Final

STORMWATER MANAGEMENT PLAN

Marine Corps Installations East –
Marine Corps Base Camp Lejeune

Naval Facilities Engineering Systems Command Mid-Atlantic

Contract: N62470-19-D-4001 | Task Order: N4008520F6173

January 2022

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STORMWATER MANAGEMENT PLAN

MARINE CORPS INSTALLATIONS EAST – MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA

Prepared For:

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
MID-ATLANTIC
NORFOLK, VA 23511

Contracting Officer's Representative: Dialis B. Figueroa Arriaga

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APPENDICES

TABLES

FIGURES

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ACRONYMS AND ABBREVIATIONS

A/E	architect/engineer
AH	AH Environmental Consultants, Inc.
AMB	Asset Management Branch
AMCC	Atlantic Marine Corps Communities
BMP	best management practice
BOD	Beneficial Occupancy Date
BUA	built upon area
CAMA	Coastal Area Management Act
CAMLEJO	Camp Lejeune Order
CFR	Code of Federal Regulations
CMMS	Computerized Maintenance Management System
COC	Certificate of Coverage
CWA	Clean Water Act
DEMLR	Division of Energy, Minerals, and Land Resources
DEQ	Department of Environmental Quality
DMR	discharge monitoring report
DoD	Department of Defense
DOT	Department of Transportation
E&SC	erosion and sediment control
ECB	Environmental Compliance Branch
ECC	Environmental Compliance Coordinator
ECE	Environmental Compliance Evaluation
ECO	Environmental Compliance Officer
ECSOP	Environmental Compliance & Protection Standard Operating Procedure
EISA	Energy Independence and Security Act of 2007
EMD	Environmental Management Division
EPA	Environmental Protection Agency
GIS	geographic information system
HM	hazardous material
HQW	high quality waters
HW	hazardous waste
IDDE	illicit discharge detection and elimination
IGIR	Integrated Geographic Information Repository
IPaC	Information for Planning and Consultation
LA	Load Allocation
MARSOC	Marine Forces Special Operations Command

MCAS	Marine Corps Air Station
MCB CAMLEJ	Marine Corps Base Camp Lejeune
MCIEAST	Marine Corps Installations East
MCM	minimum control measure
MS4	municipal separate storm sewer system
N/A	not applicable
NAVFAC MIDLANT	Naval Facilities Engineering Systems Command Mid-Atlantic
NC	North Carolina
NCAC	North Carolina Administrative Code
NCGS	North Carolina General Statute
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NSW	nutrient sensitive waters
O&M	operation and maintenance
OWS	oil/water separator
POL	petroleum, oil, lubricant
PWD	Public Works Division
SCM	stormwater control measure
SDO	stormwater discharge outfall
SOP	standard operating procedure
SPCA	North Carolina Sediment Pollution Control Act
SPCC	spill prevention, control, and countermeasure
SSO	sanitary sewer overflow
Sw	swamp waters
SWMP	Stormwater Management Plan
SWOMP	Stormwater Outfall Monitoring Plan
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
US	United States
WLA	waste load allocation

RECORD OF REVISIONS AND AMENDMENTS

All revisions and amendments to the Stormwater Management Plan are and will continue to be summarized in the following table. The Environmental Management Division will be responsible for maintaining an updated copy of this Plan at all times.

Table R-1 Record of Revisions and Amendments

Date	Organization Responsible for Revision/Amendment	Reviewing Organization	Description of Revision/Amendment	Initials
March 2003	AMEC Earth & Environmental, Inc.	MCIEAST-MCB CAMLEJ Environmental Management Division	Stormwater Management Plan	Not Applicable (N/A)
August 2013	AH Environmental Consultants, Inc.	MCIEAST-MCB CAMLEJ Environmental Management Division	Updated Stormwater Management Plan	N/A
January 2022	AH Environmental Consultants, Inc.	MCIEAST-MCB CAMLEJ Environmental Management Division	Updated Stormwater Management Plan	

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1. INTRODUCTION

The Naval Facilities Engineering Systems Command Mid-Atlantic Division (NAVFAC MIDLANT) contracted AH/BC Navy JV, LLC (operating in North Carolina [NC] as AH Environmental Consultants Inc. [AH]), under Contract N62470-19-D-4001, Task Order N4008520F6173, to update the Stormwater Management Plan (SWMP) for Marine Corps Installations East (MCIEAST) – Marine Corps Base Camp Lejeune (MCB CAMLEJ).

1.1 STORMWATER DISCHARGE PERMIT

The National Pollutant Discharge Elimination System (NPDES) program was established under the authority of the Federal Clean Water Act (CWA) of 1972. Phase I of the NPDES stormwater program, established in 1990, focused on pollutant source reduction through site planning and responsible operational and procedural practices. Phase I covered industrial activities defined by Title 40 of the United States (US) Code of Federal Regulations (CFR) 122.26 (b)(14), construction activities that disturbed five acres or more, and municipalities with populations of 100,000 or more that owned and operated a municipal separate storm sewer system (MS4). Phase II of the program expanded coverage to construction activities that disturbed one acre or more and any publicly owned and operated MS4. In NC, the NPDES stormwater program is administered by the NC Department of Environmental Quality (DEQ), Division of Energy, Minerals, and Land Resources (DEMLR).

NC DEQ DEMLR issued NPDES Permit Number NCS000290 to MCIEAST-MCB CAMLEJ. The term for the current permit expires on 30 September 2026. The MCIEAST-MCB CAMLEJ NPDES permit (included as Appendix A) was issued pursuant to the requirements of NC General Statute (NCGS) 143-215.1 and the Memorandum of Agreement between NC and the US Environmental Protection Agency (EPA) dated May 9, 1994 (or as subsequently amended). The MCIEAST-MCB CAMLEJ NPDES permit authorizes the point source discharge of stormwater runoff and

specified non-stormwater discharges from MCIEAST-MCB CAMLEJ, including Marine Corps Air Station (MCAS) New River, to the receiving waters specified in the permit.

1.2 PURPOSE

The purpose of this SWMP is to establish and define the means by which MCIEAST-MCB CAMLEJ will comply with its NPDES permit and the applicable provisions of the CWA to meet the federal standard of reducing pollutants in stormwater runoff to the maximum extent practicable.

This SWMP identifies the specific elements and control measures that MCIEAST-MCB CAMLEJ will develop, implement, enforce, evaluate, and report to the NC DEQ DEMLR to comply with NPDES permit number NCS000290. This permit covers activities associated with the discharge of stormwater from the MS4 owned and operated by and located within the installation boundaries of MCIEAST-MCB CAMLEJ.

In preparing this SWMP, MCIEAST-MCB CAMLEJ has evaluated its MS4 and the permit requirements to develop a comprehensive 5-year SWMP that will meet the community's needs, address local water quality issues, and provide the control measures necessary to comply with the permit. The SWMP will be evaluated annually and updated as necessary to ensure that the elements and control measures it contains continue to adequately provide for permit compliance and the community's needs.

Once approved by NC DEQ, all provisions contained and referenced in this SWMP, along with any approved modifications, are incorporated by reference into the permit and become enforceable parts of the permit. Any major changes to the approved SWMP will require NC DEQ review and approval.

1.3 STORMWATER MANAGEMENT PLAN FORMAT

The SWMP presents information in seven sections, with supplemental information provided in the appendices.

- **Section 1 – Introduction:** contains background information, the SWMP purpose, and the document content and format.
- **Section 2 – Certification:** includes the SWMP certification page.
- **Section 3 – MS4 Information:** provides a comprehensive summary of the existing MCIEST-MCB CAMLEJ MS4 following the NC DEQ SWMP template.
- **Section 4 – Stormwater Management Program Administration:** includes the organizational structure of the stormwater program at MCIEAST-MCB CAMLEJ, summarizes reporting and recordkeeping requirements, and indicates the measurable goals for program administration.
- **Section 5 – Permit Requirements:** summarizes the NPDES permit requirements including objectives, best management practices (BMPs), measurable goals, implementation schedules associated with the six minimum control measures (MCMs), and additional permit requirements. This section identifies activities that have already been undertaken and those planned for future implementation.
- **Section 6 -Summary of Required Action Items:** summarizes the planned actions necessary to maintain permit compliance for the remainder of the current permit term.
- **Section 7 – References and Works Consulted:** includes a list of references and works used for the SWMP development.

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2. CERTIFICATION

By my signature below I hereby certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. I am also aware that the contents of this document shall become an enforceable part of the MCIEAST-MCB CAMLEJ NPDES permit, and that both the NC DEQ DEMLR and the Environmental Protection Agency have NPDES permit compliance and enforcement authority.

Director, Environmental Management Division
Marine Corps Installations East – Marine Corps Base
Camp Lejeune, North Carolina

Date

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3. MS4 INFORMATION

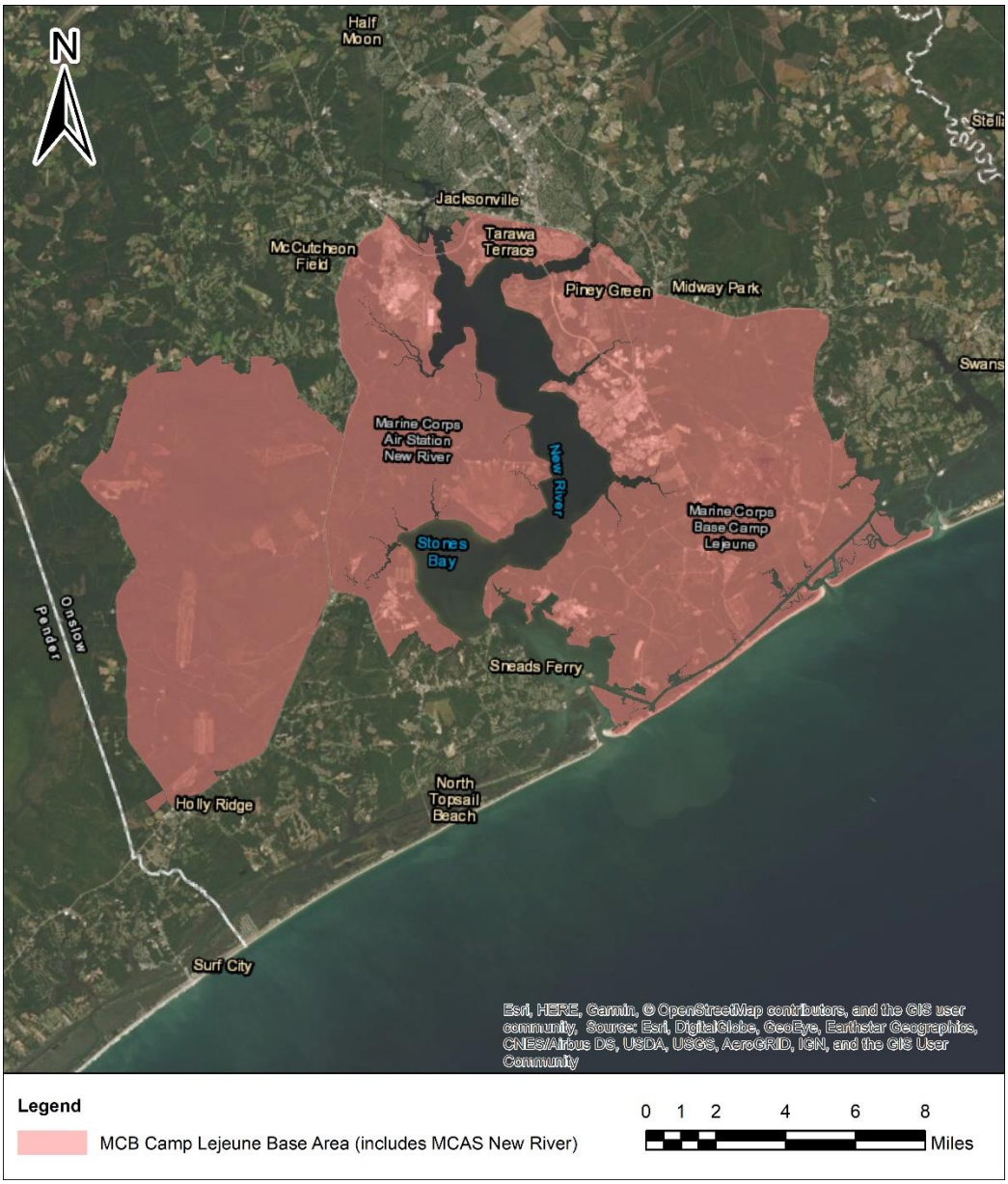
This section summarizes the existing MS4 at MCIEAST-MCB CAMLEJ, following the NC DEQ SWMP template.

3.1 PERMITTED MS4 AREA

MCIEAST-MCB CAMLEJ (including MCAS New River) occupies approximately 156,000 acres including roughly 11 miles of beaches. MCIEAST-MCB CAMLEJ operates a 15 million gallons per day advanced wastewater treatment plant, four water treatment plants, and a Subtitle D municipal solid waste landfill. The installation supports a population of approximately 170,000 active duty, dependent, retiree, and civilian employee personnel.

This SWMP applies throughout the installation boundaries of MCIEAST-MCB CAMLEJ, including all regulated activities associated with the discharge of stormwater from the MS4. Figure 3-1 provides a vicinity map for MCIEAST-MCB CAMLEJ and displays the MS4 boundaries subject to this SWMP.

Figure 3-1 MCIEAST MCB CAMLEJ Vicinity Map



3.2 EXISTING MS4 MAPPING

MCIEAST-MCB CAMLEJ maintains an electronic geographic information system (GIS) database containing all MS4 stormwater mapping data. The current MS4 mapping data includes stormwater conveyances (e.g., pipes and swales), inlets, catch basins,

manholes, major outfalls, and receiving waters. Table 3-1 summarizes coverage of the existing GIS data.

Table 3-1 Summary of Current MS4 Mapping

Percent of MS4 Area Mapped	99 %
Number of Major Outfalls[1] Mapped	320

1) An outfall is a point where the MS4 discharges from a pipe or other conveyance (e.g., a swale) directly into surface waters. Major outfalls must be mapped to meet permit requirements. A major outfall is a 36-inch diameter pipe or discharge from a drainage area > 50 acres; for industrial zoned areas, a 12-inch diameter pipe or a drainage area > 2 acres constitutes a major outfall.

3.3 RECEIVING WATERS

Table 3-2 lists receiving waters for MCIEAST-MCB CAMLEJ (as identified on the cover page of the NPDES permit and any other surface water that receives stormwater runoff from regulated industrial activities at MCIEAST-MCB CAMLEJ). Applicable water quality standards listed below are compiled from the following NC DEQ sources:

- Waterbody Classification Map
- Impaired Waters and Total Maximum Daily Load (TMDL) Map
- Most recent NC DEQ Final 303(d) List

Table 3-2 Receiving Waters of MCIEAST-MCB CAMLEJ

Receiving Water	Classification[1]	TMDL / Listed 303(d)[2]
Bear Creek	SA; HQW	Approved TMDL for Fecal Coliform, 2011 (*not included in 2020 303(d) list*)
Bearhead Creek	SB;NSW	No
Beaverdam Creek	SB; NSW	No
Brinson Creek	SC, NSW	303(d) listed impaired: copper (2020)
Cogdels Creek	SC; NSW	No
Courthouse Bay	SA; HQW	303(d) listed impaired: prohibited shellfish harvesting / fecal coliform (2020)
Cowhead Creek	SC;NSW	No
Edwards Creek	SC; HQW, NSW	No
Farnell Bay	SC; NSW	No
Frenchs Creek	SC; NSW	No
Morgan Bay	SC; NSW	No
Mott Creek	C; NSW	No
New River	SC; HQW, NSW (upstream portion) SC; NSW (middle portion) SA; HQW (downstream portion)	303(d) listed impaired: copper, prohibited shellfish harvesting / fecal coliform (2020)
Northeast Creek	SC; HQW, NSW	No
Scales Creek	SC; HQW, NSW	No
Shelter Swamp Creek	C;Sw	No
Southwest Creek	C; NSW (upstream portion) SC; HQW, NSW (downstream portion)	No
Stick Creek	SC; HQW, NSW	No
Stones Bay	SA;HQW	No
Stones Creek	SA; HQW	303(d) listed impaired: prohibited shellfish harvesting / fecal coliform (2020)
Strawhorn Creek	SC; HWQ, NSW	No
Wallace Creek	SB; NSW	No
Wilson Bay	SC; HQW, NSW	No

(1) As per NC DEQ's NC Surface Water Classification Map

Class C: Waters protected for uses such as secondary recreation, fishing, wildlife, fish consumption, aquatic life including propagation, survival and maintenance of biological integrity, and agriculture. Secondary recreation includes wading, boating, and other uses involving human body contact with water where such activities take place in an infrequent, unorganized, or incidental manner.

Class SC: All tidal salt waters protected for secondary recreation such as fishing, boating, and other activities involving minimal skin contact; fish and noncommercial shellfish consumption; aquatic life propagation and survival; and wildlife.

Class SB: Tidal salt waters protected for all SC uses in addition to primary recreation. Primary recreational activities include swimming, skin diving, water skiing, and similar uses involving human body contact with water where such activities take place in an organized manner or on a frequent basis.

Class SA: Tidal salt waters used for commercial shellfishing or marketing purposes that are also protected for all Class SC and Class SB uses. All SA waters are also HQW by supplemental classification.

High Quality Waters (HQW): Supplemental classification intended to protect waters that are rated excellent based on biological and physical/chemical characteristics through Division monitoring or special studies, primary nursery areas designated by the Marine Fisheries Commission, and other functional nursery areas designated by the Marine Fisheries Commission.

Nutrient Sensitive Waters (NSW): Supplemental classification intended for waters needing additional nutrient management due to being subject to excessive growth of microscopic or macroscopic vegetation.

Swamp Waters (Sw): Supplemental classification intended to recognize those waters which have low velocities and other natural characteristics which are different from adjacent streams.

(2) Waterbodies listed as impaired and requiring a TMDL in the final 2020 303(d) list published by NC DEQ and/or waterbodies subject to an approved TMDL.

3.4 MS4 INTERCONNECTIONS

Based on current MS4 mapping data, MCIEAST-MCB CAMLEJ contains approximately five (5) interconnections with the NC Department of Transportation (DOT) MS4. These interconnections consist of small drainage basins that discharge from MCIEAST-MCB CAMLEJ property to roadside swales located within NC DOT right-of-way.

3.5 TOTAL MAXIMUM DAILY LOADS

The TMDL listed in Table 3-3 has been approved within the MCIEAST-MCB CAMLEJ MS4 area, as determined by the map and list provided on the NC DEQ Modeling & Assessment Unit web page. The table also indicates whether the approved TMDL has a specific stormwater Waste Load Allocation (WLA) for any watershed directly receiving discharges from the permitted MS4.

Table 3-3 Summary of Approved TMDLs

Water Body Name	TMDL Pollutant(s) of Concern	Stormwater WLA Established? (Yes/No)
Bear Creek	Fecal Coliform	No

Refer to Section 5.9 (Impaired Waters and TMDLs) for a detailed discussion related to the Bear Creek TMDL.

3.6 ENDANGERED AND THREATENED SPECIES AND CRITICAL HABITAT

The MCIEAST-MCB CAMLEJ Environmental Management Division (EMD) National Environmental Policy Act (NEPA) program conducts environmental impact reviews of all proposed actions that may affect the environment at MCIEAST-MCB CAMLEJ to ensure NEPA compliance. These environmental impact reviews include consideration of impacts to all endangered and threatened species found within the MCIEAST-MCB CAMLEJ installation boundaries.

Multiple threatened/endangered species have been identified within the regulated MS4 area of MCIEAST-MCB CAMLEJ. Based on a query of the US Fish and Wildlife

Information for Planning and Consultation (IPaC) website, the species listed in Table 3-4 have the potential to be present within the regulated MS4 area.

Table 3-4 Potential Federally Listed Species Impacted by Surface Water Quality

Common Name	Scientific Name	Federal Listing Status
Mammals		
West Indian Manatee	Trichechus manatus	Threatened
Birds		
Eastern Black Rail	Laterallus jamaicensis ssp. jamaicensis	Threatened
Piping Plover	Charadrius melodus	Threatened
Red Knot	Calidris canutus rufa	Threatened
Red-cockaded Woodpecker	Picoides borealis	Endangered
Reptiles		
American Alligator	Alligator mississippiensis	Similarity of appearance to another listed (threatened) species
Green Sea Turtle	Chelonia mydas	Threatened
Kemp's Ridley Sea Turtle	Lepidochelys kempii	Endangered
Leatherback Sea Turtle	Dermochelys coriacea	Endangered
Loggerhead Sea Turtle	Caretta caretta	Threatened
Insects		
Monarch Butterfly	Danaus plexippus	Candidate – under consideration for listing
Flowering Plants		
Cooley's Meadowrue	Thalictrum cooleyi	Endangered
Golden Sedge	Carex lutea	Endangered
Pondberry	Lindera melissifolia	Endangered
Rough-leaved Loosestrife	Lysimachia asperulaefolia	Endangered
Seabeach Amaranth	Amaranthus pumilus	Threatened

The IPaC query did not identify any known critical habitats.

3.7 INDUSTRIAL FACILITY DISCHARGES

MCIEAST-MCB CAMLEJ includes multiple regulated industrial facilities that are covered under Section H of the MCIEAST-MCB CAMLEJ NPDES permit. The MCIEAST-MCB CAMLEJ Stormwater Pollution Prevention Plan (SWPPP) and Stormwater Outfall Monitoring Plan (SWOMP) detail the management and routine monitoring of these industrial facilities and their associated stormwater outfalls. Additional information related to industrial facility discharges is included in Section 5.7 (Industrial Activities).

3.8 NON-STORMWATER DISCHARGES

The water quality impacts of non-stormwater discharges have been evaluated by MCIEAST-MCB CAMLEJ as summarized in Table 3-5 below. The unpermitted non-stormwater flows listed as incidental are not expected to significantly impact water quality.

MCIEAST-MCB CAMLEJ has evaluated residential and charity car washing for possible significant water quality impacts. Wash water associated with car washing that does not contain detergents or does not discharge directly into the MS4 is considered incidental; however, these types of non-stormwater discharges that do contain detergents are managed as follows by MCIEAST-MCB CAMLEJ to mitigate their impact on water quality: residents are encouraged through various education and outreach programs to conduct all car washing activities at commercial car wash facilities available on base. When washing vehicles at home, residents are encouraged to conduct washing on grassy areas to allow infiltration of wash water. Charity car washes are prohibited at MCIEAST-MCB CAMLEJ.

