016) includes provisions intended to control noxious weeds (which includes non-native and invasive species).			
While rights-of-ways are at risk from invasive species colonization from adjacent properties, implementing the above provisions would reduce or minimize potential for introduction, proliferation, and spread of invasive species. Additionally, the implementation of BMPs for erosion/sediment control and abatement of pollutant loading would minimize indirect impacts to adjoining communities and habitat by reducing excess nutrient loads that could encourage invasive species proliferation.			
Comments: All seeds used will be tested in accordance with the Virginia Seed Law to ensure there are not prohibited Noxious Weed-Seeds in the seed mixes.			

AIR QUALITY		
Carbon Monoxide (CO)	Yes	No
This project is located in a CO <input checked="" type="checkbox"/> Attainment Area <input type="checkbox"/> Maintenance Area		
CO Hotspot Analysis Required? (if "Yes", please attach analysis) <input type="checkbox"/> <input checked="" type="checkbox"/>		
If "No", indicate which exemption it falls under:		
<input type="checkbox"/> Exempt project under 40 CFR 93.126.		
<input checked="" type="checkbox"/> Exempt project based on traffic volumes below thresholds in the current VDOT Project Level Air Quality Studies Agreement with FHWA/EPA.		
Ozone		
This project is located in an Ozone <input checked="" type="checkbox"/> Attainment Area <input type="checkbox"/> Maintenance Area <input type="checkbox"/> Nonattainment Area <input type="checkbox"/> Early Action Compact Area		
Only projects located in ozone nonattainment or maintenance areas must complete this box		
<input type="checkbox"/> Exempt from regional emissions requirements under 40 CFR 93.126 or 40 CFR 93.127.		
<input type="checkbox"/> Properly programmed in the CLRP and FY - TIP.		
<input type="checkbox"/> The project is not regionally significant and/or is not of a type that would normally be included in the regional transportation model.		
<input type="checkbox"/> This project is regionally significant; however the project was not modeled, or the scope of the project is not consistent with what was modeled in the currently conforming CLRP and TIP.		
Fine Particulate Matter (PM2.5)	Yes	No
This project is located in a PM _{2.5} <input type="checkbox"/> Nonattainment Area <input type="checkbox"/> Maintenance Area <input checked="" type="checkbox"/> Attainment Area (if checked, do not fill out box below)		
PM _{2.5} Hotspot Analysis Required? (If "Yes", Please Attach Analysis) <input type="checkbox"/> <input checked="" type="checkbox"/>		
Check all that apply;		
<input type="checkbox"/> A. Exempt project under 40 CFR 93.126, Table 2.		
<input type="checkbox"/> B. Not a project of air quality concern under 40 CFR 93.123(b)(1)(i) thru (v).		
<input type="checkbox"/> C. Properly programmed in the CLRP and FY - TIP.		
<input type="checkbox"/> D. This project is regionally significant; however the project was not modeled, or its scope is not consistent with what was modeled, in the currently conforming CLRP and TIP.		
If "B" is checked above, please indicate the following for highway projects; Design Year _____, Peak AADT _____, Peak Diesel Truck % _____		
Mobile Source Air Toxics (MSAT)		
This project <input checked="" type="checkbox"/> is exempt with no meaningful potential MSAT effects <input type="checkbox"/> is one with low potential MSAT effects (attach qualitative MSAT analysis) <input type="checkbox"/> is one with high potential MSAT effects (attach quantitative MSAT analysis)		
Check all that apply;		
<input checked="" type="checkbox"/> Exempt project under 40 CFR 93.126, or qualifies as a CE under 23 CFR 771.117(c).		
<input checked="" type="checkbox"/> Project with no meaningful impact on traffic volumes or vehicle mix.		
If a qualitative MSAT analysis is required, please indicate the following for highway projects; Design Year: _____ Peak AADT: _____		
Source: Air Quality Technical Report for Nansemond Parkway/Wilroy Road Overpass completed by HMMH in September 2019 and revised in December 2019, per VDOT comments (Appendix G).		

Comments: The study area is located in the City of Suffolk. At the time of preparation of this technical report, the United States Environmental Protection Agency's (EPA) Green Book shows the City of Suffolk to be designated as an attainment area for all criteria pollutants. Notwithstanding that listing in the EPA Green Book, federal conformity requirements, including specifically 40 CFR 93.114 and 40 CFR 93.115, apply for the project as the area in which it is located is one affected by a recent court decision that reinstates conformity requirements nationwide associated with the 1997 ozone NAAQS that had previously been eliminated with the revocation by EPA of that NAAQS in 2015.