Table 3-5 Non-Stormwater Discharges

Non-Stormwater Discharge	Water Quality Impacts
Water line and fire hydrant flushing	Incidental
Landscape irrigation, irrigation waters, & lawn watering	Incidental
Diverted stream flows	Incidental
Rising groundwater	Incidental
Uncontaminated groundwater infiltration	Incidental
Uncontaminated pumped groundwater	Incidental
Uncontaminated potable water sources	Incidental
Foundation drains	Incidental
Air conditioning condensate	Incidental
Irrigation waters	Incidental
Springs	Incidental
Water from crawl space pumps	Incidental
Footing drains	Incidental
Residential car washing	Incidental
Charity car washing	Incidental
Flows from riparian habitats and wetlands	Incidental
Dechlorinated swimming pool discharges	Incidental
Street wash water	Incidental (street washing is not conducted, only street sweeping)
Flows from firefighting activities	Incidental
Releases of clean waters from hydrostatic testing	Incidental
Drainage of uncontaminated stormwater from secondary containment after visual monitoring	Incidental

3.9 TARGET POLLUTANTS AND SOURCES

Table 3-6 below summarizes the water quality pollutants identified throughout Part 3 of this SWMP, the likely activities/sources/targeted audiences attributed to each pollutant, and the associated SWMP program(s) that address each. In addition, MCIEAST-MCB CAMLEJ has evaluated schools, base housing, businesses, and industrial facilities as target audiences that could impact surface water quality.

Table 3-6 Summary of Target Pollutants and Sources

Target Pollutant(s)	Likely Source(s)/Target Audience(s)	SWMP Program Addressing Target Pollutant(s)/Audience(s)
Litter / Solid Waste	Residents, Businesses, Schools, & Industrial Facilities	Public Education & Outreach
Animal Waste	Residents	Public Education & Outreach
Petroleum, Oils, and Lubricants (POLs), Hazardous Materials (HM), and Hazardous Waste (HW)	Industrial Facilities	SWPPP Training & Routine Environmental Compliance Evaluations (ECEs)

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4. STORMWATER MANAGEMENT PROGRAM ADMINISTRATION

This section summarizes the stormwater management program administration at MCIEAST-MCB CAMLEJ.

4.1 ORGANIZATIONAL STRUCTURE

The stormwater management program is administered by the MCIEAST-MCB CAMLEJ EMD Environmental Compliance Branch (ECB). Table 4-1 outlines the roles and responsibilities fulfilled by various ECB staff.

Table 4-1 SWMP Program Organization Structure

SWMP Component	Responsible Position(s)
Stormwater Program Administration	EMD Director
SWMP Management	Stormwater/Land Quality/Pesticides Manager
Public Education & Outreach	Stormwater/Land Quality/Pesticides Manager
Public Involvement & Participation	Stormwater/Land Quality/Pesticides Manager
Illicit Discharge Detection & Elimination	Stormwater/Land Quality/Pesticides Manager & Stormwater Compliance Assessors
Construction Site Runoff Control	Stormwater/Land Quality/Pesticides Manager & Public Works Division (PWD) Construction Manager
Post-Construction Stormwater Management	Stormwater/Land Quality/Pesticides Manager & PWD Design Branch Stormwater Engineer
Pollution Prevention/Good Housekeeping	Stormwater/Land Quality/Pesticides Manager
Operation and Maintenance (O&M) Program	Stormwater/Land Quality/Pesticides Manager (inspections); Base Maintenance Contractor (maintenance)
Spill Response Program	ECB Branch Head
Pesticide, Herbicide & Fertilizer Management Program	Stormwater/Land Quality/Pesticides Manager
TMDL Requirements	Stormwater/Land Quality/Pesticides Manager

4.2 REPORTING AND RECORDKEEPING

This section presents the reporting and record keeping requirements included in the MCIEAST-MCB CAMLEJ NPDES permit.

4.2.1 Annual Monitoring Reports

Results of stormwater outfall sampling, analyzed in accordance with the terms of the SWOMP, shall be submitted annually to NC DEQ DEMLR using the annual discharge monitoring report (DMR) form. Appendix F of the SWOMP provides a blank annual DMR form. The annual submittals shall be submitted to DEMLR no later than 30 days from the date MCIEAST-MCB CAMLEJ receives the sampling results from the third-party laboratory.

If no stormwater discharge has occurred from any of the representative analytical outfalls during the reporting period, MCIEAST-MCB CAMLEJ is required to submit an annual DMR, within 30 days of the end of the sampling period, giving all required information and indicating “No Flow” as per NC Administrative Code (NCAC) T15A 02B .0506.

MCIEAST-MCB CAMLEJ shall record the required qualitative monitoring observations on the stormwater discharge outfall (SDO) Qualitative Monitoring Report form provided by NC DEQ (blank form provided in Appendix D of the SWOMP). MCIEAST-MCB CAMLEJ shall retain the completed qualitative monitoring forms onsite; however, visual monitoring results are not required to be submitted to NC DEQ, except upon specific request to do so.

4.2.2 Records Retention

Copies of all stormwater program documentation (e.g., management documents, analytical monitoring results, and visual monitoring records) shall be maintained onsite for a period of at least five (5) years from the expiration date of the NPDES permit. MCIEAST-MCB CAMLEJ shall retain records of all monitoring information, including all calibration and maintenance records and copies of all reports required by the NPDES

permit, for a period of at least five (5) years from the permit expiration date. This period may be extended by request of NC DEQ.

4.2.3 Procedure for Annual Submittals

All annual monitoring reports shall be submitted electronically to NC DEQ DEMLR or mailed to the following address:

- Department of Environmental Quality
  Division of Energy, Mineral, and Land Resources – Stormwater Program
  1612 Mail Service Center
  Raleigh, North Carolina 27699-1612

All annual monitoring reports submitted to NC DEQ, other than those submitted electronically, shall be signed by a duly authorized representative. A person is duly authorized only if all of the following requirements are met:

- The authorization is made in writing by a principal executive officer or ranking elected official
- The authorization specified either an individual or a position having responsibility for the overall operation of a regulated facility or activity or an individual or position having overall responsibility for environmental/stormwater matters
- The written authorization is submitted to NC DEQ DEMLR

Any person signing an annual monitoring report shall make the following certification:

> *"I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."*

4.2.4 Twenty-Four Hour Noncompliance Reporting

MCIEAST-MCB CAMLEJ shall report to NC DEQ DEMLR any noncompliance that includes a release to surface waters or a spill that exceeds reportable quantities. Information shall be provided orally within 24 hours from the time MCIEAST-MCB CAMLEJ

became aware of the circumstances. A written submission shall also be provided within 5 days of the time MCIEAST-MCB CAMLEJ becomes aware of the circumstances.

The written submission shall contain the following information:

- A description of the noncompliance and its causes
- The period of noncompliance, including exact dates and times
- If the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue
- Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance

4.3 MEASURABLE GOALS FOR PROGRAM ADMINISTRATION

MCIEAST-MCB CAMLEJ will manage and report the following BMPs for the administration of the stormwater management program.

Table 4-2 Program Administration BMPs

BMP	Measurable Goals and Schedules	Implementation
Annual Self-Assessment	Perform an annual evaluation of SWMP implementation, suitability of SWMP commitments, and any proposed changes to the SWMP utilizing the NC DEQ Annual Self-Assessment Template.	**Planned Actions: MCIEAST-MCB CAMLEJ will prepare, certify, and submit the Annual Self-Assessment to NC DEQ no later than 31 December of each year during the term of the permit. The SWMP will be evaluated annually and updated as necessary to ensure that the elements and control measures it contains continue to adequately provide for permit compliance and the community's needs.**

Implementation Legend:

XXX	Permit requirements met. No additional actions are planned during the permit term.
XXX	Implementation requires additional/recurring action(s) by MCIEAST-MCB CAMLEJ to satisfy permit requirements.

5. PERMIT REQUIREMENTS

This SWMP defines the following mandatory programs and activities required of MCIEAST-MCB CAMLEJ to fully comply with its NPDES permit:

Six MCMs:

- Public education and outreach
- Public involvement and participation
- Illicit discharge detection and elimination
- Construction site runoff control
- Post-construction site runoff control
- Pollution prevention and good housekeeping

Additional Requirements:

- Stormwater pollution prevention and stormwater quality monitoring associated with industrial activities
- Inventory of oil/water separators (OWSs)
- Addressing additional requirements related to waters that are:
  - Subject to an approved TMDL, and/or
  - Included on the latest NC DEQ 303(d) list of impaired waters.

The remainder of this section describes each of the mandatory programs and activities required in the permit including associated BMPs, measurable goals, and implementation schedules during the five-year NPDES permit term. Brief descriptions of the actions already taken by MCIEAST-MCB CAMLEJ to implement each required BMP are presented, and actions planned for the remaining five years of the permit term are noted.

5.1 PUBLIC EDUCATION AND OUTREACH

The objectives of this NPDES permit requirement are to share educational materials, promote educational opportunities for the base-wide community, conduct outreach activities on the impacts of stormwater pollutants and discharges to water bodies, and inform base occupants on how they can reduce pollutants in stormwater runoff and properly dispose of waste. Table 5-1 contains the BMPs, measurable goals, and implementation schedules necessary to meet the public education and outreach objectives,

and descriptions of the actions already taken by MCIEAST-MCB CAMLEJ to implement each BMP and/or actions planned for the remainder of the permit term.

Table 5-1 BMPs for Public Education and Outreach

BMP	Measurable Goals and Schedules	Implementation
Annual assessment	Annually evaluate, identify, and define the target pollutants, potential sources, and associated target audiences likely to have significant stormwater impacts on base.	MCIEAST-MCB CAMLEJ developed and distributes computer-based stormwater training that includes knowledge assessments. The training and assessments are administered at the unit-level. Results of the knowledge assessments are submitted to EMD by each unit. This information is used by EMD to evaluate the effectiveness of the training material. In addition, MCIEAST-MCB CAMLEJ assesses the effectiveness of its public education and outreach efforts by tracking instances of spills and illicit discharges on an annual basis.
Provide educational information and/or outreach	Identify and address three high priority community-wide issues.	MCIEAST-MCB CAMLEJ previously identified the following three high priority community-wide issues: 1. Solid Waste Disposal – improper use of solid waste dumpsters (e.g., throwing away bulky/improper wastes such as furniture). 2. Spill Identification & Response Procedures – some instances where base personnel are not following the proper chain-of-command and/or following documented procedures. 3. Construction Related Pollutants – some instances where construction activities release pollutants such as sediment and construction trash/debris to the environment. EMD distributes a contractor handbook to all base contractors that discusses proper controls for construction related pollutants. **<u>Planned Actions:</u> Within the current permit term, MCIEAST-MCB CAMLEJ will add all three items to the EM101 training module to emphasize their importance.**

Table 5-1 BMPs for Public Education and Outreach (continued)

BMP	Measurable Goals and Schedules	Implementation
Provide educational information and/or outreach (continued)	Address a minimum of three residential and three industrial/commercial issues.	MCIEAST-MCB CAMLEJ has developed computer-based educational materials for distribution to its target audiences. These educational materials cover stormwater quality topics at MCIEAST-MCB CAMLEJ including: • Specific pollutants • Pollutant sources • Environmental impacts of stormwater pollution • Residential and industrial/commercial stormwater issues.
	Provide educational information to base employees, operational forces, and businesses regarding the public of hazards associated with illicit discharges, illegal dumping, and improper disposal of waste.	Stormwater information pamphlets are distributed to all new on-base residents via Atlantic Marine Corps Communities (AMCC). Computer-based residential stormwater educational material has been developed for distribution to targeted audiences at MCIEAST-MCB CAMLEJ. **Planned Actions: within the permit term, MCIEAST-MCB CAMLEJ EMD personnel will begin performing in-person education regarding various stormwater issues (i.e., community outreach in educational settings).**
	Inform the community on watersheds in need of special protection, and the issues that may threaten the quality of these waters.	**Planned Actions: within the permit term, MCIEAST-MCB CAMLEJ will add a list of impaired waters, as well as maps of each impaired water and likely causes of each impairment to the stormwater informational website.**

Table 5-1 BMPs for Public Education and Outreach (continued)

BMP	Measurable Goals and Schedules	Implementation
Informational website	Provide and maintain a website designed to convey the stormwater program's purpose and scope. The web page should include educational information and opportunities to improve stormwater discharges from the MS4.	MCIEAST-MCB CAMLEJ developed and maintains the following informational stormwater website: https://www.lejeune.marines.mil/Offices-Staff/Environmental-Mgmt/StormwaterMgmt/
Stormwater hotline	Provide and maintain a stormwater hotline/help-line for public education and outreach.	The following contact information for trained MCIEAST-MCB CAMLEJ EMD stormwater personnel is provided on the informational stormwater website: Tel: 910-451-8039 (Stormwater Hotline) Email: cljn_stormwater@usmc.mil

Implementation Legend:

XXX	Permit requirements met. No additional actions are planned during the permit term.
XXX	Implementation requires additional/recurring action(s) by MCIEAST-MCB CAMLEJ to satisfy permit requirements.

5.2 PUBLIC INVOLVEMENT AND PARTICIPATION

The objective of this NPDES permit requirement is to engage the public, provide and promote volunteer opportunities for the base-wide community, provide opportunities for feedback on the stormwater program, and encourage more vigilant protection of MCIEAST-MCB CAMLEJ's receiving waters.

Table 5-2 contains the BMPs, measurable goals, and implementation schedules necessary to meet the public involvement and participation objectives, and descriptions of the actions already taken by MCIEAST-MCB CAMLEJ to implement each BMP and/or actions planned for the remainder of the permit term.

Table 5-2 BMPs for Public Involvement and Participation

BMP	Measurable Goals and Schedules	Implementation
Public review and comment on the SWMP	MCIEAST-MCB CAMLEJ shall conduct at least one public meeting during the term of the permit to allow the public an opportunity to review and comment on the SWMP.	**Planned Actions: MCIEAST-MCB CAMLEJ will promote public involvement and make the SWMP available for review via media outlets and the stormwater website.**
Mechanism for public involvement	MCIEAST-MCB CAMLEJ shall promote and provide a mechanism for public/group involvement that provides for input on stormwater issues and the stormwater program.	In addition to participation in public events and coordination of volunteer opportunities, MCIEAST-MCB CAMLEJ's existing informational stormwater website includes the following information that provide opportunities for public involvement: Tel: 910-451-8039 (Stormwater Hotline) Email: cljn_stormwater@usmc.mil
Volunteer community involvement program	MCIEAST-MCB CAMLEJ shall provide a minimum of one (1) stormwater volunteer event or opportunity each year.	MCIEAST-MCB CAMLEJ has established and offers the following volunteer opportunities (usually around Earth Day): • "No Dumping" storm drain marking program with the Boy Scouts and through an intern program • Splash for Trash (river cleanup event) • Beach Sweeps

Table 5-2 BMPs for Public Involvement and Participation (continued)

BMP	Measurable Goals and Schedules	Implementation
Maintain hotline/helpline	MCIEAST-MCB CAMLEJ shall provide and maintain a stormwater hotline/helpline for reporting stormwater issues and concerns on base.	The following contact information for trained MCIEAST-MCB CAMLEJ EMD stormwater personnel is provided on the informational stormwater website: Tel: 910-451-8039 (Stormwater Hotline) Email: cljn_stormwater@usmc.mil

Implementation Legend:

XXX	Permit requirements met. No additional actions are planned during the permit term.
XXX	Implementation requires additional/recurring action(s) by MCIEAST-MCB CAMLEJ to satisfy permit requirements.

5.3 ILLICIT DISCHARGE DETECTION AND ELIMINATION

The objectives of this NPDES permit requirement are to establish a formal illicit discharge detection and elimination (IDDE) program in accordance with 40 CFR 122.34(b)(3).

The following categories of non-stormwater discharges are permitted (they must be addressed only if they are identified to be significant contributors of pollutants to the MCIEAST-MCB CAMLEJ MS4):

- Water line flushing
- Irrigation and lawn/landscape watering
- Diverted stream flow
- Rising groundwater
- Uncontaminated groundwater infiltration
- Uncontaminated pumped groundwater
- Discharges from potable water sources
- Foundation drains
- Air conditioning condensate (commercial/residential)
- Springs
- Water from crawl space pumps
- Footing drains
- Residential and charity car washing
- Flows from riparian habitats and wetlands
- Dechlorinated swimming pool discharges
- Street wash water
- Flows from emergency fire fighting
- Releases of clean water from hydrostatic testing
- Drainage of uncontaminated stormwater from secondary containment after visual inspection

Table 5-3 contains the BMPs, measurable goals, and implementation schedules necessary to meet the IDDE objectives, and descriptions of the actions already taken by MCIEAST-MCB CAMLEJ to implement each BMP and/or actions planned for the remainder of the permit term.

Table 5-3 BMPs for Illicit Discharge Detection and Elimination

BMP	Measurable Goals and Schedules	Implementation
Stormwater mapping	Develop, update, and maintain a MS4 map including stormwater conveyances, flow direction, major outfalls, and waters of the US receiving stormwater discharges.	MCIEAST-MCB CAMLEJ established and maintains a stormwater geodatabase that resides on the Integrated Geographic Information Repository (IGIR). The geodatabase includes all required mapping components and is updated regularly by base personnel and government contractors.
Regulatory mechanism for legal authority	Develop and maintain a regulatory mechanism that provides legal authority to prohibit, detect, and eliminate illicit connections and discharges, illegal dumping, and spills into the MS4, including enforcement procedures and actions.	**Planned Actions: within the current permit term, a MCIEAST-MCB CAMLEJ Order (MCIEST-MCB CAMLEJO) will be established that will provide authority to prohibit, detect, and eliminate illicit connections and discharges, illegal dumping, and spills into the MS4 (to include enforcement procedures and actions).**
Maintain and implement a written IDDE Plan to detect and address illicit discharges, illegal dumping, spills, and any non-stormwater discharges identified as significant contributors to pollutants to the MS4.	Locate priority areas likely to have illicit discharges.	MCIEAST-MCB CAMLEJ updated the base-wide SWOMP in September 2021 in preparation for the new five-year permit term. This SWOMP includes procedures and requirements for conducting visual inspections at all stormwater outfalls receiving flow from regulated industrial activities, which are considered priority areas likely to have illicit discharges. These outfalls also receive flow from multiple commercial/residential areas. The SWOMP also includes procedures and requirements for representative analytical monitoring at select outfalls.
	Conduct routine dry-weather inspections of all major outfalls or implement approved base-wide SWOMP in accordance with Section H.3 of the NPDES permit.	

Table 5-3 BMPs for Illicit Discharge Detection and Elimination (continued)

BMP	Measurable Goals and Schedules	Implementation
Maintain and implement a written IDDE Plan to detect and address illicit discharges, illegal dumping, spills, and any non-stormwater discharges identified as significant contributors to pollutants to the MS4 (continued).	Identify illicit discharges and trace sources.	The MCIEAST-MCB CAMLEJ EMD-ECB implements a Dry Weather Detection Program that includes written procedures for identifying and removing the sources of illicit discharges. All observed dry weather flows are traced upstream by field personnel, then eliminated if determined to be an illicit discharge. In addition, ECB conducts semiannual inspections at each SDO that receives stormwater runoff from regulated industrial activity as part of the SWOMP. ECB also distributes a printed "Turnover Binder" to all ECB employees that details required procedures for dry weather investigations and includes a decision tree for actions to take if a dry weather flow is detected.
	Eliminate the source(s) of all illicit discharges.	
	Evaluate and assess the IDDE program.	MCIEAST-MCB CAMLEJ will annually evaluate and assess the effectiveness of the IDDE program as part of the mandatory annual assessment discussed in Section 4.3 (Measurable Goals for Program Administration).

Table 5-3 BMPs for Illicit Discharge Detection and Elimination (continued)

BMP	Measurable Goals and Schedules	Implementation
Tracking and documenting illicit discharges, illicit connections, and/or illegal dumping	Provide a mechanism for tracking and documenting each illicit discharge, illicit connection, and/or illegal dumping event, including date(s) reported/observed, the results of the investigation, any follow-up investigation, the date the investigation was closed, the issuance of enforcement actions, and the ability to identify chronic violators.	Observed illicit discharges are documented by ECB inspectors (typically during semiannual ECEs). The MCIEAST-MCB CAMLEJ SWPPP and ECB "Turnover Binder" include written procedures for illicit discharge source investigations, follow-up investigations, and documentation of these efforts. ECB utilizes the eSWPPP database for all tracking and documentation of each illicit discharge, illicit connection, and/or illegal dumping event. Documentation includes date(s) reported/observed, the results of the investigation, any follow-up investigation, the date the investigation was closed, and the issuance of enforcement actions. The eSWPPP database can be easily queried to identify chronic violators.
IDDE training	Train base personnel and contractors who, as a part of their normal job responsibilities, may observe an illicit discharge, illicit connection, illegal dumping, or spills. Training shall include how to identify and report illicit discharges, illicit connections, illegal dumping, and spills. Each staff training event shall be documented, including the agenda/materials, date, and number of staff participating. The training program shall identify appropriate personnel, the schedule for conducting the training, and the proper procedures for reporting and responding to an illicit discharge or connection. Follow-up training must be provided as needed to address changes in personnel, procedures, or techniques.	MCIEAST-MCB CAMLEJ provides spill prevention, control, and countermeasure (SPCC) and illicit discharge training to all personnel who, as part of their normal job responsibilities, may contact HW/HM/POLs. Targeted personnel include: 1. Unit-level HW/HM/POL coordinators 2. Environmental Compliance Officers (ECOs) & Environmental Compliance Coordinators (ECCs) 3. All ECB Staff

Table 5-3 BMPs for Illicit Discharge Detection and Elimination (continued)

BMP	Measurable Goals and Schedules	Implementation
Mechanism for public and MCIEAST-MCB CAMLEJ personnel to report illicit discharges	Provide and promote a reporting mechanism for the public to report illicit discharges and establish and implement response procedures. MCIEAST-MCB CAMLEJ shall conduct reactive inspections in response to reports/complaints and perform follow-up investigations as needed to ensure that corrective measures have been implemented by the responsible party to achieve and maintain compliance.	The following contact information for reporting illicit discharges to MCIEAST-MCB CAMLEJ EMD stormwater personnel is provided on the informational stormwater website: Tel: 910-451-8039 (Stormwater Hotline) Email: cljn_stormwater@usmc.mil
Sanitary sewer overflow (SSO) identification and reporting	Implement, assess annually, and update as necessary written procedures to identify and report SSOs and sewer leaks to the system operator.	MCIEAST-MCB CAMLEJ established and maintains a SSO / wastewater spills database and written procedures for identifying and reporting SSOs and sewer leaks to the sanitary sewer system operator (the MCIEAST-MCB CAMLEJ PWD Utilities Branch). These written procedures are included in MCIEAST-MCB CAMLEJ's *Spill Response Decision Tree for Hazardous Material / Hazardous Waste / POLs. Air Releases, Wastewater and Drinking Water Response Actions* (provided as Appendix B to this SWMP). This document is reviewed regularly by EMD and PWD personnel and updated as necessary.

Implementation Legend:

XXX	Permit requirements met. No additional actions are planned during the permit term.
XXX	Implementation requires additional/recurring action(s) by MCIEAST-MCB CAMLEJ to satisfy permit requirements.

5.4 CONSTRUCTION SITE RUNOFF CONTROLS

The MCIEAST-MCB CAMLEJ NPDES permit requires the implementation of erosion and sediment control (E&SC) practices for any land-disturbing activity for the duration of the activity, until sufficient ground cover can be established to prevent erosion.

The objectives of the MCIEAST-MCB CAMLEJ construction site runoff control program are to:

- Reduce sediment pollution in the receiving waters of MCIEAST-MCB CAMLEJ.
- Protect all public and private property from damage caused by erosion or deposition of eroded sediment.

5.4.1 Compliance

Compliance with the NC DEQ DEMLR E&SC program constitutes compliance with the E&SC requirements of MCIEAST-MCB CAMLEJ's NPDES permit. The NC DEQ DEMLR E&SC program is authorized by the NC Sediment Pollution Control Act of 1973 and Chapter 4 of NCAC Title 15A. This program includes the following:

- Procedures for public input
- Sanctions to encourage compliance
- Requirements for construction site operators to implement appropriate E&SC practices
- Requirements for construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impact to water quality
- Review of site plans that incorporates consideration of potential water quality impacts
- Procedures for site inspection and enforcement of E&SC measures

MCIEAST-MCB CAMLEJ is required to provide and promote a means for the public to notify appropriate authorities of observed E&SC problems. MCIEAST-MCB CAMLEJ may implement a plan promoting the existence of the NC DEQ DEMLR "Stop Mud" hotline to meet this requirement.

5.4.2 Program Implementation

The MCIEAST-MCB CAMLEJ PWD implements an E&SC program that complies with the NC Sediment Pollution Control Act of 1973 (SPCA) and Chapter 4 of NCAC Title 15A. For all construction projects (regardless of size), E&SC plans are submitted by designers to PWD engineers for in-house review. Once reviewed by the PWD Design Branch, the E&SC plans are returned to the designer for any necessary modifications.

Coverage under the NC Construction General Permit (NCG01) is required for construction activities that result in the disturbance of a land area greater than or equal to one acre, or are part of a common plan of development of that size or greater that are also subject to the SPCA. For projects requiring coverage under NCG01, the E&SC plans are submitted by the designer to NC DEQ for state approval and issuance of a Certificate of Coverage (COC).

The MCIEAST-MCB CAMLEJ Resident Officer in Charge of Construction (ROICC) office conducts regular E&SC inspections and promotes NC DEQ's "Stop Mud" hotline at all active construction sites. When construction starts, clearing & grubbing begins, and the first phase of E&SC commences, ECB staff conduct on the jobsite training of contractor personnel related to E&SC requirements (including self-inspections).

5.5 POST-CONSTRUCTION STORMWATER PROGRAM

NC DEQ notified MCIEAST-MCB CAMLEJ (via memorandum dated 18 February 2021) that "Department of Defense (DoD) MS4s that do not already review, approve, and enforce post-construction permit applications within their own jurisdictions are required to develop and implement a post-construction program by October 1, 2023."

As of publication of this SWMP, NC DEQ is the primacy agency reviewing, approving, and enforcing post-construction activities at MCIEAST-MCB CAMLEJ. Therefore, by 1 October 2023, MCIEAST-MCB CAMLEJ shall develop and implement its own Post-Construction Stormwater Program, herein referred to as the PC Stormwater Program.

This subsection constitutes MCIEAST-MCB CAMLEJ's PC Stormwater Program development and implementation plan. This plan will require periodic update throughout the current permit term as the PC Stormwater Program is fully developed and implemented. Table 5-4 summarizes the PC Stormwater Program implementation deadlines indicated in the 18 February 2021 NC DEQ memorandum and current implementation status for each requirement.

Table 5-4 PC Stormwater Program Implementation Schedule

Deadline	Requirement	Implementation
31 December 2021	Notify NC DEQ of the specific PC Stormwater Program it will implement.	MCIEAST-MCB CAMLEJ submitted a letter to NC DEQ in December 2021 providing notice that MCIEAST-MCB CAMLEJ will develop and implement its own PC Stormwater Program using DoD personnel employed at MCIEAST-MCB CAMLEJ to administer all post-construction program requirements.
1 October 2022	**Establish local authority to review, approve, and enforce the PC Stormwater Program.**	**A MCIEAST-MCB CAMLEJO and associated standard operating procedures (SOPs) will be developed to establish local authority to review, approve, and enforce the PC Stormwater Program at MCIEAST-MCB CAMLEJ. It is anticipated that two SOPs will be developed: the first outlining PWD roles and responsibilities, and the second outlining EMD roles and responsibilities.** **The MCIEAST-MCB CAMLEJO and SOPs will identify stormwater management program personnel, roles and responsibilities, non-compliance corrective actions, and associated processes. The MCIEAST-MCB CAMLEJO and SOPs will be submitted to NC DEQ for approval, prior to final issuance.**
1 October 2023	**Implement the full PC Stormwater Program**	**MCIEAST-MCB CAMLEJ will fully implement a PC Stormwater Program prior to the 1 October 2023 deadline.**

Implementation Legend:

XXX	Permit requirements met. No additional actions are planned during the permit term.
XXX	Implementation requires additional/recurring action(s) by MCIEAST-MCB CAMLEJ to satisfy permit requirements.

5.5.1 Regulatory Background

The MCIEAST-MCB CAMLEJ NPDES permit states that the installation's PC Stormwater Program shall comply with 15A NCAC 02H .1017 and .1019 and include several

specific provisions, which are listed in the permit – these provisions are detailed in Section 5.5.3 (Post-Construction Program Elements) of this SWMP. Furthermore, all construction projects at MCIEAST-MCB CAMLEJ, must meet the requirements for stormwater management and water quality protection required by General Assembly of NC Session 2007, Session Law 2008-211, Sections 2.(a), 2.(b), 2.(c), 2.(d), 2.(e), and 2.(f).

MCIEAST-MCB CAMEJ must also comply with the DoD Energy Independence and Security Act (EISA) Section 438. Unified Facilities Criteria 3-210-10 *Low Impact Development* provides technical criteria, requirements, and references for the planning and design of applicable DoD projects to comply with EISA Section 438 and the Deputy Under Secretary of Defense memorandum of 19 January 2010 that directs the use of low impact development techniques in implementing EISA Section 438.

5.5.2 Applicable Development Projects

As an entity located in one of NC's "20 Coastal Counties," MCIEAST-MCB CAMLEJ's PC Stormwater Program shall apply to the following types of development projects:

- Projects that disturb greater than or equal to one acre, projects less than one acre that are part of a larger common plan of development (*see below definition*), and/or projects that require an E&SC Plan pursuant to NCGS 113A-57.

  Common plan of development definition: EPA's Construction General Permits define a larger common plan of development or sale as "a contiguous area where multiple separate and distinct construction activities are occurring under one plan." The "plan" is broadly defined as any announcement or piece of documentation or physical demarcation indicating construction activities may occur on a specific plot.

  There are several situations where discrete projects that could conceivably be considered part of a larger common plan can actually be treated as separate projects for the purposes of permitting:

  - A public body (e.g., a municipality, state, tribe, or federal agency) need not consider all their construction projects within their entire jurisdiction to be part of an overall common plan. For example, construction of roads or buildings in different parts of a state, city, military base, university campus, etc. can be considered as separate common plans. Only the interconnected parts of single project would be considered to be a common plan (e.g., a building and its associated parking lot and driveways, airport runway and associated taxiways, a building complex).
  - Where discrete construction projects within a larger common plan of development or sale are located at least 1/4 mile apart and the area between the projects is not being disturbed, each individual project can be treated as a separate plan of

development or sale provided any interconnecting road, pipeline or utility project that is part of the same common plan is not concurrently being disturbed. For example, if a utility company was constructing new trunk lines off an existing transmission line to serve separate residential subdivisions located more than 1/4 mile apart, the two trunk line projects could be considered to be separate projects.

- Projects that require a Coastal Area Management Act (CAMA) Major Development Permit pursuant to NCGS 113A-118
- Projects that add/reduce built upon area (BUA) in existing permitted boundaries
- Projects that do not meet the above criteria, but meet one of the following criteria:
  - Nonresidential projects that propose to cumulatively add 10,000 square feet or more of built-upon area
  - Residential projects that are within ½ mile of and draining to Class SA waters, propose to cumulatively add more than 10,000 square feet of built-upon area, and result in a percentage built-upon area greater than 12 percent.

5.5.3 Post-Construction Program Elements

In addition to the program implementation schedule requirements and the requirements noted in Section 5.5.1, the MCIEAST-MCB CAMLEJ NPDES permit requires that the PC Stormwater Program include the following four key program elements:

1. Legal authority to implement the PC Stormwater Program
2. Project plan review and approval process
3. Process to ensure proper construction and long-term maintenance of stormwater control measures (SCMs)
4. Standardized inspection and tracking of permitted SCMs

This section provides the NPDES permit language associated with each required element followed by a narrative description of MCIEAST-MCB CAMLEJ's compliance strategy.

5.5.3.1 Legal Authority

NPDES Permit Requirement: establish and maintain adequate legal authorities through ordinance or other regulatory mechanism(s) to:

- Review designs and proposals for development projects to determine whether adequate stormwater control measures will be installed, implemented, and maintained.

- Request information such as stormwater plans, inspection reports, monitoring results, and other information deemed necessary to evaluate compliance with the PC Stormwater Program.
- Enter property for the purpose of inspecting at reasonable times any facilities, equipment, practices, or operations related to stormwater discharges to determine compliance with the PC Stormwater Program.

The installation Commanding General shall issue a MCIEAST-MCB CAMLEJO by 1 October 2022 that establishes MCIEAST-MCB CAMLEJ's authority to implement its PC Stormwater Program. The MCIEAST-MCB CAMLEJO will define the roles and responsibilities of all installation entities within the PC Stormwater Program and, once completed, will be included at a later date as Appendix E to this SWMP.

5.5.3.2 Plan Review and Approval

NPDES Permit Requirement: develop, maintain, and implement plan review and approval authority, standards, and procedures to:

- Conduct site plan reviews of all new development and redeveloped sites that disturb greater than or equal to one acre, and sites that disturb less than one acre that are part of a larger common plan of development, for compliance with 15A NCAC 02H .1017 and .1019.
- Ensure that each project has an O&M Agreement that complies with 15A NCAC 02H .1050(11).
- Ensure that each project has recorded deed restrictions and protective covenants, or their equivalent, that require the project to be maintained consistent with approved plans (note: recorded deed restrictions and protective covenants are not applicable to a military installation).
- Ensure that each SCM and associated maintenance accesses be protected in a permanent recorded easement or equivalent mechanism per 15A NCAC 02H .1050 (9) and (10).

Development projects at MCIEAST-MCB CAMLEJ are processed/initiated either by the PWD Asset Management Branch (AMB) or PWD Operations Branch, depending on anticipated project costs and available funding. Under either scenario, the design of installation development projects is most often completed via architect/engineer (A/E) contracts overseen by various DoD agencies (including the PWD Design Branch), while construction is overseen by the MCB CAMLEJ ROICC office. Therefore, upon full implementation of the PC Stormwater Program, PWD will conduct activities similar to

those typically attributed to the developer, while simultaneously acting as the primacy agency responsible for enforcing regulatory requirements in accordance with EMD.

Upon full implementation of the PC Stormwater Program, the general project plan review and approval process will begin with A/E submittal of all required design documents and post-construction permitting forms to the PWD Design Branch for review. Project plan reviews will verify full compliance with the regulatory requirements referenced in Section 5.5.1 (Regulatory Background). The Design Branch will review and comment on the final design package, determine final permit package compliance with applicable regulations, and issue permits, as warranted. The permits will be issued to MCIEAST-MCB CAMLEJ, which will be responsible for ensuring that PWD maintains permit compliance. PWD currently acts as the primary point of contact for stormwater permits issued by NC DEQ.

The PWD Design Branch will also ensure the following during its project plan review process:

- Project includes an O&M Agreement that complies with 15A NCAC 02H .1050(11).
- Program in place to maintain project consistent with approved plans (note: recorded deed restrictions and protective covenants are not applicable to a military installation).
- SCM and associated maintenance accesses will be protected by mechanisms equivalent to permanent easements, per 15A NCAC 02H .1050 (9) and (10).

To standardize this process, the PWD Design Branch intends to develop a project plan review and approval SOP that includes checklists similar to those currently used by NC DEQ to facilitate its review and approval process. This SOP will also include procedures for transitioning state-issued permits to installation-issued permits (refer to Section 5.5.4 [Management of State-Issued Stormwater Permits] for a discussion of this process). In addition to the SOP, new permit application forms (based on current NC DEQ forms) will be developed and tailored for use at MCIEAST-MCB CAMLEJ. These permit application forms will be completed by the A/E and submitted to the PWD Design Branch for review and approval.

Development of the SOP and new permit application forms is planned for completion by 1 October 2022. Development of these documents will coincide with issuance of the PC Stormwater Program MCIEAST-MCB CAMLEJO, which will cross-reference the SOP and permit application forms. Once completed, the SOP and permit application forms will also be included in Appendix E of this SWMP.

5.5.3.3 Post-Construction and Long-Term Maintenance

NPDES Permit Requirement: maintain inspection and enforcement authority, standards, and procedures to:

- Conduct post-construction inspections prior to issuing a Certificate of Occupancy, Temporary Certificate of Occupancy, or equivalent approval (note: Beneficial Occupancy Date (BOD) is the DoD equivalent).
- Ensure that the project has been constructed in accordance with the approved plan(s).
- Ensure annual inspection of each permitted SCM to ensure compliance with the approved O&M Agreement.
- Require that inspections be conducted by a qualified professional.

When construction of a development project has been completed, MCIEAST-MCB CAMLEJ PWD ensures the project was properly constructed by requiring the designer of record to conduct a site inspection and then certify that the project was built in accordance with the approved plans and specifications. Upon receipt of this certification, the project is issued a BOD, which is the DoD equivalent to a Certificate of Occupancy. This process is currently implemented at MCIEAST-MCB CAMLEJ and will be included in the previously referenced project plan review and approval SOP.

The MCIEAST-MCB CAMLEJ EMD-ECB conducts inspections of all permitted SCMs at least annually to verify compliance with executed O&M Agreements. Inspections are conducted by a qualified professional (e.g., the MCIEAST-MCB CAMLEJ Stormwater Program Manager). Observed deficiencies are documented by EMD in the MCIEAST MCB CAMLEJ's Computerized Maintenance Management System (CMMS) by submitting a work order. Work orders that fall within base support contract funding limitations are executed by the base maintenance contractor. If the work exceeds the base support contract funding limitations, the work order is routed to PWD for review (i.e., capital

funding). ECB's SCM inspection process is currently implemented at MCIEAST-MCB CAMLEJ, but does include NPDES permit-compliant enforcement actions to ensure that deficiencies are addressed. Upon PC Stormwater Program implementation, EMD shall notify PWD (acting as the permit issuing authority) when deficiencies are identified. EMD may then issue a letter of non-compliance that includes required corrective actions and completion dates for such actions.

EMD intends to develop an additional SOP that includes standardization of the SCM inspection process. Development of this SOP is planned for completion by 1 October 2022 to coincide with issuance of the PC Stormwater Program MCIEAST-MCB CAMLEJO, which will reference this SOP. Once completed, the SOP, which will primarily apply to EMD responsibilities, will be included in Appendix E of this SWMP.

5.5.3.4 SCM Inspection and Tracking

NPDES Permit Requirement: maintain adequate documentation and standardized inspection and tracking mechanisms to:

- Maintain an inventory of post-construction SCMs and permitted projects.
- Document, track, and maintain records of inspections and enforcement actions. Tracking shall include the ability to identify chronic violators.
- Make available to developers all relevant ordinances, post-construction requirements, design standards, checklists, and/or other materials.

MCIEAST-MCB CAMLEJ EMD-ECB maintains an electronic environmental compliance database that includes an inventory of all permitted installation SCMs. The database notifies ECB inspectors when SCMs are due for inspection. ECB inspectors log their annual inspection findings in the database, which includes tracking of deficiencies and associated work orders. This database is currently being utilized by ECB inspectors and will be referenced in the SCM inspection SOP.

The PWD Design Branch is responsible for promulgating the PC Stormwater Program MCIEAST-MCB CAMLEJO, NPDES permit requirements, checklists, forms, and SOPs to other PWD divisions (e.g., AMB, Operations Branch), EMD, A/E design contractors, and any other entity that may be involved in applicable development projects.

5.5.4 Management of State-Issued Stormwater Permits

Stormwater permits issued to MCIEAST-MCB CAMLEJ prior to the date of full PC Stormwater Program implementation will continue to be managed under the authority of NC DEQ until such permits are rescinded and new permits are issued by MCIEAST-MCB CAMLEJ. NC DEQ will allow for renewal of existing NC DEQ-issued permits following full PC Stormwater Program implementation, if necessary.

PWD will issue a new stormwater permit to MCIEAST-MCB CAMLEJ following a project plan review and site inspection that includes evaluation of compliance with SCM O&M requirements. Once the new permit is issued, PWD will rescind the applicable NC DEQ permit. There are no NC DEQ stormwater permit rescission fees. This recission and reissuance process will be standardized in an SOP that includes other PWD-specific procedures (refer to section 5.5.3.2).

5.6 POLLUTION PREVENTION AND GOOD HOUSEKEEPING

The objectives of this NPDES permit requirement are to develop an O&M program to prevent or reduce polluted stormwater runoff. The O&M program shall include a training component for MCIEAST-MCB CAMLEJ personnel that covers MS4 maintenance and the prevention and reduction of polluted stormwater runoff from activities such as park and open space maintenance, fleet and building maintenance, and new construction and other land disturbing activities.

Table 5-5 contains the BMPs, measurable goals, and implementation schedules necessary to meet the pollution prevention and good housekeeping objectives, and descriptions of the actions already taken by MCIEAST-MCB CAMLEJ to implement each BMP and/or actions planned for the remainder of the permit term.

Table 5-5 BMPs for Pollution Prevention and Good Housekeeping

BMP	Measurable Goals and Schedules	Implementation
Facilities O&M program	MCIEAST-MCB CAMLEJ shall implement a facilities O&M program to manage facilities that have the potential for generating polluted stormwater runoff. MCIEAST-MCB CAMLEJ shall maintain a current inventory of these facilities and corresponding outfalls and receiving waters; perform facility inspections and routine maintenance; establish specific frequencies, schedules, and standard documentation; and provide staff training on general stormwater awareness and implementing pollution prevention and good housekeeping practices.	Appendix C of MCIEAST-MCB CAMLEJ's SWPPP contains an inventory of regulated industrial facilities with the potential for generating polluted stormwater runoff. The SWPPP provides O&M procedures for these facilities. In addition, MCIEAST-MCB CAMLEJ ECB maintains an inventory of all facilities and operations with the potential for generating polluted stormwater runoff through the ECE program. The ECE program covers facilities that include HW/HM/POLs, medical waste, aboveground storage tanks, underground storage tanks, oil/water separators, air emission sources, and/or landfills. Each facility subject to the ECE program is inspected annually at a minimum. The results of all ECE inspections are documented in an electronic database. Based on the results of the ECE inspections, ECB mandates corrective actions and maintenance, as needed, and provides follow-up inspections. Personnel at each facility subject to the ECE program are trained as indicated in Section 5.3 (Illicit Discharge Detection and Elimination). Routine maintenance and any additional required maintenance are managed using CMMS and PWD project process.
Spill response procedures for facilities and operations with the potential for generating polluted stormwater runoff	MCIEAST-MCB CAMLEJ shall maintain written spill response procedures and train staff annually on spill response procedures.	MCIEAST-MCB CAMLEJ established and maintains an SPCC Plan and a Facility Response Plan that are both frequently updated and apply base-wide. In addition, facilities that generate or handle HW/HM/POLs maintain site-specific spill contingency plans. The spill contingency plans are updated periodically and are inspected during the routine ECEs conducted by ECB.

Table 5-5 BMPs for Pollution Prevention and Good Housekeeping (continued)

BMP	Measurable Goals and Schedules	Implementation
MS4 O&M program	MCIEAST-MCB CAMLEJ shall provide O&M staff training on stormwater awareness and pollution prevention, perform MS4 inspections, maintain the collection system including catch basins and conveyances, and establish specific frequencies, schedules, and standard documentation.	Training: MCIEAST-MCB CAMLEJ has developed computer-based SWPPP training that is distributed to personnel involved in implementing stormwater pollution prevention and good housekeeping practices. The following personnel are required to complete this training: 1. Unit-level HW/HM/POL coordinators 2. ECCs & ECOs 3. All ECB staff MS4 Inspections/Maintenance: MCIEAST-MCB CAMLEJ has initiated a base-wide stormwater conveyance assessment program. This program is expected to be implemented in annual phases. By the end of the permit term, MCIEAST-MCB CAMLEJ will visually evaluate the condition of the entire base-wide stormwater system. Corrective actions will be implemented annually based on the findings of the conveyance system assessments.
SCM O&M program	MCIEAST-MCB CAMLEJ shall manage structural SCMs that are installed for compliance with the post-construction program. MCIEAST-MCB CAMLEJ shall maintain a current inventory of SCMs, perform annual SCM inspections, perform routine maintenance in accordance with the SCM O&M plan, and shall establish specific frequencies, schedules, and documentation.	MCIEAST-MCB CAMLEJ's ECB conducts, at a minimum, semiannual inspections of all structural SCM's and maintains a database of the inspection results. MCIEAST-MCB CAMLEJ performs additional maintenance on the structural components of the MS4 on an as needed basis. When additional maintenance is required, PWD procures funding and awards contracts for the completion of the maintenance. For development or redevelopment projects that require an NPDES permit, MCIEAST-MCB CAMLEJ signs O&M agreements to inspect and maintain the SCM(s) associated with those projects.

Table 5-5 BMPs for Pollution Prevention and Good Housekeeping (continued)

BMP	Measurable Goals and Schedules	Implementation
Pesticide, herbicide, and fertilizer management program	MCIEAST-MCB CAMLEJ shall implement a program for staff and contractors to minimize water quality impacts from the use of landscaping chemicals. MCIEAST-MCB CAMLEJ shall provide routine pollution prevention and chemical use, storage, and handling training, and shall ensure compliance with permits and applicator certifications.	MCIEAST-MCB CAMLEJ's Integrated Pest Management Plan addresses the use of pesticides, herbicides, and fertilizers used by MCIEAST-MCB CAMLEJ personnel or contractors including approval of chemicals; records and reporting; training, certifications, and licensing; regulatory compliance; and health, safety, and environmental considerations.
Vehicle and equipment maintenance program	The goal of this program is to prevent and minimize contamination of stormwater runoff from areas used for vehicle and equipment maintenance and/or cleaning. MCIEAST-MCB CAMLEJ shall ensure that industrial facilities subject to NPDES industrial permitting comply with those permit requirements, provide routine pollution prevention training to staff, perform routine inspections, and establish specific frequencies, schedules, and documentation.	MCIEAST-MCB CAMLEJ's SWPPP details the vehicle and equipment maintenance program at regulated industrial facilities. The SWPPP includes training methods and frequencies and inspection requirements (including schedules and required documentation). In addition to the SWPPP program, MCIEAST-MCB CAMLEJ has developed an Environmental Compliance & Protection Standard Operating Procedure (ECSOP) that restricts vehicle and equipment washing to designated wash racks equipped with devices such as OWSs or wash water reuse systems.