The project is currently included in the Hampton Roads Transportation Planning Organization (HRTPO) FY 2018 - 2021 Transportation Improvement Program (UPC #110634) and the HRTPO 2040 Long-Range Transportation Plan, which received a joint FTA/FHWA conformity finding for the 1997 ozone standard, dated October 29, 2018.

NOISE	YES	NO
Type I Project:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Source:		
Noise Analysis Attached:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Barriers Under Consideration:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Source: Preliminary Noise Analysis Technical Report for Nansemond Parkway/Wilroy Road Overpass Suffolk, VA completed by HMMH in September 2019 and revised in December 2019, per VDOT comments (Appendix H).		
Comments: Additional information can be found in the Preliminary Noise Analysis Technical Report for Nansemond Parkway/Wilroy Road Overpass Suffolk, VA (Appendix H).		

RIGHT OF WAY AND RELOCATIONS	YES		NO	
Residential Relocations: If "Yes", number:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
Source: Project Design Plans (Appendix I)				
Commercial Relocations: If "Yes", number:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
Source: Project Design Plans (Appendix I)				
Non-profit Relocations: If "Yes", number:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
Source: Project Design Plans (Appendix I)				
Right of Way required: If "Yes", acreage amount: 18.3436 acres (out of a total of 325.13 acres). This includes acquisition for fee simple right of way (16.8668 acres), permanent drainage easements (0.6650 acres), private utilities easements (0.1141 acres), aerial easements (0.1009 acres), non ingress/egress easements (0.0418 acres), and temporary construction easements (0.555 acres).	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
Source: Sheet No. 1C of the Project Design Plans (Appendix I)				
	PRESENT		IMPACTS	
	YES	NO	YES	NO
Septic Systems, Wells, or Public Water Supplies	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Source: Project Design Plans and City of Suffolk Planning				

Hazardous Materials:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Source: Government Records Report generated by Envirosite Corporation, dated January 17, 2018 (Appendix I).				
Comments: The report does not indicate the presence of hazardous materials within the project limits. The report was designed to meet the search requirements of EPA's Standards and Practices for all Appropriate inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments and states. The City of Suffolk shall perform the required due diligence for individual parcels prior to purchasing right-of-way and will provide the appropriate construction provisions for the mitigation of contaminated soil, as necessary. A copy of the Government Records Report is found in Appendix I.				

CUMULATIVE AND INDIRECT IMPACTS	PRESENT		
	YES	NO	N/A
Present or reasonably foreseeable future projects (highway and non-highway) in the area:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Impact same resources as the proposed highway project (i.e. cumulative impacts):	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Indirect (Secondary) impacts:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Source: VDOT Six Year Improvement Program, VDOT Dashboard, City of Suffolk Comprehensive Plan			
Comments: Indirect impacts of the project include increased economic growth due to better traffic circulation. However, the intensity of these impacts would be considered small when viewed in the context of impacts from other past, present, and reasonably foreseeable future activities. While the potential for future road projects exists, based on a review of the VDOT Six Year Improvement Program and the City of Suffolk Comprehensive Plan, the project, by itself, is not anticipated to cause substantial cumulative or indirect impacts.			

PUBLIC INVOLVEMENT	YES	NO
Substantial Controversy on Environmental Grounds:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Source: Agency Scoping Comments		
Public Hearing: If "Yes", type of hearing: A Location/Design Public Hearing scheduled for Fall 2020, following completion of the NEPA document.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other Public Involvement Activities: If "Yes", type of Involvement:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Source: City of Suffolk Project Manager		
Comments: Efforts to minimize environmental impacts have been included in the design of the project. A Location/Design Public Hearing scheduled for Fall 2020, following completion of the NEPA document.		

COORDINATION

The following agencies were contacted during development of this study:

- Department of Conservation and Recreation
- National Resources Conservation Service
- U.S. Fish & Wildlife Service

Department of Game and Inland Fisheries
Virginia Department of Historic Resources
U.S. Army Corps of Engineers

This project meets the criteria for a Categorical Exclusion pursuant to 40 CFR 1508.4 and 23 CFR 771.117 and will not result in significant impacts to the human or natural environment.