Table 5-5 BMPs for Pollution Prevention and Good Housekeeping (continued)

BMP	Measurable Goals and Schedules	Implementation
Pavement management program	The goal of the pavement management program is to reduce pollutants in stormwater runoff from streets, roads, parking lots and runways within the permittee's jurisdictional limits. MCIEAST-MCB CAMLEJ shall implement measures to control litter, leaves, debris, particulate matter, and fluids associated with vehicles and aircraft, and shall establish specific frequencies, schedules, and documentation.	Pavement management program goals are met by the following actions/approaches: 1. MCIEAST-MCB CAMLEJ inspects base parking lots associated with facilities and operations with the potential to generate polluted stormwater runoff during routine ECEs. Additionally, approximately two to three days per week, parking lot inspections are conducted by ECB staff. Inspections are documented and corrective actions are taken as needed. 2. MCIEAST-MCB CAMLEJ PWD maintains a street sweeping program that covers approximately 40 miles of paved roadway. Construction sites are required to be cleaned with street sweepers as needed, based on regular inspections by ECB. 3. MCIEAST-MCB CAMLEJ conducts sediment removal using vacuum trucks on the MCAS New River flightline (approximately 200 acres of paved surface area). 4. MCIEAST-MCB CAMLEJ contracts landscaping services that include seasonal leaf pick-up. Grass clippings are also collected during all mowing activities. 5. MCIEAST-MCB CAMLEJ implements analytical and visual stormwater monitoring to evaluate the effectiveness of its overall stormwater program. 6. Post-construction runoff controls are required for all newly constructed roadways and parking lots. 7. Stormwater inlets are cleaned on an as needed basis by the base maintenance contractor via CMMS.

Implementation Legend:

XXX	Permit requirements met. No additional actions are planned during the permit term.
XXX	Implementation requires additional/recurring action(s) by MCIEAST-MCB CAMLEJ to satisfy permit requirements.

5.7 INDUSTRIAL ACTIVITIES

The objective of this NPDES permit requirement is to protect MCIEAST-MCB CAMLEJ's receiving streams and watercourses from adverse water quality impacts resulting from chemical spills and/or contaminated stormwater runoff from facilities engaging in regulated industrial activity.

MCIEAST-MCB CAMLEJ's NPDES permit requires the development, implementation, and maintenance of a SWPPP that covers all regulated industrial activities at MCIEAST-MCB CAMLEJ. Regulated industrial activities are defined by Title 40 of the US CFR 122.26 (b)(14) and the following NC NPDES general permits:

- NCG08000, vehicular maintenance areas
- NCG150000, air transportation

Table 5-6 contains the BMPs, measurable goals, and implementation schedules necessary to meet the industrial activities objectives, and descriptions of the actions already taken by MCIEAST-MCB CAMLEJ to implement each BMP and/or actions planned for the remainder of the permit term.

Table 5-6 BMPs for Industrial Activities

BMP	Measurable Goals and Schedules	Implementation
Inventory of vehicle maintenance and air transportation facilities	Maintain an inventory of subject vehicle maintenance and air transportation facilities.	MCIEAST-MCB CAMLEJ's current SWPPP addresses the requirements of the "Industrial Activities" portion of the NPDES permit. The SWPPP includes the following: • NPDES permit requirements with respect to regulated industrial activity at MCIEAST-MCB CAMLEJ • Reporting and recordkeeping requirements • Organization and responsibilities of the Stormwater Pollution Prevention Committee • SWPPP field assessments • SWPPP mapping • Inventories of facilities engaging in regulated industrial activities and known potential pollutant sources and illicit discharges • Existing and recommended structural and non-structural BMPs The SWPPP is reviewed annually and updated as necessary. MCIEAST-MCB CAMLEJ has developed mapping and database software (referred to as eSWPPP) that aids in the maintenance of the SWPPP.
SWPPP	Develop, maintain, and implement a SWPPP at each vehicle maintenance and air transportation facility. The SWPPP shall include all items that are listed in current general permit requirements in NCG080000 and NCG150000. Either a base-wide SWPPP or individual SWPPPs for each facility shall be acceptable to meet this permit requirement.	
SWOMP	Within twelve (12) months of permit issuance, update and submit to the Division for review and approval a base-wide Monitoring Plan. The base-wide Monitoring Plan shall target analytical monitoring efforts at stormwater outfalls considered most likely to cause or contribute to water quality degradation based on either previously collected data or an analysis of activities within the drainage area, or both.	MCIEAST-MCB CAMLEJ submitted an updated base-wide monitoring plan (i.e., the SWOMP) to NC DEQ in October 2021. The SWOMP targets analytical monitoring efforts at stormwater outfalls considered most likely to cause or contribute to water quality degradation based on an analysis of activities within the drainage areas.

Table 5-6 BMPs for Industrial Activities (continued)

BMP	Measurable Goals and Schedules	Implementation
Analytical monitoring data and annual reporting	Include all analytical monitoring data in the annual report as well as any changes to the base-wide SWOMP that will occur during the upcoming year.	MCIEAST-MCB CAMLEJ will annually submit all analytical monitoring data as indicated in the SWOMP.

Implementation Legend:

XXX	Permit requirements met. No additional actions are planned during the permit term.
XXX	Implementation requires additional/recurring action(s) by MCIEAST-MCB CAMLEJ to satisfy permit requirements.

5.8 OIL/WATER SEPARATORS

The objective of this NPDES permit requirement is to protect MCIEAST-MCB CAMLEJ's receiving streams and watercourses from adverse water quality impacts resulting from the accidental release of HW/HM/POLs from OWSs to the MS4 or to waters of the state.

5.8.1 Compliance

MCIEAST-MCB CAMLEJ's NPDES permit requires that all OWSs that discharge to either the MS4, directly into the waters of the state, or have engineered diversionary catchment basins (including in the event of a bypass) be fully documented, with the following information identified for each OWS:

- Location
- Drainage area
- Activities contributing flow to the OWS that could impact stormwater discharges
- Materials used/stored/handled in the OWS drainage area that could impact stormwater discharges
- Name of water body ultimately receiving any discharge
- Design capacity of the device

5.8.2 Implementation

MCIEAST-MCB CAMLEJ's current SWPPP contains an OWS inventory that includes all OWSs that discharge directly to the MS4 or to waters of the state, or include a bypass feature that discharges to the MS4 or to waters of the state. The SWPPP OWS inventory also includes OWSs associated with regulated industrial activities that discharge to the sanitary sewer system. This inventory does not include all information required by the NPDES permit, such as drainage area directed to the OWS or OWS design capacity.

MCIEAST-MCB CAMLEJ also maintains a detailed, stand-alone *Oil Pollution Abatement Facility Inventory* (AH, 2021). This inventory fully describes all existing OWSs and

spill containment basins (regardless of operational discharge route) at MCIEAST-MCB CAMLEJ at the time the inventory was conducted. This inventory includes all information required by the MCIEAST-MCB CAMLEJ NPDES permit. MCIEAST-MCB CAMLEJ typically updates this inventory approximately every five (5) years.

5.9 IMPAIRED WATERS AND TOTAL MAXIMUM DAILY LOADS

The objective of this NPDES permit requirement is to comply with all state water quality standards for waters at MCIEAST-MCB CAMLEJ included in the latest NC 303(d) list of impaired waters and/or with an established TMDL.

Appendix C of this SWMP is a technical memorandum that evaluates all receiving waters at MCIEAST-MCB CAMLEJ included on the latest NC DEQ's 303(d) list of impaired waters or subject to an EPA-approved TMDL. The memorandum also contains mapping of each impaired watershed, including identification of watercourses, water bodies, and major SDOs. This memorandum contains the following information:

- Identifies, describes, and maps the watershed, outfalls, and streams
- Describes the likely cause(s) of the impairment and/or the pollutant(s) of concern
- Describes and assesses existing programs, controls, partnerships, projects, and strategies implemented to address the impaired water(s), where applicable

Bear Creek currently has an approved fecal coliform TMDL; however, MCIEAST-MCB CAMLEJ is not subject to this TMDL. Appendix D of this plan is the NC DEQ final report, *TMDL for Fecal Coliform for Bear Creek, NC.* The TMDL does not assign MCIEAST-MCB CAMLEJ a WLA, a load allocation (LA), or a pollutant reduction goal. Furthermore, MCIEAST-MCB CAMLEJ was not included in the Source Assessment section of the TMDL, nor does the portion of MCIEAST-MCB CAMLEJ that drains to Bear Creek include any of the sources listed in the Source Assessment (agricultural lands, residential areas, roadways, malfunctioning or improperly sited septic systems, or illicit connections of sanitary sewage). Appendix C of this SWMP is a technical memorandum that assesses the fecal coliform TMDL for Bear Creek. The memorandum presents information to support the finding that the impairment of Bear Creek is due to

sources outside of the geographic limits and jurisdictional control of MCIEAST-MCB CAMLEJ.

Table 5-7 contains the BMPs, measurable goals, and implementation schedules necessary to meet the impaired waters/TMDL objectives, and descriptions of the actions taken during the first two years of the permit term to implement each BMP and/or actions planned for the remaining three years of the permit term.

Table 5-7 BMPs for Impaired Waters and TMDLs

BMP	Measurable Goals and Schedules	Implementation
Enhance water quality recovery strategies	Evaluate strategies and tailor and/or expand BMPs for impaired waters within the scope of the six MCMs to enhance water quality recovery strategies in the watershed(s) and describe the strategies and tailored and/or expanded BMPs in each annual report.	**Planned Actions: MCIEAST-MCB CAMLEJ will continue to evaluate strategies to enhance water quality within each impaired watershed. These efforts will be described in each annual report.**
Existing TMDL WLAs	Comply with the requirements of an approved TMDL stormwater WLAs for any watershed directly receiving discharges from the permitted MS4.	This requirement is currently not applicable. MCIEAST-MCB CAMLEJ is not currently subject to any TMDL with an assigned WLA, LA, or pollutant reduction goal.
	If no stormwater WLA exists for an approved TMDL, evaluate strategies and tailor and/or expand BMPs within the scope of the six MCMs to enhance water quality recovery strategies and reduce pollutants of concern in the watershed(s) to which the TMDL applies. Describe the strategies and tailored and/or expanded BMPs in annual reports.	**Planned Actions: MCIEAST-MCB CAMLEJ will continue to evaluate strategies to enhance water quality within each impaired watershed. These efforts will be described in each annual report.**
Future TMDLs	Within 12 months following the date of EPA's final approval of a TMDL, annual reports shall include a description of, and a brief explanation as to how existing programs, controls, partnerships, projects, and strategies address impaired waters.	Annual reports will be updated as necessary if any new TMDLs are established within the MCIEAST-MCB CAMLEJ watershed during the permit term.
	Within 24 months following the date of EPA's final approval of a TMDL, annual reports shall include an assessment of whether additional structural and/or non-structural BMPs are necessary to address impaired waters.	This additional assessment will be completed as necessary if any new TMDLs are established within the MCIEAST-MCB CAMLEJ watershed during the permit term.
	Within 36 months following the date of EPA's final approval of a TMDL, this SWMP shall be updated to include appropriate BMPs to address impaired waters.	The SWMP will be updated as necessary if any new TMDLs are established within the MCIEAST-MCB CAMLEJ watershed during the permit term.

Implementation Legend:

XXX	Permit requirements met. No additional actions are planned during the permit term.
XXX	Implementation requires additional/recurring action(s) by MCIEAST-MCB CAMLEJ to satisfy permit requirements.

6. SUMMARY OF REQUIRED ACTION ITEMS

Table 6-1 provides an implementation schedule for action items required to maintain compliance with the MCIEAST-MCB CAMLEJ NPDES permit for the remainder of the permit term.

Table 6-1 Required Action Items and Implementation Schedule

BMP	Measurable Goals and Schedules	Implementation Requirements	Implementation Schedule
Stormwater Program Administration (Refer to Section 4)			
Annual Self-Assessment	Perform an annual evaluation of SWMP implementation, suitability of SWMP commitments, and any proposed changes to the SWMP utilizing the NC DEQ Annual Self-Assessment Template.	MCIEAST-MCB CAMLEJ will prepare, certify, and submit the Annual Self-Assessment to NC DEQ no later than 31 December of each year during the term of the permit. The SWMP will be evaluated annually and updated as necessary to ensure that the elements and control measures it contains continue to adequately provide for permit compliance and the community's needs.	No later than 31 December of each year during the permit term.
Public Education and Outreach (Refer to Section 5.1)			
Provide educational information and/or outreach	Identify and address three high priority community-wide issues.	MCIEAST-MCB CAMLEJ previously identified the following three high priority community-wide issues: (1) Solid Waste Disposal; (2) Spill Identification & Response Procedures; and (3) Construction Related Pollutants MCIEAST-MCB CAMLEJ will add all three items to the EM101 training module to emphasize their importance.	By end of permit term (30 September 2026)

Table 6-1 Required Action Items and Implementation Schedule (continued)

BMP	Measurable Goals and Schedules	Implementation Requirements	Implementation Schedule
Provide educational information and/or outreach (continued)	Provide educational information to base employees, operational forces, and businesses regarding the public of hazards associated with illicit discharges, illegal dumping, and improper disposal of waste.	MCIEAST-MCB CAMLEJ EMD personnel will begin performing in-person education regarding various stormwater issues (i.e., community outreach in educational settings).	By end of permit term (30 September 2026)
	Inform the community on watersheds in need of special protection, and the issues that may threaten the quality of these waters.	MCIEAST-MCB CAMLEJ will add a list of impaired waters as well as maps of each impaired water to the stormwater informational website.	By end of permit term (30 September 2026)
Public Involvement and Participation (Refer to Section 5.2)			
Public review and comment on the SWMP	MCIEAST-MCB CAMLEJ shall conduct at least one public meeting during the term of the permit to allow the public an opportunity to review and comment on the SWMP.	MCIEAST-MCB CAMLEJ will promote public involvement and make the SWMP available for review via media outlets and the stormwater website.	By end of permit term (30 September 2026)
Illicit Discharge Detection and Elimination (Refer to Section 5.3)			
Regulatory mechanism for legal authority	Develop and maintain a regulatory mechanism that provides legal authority to prohibit, detect, and eliminate illicit connections and discharges, illegal dumping, and spills into the MS4, including enforcement procedures and actions.	A MCIEAST-MCB CAMLEJO will be established that will provide authority to prohibit, detect, and eliminate illicit connections and discharges, illegal dumping, and spills into the MS4 (to include enforcement procedures and actions).	By end of permit term (30 September 2026)
Construction Site Runoff Controls (Refer to Section 5.4)			
There are no action items required for the MCIEAST-MCB CAMLEJ construction site runoff control program. MCIEAST-MCB CAMLEJ will continue to operate this program in accordance with permit requirements.			

Table 6-1 Required Action Items and Implementation Schedule (continued)

BMP	Measurable Goals and Schedules	Implementation Requirements	Implementation Schedule
PC Stormwater Program (Refer to Section 5.5)			
PC Stormwater Program Implementation	Establish local authority to review, approve, and enforce the PC Stormwater Program.	A MCIEAST-MCB CAMLEJO and associated SOPs will be developed to establish local authority to review, approve, and enforce the PC Stormwater Program at MCIEAST-MCB CAMLEJ. It is anticipated that two SOPs will be developed: the first outlining PWD roles and responsibilities, and the second outlining EMD roles and responsibilities. The MCIEAST-MCB CAMLEJO and SOPs will identify stormwater management program personnel, roles and responsibilities, non-compliance corrective actions, and associated processes. The MCIEAST-MCB CAMLEJO and SOPs will be submitted to NC DEQ for approval, prior to final issuance.	1 October 2022
	Implement the full PC Stormwater Program	MCIEAST-MCB CAMLEJ will fully implement a PC Stormwater Program	1 October 2023
Pollution Prevention and Good Housekeeping (Refer to Section 5.6)			
There are no action items required for this component of the NPDES permit.			
Industrial Activities (Refer to Section 5.7)			
There are no action items required for this component of the NPDES permit.			
Oil/Water Separators (Refer to Section 5.8)			
There are no action items required for this component of the NPDES permit.			

Table 6-1 Required Action Items and Implementation Schedule (continued)

BMP	Measurable Goals and Schedules	Implementation Requirements	Implementation Schedule
Impaired Waters and TMDLs (Refer to Section 5.9)			
Enhance water quality recovery strategies	Evaluate strategies and tailor and/or expand BMPs for impaired waters within the scope of the six MCMs to enhance water quality recovery strategies in the watershed(s) and describe the strategies and tailored and/or expanded BMPs in each annual report.	MCIEAST-MCB CAMLEJ will continue to evaluate strategies to enhance water quality within each impaired watershed. These efforts will be described in each annual report.	Strategies will be evaluated annually, with applicable reporting submitted to NC DEQ no later than 31 December of each year during the permit term.
Existing TMDL WLAs	If no stormwater WLA exists for an approved TMDL, evaluate strategies and tailor and/or expand BMPs within the scope of the six MCMs to enhance water quality recovery strategies and reduce pollutants of concern in the watershed(s) to which the TMDL applies. Describe the strategies and tailored and/or expanded BMPs in annual reports.	MCIEAST-MCB CAMLEJ will continue to evaluate strategies to enhance water quality within each impaired watershed. These efforts will be described in each annual report.	Strategies will be evaluated annually, with applicable reporting submitted to NC DEQ no later than 31 December of each year during the permit term.

7. REFERENCES AND WORKS CONSULTED

AH Environmental Consultants, Inc. September 2021. *Oil Pollution Abatement Facility Inventory for MCIEAST-MCB CAMLEJ (Volume 1 through Volume 7)*.

AH Environmental Consultants, Inc. August 2021. *Stormwater Outfall Monitoring Plan for MCIEAST-MCB CAMLEJ*.

AH Environmental Consultants, Inc. September 2021. *Stormwater Pollution Prevention Plan for MCIEAST-MCB CAMLEJ*.

Code of Federal Regulations, Title 40, Pt. 122.26(b)(14), *EPA Administered Permit Programs: The National Pollutant Discharge Elimination System*.

North Carolina Department of Environmental Quality. October 2021. *National Pollutant Discharge Elimination System Permit Number NCS000290*.

North Carolina Department of Environmental Quality. July 2020. *North Carolina 2020 303(d) List*.

North Carolina Department of Environmental Quality. February 2021. *Notice of Post-Construction Requirements for Department of Defense NPDES MS4 Permittees.*

North Carolina Department of Environmental Quality. September 2011. *Total Maximum Daily Load for Bear Creek, North Carolina*.

North Carolina Department of Environmental Quality. September 2021. *White Oak River Basinwide Water Quality Plan (Draft)*.

North Carolina General Assembly. 2008. *Session Law 2008-211, Senate Bill 1967, To Improve Coastal Stormwater Management*.

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APPENDIX A

NPDES Permit Number NCS000290

(24 PAGES)

STATE of NORTH CAROLINA DEPARTMENT of ENVIRONMENTAL QUALITY
DIVISION of ENERGY, MINERAL, and LAND RESOURCES

PERMIT NO. NCS000290

TO DISCHARGE STORMWATER UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with applicable law, including the regulations promulgated and adopted by the North Carolina Environmental Management Commission, and the Federal Water Pollution Control Act, as amended,

United States Marine Corps

is hereby authorized to discharge stormwater and continue operation of oil water separators not associated with wastewater discharges from facilities located at:

Marine Corps Base Camp Lejeune and Marine Corps Air Station New River
herein referred to as Camp Lejeune
Onslow County

to receiving waters designated as Bear Creek (SB, NSW), Beaverdam Creek (SB, NSW), Cogdels Creek (SC, NSW), New River (SC, HQW, NSW, SC, NSW, SA), Wallace Creek (SB, NSW), Frenchs Creek (SC, NSW), Edwards Creek (SC, NSW), Strawhorn Creek (SC, NSW), Stick Creek (SC, HQW, NSW), Southwest Creek (C, NSW), Courthouse Bay (SA), Stones Creek (SA), Brinson Creek (SC, NSW), Northeast Creek (SC, HQW, NSW), Scales Creek (SC, HQW, NSW), Wilson Bay (SC, HQW, NSW), Mott Creek (C, NSW), Morgan Bay (SC, NSW), and Farnell Bay (SC, NSW) in the White Oak River Basin in accordance with the discharge limitations, monitoring requirements, and other conditions set forth in Parts I, II, III, IV, V, VI, and VII hereof.

This permit shall become effective October 1, 2021.

This permit and the authorization to discharge are subject to applicable law and shall expire at midnight on September 30, 2026.

Signed this 24th day of September 2021.

for Brian Wrenn, Director
Division of Energy, Mineral, and Land Resources
By the Authority of the Environmental Management Commission

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CONTENTS

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PART 1: PERMIT COVERAGE

1. During the period beginning on the effective date of the permit and lasting until expiration, Marine Corp Base Camp Lejeune and Marine Corps Air Station New River, herein referred to as Camp Lejeune and/or the permittee, is authorized to discharge stormwater from the Municipal Separate Storm Sewer System (MS4) and continue operation of oil water separators not associated with wastewater discharges to receiving waters.

2. Receiving waters for discharges from the permittee's MS4 are designated as: Bear Creek (SB, NSW), Beaverdam Creek (SB, NSW), Cogdels Creek (SC, NSW), New River (SC, HQW, NSW, SC, NSW, SA), Wallace Creek (SB, NSW), Frenchs Creek (SC, NSW), Edwards Creek (SC, NSW), Strawhorn Creek (SC, NSW), Stick Creek (SC, HQW, NSW), Southwest Creek (C, NSW), Courthouse Bay (SA), Stones Creek (SA), Brinson Creek (SC, NSW), Northeast Creek (SC, HQW, NSW), Scales Creek (SC, HQW, NSW), Wilson Bay (SC, HQW, NSW), Mott Creek (C, NSW), Morgan Bay (SC, NSW), Farnell Bay (SC, NSW), and their tributaries in the White Oak River Basin.

3. Discharges from the permittee's MS4 shall be controlled, limited, and monitored in accordance with this permit and the permittee's Comprehensive Stormwater Management Program Plan, herein referred to as the Stormwater Plan.

4. Under the authority of Section 402(p) of the Clean Water Act and implementing regulations 40 CFR Part 122, 123 and 124, North Carolina General Statute 143-215.1, and Session Law 2006-246, all provisions contained and referenced in the Stormwater Plan are enforceable parts of this permit.

5. The issuance of this permit does not prohibit the Division from reopening and modifying the permit, revoking and reissuing the permit, or terminating the permit as allowed by the laws, rules, and regulations contained in Title 40, Code of Federal Regulations, Parts 122 and 123; Title 15A of the North Carolina Administrative Code, Subchapter 2H .0100; and North Carolina General Statute 143-215.1 et. al.

6. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

7. No provisions of this permit shall be interpreted as or constitute a commitment that the permittee will obligate or pay funds in contravention of the Anti-Deficiency Act, 31 U.S.C. Section 1341.

8. All discharges authorized herein shall be lawfully managed in accordance with the terms and conditions of this permit. Any other point source discharge to surface waters of the state is prohibited unless it is an allowable non-stormwater discharge or is covered by another permit, authorization, or approval.

9. This permit does not relieve Camp Lejeune from responsibility for compliance with any other applicable federal, state, or local law, rule, standard, ordinance, order, judgment, or decree.

10. The permit authorizes the point source discharge of stormwater runoff from the permittee's MS4. Unless the Division requires that specific non-stormwater flows be controlled, the discharge of non-stormwater is also authorized through the MS4 if such discharges are:

(a) Permitted by, and in compliance with, another NPDES discharge permit including discharges of process and non-process wastewater, and stormwater associated with industrial activity; or

(b) Determined to be incidental non-stormwater flows that do not significantly impact water quality and may include:

- water line flushing;
- landscape irrigation;
- diverted stream flows;
- rising groundwaters;
- uncontaminated groundwater infiltration;
- uncontaminated pumped groundwater;
- discharges from potable water sources;
- foundation drains;
- air conditioning condensate (commercial/residential);
- irrigation waters;
- springs;
- water from crawl space pumps;
- footing drains;
- lawn watering;
- residential and charity car washing;
- flows from riparian habitats and wetlands;
- dechlorinated swimming pool discharges;
- street wash water;
- flows from emergency fire fighting;
- releases of clean waters from hydrostatic testing; and
- drainage of uncontaminated stormwater from secondary containment after visual monitoring.

PART 2: LIMITATIONS AND CONTROLS FOR PERMITTED DISCHARGES

SECTION A: STORMWATER MANAGEMENT PROGRAM IMPLEMENTATION

The permittee shall implement, manage, and oversee all provisions of its Comprehensive Stormwater Management Program Plan to reduce pollutants discharged from the MS4. This includes, but is not limited to, the following provisions:

1. Stormwater Plan

(a) The permittee shall develop, maintain, and implement a Stormwater Plan in accordance with Section 402(p)(3)(B) of the Clean Water Act, provisions outlined by the Director, and the provisions of this permit.

(b) The Stormwater Plan shall include, at a minimum, specific and measurable goals that define program elements to fully implement each of the six minimum control measures (MCMs) defined in 40 CFR §122.34(b): public education and outreach on stormwater impacts, public involvement and participation, illicit discharge detection and elimination, construction site runoff control, post-construction stormwater management, and pollution prevention/good housekeeping for municipal operations, as well as any required Total Maximum Daily Load (TMDL) requirements.

(c) The Stormwater Plan shall detail the permittee's Stormwater Management Program for the five-year term of the stormwater permit. Each MCM shall have: a narrative description of the program, a table that identifies each best management practice (BMP) used, the frequency of the BMP, the measurable goals for each BMP, the implementation schedule, funding, and the responsible person or position for implementation.

(d) The Stormwater Plan shall identify specific position(s) and responsibilities for the implementation of each MCM and any TMDL requirements, as well as overall coordination and management of the Comprehensive Stormwater Management Program.

(e) If discharges are determined to cause or contribute to non-attainment of an applicable water quality standard, the permittee shall expand or better tailor its BMPs within the scope of the six minimum control measures to address the discharges.

(f) The purpose of the Stormwater Plan is to reduce the discharge of pollutants from the MS4 to the maximum extent practicable, to protect water quality, and to satisfy the applicable water quality requirements of the Clean Water Act. Implementation of best management practices consistent with the provisions of the Stormwater Plan constitutes compliance with the standard of reducing pollutants to the maximum extent practicable.

(g) The Division may notify the permittee when the Stormwater Plan does not meet one or more of the requirements of the permit or the maximum extent practicable standard. Within ninety (90) days of such notice, the permittee shall submit a plan and time schedule to the Division for modifying the Stormwater Plan to meet the requirements. The Division may approve the plan, approve a plan with modifications, or reject the proposed plan. Nothing in this paragraph shall be construed to limit the Division's ability to conduct enforcement actions for violations of this permit. When changes to the program are required by the Division, the permittee shall provide certification in writing

to the Division that the changes have been made.

(h) The permittee shall make its Stormwater Plan available to the Division upon request.

2. Legal Authority

The permittee shall develop and maintain the authority to implement and enforce all provisions of the Stormwater Plan.

3. Program Funding

The permittee shall maintain adequate funding and staffing to comply with this permit and implement and manage the Comprehensive Stormwater Management Program and all provisions of the Stormwater Plan.

SECTION B: PUBLIC EDUCATION AND OUTREACH PROGRAM

The Stormwater Plan shall identify the specific elements and implementation of a Public Education and Outreach Program designed to share educational materials, promote educational opportunities for the base-wide community, conduct outreach activities on the impacts of stormwater pollutants and discharges to water bodies, and inform base occupants on how they can reduce pollutants in stormwater runoff and properly dispose of waste. The program shall include a combination of approaches that are effective at reaching identified target audiences.

The permittee shall document the extent of exposure of each media, event, or activity, including those elements implemented locally or through a cooperative agreement and, at a minimum, shall:

1. Annually evaluate, identify, and define the target pollutants, potential sources, and associated target audiences likely to have significant stormwater impacts on base.

2. Provide educational information and/or outreach to identified target audiences on target pollutants and/or stormwater issues. At a minimum, the permittee shall:

   (a) Identify and address three high priority community-wide issues.

   (b) Address a minimum of three residential and three industrial/commercial issues.

   (c) Provide educational information to base employees, operational forces, businesses and the public of hazards associated with illicit discharges, illegal dumping, and improper disposal of waste.

   (d) Inform the community on watersheds in need of special protection, and the issues that may threaten the quality of these waters.

3. Provide and maintain a website designed to convey the stormwater program's purpose and scope. The website should include educational information and opportunities to improve stormwater discharges from the MS4.

4. Provide and maintain a stormwater hotline/helpline for public education and outreach.

SECTION C: PUBLIC INVOLVEMENT AND PARTICIPATION

The Stormwater Plan shall identify the specific elements and implementation of a Public Involvement and Participation Program designed to provide and promote volunteer opportunities for the base-wide community, and to provide opportunities for feedback on the Stormwater Plan.

The permittee shall document the extent of exposure of each media, event, or activity, including those elements implemented locally or through a cooperative agreement and, at a minimum, shall:

1. Conduct at least one public meeting during the term of the permit to allow the community an opportunity to review and comment on the Stormwater Plan.

2. Promote and provide a mechanism for group involvement and input on the stormwater program.

3. Promote and provide a minimum of one stormwater volunteer event or opportunity each year.

4. Provide and maintain a stormwater hotline/helpline for reporting stormwater issues and concerns on base.

SECTION D: ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

The Stormwater Plan shall identify the specific elements and implementation of an Illicit Discharge Detection and Elimination (IDDE) Program in accordance with 40 CFR §122.34(b)(3). At a minimum, the IDDE Program shall:

1. Develop, update, and maintain a municipal storm sewer system map including stormwater conveyances, flow direction, major outfalls, and waters of the United States receiving stormwater discharges.

2. Develop and maintain a regulatory mechanism that provides legal authority to prohibit, detect, and eliminate illicit connections and discharges, illegal dumping, and spills into the MS4, including enforcement procedures and actions.

3. Maintain and implement a written IDDE Plan to detect and address illicit discharges, illegal dumping, spills and any non-stormwater discharges identified as significant contributors of pollutants to the MS4. The plan shall provide standard procedures and documentation to:

    (a) Locate priority areas likely to have illicit discharges,

    (b) Conduct routine dry weather inspections of all major outfalls or implement approved base-wide Stormwater Monitoring Plan in accordance with Section H.3 of this permit,

    (c) Identify illicit discharges and trace sources,

    (d) Eliminate the source(s) of an illicit discharge, and

    (e) Evaluate and assess the IDDE Program.

4. Provide a mechanism for tracking and documenting each illicit discharge, illicit connection, or illegal dumping event including date(s) reported and/or observed, the results of the investigation,

any follow-up of the investigation, the date the investigation was closed, the issuance of enforcement actions, and the ability to identify chronic violators.

5. Train municipal staff and contractors who, as part of their normal job responsibilities, may observe an illicit discharge, illicit connection, illegal dumping, or spills. Training shall include how to identify and report illicit discharges, illicit connections, illegal dumping, and spills. Each staff training event shall be documented, including the agenda/materials, date, and number of staff participating. The training program shall identify appropriate personnel, the schedule for conducting the training and the proper procedures for reporting and responding to an illicit discharge or connection. Follow-up training must be provided as needed to address changes in personnel, procedures, or techniques.

6. Promote and provide a reporting mechanism for the public and staff to report illicit discharges, and establish and implement response procedures. The permittee shall conduct reactive inspections in response to reports/complaints and perform follow-up inspections as needed to ensure that corrective measures have been implemented by the responsible party to achieve and maintain compliance.

7. Implement, assess annually, and update as necessary written procedures to identify and report sanitary sewer overflows and sewer leaks to the system operator.

SECTION E: CONSTRUCTION SITE RUNOFF CONTROL PROGRAM

Compliance with the North Carolina Sediment Pollution Control Act of 1973 (SPCA) program as defined in 15A NCAC Chapter 04 shall meet requirements for public input, sanctions to ensure compliance, requirements for construction site operators to implement appropriate erosion and sediment control practices, review of site plans which incorporates consideration of potential water quality impacts, and procedures for site inspection and enforcement of control measures.

At a minimum, the permittee's Construction Site Runoff Control Program shall:

1. Require construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impact to water quality.

2. Provide and promote a means for the community to notify the appropriate authorities of observed erosion and sedimentation problems.

SECTION F:POST-CONSTRUCTION SITE RUNOFF CONTROL PROGRAM

The Stormwater Plan shall identify the specific elements to develop, implement, and enforce a Post-Construction Site Runoff Control Program (PC Program) to address stormwater runoff from development projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the MS4. At a minimum, the Post-Construction Program shall comply with 15A NCAC 02H .1017 and .1019, and the permittee's PC Program shall include the following provisions:

1. The permittee shall notify the Division of the specific post-construction program it will implement.

Notification shall be received by the Division no later than December 31, 2021.

2. Establish local authority to review, approve, and enforce the PC Program no later than October 1, 2022.

3. Implement the full PC Program no later than October 1, 2023.

4. The permittee shall establish and maintain adequate legal authorities through ordinance or other regulatory mechanism(s) to:

   (a) Review designs and proposals for development projects to determine whether adequate stormwater control measures will be installed, implemented, and maintained.

   (b) Request information such as stormwater plans, inspection reports, monitoring results, and other information deemed necessary to evaluate compliance with the Post-Construction Program.

   (c) Enter property for the purpose of inspecting at reasonable times any facilities, equipment, practices, or operations related to stormwater discharges to determine compliance with the Post-Construction Program.

5. The permittee shall develop, maintain, and implement plan review and approval authority, standards, and procedures to:

   (a) Conduct site plan reviews of all new development and redeveloped sites that disturb greater than or equal to one acre, and sites that disturb less than one acre that are part of a larger common plan of development or sale for compliance with 15A NCAC 02H .1017 and .1019.

   (b) Ensure that each project has an Operation and Maintenance Agreement that complies with 15A NCAC 02H .1050(11).

   (c) Ensure that each project has recorded deed restrictions and protective covenants, or their equivalent, that require the project to be maintained consistent with approved plans.

   (d) Ensure that each SCM and associated maintenance accesses be protected in a permanent recorded easement or equivalent mechanism per 15A NCAC 02H 1050 (9) and (10).

6. The permittee shall maintain inspection and enforcement authority, standards, and procedures to:

   (a) Conduct post-construction inspections prior to issuing a Certificate of Occupancy, Temporary Certificate of Occupancy or equivalent approval.

   (b) Ensure that the project has been constructed in accordance with the approved plan(s).

   (c) Ensure annual inspection of each permitted SCM to ensure compliance with the approved Operation and Maintenance Agreement.

   (d) Require that inspections be conducted by a qualified professional.

7. The permittee shall maintain adequate documentation and standardized inspection and tracking mechanisms to:

(a) Maintain an inventory of post-construction SCMs and permitted projects.

(b) Document, track, and maintain records of inspections and enforcement actions. Tracking shall include the ability to identify chronic violators.

(c) Make available to developers all relevant ordinances, post-construction requirements, design standards, checklists, and/or other materials.

8. Construction projects that are performed by or under contract for the permittee, including roads and bridges, must meet the requirements for stormwater management and water quality protection required by Session Law 2008-211, Sections 2.(a), 2.(b), 2.(c), 2.(d), 2.(e) and 2.(f). Roads and bridges must minimize built-upon surfaces, divert stormwater away from surface waters as much as possible and employ other best management practices to minimize water quality impacts to the maximum extent practicable.

9. As an alternative to the requirements above, the permittee may develop and implement a Division-approved Comprehensive Watershed Protection Plan (CWPP) to meet all or part of the requirements for a PC Program. Any previous Division-approved CWPP(s) shall be updated and resubmitted to the Division for review, comment, and approval within twelve (12) months of permit issuance.

SECTION G: POLLUTION PREVENTION AND GOOD HOUSEKEEPING PROGRAMS

The Stormwater Plan shall identify the specific elements for development and implementation of a comprehensive suite of operation and maintenance programs to prevent and minimize pollutants in runoff from base facilities and operations. At a minimum, pollution prevention and good housekeeping for municipal operations shall include the following programs.

At a minimum, the permittee shall develop, implement, document, and maintain the following pollution prevention and good housekeeping programs:

1. Facilities Operation and Maintenance Program to manage facilities that are owned and operated by the permittee and have the potential for generating polluted stormwater runoff. The permittee shall maintain a current inventory of municipal facilities and corresponding outfalls and receiving waters; perform facility inspections and routine maintenance; establish specific frequencies, schedules, and standard documentation; provide staff training on general stormwater awareness and implementing pollution prevention and good housekeeping practices.

2. Spill Response Program for facilities and operations that store and/or use materials that have the potential to contaminate stormwater runoff if spilled. The permittee shall maintain written spill response procedures and train staff annually on spill response procedures.

3. MS4 Operation and Maintenance Program to minimize pollutants in the stormwater collection system. The permittee shall provide operation and maintenance staff training on stormwater awareness and pollution prevention, perform MS4 inspections, maintain the collection system including catch basins and conveyances; and establish specific frequencies, schedules, and standard documentation.

4. Municipal SCM Operation and Maintenance Program to manage structural SCMs that are installed for compliance with the permittee's post-construction program. The permittee shall maintain a current inventory of SCMs, perform annual SCM inspections, perform routine maintenance in

accordance with the SCM O&M Plan, and shall establish specific frequencies, schedules, and documentation.

5. Pesticide, Herbicide, and Fertilizer Management Program for staff and contractors to minimize water quality impacts from the use of landscape chemicals. The permittee shall provide routine pollution prevention and chemical use, storage and handling training, and shall ensure compliance with permits and applicator certifications.

6. Vehicle and Equipment Maintenance Program to prevent and minimize contamination of stormwater runoff from areas used for municipal vehicle and equipment maintenance and/or cleaning. The permittee shall ensure that municipal industrial facilities subject to NPDES industrial permitting comply with those permit requirements, provide routine pollution prevention training to staff, perform routine inspections, and establish specific frequencies, schedules, and documentation.

7. Pavement Management Program to reduce pollutants in stormwater runoff from streets, roads, parking lots and runways within the permittee's jurisdictional limits. The permittee shall implement measures to control litter, leaves, debris, particulate matter and fluids associated with vehicles and aircraft, and shall establish specific frequencies, schedules, and documentation.

SECTION H: INDUSTRIAL ACTIVITIES

The permittee shall be deemed to have general permit coverage for industrial facilities subject to the Division's general permits for vehicle maintenance and air transportation (NCG080000 and NCG150000, respectively). Industrial facilities that are subject to individual stormwater permitting and any other general permit shall obtain and maintain an industrial stormwater permit from the Division.

To maintain deemed general permit coverage for an NCG080000 or NCG150000 facility, the permittee shall:

1. Maintain an inventory of subject vehicle maintenance and air transportation facilities.

2. Develop, maintain, and implement a Stormwater Pollution Prevention Plan (SWPPP) at each vehicle maintenance and air transportation facility. The SWPPP shall include all items that are listed in current general permit requirements in NCG080000 and NCG150000. Either a base-wide SWPPP or individual SWPPPs for each facility shall be acceptable to meet this permit requirement.

3. Within twelve (12) months of permit issuance, update and submit to the Division for review and approval a base-wide Monitoring Plan. The base-wide Monitoring Plan shall target analytical monitoring efforts at stormwater outfalls considered most likely to cause or contribute to water quality degradation based on either previously collected data or an analysis of activities within the drainage area, or both.

4. Include all analytical monitoring data in the annual report as well as any changes to the base-wide Monitoring Plan that will occur during the upcoming year.

SECTION I: OIL WATER SEPARATORS

All oil water separators (OWS) that discharge to either the MS4, directly into the waters of the state, or have engineered diversionary catchment basins, including in the event of a bypass, shall be fully described in a SWPPP which includes the following information for each OWS:

1. Location,
2. Drainage area,
3. Drainage area activities that could impact stormwater discharges,
4. Materials used/stored/handled in the drainage area that could impact stormwater discharges,
5. Name of water body ultimately receiving any discharge,
6. Design capacity of the device.

SECTION J: IMPAIRED WATERS and TOTAL MAXIMUM DAILY LOADS (TMDLs)

1. The permittee shall evaluate strategies and tailor and/or expand BMPs for impaired waters within the scope of the six minimum control measures to enhance water quality recovery strategies in the watershed(s) and describe the strategies and tailored and/or expanded BMPs in each annual report.

2. The permittee shall comply with the requirements of an approved TMDL stormwater Waste Load Allocation (WLA) for any watershed directly receiving discharges from the permitted MS4.

3. If no stormwater WLA exists for an approved TMDL, the permittee shall evaluate strategies and tailor and/or expand BMPs within the scope of the six MCMs to enhance water quality recovery strategies and reduce pollutants of concern in the watershed(s) to which the TMDL applies. The permittee shall describe the strategies and tailored and/or expanded BMPs in their Stormwater Management Plan and annual reports.

4. Upon the date of EPA's final approval of a TMDL, the following shall apply:

   (a) Within 12 months, the permittee's annual reports shall include a description of, and a brief explanation as to how existing programs, controls, partnerships, projects, and strategies address impaired waters.

   (b) Within 24 months, the permittee's annual reports shall include an assessment of whether additional structural and/or non-structural BMPs are necessary to address impaired waters.

   (c) Within 36 months, the permittee's Stormwater Plan shall be updated to include appropriate BMPs to address impaired waters.

PART 3: ANNUAL PROGRAM ASSESSMENT

1. Implementation of the Stormwater Plan shall include documentation of all program components that are being undertaken including, but not limited to, inspections, maintenance activities, educational programs, implementation of BMPs, enforcement actions, and other stormwater activities. If monitoring and sampling are being performed, documentation of results shall be included.

2. The Stormwater Plan shall be reviewed and updated as necessary, but at least on an annual basis. The report shall include appropriate information to accurately describe the program progress, status, and results.

   The annual program assessment shall include, but is not limited to, the following components:

   (a) A detailed description of the status of implementation of the Stormwater Plan. This will include information on development and implementation of all components of the Stormwater Plan for the past year and schedules and plans for the year following each report.

   (b) Describe and justify any proposed changes to the Stormwater Plan. This will include descriptions and supporting information for the proposed changes and how these changes will impact the Stormwater Plan (results, effectiveness, implementation schedule, etc.).

   (c) Document any necessary changes to programs or practices for assessment of management measures implemented through the Stormwater Plan. In addition, any changes in the cost of, or funding for, the Stormwater Plan will be documented.

   (d) A summary of data accumulated as part of the Stormwater Plan throughout the year along with an assessment of what the data indicates.

   (e) A summary of activities undertaken as part of the Stormwater Plan throughout the year. This summary will include, but is not limited to, information on the establishment of appropriate legal authorities, project assessments, inspections, enforcement actions, continued inventory and review of the storm sewer system, education, training, and results of the illicit discharge detection and elimination program.

3. The permittee shall submit an annual self-assessment of the previous federal fiscal year activities to the Division no later than December 31 of each year.

4. The Division may notify the permittee when the Stormwater Plan does not meet one or more of the lawful requirements of the permit. Within thirty (30) calendar days of such notice, the permittee shall submit a plan and time schedule to the Director for modifying the Stormwater Plan to meet the requirements. The Division may approve the plan, approve a plan with modifications, or reject the proposed plan. The permittee shall provide certification in writing to the Division that the changes have been made. Nothing in this paragraph shall be construed to limit the Division's ability to conduct enforcement actions for violations of this permit.

5. The Division may request additional reporting information as necessary to assess the progress and results of the permitted stormwater program.

PART 4: REPORTING AND RECORD KEEPING REQUIREMENTS

1. Electronic Submittals

Beginning on December 21, 2020, and in accordance with federal reporting requirements established in the final NPDES Electronic Reporting Rule adopted and effective December 21, 2015, the permittee shall electronically submit any required annual reports and monitoring data. All required electronic submittals shall be made in accordance with Division guidance.

2. Non-Electronic Submittals

All reports required herein, not submitted electronically, shall be submitted to the following address:

Department of Environmental Quality
Division of Energy, Mineral, and Land Resources - Stormwater Program
1612 Mail Service Center
Raleigh, North Carolina 27699-1612

3. Signatory Authority

All applications, reports, or information, other than those submitted electronically, shall be signed by a principal executive officer, ranking elected official, or duly authorized representative. A person is a duly authorized representative only if:

(a) The authorization is made in writing by a principal executive officer or ranking elected official;

(b) The authorization specified either an individual or a position having responsibility for the overall operation of a regulated facility or activity or an individual or position having overall responsibility for environmental/stormwater matters; and

(c) The written authorization is submitted to the Division.

4. Signatory Certification

Any person signing a document under these permit requirements shall, at a minimum, make the following certification:

> "I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

5. Record Keeping Requirements

(a) Documentation shall be kept on-file by the permittee for a period of five years from the date of expiration of this permit and made available to the Division or authorized representative upon request.

(b) The permittee shall retain records of all monitoring information, including calibration and maintenance records and copies of reports required by this permit, for a period of at least five years from the date of expiration of this permit. This period may be extended by request of the Division.

6. Supplemental or Corrected Information

Where the permittee becomes aware that it failed to submit any relevant facts or submitted incorrect information in a permit application or in any report to the Division, it shall promptly submit such facts or information.

PART 5: COMPLIANCE AND LIABILITY

1. Duty to Comply

The permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of permit coverage upon renewal application.

(a) The permittee shall comply with standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

(b) The Clean Water Act provides that any person who violates a permit condition is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act and the Federal Civil Penalties Inflation Adjustment Act (28 U.S.C. §2461 note) as amended by the Debt Collection Improvement Act (31 U.S.C. §3701 note) (currently $37,500 per day for each violation). Any person who negligently violates any permit condition is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment for not more than 1 year, or both. Any person who knowingly violates permit conditions is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than 3 years, or both. Also, any person who violates a permit condition may be assessed an administrative penalty not to exceed $16,000 per violation with the maximum amount not to exceed $177,500. [Ref: Section 309 of the Federal Act 33 USC 1319 and 40 CFR 122.41(a).]

(c) Under state law, a daily civil penalty of not more than twenty-five thousand dollars ($25,000) per violation may be assessed against any person who violates or fails to act in accordance with the terms, conditions, or requirements of a permit. [Ref: North Carolina General Statutes 143-215.6A]

(d) Any person may be assessed an administrative penalty by the Administrator for violating sections 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Pursuant to 40 CFR Part 19 and the Act, administrative penalties for Class I violations are not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act and the Federal Civil Penalties Inflation Adjustment Act (28 U.S.C. §2461 note) as amended by the Debt Collection Improvement Act (31 U.S.C. §3701 note) (currently $11,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $27,500). Pursuant to 40 CFR Part 19 and the Act, penalties for Class II violations are not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act and the Federal Civil Penalties Inflation Adjustment Act (28 U.S.C. §2461 note) as amended by the Debt Collection Improvement Act (31 U.S.C. §3701 note) (currently $11,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $137,500).

2. Duty to Mitigate

The permittee shall take reasonable steps to minimize or prevent any discharge in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

3. Twenty-four Hour Noncompliance Reporting

The permittee shall report to the Division any noncompliance that may constitute an imminent threat to health or the environment. Any information shall be provided orally within 24 hours from the time the permittee became aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances.

The written submission shall contain a description of the noncompliance and its causes, the period of noncompliance, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue, and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

4. Civil and Criminal Liability

Nothing in this permit shall be construed to relieve the permittee from any responsibilities, liabilities, or penalties for noncompliance pursuant to NCGS l43-2l5.3, l43-2l5.6A, 143-215.6B, 143-215.6C or Section 309 of the Federal Act, 33 USC 1319. Furthermore, the permittee is responsible for consequential damages, such as fish kills, even though the responsibility for effective compliance may be temporarily suspended.

5. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject to under NCGS l43-2l5.75 et seq. or Section 311 of the Federal Act, 33 USC 1321.

6. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.

7. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

8. Duty to Provide Information

The permittee shall furnish to the Division, within a reasonable time, any information which the Division may request to determine whether cause exists for modifying, revoking and reissuing, or terminating the coverage issued pursuant to this permit or to determine compliance with this permit. The permittee shall also furnish to the Division upon request, copies of records required by this permit.

9. Penalties for Tampering

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $l0,000 per violation, or by imprisonment for not more than two years per violation, or by both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

10. Penalties for Falsification of Reports

The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $l0,000 per violation, or by imprisonment for not more than two years per violation, or by both.

11. Need to Halt or Reduce not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the condition of this permit.

12. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are owned and/or operated by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures as necessary. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

PART 6: INSPECTION, ENTRY, AND AVAILABILITY OF REPORTS

1. Inspection and Entry

The permittee shall allow the Division, or an authorized representative (including an authorized contractor acting as a representative of the Division), or in the case of a facility which discharges through a municipal separate storm sewer system, an authorized representative of a municipal operator or the separate storm sewer system receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to;

(a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records shall be kept under the conditions of this permit;

(b) Have access to and copy, at reasonable times, any records of the permittee that shall be kept under the conditions of this permit;

(c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations of the permittee regulated or required under this permit; and

(d) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location under the control of the permittee.

2. Availability of Reports

Except for data determined to be confidential under NCGS 143-215.3(a)(2) or Section 308 of the Federal Act, 33 USC 1318, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Division of Energy, Mineral, and Land Resources. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in NCGS 143-215.6B or in Section 309 of the Federal Act.

PART 7: DEFINITIONS

1. Act: See Clean Water Act.

2. Annual Self-Assessment (ASA): The standard document submitted by the permittee on an annual basis that summarizes the SWMP implementation and activities conducted during the previous fiscal year.

3. Best Management Practice (BMP): Measures or practices used to reduce the amount of pollution entering surface waters. BMPs can be structural or non-structural and may take the form of a process, activity, physical structure or planning (see non-structural BMP). See also SCM.

4. Clean Water Act (CWA or Act): The Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 USC 1251, et. seq.

5. Common Plan of Development: A construction or land disturbing activity is part of a larger common plan of development if it is completed in one or more of the following ways: in separate stages, in separate phases, or in combination with other construction activities. It is identified by the documentation (including but not limited to a sign, public notice or hearing, sales pitch, advertisement, loan application, drawing, plats, blueprints, marketing plans, contracts, permit application, zoning request, or computer design) or physical demarcation (including but not limited to boundary signs, lot stakes, or surveyor markings) indicating that construction activities may occur on a specific plot. It can include one operator or many operators.

6. Construction Activity: The disturbance of soils associated with clearing, grading, excavating, filling of land, or other similar activities which may result in soil erosion.

7. Department (DEQ): The North Carolina Department of Environmental Quality.

8. Division (DEMLR): The Division of Energy, Mineral, and Land Resources in the Department of Environmental Quality.

9. Illicit Discharge: Any discharge to a MS4 that is not composed entirely of stormwater except discharges pursuant to an NPDES permit (other than the NPDES MS4 permit), allowable non-stormwater discharges, and discharges resulting from fire-fighting activities.

10. Industrial Activity: For the purposes of this permit, industrial activities shall mean all industrial activities as defined in 40 CFR 122.26.

11. Major Municipal Separate Storm Sewer Outfall (or "Major Outfall"): Major municipal separate storm sewer outfall (or "major outfall") means a municipal separate storm sewer outfall that discharges from a single pipe with an inside diameter of 36 inches or more or its equivalent (discharge from a single conveyance other than circular pipe that is associated with a drainage area of more than 50 acres); or for municipal separate storm sewers that receive storm water from lands zoned for industrial activity (based on comprehensive zoning plans or the equivalent), an outfall that discharges from a single pipe with an inside diameter of 12 inches or more or from its equivalent (discharge from other than a circular pipe associated with a drainage area of 2 acres or more).

12. Maximum Extent Practicable (MEP): MEP is defined in the *Federal Register* (U.S. EPA, 1999, p. 68754). This document says that "Compliance with the conditions of the general permit and the series of steps associated with identification and implementation of the minimum control measures will satisfy the MEP standard." Minimum control measures are defined in the *Federal Register* as (1) public education and outreach, (2) public participation/involvement, (3) illicit discharge detection and elimination, (4) construction site runoff control, (5)

post-construction runoff control, and (6) pollution prevention/good housekeeping. MEP are the controls necessary for the reduction of pollutants discharged from a MS4, which consist of a combination of BMPs, control techniques, system design and such other provisions as described in the SWMP. Implementation of BMPs consistent with the provisions of the stormwater management program required pursuant to this permit constitutes compliance with the standard of reducing pollutants to the MEP. Stormwater management programs must be assessed and adjusted, as part of an iterative process, to maximize their efficiency and make reasonable progress toward as ultimate goal of reducing the discharge of pollutants to the MEP.

13. Municipal Separate Storm Sewer System (MS4): Pursuant to 40 CFR 122.26(b)(8) means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains) owned or operated by the United States, a State, city, town, county, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of the Clean Water Act (CWA) that discharges to waters of the United States or waters of the State that is designed or used for collecting or conveying stormwater; that is not a combined sewer; and which is not part of a Publicly Owned Treatment Works (POTW) as defined in 40 CFR 122.2.

14. Non-structural BMP: Non-structural BMPs are preventive actions that involve management and source controls such as: (1) Policies and ordinances that provide requirements and standards to direct growth to identified areas, protect sensitive areas such as wetlands and riparian areas, maintain and/or increase open space, provide buffers along sensitive water bodies, minimize impervious surfaces, and/or minimize disturbance of soils and vegetation; (2) policies or ordinances that encourage infill development in higher density urban areas, and areas with existing storm sewer infrastructure; (3) education programs for developers and the public about minimizing water quality impacts; (4) other measures such as minimizing the percentage of impervious area after development, use of measures to minimize directly connected impervious areas, and source control measures often thought of as good housekeeping, preventive maintenance and spill prevention.

15. Outfall: Outfall means a point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other waters of the United States and are used to convey waters of the United States.

16. Permittee: The owner or operator issued this permit.

17. Point Source Discharge of Stormwater: Any discernible, confined and discrete conveyance including, but not specifically limited to, any pipe, ditch, channel, tunnel, conduit, well, or discrete fissure from which stormwater is or may be discharged to waters of the state.

18. Redevelopment: "Redevelopment" has the same meaning as in G.S. 143-214.7.

19. Storm Sewer System: Is a conveyance or system of conveyances which are designed or used to collect or convey stormwater runoff that is not part of a combined sewer system or treatment works. This can include, but is not limited to, streets, catch basins, pipes, curbs, gutters, ditches, man-made channels or storm drains that convey stormwater runoff.

20. Stormwater Associated with Industrial Activity: The discharge from any point source which is used for collecting and conveying stormwater and which is directly related to manufacturing, processing or raw material storage areas at an industrial site. Facilities considered to be engaged in "industrial activities" include those activities defined in 40 CFR 122.26(b)(14). The term does not include discharges from facilities or activities excluded from the NPDES program.

21. Stormwater Control Measures (SCM): "Stormwater Control Measure" or "SCM," also known as a structural "Best Management Practice" or "BMP," means a permanent device that is designed, constructed, and maintained to remove pollutants from stormwater runoff by promoting settling or filtration; or to mimic the natural hydrologic cycle by promoting infiltration, evapo-transpiration, post-filtration discharge, reuse of stormwater, or a combination thereof.

22. Stormwater Management Program: The term Stormwater Management Program refers to the comprehensive stormwater management program that is required to be developed and implemented by MS4 permittees.

23. Stormwater Management Plan (SWMP): The Stormwater Management Plan is the written plan that is used to describe and define the various control measures and activities the permittee will undertake to implement the stormwater management program to meet the MEP standard.

24. Stormwater Runoff: The flow of water which results from precipitation and which occurs immediately following rainfall or as a result of snowmelt.

25. Total Maximum Daily Load (TMDL): A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. A TMDL is a detailed water quality assessment that provides the scientific foundation for an implementation plan. The implementation plan outlines the steps necessary to reduce pollutant loads in a certain body of water to restore and maintain water quality standards in all seasons. The Clean Water Act, Section 303, establishes the water quality standards and TMDL programs.

26. Waste Load Allocation (WLA): A WLA is a TMDL pollutant reduction target allocating a specific load reduction to specific point source discharge(s) of the pollutant. Some stormwater point source discharges are assigned a WLA.

APPENDIX B

Spill Response Decision Tree

(30 PAGES)

Marine Corps Base Camp Lejeune
Spill Response Decision Tree
For
Hazardous Material/Hazardous Waste/POLs, Air Releases, Wastewater and Drinking Water Response Actions






v.2021

SPILL RESPONSE PROCEDURES FOR HW/HM & POL RELEASES

CALL RECEIVED FROM 911 REPORTING RELEASE
[If call comes from unit instead of 911, ensure unit reports to 911]

WHAT TYPE OF RELEASE OCCURRED?

HW In Any Amount

Contact **NCDEM** Immediately
910-796-7215 Duty hrs.: 8-5
800-858-0368 Off Duty hrs.

Contact **NRC** Immediately [Within 30 minutes]
800-424-8802

Day: Contact Chain of Command (Dir, EMD/AC/S/COS)

Night: MCBCL Command Duty Officer (CDO) **451-2414**

NCDEQ Hazardous Waste Section
Wes Hare **910-442-0922**
Heather Goldman **919-270-2186**

HQMC Spill Tracker input
https://em.usmc.mil/sites/hq/spcc
within 3 working days

HM

Did release reach surface waters?

NO → Does release amount meet RQ values? *Ref: 40 CFR 302.4

- **NO** → No Report Required. Notify EAS, ECB for In-House Documentation **451-5837**
- **YES** → Contact **NCDEM** immediately **910-796-7215** Duty hrs.: 8-5 **800-858-0368** Off Duty hrs.

YES → Contact **NCDEM** immediately **910-796-7215** Duty hrs.: 8-5 **800-858-0368** Off Duty hrs.

Contact **NRC** Immediately [Within 30 minutes] **800-424-8802**

Day: Contact Chain of Command (Dir, EMD/AC/S/COS)

Night: MCBCL Command Duty officer (CDO) **451-2414**

IN ADDITION

If release is greater than 1,000 gl. in a single discharge or 42 gl. of two or more discharges, in a 12 month period, a written report must be submitted to USEPA Region IV Administration, Atlanta, GA.

NCDEQ
Bruce Reed **910-796-7400** (POL Spills)
Wes Hare **910-442-0922** (HW/HW Spills)
Heather Goldman **919-270-2186** (HM/HW Spills)

POLs

IN ADDITION

State Notification of discharge Report and map. Must be sent within 24 hours. Fax to Bruce Reed @ **910-350-2004**

Initial cleanup performed by ECB. Site turnover to EQB for sampling, further cleanup activities and final reporting requirements.

Did release reach surface waters?

YES → Contact **NCDEM** immediately **910-796-7215** Duty hrs.: 8-5 **800-858-0368** Off Duty hrs.

NO → Is the release greater than 25 gallons (NC State RQ for POL)?

- **YES** → Contact **NCDEM** immediately **910-796-7215** Duty hrs.: 8-5 **800-858-0368** Off Duty hrs.
- **NO** → No Report Required. Notify EAS, ECB for In-House Documentation **451-5837**

MCICOM Watch Officer EOC **703-693-7177 (Call during COVID-19)**
MCICOM Watch Officer desk **571-256-8194**
Calls will be redirected after hours to **910-391-4419**
Email: MCICOM.Watch@usmc.mil

Contact EAS, ECB for In-House Documentation **451-5837**

COURTESY ONLY
MSO WILMINGTON **800-325-4956**
{DEM SHOULD CONTACT}

If DLA Energy owned product, notify within 24 hours via email to desc.spillreport@dla.mil

* **RQ List Ref. Link:**
https://www.ecfr.gov/cgi-bin/text-idx?SID=b31d82c4147a66736f3a838573456185&mc=true&node=pt40.30.302&rgn=div5

v.2021 JAN

MCIEAST-MCB CAMP LEJEUNE SPILL REPORT

*** SHADED AREAS RCRS USE ONLY ***

TITLE/LOCATION

DATE | TIME

RESPONSE NAME/UNIT:

SPILL CATEGORY (SELECT ONE) ☐ HAZMAT ☐ HAZWASTE ☐ POL ☐ WASTEWATER ☐ OTHER

PRODUCT SPILLED

QUANITY SPILLED

LATITUDE | LONGITUDE

HOW WAS SPILL DISCOVERED

SOURCE OF THE SPILL

CAUSE OF THE SPILL

MISSION IMPACT

WERE SAMPLES TAKEN (CHECK ONE) YES ☐ NO ☐

ANALYSES REQUESTED / PERFORMED ON SAMPLES

DID THE SPILL (CHECK ONE)

ENTER A WATERWAY?	REACH WITHIN 100' OF SURFACE WATER?	REACH WITHIN 1500' OF A WATER SUPPLY WELL?	GO OFF BASE?
☐ YES ☐ NO	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐

HOW WAS THE SPILL CONTAINED?

WHAT DANGERS DID THE SPILL PRESENT?

WHAT WERE THE ENVIRONMENTAL IMPACTS?

WHAT RECOVERY EFFORTS WERE USED?

IF OIL SPILLED, WHAT PERCENT WAS RECOVERED?

HOW WERE RESIDUALS DISPOSED OF?

WEATHER CONDITIONS?

REPORTABLE SPILL? (CHECK ONE) ☐ YES ☐ NO WAS A REGULATORY AGENCY CONTACTED: ☐ YES ☐ NO

AGENCY NAME (IF) ☐ NCDEQ NCDEQ REPORT# ☐ NCDEM NCDEM REPORT#

REGULATORY DRIVER

NRC NOTIFIED ☐ YES ☐ NO NRC INCIDENT NUMBER:

WHAT MEASURES WERE PUT IN PLACE TO PREVENT RECURRENCE?

ADDITIONAL INFORMATION OR COMMENTS

SPILL POC | E-MAIL | PHONE

AFFF

SPILL RESPONSE PROCEDURES FOR RELEASES OF AQUEOUS FILM FORMING FOAM (AFFF)

CALL RECEIVED FROM 911 REPORTING RELEASE
[If call comes from unit instead of 911, ensure unit reports to 911]
OR
AFFF Deployed during Emergency Response Operations
(Report from Fire Dept./ARFF)

Has any usage, spill or release above 10 gallons of AFFF concentrate or 300 gallons of mixed foam, or any other situation that may receive media attention (Significant Incident) occurred?
(ASD Memo Aqueous Film Forming Form Usage and Spill Reporting January 13, 2020)

Yes

Within 30 Minutes
A Voice report shall be submitted to Headquarters Marine Corps Operations Center (MCOC) **(703) 695-5454** or e-mail **hqmc.mcc2@usmc.mil** and Marine Corps Installation Command (MCICOM) Watch Officer at **(703) 693-7171** or e-mail **mcicom.watch@usmc.mil**

Day: Contact Chain of Command (Dir, EMD/AC/S/COS)

Night: MCBCL Command Duty officer (CDO) **451-2414**

Email the 5 W's to Operations AC/S, G-3/5
Operations Officer Wayne Herbert: wayne.Herbert@usmc.mil
Dir Ops and Plans John Reeve: john.reeve@usmc.mil

Within 6 Hours Installation Commanders or Representative
Operations Events/Serious Incident Report (OPREP-3)/(SIR) shall be generated and submitted using Automated Message Handling System (AMHS) to Headquarters Marine Corps Operations Center (MCOC) Watch Officer at **(703) 695-5454** or e-mail **hqmc.mcc2@usmc.mil** and Marine Corps Installation Command (MCICOM) Watch Officer at **(703) 693-7171** or e-mail **mcicom.watch@usmc.mil** .
The above OSD report must be submitted along with EDR spill report and AMHS message.

Within 24 hours
** OSD Report shall be submitted via E-Mail to:
osd.pentagon.ousd-a-s.mbx.asds-environment@mail.mil
Cc: to Richard.Mach@navy.mil

Within 3 days
**Responsible unit will notify EMD for immediate in house tracking and annual reporting in the EDR.
**EMD will complete EDR Spill Report Form and enter into EDR
(See next page)

No

Notify EMD RCRS for immediate in house tracking and annual reporting in the EDR.
(910) 451-1482
LEJEUNE_HAZMAT@USMC.MIL

F&ES, ARFF, or EFR shall enter incident information into the Marine Corps Fire Incident Reporting System (MCFIRS).

**Reporting Forms on following pages and electronic versions located at
https://em.usmc.mil/sites/le/wf/5090_070_Emergency_Planning_and_Response/SPILL_RESPONSE_DECISION_TREE_UPDATE/2020_UPDATE/FINAL_VERSION_2020/Spill_Response_Decision_Tree_2020_final.pdf

v.2021 JAN

MCIEAST-MCB CAMP LEJEUNE SPILL REPORT

*** SHADED AREAS RCRS USE ONLY ***

TITLE/LOCATION

DATE | TIME

RESPONSE NAME/UNIT:

SPILL CATEGORY (SELECT ONE) ☐ HAZMAT ☐ HAZWASTE ☐ POL ☐ WASTEWATER ☐ OTHER

PRODUCT SPILLED

QUANITY SPILLED

LATITUDE | LONGITUDE

HOW WAS SPILL DISCOVERED

SOURCE OF THE SPILL

CAUSE OF THE SPILL

MISSION IMPACT

WERE SAMPLES TAKEN (CHECK ONE) YES ☐ NO ☐

ANALYSES REQUESTED / PERFORMED ON SAMPLES

DID THE SPILL (CHECK ONE)

ENTER A WATERWAY?	REACH WITHIN 100' OF SURFACE WATER?	REACH WITHIN 1500' OF A WATER SUPPLY WELL?	GO OFF BASE?
☐ YES ☐ NO	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐

HOW WAS THE SPILL CONTAINED?

WHAT DANGERS DID THE SPILL PRESENT?

WHAT WERE THE ENVIRONMENTAL IMPACTS?

WHAT RECOVERY EFFORTS WERE USED?

IF OIL SPILLED, WHAT PERCENT WAS RECOVERED?

HOW WERE RESIDUALS DISPOSED OF?

WEATHER CONDITIONS?

REPORTABLE SPILL? (CHECK ONE) ☐ YES ☐ NO WAS A REGULATORY AGENCY CONTACTED: ☐ YES ☐ NO

AGENCY NAME (IF) ☐ NCDEQ NCDEQ REPORT# ☐ NCDEM NCDEM REPORT#

REGULATORY DRIVER

NRC NOTIFIED ☐ YES ☐ NO NRC INCIDENT NUMBER:

WHAT MEASURES WERE PUT IN PLACE TO PREVENT RECURRENCE?

ADDITIONAL INFORMATION OR COMMENTS

SPILL POC | E-MAIL | PHONE

AQUEOUS FILM FORMING FOAM (AFFF) RELEASE/USE REPORTING PROCEDURES

Per Office of the Secretary of Defense (OSD), and MARADMIN 585/20 guidance, all AFFF uses, releases or spills, regardless of cause or volume, must be tracked and reported.

All AFFF uses, releases, and spills regardless of cause or volume, must be tracked and reported. This reporting requirement applies to both accidental and emergency response (firefighting) releases from fire suppression systems in hangars, F&ES and Aircraft Rescue and Firefighting (ARFF) tactical or garrison apparatuses, and incidents that Marine Corps F&ES and ARFF respond to, regardless of incident location (on or off the installation). Commanders shall ensure the reporting of AFFF uses, releases, and spills to higher headquarters to meet the requirements established in references A-F of MARADMIN 585/20.

For all AFFF uses, releases, or spills: All incidents must be reported as soon as they are discovered to the installation environmental office and the installation F&ES, ARFF, or Expeditionary Fire Rescue (EFR) and bulk fuel units. The environmental office shall enter incident information into the Environmental Management Portal Environmental Data Repository (EM-Portal EDR) and the F&ES, ARFF, or EFR shall enter incident information into the Marine Corps Fire Incident Reporting System (MCFIRS). Unless it is a Significant Incident as defined below, reporting shall be completed within three working days after the release.

For all AFFF usage, release or spill that is above 10 gallons AFFF concentrate, or more than 300 gallons of mixed foam, or any other situation that may receive media attention (Significant Incident): A voice report to the MCOC and MCICOM Watch Officer shall be completed within 30 minutes of becoming aware of such an event: Headquarters Marine Corps Operations Center (MCOC) at Comm: 703-695-5454, DSN 312-223-4397, or email: hqmc.mcc2@usmc.mil; Marine Corps Installation Command (MCICOM) Watch Office at Comm: 703-693-7171, DSN 312-223-7171, email: mcicom.watch@usmc.mil. An Operations Events/Serious Incident Report (OPREP-3) (SIR) shall be prepared utilizing Automated Message Handling System (AMHS) within six hours of any event or incident, or within six hours of becoming aware, of any Significant Incident. The voice and AMHS report will include as much information as is available, but should at a minimum contain the date, time, location, unit/installation/personnel involved, cause of spill, amount (gallons) spilled and a general description of the event or incident. In addition, installation shall provide an AFFF Release and Response Reporting Spreadsheet (OSD Format) within six hours of any Significant Incident, or within six hours of becoming aware, of any Significant Incident.

The January 2020 Assistant Secretary of Defense (Sustainment) Memo, “Aqueous Film Forming Foam Usage and Spill Reporting” clarified procedures on AFFF use and spill reporting. The ASD (Sustainment) memo directs DoD Components to report AFFF use or spills (not associated with use) to ODASD (ENV) annually by November 15, beginning in 2020. The format for this report is in the attached Excel spreadsheet (see next page). The memo also requires reporting within 24 hours using this template for any AFFF usage, release, or spill (High Priority Incidents) that is:

1. Greater than 10 gallons of AFFF concentrate
2. Greater than 300 gallons of mixed foam
3. Any other situation that may receive media attention.

Prior to EMD Staff submitting report to OSD, RCRS Head will have approval from EMD Director and incident will be reported up chain of command following preceding flowchart.

MARADMIN 585/20 dated 2 OCT 2020 Aqueous Film Forming (AFFF) Usage and Spill Reporting”, requires all usage, spills or releases of AFFF regardless of cause or volume must be reported in two places: the Environmental Data Repository (EDR) and the Marine Corps Fire Incident Reporting System (MCFIRS) within three days of occurrence. Reporting in the EDR should be done in accordance with the EDR reporting form (see preceding page)

Electronic copies of both forms can be found out at:
https://em.usmc.mil/sites/le/wf/5090_070_Emergency_Planning_and_Response/SPILL_RESPONSE_DECISION_TREE_UPDATE/2020_UPDATE/FINAL_VERSION_2020/Spill_Response_Decision_Tree_2020_final.pdf

INTERNAL DELIBERATIVE - DO NOT RELEASE

OSD (USD A&S) AFFF Release and Response Reporting Spreadsheet

Installation	Date	Time	Amount of AFFF Concentrate (in gallons)	Amount of Mixed Foam (AFFF concentrate and water in gllons)	Type of AFFF	Cause of Release (Fire response, fuel spill, accidental release, etc.)	Summary of AFFF usage or spill	Release Notification Made to Environmental Department for on-base (person's name and contact)	Release Notifications Made to Supported entity for off-base mutual response (name and contact)
Base Pick a Post	21-Aug-19	12:30	25	1666	6% 3M	e.g Hanger 11 experienced an inadvertent discharge of AFFF in zone 1. S/F secured fire main to prevent further discharge. Fire main was restored at approximately 1345 EDT. Cause of mishap is unknown. Estimated discharge is 25 gallons of finished foam, six percent AFFF and 94 percent fire main mix. Environmental safety report has been completed. Final report this incident.	e.g Environmental Impact was limited to 5 gallons of finished foam that entered the storm drain.	e.g. Environmental team contacted following accidental hangar release of AFFF	e.g. Local Fire Department Chief informed of AFFF useage as part of mutual aid response to gasoline station fire

Air Quality

SPILL RESPONSE PROCEDURES
FOR AIR RELEASES OF HAZARDOUS CHEMICAL SUBSTANCES

CALL RECEIVED FROM 911 REPORTING RELEASE
[If call comes from unit instead of 911, ensure unit reports to 911]

Air Hazardous Chemical Releases

Does Release Amount Meet RQ Values?
***Ref: 40 CFR 302.4 (see bottom of page)**

NO

If the release is less than the RQ value, but results in a fatality, significant injury, or significant property damage then ***written report must be sent to the CSB within 8 hours regardless of quantity.
CSB Contact Information:
report@csb.gov
1-202-261-7600

YES

Contact NRC Immediately.
[Within 30 min]
800-424-8802

Is there Potential for Off-site Impact?
Ref: 40 CFR 355.40 (see next page)

YES

Contact NCDEM Immediately.
800-858-0368

Contact Chemical Safety and Hazard Investigation Board (CSB)
WITHIN 30 MINUTES
of contacting the NRC and provide incident number from NRC.

****Ref 40 CFR 1604.4 (see bottom of page)**

Contact Air Quality Section, EQB to make any additional reporting requirements
451-9455/9386/5836

DAY:
Contact Chain of Command
Night:
Command Duty Officer 451-2414

MCICOM Watch Officer desk 571-256-8194
Call will be redirected after hours to 910-391-4419
MCICOM.Watch@usmc.mil

Notify EAS,ECB for In-House Documentation
451-5837

*https://www.ecfr.gov/cgi-bin/text-idx?SID=b31d82c4147a66736f3a838573456185&mc=true&node=pt40.30.302&rgn=div5
**https://www.govinfo.gov/content/pkg/FR-2020-02-21/html/2020-02418.htm

***Reporting Requirements for 1604.4 see next pages

40 CFR 1604.4 Reporting Requirements for Accidental Releases

The enabling legislation of the Chemical Safety and Hazard Investigation Board (CSB) provides that the CSB shall establish by Regulation requirements binding on persons for reporting accidental Releases into the ambient air subject to the Board's investigative Jurisdiction. 42 U.S.C. 7412(r) (6) (C) (iii). This part establishes the Rule required by the enabling legislation. The purpose of this part is to require prompt notification of any accidental release within the CSB's investigatory jurisdiction.

Sec.1604.4 Information required in an accidental release report.

The report required under Sec. 1604.3(c) must include the Following information regarding an accidental release as applicable:

a) The name of, and contact information for, the owner/operator;

b) The name of, and contact information for, the person making the report;

c) The location information and facility identifier;

d) The approximate time of the accidental release;

e) A brief description of the accidental release;

f) An indication whether one or more of the following has Occurred:

- Fire;
- Explosion;
- Death;
- Property damage;

g) The name of the material(s) involved in the accidental release, the Chemical Abstract Service (CAS) number(s), or other appropriate identifiers;

h) If known, the amount of the release;

i) If known, the number of fatalities;

j) If known, the number of serious injuries;

k) Estimated property damage at or outside the stationary source; and

l) Whether the accidental release has resulted in an evacuation order impacting members of the general public and others, and, if known:

m) The number of persons evacuated;

n) Approximate radius of the evacuation zone; and

o) The type of person subject to the evacuation order (i.e., employees, members of the general public, or both).

Incident Above 40 CFR 302.6 RQ list?

The incident is reported to the National Response Center (NRC) pursuant to 40 CFR 302.6, the CSB reporting requirement may be satisfied by submitting the NRC identification number to the CSB within 30 minutes of submitting a report to the NRC. **(Only requirement is to provide the NRC incident number, does not mention written report)**

Incident Below the 40 CFR 302.6:

If the incident results in a fatality, significant injury, or significant property damage then a written report providing answers for (a) thru (l) above must be sent to the CSB within 8 hours regardless of quantity.

Notifications may be made by email to: report@csb.gov, or by telephone at (202)-261-7600.

MCIEAST-MCB CAMP LEJEUNE SPILL REPORT

*** SHADED AREAS RCRS USE ONLY ***

TITLE/LOCATION

DATE | TIME

RESPONSE NAME/UNIT:

SPILL CATEGORY (SELECT ONE) ☐ HAZMAT ☐ HAZWASTE ☐ POL ☐ WASTEWATER ☐ OTHER

PRODUCT SPILLED

QUANITY SPILLED

LATITUDE | LONGITUDE

HOW WAS SPILL DISCOVERED

SOURCE OF THE SPILL

CAUSE OF THE SPILL

MISSION IMPACT

WERE SAMPLES TAKEN (CHECK ONE) YES ☐ NO ☐

ANALYSES REQUESTED / PERFORMED ON SAMPLES

DID THE SPILL (CHECK ONE)

ENTER A WATERWAY?	REACH WITHIN 100' OF SURFACE WATER?	REACH WITHIN 1500' OF A WATER SUPPLY WELL?	GO OFF BASE?
☐ YES ☐ NO	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐

HOW WAS THE SPILL CONTAINED?

WHAT DANGERS DID THE SPILL PRESENT?

WHAT WERE THE ENVIRONMENTAL IMPACTS?

WHAT RECOVERY EFFORTS WERE USED?

IF OIL SPILLED, WHAT PERCENT WAS RECOVERED?

HOW WERE RESIDUALS DISPOSED OF?

WEATHER CONDITIONS?

REPORTABLE SPILL? (CHECK ONE) ☐ YES ☐ NO WAS A REGULATORY AGENCY CONTACTED: ☐ YES ☐ NO

AGENCY NAME (IF) ☐ NCDEQ NCDEQ REPORT# ☐ NCDEM NCDEM REPORT#

REGULATORY DRIVER

NRC NOTIFIED ☐ YES ☐ NO NRC INCIDENT NUMBER:

WHAT MEASURES WERE PUT IN PLACE TO PREVENT RECURRENCE?

ADDITIONAL INFORMATION OR COMMENTS

SPILL POC | E-MAIL | PHONE

Wastewater Spill Response

WASTEWATER (WW) SPILL NOTIFICATION REQUIREMENTS
- **DUTY** HOURS -

EQB WATER QUALITY (WQ) CONTACTS

Primary: **Travis Voorhees**

Phone: 451-9518

Secondary: **Dan Straub**

Phone: 451-9122

Backup: **Charity Delaney**

Phone: 451-9385

Backup: **EMD Admin**

Phone: 451-5003

Wastewater Spill Occurs

Utilities investigates and notifies EQB WQ 451-9518/9122 ASAP.

Is SPILL amount over **1000** gallons to the ground OR has any amount reached surface waters (reportable)?

NO

Utilities completes "in-house" written report and sends via email to EQB WQ within 5 business days.

EQB WQ notifies EMD Director and archives spill report in ODI.

YES

Have **1000** gallons or more discharged into surface waters?

NO

Complete all **BLUE** and **ORANGE** requirements.

Utilities contacts 911 dispatch and notifies EQB WQ ASAP. Utilities provides written report to EQB WQ via email within 1 business day. EQB WQ notifies EMD Director and AC/S G-F 451-3034 same day or ASAP.

EQB WQ calls NCDEQ Wilmington Regional Office (WiRO) 910-796-7215 ASAP but no later than 24 hours after discovery.[1, 2]

EQB WQ will notify MCICOM-ENV & MCIEAST via email (attn: Craig Sakai, Capt Truver, Scott Williams) ASAP but within 24 hours.

NCDEQ WiRO will notify if sampling needs to be done.

EQB WQ courtesy emails COMMSTRAT mcieastcommstrat@usmc.mil.[4]

EQB WQ will email report as attachment to NCDEQ WiRO within 5 business days.[3]

YES

Is discharge to surface waters greater than **15,000** gallons?

NO

Complete all **BLUE** and **YELLOW** requirements.

EQB WQ provides required info to EACO & COMMSTRAT ASAP to issue press release within 24 hours.[4]

EQB WQ notifies Onslow County Environmental Health 910-938-5851 same day or ASAP.

EQB WQ notifies NCDEQ Division of Marine Fisheries Shellfish Sanitation via phone and email. 252-726-2021 or 800-682-2632 DMF.SpillNotification@ncdenr.gov same day or ASAP.

EQB WQ courtesy calls Naval Medical Center Public Health Unit Duty Prevention Officer 545-6883 same day or ASAP.

YES

Complete all **BLUE**, **YELLOW**, and **PURPLE** requirements. NCDEQ will inform us if more notifications or sampling is required.

EQB WQ issues Public Notification in newspaper within 10 days. Email copy to NCDEQ within 30 days.[5]

[1] Every effort will be made to notify the Chain of Command prior to NCDEQ notification. Per regulation, NCDEQ should be notified by telephone ASAP but no more than 24 hours after first discovery. Initial notification is only to relay the discovery of the spill not full details. Use 800-858-0368 if DEQ WiRO is not available.

[2] DO NOT delay notification. If a press release is required, it must be done within the same 24 hours from discovery.

[3] Utilities prepares applicable NCDEQ report form and routes through EQB WQ for review and electronic submittal to NCDEQ with a follow up call, when necessary, by EMD/EQB WQ. Once completed, all REPORTABLE Spill reports must be entered into the Marine Corps Electronic Data Repository (EDR) HQMC Spill Tracker at URL: https://em.usmc.mil/EDR/pages/Spill.aspx by EQB WQ Section.

[4] COMMSTRAT Phone numbers: Landlines - 910-451-7413 or 910-451-2751, Cell phones - 910-526-2306 or 910-526-2306.

[5] Publish public notice in Onslow County newspaper (JDN) and in each county downstream significantly affected by discharge (decided by NCDEQ).

WASTEWATER (WW) SPILL NOTIFICATION REQUIREMENTS
- **AFTER DUTY** HOURS -

EQB CONTACTS

Charity Delaney

Work Mobile: 320-7656

*Refer to WW Spill SOP for additional contacts.

Wastewater Spill Occurs

Designated WWTP representative investigates and makes determination if the spill is reportable based on the information below.

Is SPILL amount over **1000** gallons to the ground OR has any amount reached surface waters (reportable)?

NO

Utilities notifies EQB within 1 business day and sends EQB "in-house" written report via email within 5 business days.

EQB WQ notifies EMD Director and archives spill report in ODI.

YES

Have **1000** gallons or more discharged into surface waters?

NO

Complete all **BLUE** and **ORANGE** requirements.

WWCS Supervisor or designee contacts 911 dispatch and notifies EQB Branch Head or designee ASAP. WWCS Supervisor notifies Utilities/PW chain of command.

EQB WQ calls NCDEQ WiRO 910-515-9065 ASAP or the next business day to leave voicemail message (backup measure). WiRO will notify if sampling needs to be done.

WWCS Supervisor or EQB WQ calls NCDEQ Emergency No. 800-858-0368 and CDO 451-2414 (Primary), 451-3031/3032 (Alternate) within 24 hours of discovery.[1, 2]

EQB WQ notifies EMD Director and AC/S G-F 451-3034 same day or ASAP. Utilities provides written report to EQB WQ via email within 1 business day.

EQB WQ will notify MCICOM-ENV & MCIEAST via email (attn: Craig Sakai, Capt Truver, Scott Williams) ASAP but within 24 hours.

EQB WQ courtesy emails COMMSTRAT mcieastcommstrat@usmc.mil.[4]

EQB WQ will email report as attachment to NCDEQ WiRO within 5 business days.[3]

YES

Is discharge to surface waters greater than **15,000** gallons?

NO

Complete all **BLUE** and **YELLOW** requirements.

EQB WQ provides required info to EACO & COMMSTRAT ASAP to issue press release within 24 hours.[4]

EQB WQ notifies Onslow County Health Dept. 910-548-3765 or email michelle_williams@onslowcountync.gov same day or ASAP.

EQB WQ notifies NCDEQ Division of Marine Fisheries Shellfish Sanitation via phone and email. 252-726-6827 ext. 8148 or 800-682-2632 DMF.SpillNotification@ncdenr.gov same day or ASAP.

EQB WQ courtesy calls Naval Medical Center Public Health Unit Duty Prevention Officer 545-6883 same day or ASAP.

YES

Complete all **BLUE**, **YELLOW**, and **PURPLE** requirements. NCDEQ will inform us if more notifications or sampling is required.

EQB WQ issues Public Notification in newspaper within 10 days. Email copy to NCDEQ within 30 days.[5]

[1] Every effort will be made to notify the Chain of Command prior to NCDEQ notification. Per regulation, NCDEQ should be notified by telephone ASAP but no more than 24 hours after first discovery. Initial notification is only to relay the discovery of the spill not full details. Use 800-858-0368 if DEQ WiRO is not available.

[2] DO NOT delay notification. If a press release is required, it must be done within the same 24 hours from discovery.

[3] Utilities prepares applicable NCDEQ report form and routes through EQB WQ for review and electronic submittal to NCDEQ with a follow up call, when necessary, by EMD/EQB WQ. Once completed, all REPORTABLE Spill reports must be entered into the Marine Corps Electronic Data Repository (EDR) HQMC Spill Tracker at URL: https://em.usmc.mil/EDR/pages/Spill.aspx by EQB WQ Section.

[4] COMMSTRAT Phone numbers: Landlines - 910-451-7413 or 910-451-2751, Cell phones - 910-526-2306 or 910-526-2306.

[5] Publish public notice in Onslow County newspaper (JDN) and in each county downstream significantly affected by discharge (decided by NCDEQ).

MCIEAST-MCB CAMP LEJEUNE SPILL REPORT

*** SHADED AREAS RCRS USE ONLY ***

TITLE/LOCATION

DATE | TIME

RESPONSE NAME/UNIT:

SPILL CATEGORY (SELECT ONE) ☐ HAZMAT ☐ HAZWASTE ☐ POL ☐ WASTEWATER ☐ OTHER

PRODUCT SPILLED

QUANITY SPILLED

LATITUDE | LONGITUDE

HOW WAS SPILL DISCOVERED

SOURCE OF THE SPILL

CAUSE OF THE SPILL

MISSION IMPACT

WERE SAMPLES TAKEN (CHECK ONE) YES ☐ NO ☐

ANALYSES REQUESTED / PERFORMED ON SAMPLES

DID THE SPILL (CHECK ONE)

ENTER A WATERWAY?	REACH WITHIN 100' OF SURFACE WATER?	REACH WITHIN 1500' OF A WATER SUPPLY WELL?	GO OFF BASE?
☐ YES ☐ NO	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐

HOW WAS THE SPILL CONTAINED?

WHAT DANGERS DID THE SPILL PRESENT?

WHAT WERE THE ENVIRONMENTAL IMPACTS?

WHAT RECOVERY EFFORTS WERE USED?

IF OIL SPILLED, WHAT PERCENT WAS RECOVERED?

HOW WERE RESIDUALS DISPOSED OF?

WEATHER CONDITIONS?

REPORTABLE SPILL? (CHECK ONE) ☐ YES ☐ NO WAS A REGULATORY AGENCY CONTACTED: ☐ YES ☐ NO

AGENCY NAME (IF) ☐ NCDEQ NCDEQ REPORT# ☐ NCDEM NCDEM REPORT#

REGULATORY DRIVER

NRC NOTIFIED ☐ YES ☐ NO NRC INCIDENT NUMBER:

WHAT MEASURES WERE PUT IN PLACE TO PREVENT RECURRENCE?

ADDITIONAL INFORMATION OR COMMENTS

SPILL POC | E-MAIL | PHONE

MCB CAMLEJ Environmental Standard Operating Procedures (ESOP)

Title: 5090.20.1 Wastewater Spill Response ESOP

PURPOSE. This SOP establishes measures and guidelines for wastewater (WW) spills occurring at the Installation to coordinate actions taken by Public Works Division (PWD), Base Utilities and the Environmental Management Division (EMD) to comply with references (a) and (b). Additionally, this SOP provides conformity with existing permits in references (c), (d) and (e) and to meet the other requirements of references (f), (g), (h) and (i). This SOP institutes the defining organizational and procedural information, responsibilities and details of the program for those at MCB CAMLEJ who respond to all WW spills.

APPLICABILITY. This SOP applies to PWD and EMD who are most likely to be responding to and/or reporting WW spills.

RESPONSIBILITY. All personnel engaging in WW spill response in a reactive mode at MCB CAMLEJ and MCAS New River.

PROCEDURES.

1. Initial Utilities Notification

a. For anyone INITIALLY reporting a WW spill condition, call 451-7190, ext. 225, and the Wastewater Treatment Plant (WWTP) operator receiving the call will log the following:

(1) Time call received

(2) Location of spill

(3) Name and contact information of person reporting the spill

(4) Any other pertinent information

b. Following initial notification, the WWTP operator IMMEDIATELY notifies the Utilities WW Collections System (WWCS) Supervisor. If they cannot be reached, the call-back roster (Table 1) shall be used to notify the backup Operator in Responsible Charge (ORC), or the next available person to investigate the spill.

c. If the spill occurs after normal working hours, the same procedure is followed using the call-back roster to notify the most available person.

2. Spill Investigation and Reporting

a. Overall Actions

(1) The spill investigator, WWCS Supervisor or designee, arrives at the site after receiving the initial notification and a determination is made if the spill is contained. If the spill is not contained, the investigator will immediately obtain personnel and equipment necessary to contain the spill. Spill containment will include actions necessary to prevent WW from entering the surface waters including: rivers, streams, and conveyance ditches etc. Spill containment may include: earthen dams, by-pass pumping, line/pipe valves, securing lift stations, closing stormwater isolation gates, or other actions necessary to contain the WW overflow.

(2) Once the spill is contained, the on-site investigator will initiate actions necessary to make repairs and clean up the spilled WW for disposal. All measures should be taken to decontaminate/ neutralize the area, including the removal of solids and addition of lime or granular chlorine (HTH), as necessary.

b. Classifying WW Spills as Non-Reportable and Reportable

(1) Non-reportable Spill: Any spill up to but not including 1000 gallons or more, confined to the immediate area, where no WW has entered or is suspected of entering any surface water by means/conveyance of, a ditch, stream or other path. A non-reportable spill is not required to be reported to the North Carolina Department of Environmental Quality (NCDEQ). An "In-house" written report is then completed by PWD Utilities and an electronic copy is sent to EQB within five business days. The spill report is kept internally by the WWCS Supervisor, ELS Supervisor (if sampling is required), and EMD/EQB by means of the Official Document Inventory (ODI).

(2) Reportable Spill:

(a) Any sewage spill, regardless of volume, that reaches any surface water by any means and/or conveyance including ditch, stream, path etc. OR

(b) Any spill of 1,000 gallons or more to the ground surface.

(c) Reportable spills are reported by means of the WW Spill Notification Requirements, Duty Hours or After Duty-Hours/Weekends decision trees, as soon as practical but no later than 24 hours after discovery.

(3) Reportable Spills Occurring **DURING** Working Hours

(a) Upon initial investigation by PWD Utilities, WWCS Supervisor, or designee, the investigator notifies the EQB Water Quality (WQ) Program Manager, or designee, located at Building 12, of the spill event as soon as possible.

(b) EQB WQ will provide the initial verbal notification to the NCDEQ, Wilmington Regional Office (WiRO) as soon as possible, but no later than 24 hours after discovery. Only what information is known should be reported verbally.

(c) PWD Utilities or EQB ELS can provide the initial verbal notification to NCDEQ in the event that other EQB contacts are unable to, or cannot be reached. It is situation dependent and driven by whoever is best able to provide the most accurate information in the shortest amount of time.

(d) Refer to the Spill Response Decision Tree for the WW Spill Notification Requirements during Duty Hours.

(e) NOTE: Do NOT delay notification. If a press release is required, it must be done within the same 24 hours of spill discovery. The initial verbal notification to NCDEQ is only to relay the discovery of the spill (time of discovery, location, estimate of volume, etc.) and not full details. If the volume of the spill is uncertain or not known, it can be provided later, after verification is obtained from PWD Utilities WWCS Supervisor. The Communications Strategy and Operations Officer (COMMSTRAT) and Eastern Area Counsel Office (EACO) attorney are also contacted. Figures 1 and 2 indicate primary contact information for spill reporting within MCB CAMLEJ and outside the Installation.

(f) A detailed written report is completed by PWD Utilities within one business day, then reviewed by EQB WQ and approved by both the EQB Head and EMD Director, before submitting within five business days of the spill electronically to the NCDEQ, WiRO.

(4) Reportable Spills Occurring **AFTER** Normal Working Hours or Weekends

(a) Whoever investigates the spill, WWCS Supervisor, or designee, reports the spill with a call to 911, Fire Protection & Emergency Services Division, if deemed necessary. Every effort shall be made to call the PWD, Utilities Branch Chain of Command and EQB WQ designee prior to any verbal notification to the NCDEQ, WiRO. If the EQB head or other EQB contacts in Table 1 are not available, the WWCS Supervisor or designee notifies the WiRO After Hours Emergency Number (Table 2) or the NCDEQ Central Environmental Emergency Number (Table 2) as soon as possible, but no later than 24 hours after discovery. Only what information is known should be reported verbally.

(b) NOTE: Do NOT delay notification. See Section 2(b)(1)(c)(1)(e) above.

(c) Within one business day, a detailed written report is completed by PWD Utilities, reviewed by EQB WQ, and approved by both the EQB Branch Head and EMD Director, before submitting, within five business days of the spill electronically to NCDEQ WiRO. Refer to the decision tree with WW Spill Notification Requirements during After Duty Hours and Weekends.

(5) All REPORTABLE Spill Reports shall be entered into the Marine Corps Environmental Management Portal (EM Portal for HQMC Spill Tracker) EQB within five business days. If there is difficulty accessing this site consult with the Environmental Compliance Branch.

(6) Important contact information for various personnel and agencies within MCB CAMLEJ described in the above decision trees is located in Tables 1 and 2.

c. PWD Utilities and Operations Branches and Other Support

(1) Table 2 indicates contacts for the Public Works Division, including the Operations Branch that is responsible for providing necessary resources such as material and personnel as appropriate (work tickets, spill containment, dirt, dump trucks, excavators, etc.).

Table 1 Wastewater Spill Call-Back Roster

Wastewater Spill Call-Back Roster	**Phone Number**	**Cell Number**
Curtis Sallis – WWCS Supervisor	910-451-7190X224	910-376-5080
Sonny Scozzari – Wastewater Foreman	910-451-7190X232	910-376-5093
Joe Stephens – Water/WW Distribution Sup	910-450-9973	910-376-9051
Greg Wright – WWTP Operations Supervisor	910-451-7190X231	910-376-9095
Brian Johnston – Water/WW General Foreman	910-451-7190X222	252-288-9369
Steven Whited – Utilities Director Water/WW	910-451-7190X223	910-650-7531
Travis Voorhees – EQB WQ Program Manager	910-451-9518	919-358-0995
Daniel Straub – EQB Water Quality	910-451-9122	910-554-7978
Charity Delaney – EQB Head	910-451-9385	910-320-7656
Lauren Acosta – EQB ELS Supervisor	910-451-5977	910-340-2875

Table 2 Primary Contacts within MCB Camp Lejeune and Outside Agencies

Wastewater Spill Telephone Numbers	**Phone Number**	**Cell Number**
NCDEQ Wilmington Regional Office (WiRO)	910-796-7215	
NCDEQ WiRO Wastewater (Dean Hunkele)	910-796-7380	
NCDEQ WiRO After Hours		910-515-9065
NCDEQ Central Environmental Emergency	800-858-0368	919-733-3300
PWD On-Call Officer	910-478-7306	
Command Duty Officer (CDO)(24 hours) Alternate Numbers	451-2414 451-3031/3032	
NCDEQ Shellfish Sanitation (24 hours)	252-726-6827X8148	800-682-2632
Onslow County Health Department	910-938-5851	910-548-3765
AC/S G-F, Tony Sholar	451-3034	
Director, EMD, Bob Lowder	451-5003	910-548-2116
COMMSTRAT – Director, Nat Fahy	451-5655X5	910-526-2303 703-200-4760
EACO – Attorney, Major Ryan Shrout	451-9514	910-378-6460
Naval Medical Center – Public Health Unit Duty Prevention Officer (24 hours)		910-545-6883
Public Works Operations (work tickets, spill containment, dirt, dump trucks, excavators, etc.)	910-451-3001 3002/3003	
Water and Wastewater Distribution (backhoes, high pressure sewer cleaner, grease truck, repair material & personnel, containment, vacuum trucks)	910-450-9973	
Fire Protection and Emergency Services Division Dispatch	911 910-451-3004/3005	
Wastewater Treatment (by-pass pumping equipment and personnel resources, HTH, spill kits)	910-451-7190X225	

(2) Water and WW Distribution may supply resources including: backhoes, high pressure sewer cleaner, grease truck, repair material & personnel, containment, vacuum trucks.

(3) WW Treatment may supply resources including: by-pass pumping equipment & personnel, HTH, and spill kits.

d. EMD Assistance with Investigation/Reporting

(1) Initially notify: EQB Branch Head or designee, per Table 1, if available.

(2) If EQB Branch Head and EQB Water Quality are not available, contact ELS.

3. Recordkeeping

a. The NCDEQ Division of Water Resources report forms used for spill reporting are located as follows:

(1) WWTP Upset, Spill or Bypass Five Day Reporting Form is at https://deq.nc.gov/about/divisions/water-resources/water-quality-permitting/npdes-wastewater/npdes-compliance-and-0.

(2) CS-SSO, Collection System Sanitary Sewer Overflow Reporting Form is at https://deq.nc.gov/about/divisions/water-resources/water-resources-permits/wastewater-branch/collection-systems/sewer-system-overflow-documents.

b. A completed record of ALL spills, reportable and non-reportable, is done utilizing the forms in 3(a)(1) and/or (2) above. The forms are initiated either by the WWCS Supervisor or WWTP Supervisor, whoever is best available, in conjunction with the EQB WQ Program Manager or designee. Reportable spills may require further detailed WW volume estimates from those previously reported with any applicable calculations. EQB WQ, EQB Head, and ultimately the EMD Director will review the completed form(s) before electronic submission to NCDEQ. The forms will be signed by the ORC and EMD Director prior to submission.

c. All spill reporting documentation will be maintained by the WWCS Supervisor and EMD/EQB in ODI. Records of all spills will be maintained for a period of three years minimum (permit requirement if reportable) and will be available for review by the NCDEQ Staff or other authorized inspection entity upon request. Non-reportable spill reports shall be kept for three years unless decided differently by the EMD Director.

Press Release Format

General Statute 143-215.1C requires that the owner or operator of any wastewater collection or treatment works to issue a press release when an untreated wastewater discharge of 1,000 gallons or more reaches surface waters.

In accordance with that regulation, the following news release has been prepared and issued to media in the affected county:

The (Utility, Municipality, District, etc.) had a discharge of untreated wastewater on (date) of an estimated (amount) gallons at (location). The untreated wastewater was discharged into (creek, river, unnamed tributary) in the (Name) River Basin.

The Division of Water Resources was notified of the event on (date) and is reviewing the matter. For more information contact (Utility, Municipality, District, etc.) at (Phone Number).

Example Press Release:

Notification of Discharge of Untreated Wastewater
General Statute 143-215.1C requires that the owner or operator of any wastewater collection or treatment works to issue a press release when an untreated wastewater discharge of 1,000 gallons or more reaches surface waters.

In accordance with that regulation, the following news release has been prepared and issued to media in the affected county (ies):

The Town of Greenwood Valley had a discharge of untreated wastewater on July 1, 2014 of an estimated 15,000 gallons at Pump Station # 1, located near the intersection of First Street and Broadway Boulevard. The untreated wastewater was discharged into Turner's Creek in the Savannah River Basin.

The Division of Water Resources was notified of the event on July 1, 2014 and is reviewing the matter. For more information contact the Town of Greenwood Valley at (754) 833-9276.

Public Notice Format

Minimum content for public notice:

- Caption must be: "Notice of Discharge of Untreated Sewage"
- Name of the facility (treatment facility, collection system component, outfall, etc.)
- Location of discharge
- Estimated volume of untreated wastewater discharged to surface water
- Time and date discharge occurred
- Duration of discharge
- Water body that was discharged into
- Action taken to prevent further discharge
- Contact person and phone number

NOTICE OF DISCHARGED OF UNTREATED SEWAGE

The (Utility, Municipality, District, etc.) had a discharge of untreated wastewater from our (collection system, treatment facility, pump station, etc.) located at street/highway of approximately (amount) gallons. The discharge occurred on (date) for approximately (amount) hours. The untreated wastewater entered into (creek, river, unnamed tributary) in the (Name) River Basin. The (list action taken) to prevent further discharge. This notice was required by North Carolina General Statutes Article 21, Chapter 143.215C. For more information contact (Name, Title) at (Phone Number).

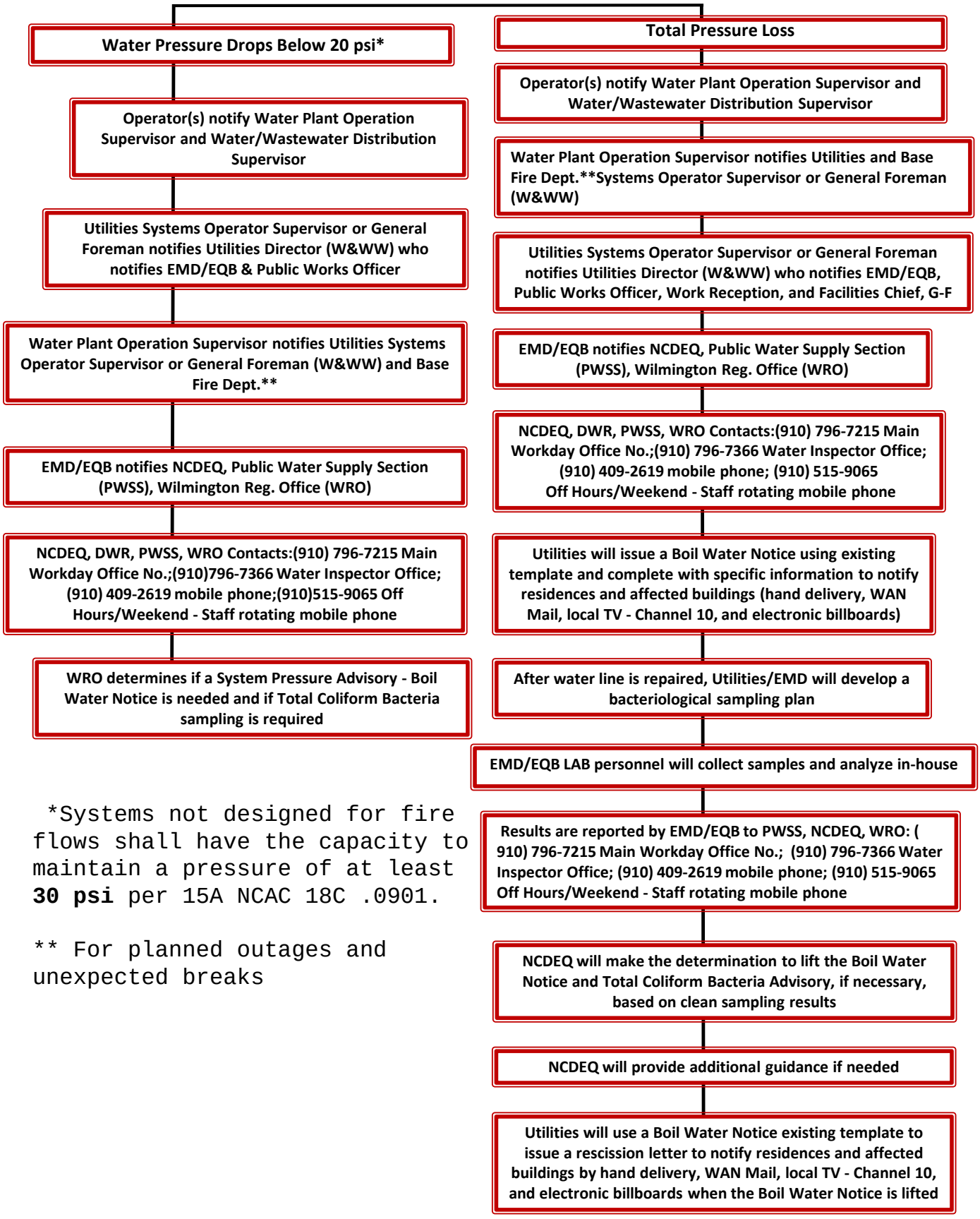
Example Public Notice:

NOTICE OF DISCHARGED OF UNTREATED SEWAGE

The Town of Greenwood Valley had a discharge of untreated wastewater from our wastewater collection system at Pump Station # 1 located at the intersection of First Street and Broadway Boulevard of approximately 15,000 gallons. The discharge occurred on July 1, 2014 for approximately 5 hours. The untreated wastewater entered into Tuner's Creek in the Savannah River Basin. The pump station was repaired and placed back into serve by replacement of a pump to prevent further discharge. This notice was required by North Carolina General Statutes Article 21, Chapter 143.215C. For more information contact John Doe, Public Information Officer at (754) 833-9276.

Drinking Water Line Breaks

Distribution System Water Line Break Notifications Flow Chart Enclosure



*Systems not designed for fire flows shall have the capacity to maintain a pressure of at least **30 psi** per 15A NCAC 18C .0901.

** For planned outages and unexpected breaks

ID NO. XX-XX-XXX

System Pressure Advisory!

The water consumers of <SYSTEM NAME>, in <NAME> County are experiencing periods of low pressure and outages in the distribution system due to <REASON(S)>. Periods of low or no pressure in the distribution system increases the potential for back siphonage and introduction of bacteria into the water system.

Therefore, when water service is restored consumers are advised to **boil all water** used for human consumption (including drinking, making ice, brushing teeth, washing dishes and food preparation) or use bottled water.

Vigorous boiling for one (1) minute should kill any disease-causing organisms that may be present in the water.

Water customers are strongly urged to conserve water whenever possible. This advisory remains in effect until further written notification is issued.

This advisory issued on <date> by:

<NAME>
<WATER SYSTEM NAME>
<CONTACT PHONE NUMBER>

[Insert the following paragraph into the Advisory, if recent historical data indicates nitrates have been detected in the source water at a level ≥ 9 mg/l]

Boiling water concentrates any levels of nitrates that may be present in the water. Infants below the age of six months and pregnant women should use an alternate water supply (e.g., bottled water) whenever possible.

ID NO. XXXXXX

Total Coliform Bacteria Advisory!

Total coliform bacteria was detected in water samples collected from the water system serving the <SYSTEM NAME> in <NAME> County. Coliforms are bacteria that are naturally present in the environment and are generally not harmful themselves. However, coliforms are an indicator that other, potentially harmful, bacteria may be present. Therefore, as a precaution until additional testing can confirm the absence of coliform bacteria, customers are advised to **boil all water** used for human consumption (including drinking, making ice, brushing teeth, washing dishes and food preparation) or use bottled water.

Vigorous boiling for one (1) minute should kill any disease-causing organisms that may be present in the water.

This advisory remains in effect until further written notification is issued.

This advisory issued on <date> by:

<NAME>
<Water System Name>
<Contact Phone Number>

[Insert the following paragraph into the Advisory, if recent historical data indicates nitrates have been detected in the source water at a level ≥ 9 mg/l]

Boiling water concentrates any levels of nitrates that may be present in the water. Infants below the age of six months and pregnant women should use an alternate water supply (e.g., bottled water) whenever possible.

DRINKING WATER WARNING

BOIL YOUR WATER BEFORE USING

E. coli Bacteria is Present in [System Name]'s Water

[Briefly describe the situation, such as: "*E. coli* bacteria were found in the water supply on [give date]" or "We did not perform required testing of the water system and must assume that *E. coli* bacteria are in the water as of [give date]]. These bacteria can make you sick, and are especially a concern for people with weakened immune systems.

Bacterial contamination can occur when increased run-off enters the drinking water source (for example, following heavy rains). It can also happen due to a break in the distribution system (pipes) or a failure in the water treatment process.

What should I do? What does this mean?

- **DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST.** Bring all water to a boil, let it boil for one minute and let it cool before using, or use bottled water. Boiled or bottled water should be used for drinking, making ice, brushing teeth, washing dishes, and food preparation until further notice. Boiling kills bacteria and other organisms in the water.

- ***E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely compromised immune systems.***

- The symptoms above are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice. People at increased risk should seek advice from their healthcare providers about drinking this water.

What is being done?

[Describe corrective action]. We will inform you when tests show no bacteria are present and you no longer need to boil your water. We anticipate resolving the problem within [estimated timeframe].

General guidelines on ways to lessen the risk of infection by bacteria and other disease-causing organisms are available from the EPA Safe Drinking Water Hotline at 1-800-426-4791.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

For more information, please contact:

Responsible Person	System Name	System Address (Street)
Phone Number	System Number	System Address (City,State,Zip)

Violation Awareness Date: _____
Date Notice Distributed: _____ **Method of Distribution** _____

Public Notification Certification

The public water system named above hereby affirms that public notification has been provided to its consumers in accordance with all delivery, content, format, and deadline requirements specified in 15A NCAC 18C .1523.

Owner/Operator: _____ _____ _____
(Signature) (Print Name) (Date)

RTCR - Instructions for Public Notice - Tier 1 Violation - *E. coli* Bacteria

Description of Violation or Situation - Beginning April 1, 2016, an *E. coli* maximum contaminant level (MCL) violation requires **Tier 1** public notification. This violation occurs when any public water system has:

1. A total coliform-positive routine sample result followed by an *E. coli*-positive repeat sample result;
2. An *E. coli*-positive routine sample result followed by a total coliform-positive repeat sample result;
3. An *E. coli*-positive routine sample result and fails to take all required repeat samples; or
4. A total coliform-positive repeat sample result and fails to test for *E. coli*.

Use the notice on the reverse if item 1, 2 or 3 above occurs; if item 4 occurs, contact the Public Water Supply Section's Public Notification Rule Manager for the appropriate public notice.

You must provide public notice to persons served **as soon as practical but no more than 24 hours** after learning of the MCL violation [40 CFR 141.202(b)]. During this time, you must also contact the NC Public Water Supply Section. You should also coordinate with your local health department. It is recommended that you notify health professionals in the area of the violation. People may call their doctors with questions about how the violation may affect their health, and the doctors should have the information they need to respond appropriately. In addition, health professionals, including dentists, use tap water during their procedures and need to know about the potential contamination so they can use bottled water.

You must use one or more of the following methods to deliver the notice to consumers [40 CFR 141.202(c)]:
- Radio
- Television
- Hand or direct delivery
- Posting in conspicuous locations
- Another method approved in writing by the state

You may need to use additional methods (e.g., newspaper, delivery of multiple copies to hospitals, clinics, or apartment buildings), since notice must be provided in a manner reasonably calculated to reach all persons served. If you post or hand deliver, print your notice on your system's letterhead, if you have it.

You must also perform the following:
- Notify new billing customers or units prior to or at the time their service begins.
- Provide multi-lingual notifications if 30% of the residents served are non-English speaking.
- Comply with any additional public notification requirements (including any repeat notices or direction on the duration of the posted notices) that are established as a result of the consultation with the State.

The notice on the reverse is appropriate for hand delivery or for publication in a newspaper. However, you may wish to modify it before using it for a radio or TV broadcast. If you modify the notice on the reverse, you must still include all required public notice elements from 40 CFR 141.205(a) and leave the mandatory language unchanged (see below).

Mandatory Language - Mandatory language on health effects (from Appendix B to 40 CFR 141 Subpart Q) must be included as written and is presented in this notice in ***bold italics.*** You will need to update the information presented in brackets with the appropriate information. You must also include standard language to encourage the distribution of the public notice to all persons served, where applicable [40 CFR 141.205(d)]. This language is also presented in this notice in ***bold italics.***

Alternative Sources of Water - If you are selling or providing bottled water, your notice should say where it can be obtained. Remember that bottled water can also be contaminated. If you are providing bottled water, make sure it meets US Food and Drug Administration (FDA) and/or state bottled water safety standards.

Corrective Action - In your notice, you must describe corrective actions you are taking [40 CFR 141.205(a)(7)] and when you expect to return to compliance or resolve the situation [40 CFR 141.205(a)(8)]. Listed below are some steps commonly taken by water systems with the presence of *E. coli*. Depending on the corrective action you are taking, you can use one or more of the following statements, if appropriate, or develop your own text:
- We are completing a comprehensive assessment of our water system and of our monitoring and operational practices to identify and correct any causes of the contamination.
- We are chlorinating and flushing the water system.
- We are switching to an alternate drinking water source.
- We are increasing sampling for coliform bacteria to determine the source of the contamination.
- We are repairing the wellhead seal.
- We are repairing, cleaning, and disinfecting the storage tank.
- We are restricting water intake from the river/lake/reservoir to prevent additional bacteria from entering the water system and restricting water use to emergencies.

After Issuing the Notice [40 CFR 141.31(d)] - Within **10 days** after completing the initial public notification, the Public Water Supply Section MUST receive a copy of the original notice (and any repeat notices) you distributed to your customers with your signature and date on the Public Notification Certification (located at the bottom of the notice) indicating that you have fully complied with all the public notice requirements. Email your notice/certification to PWSS.PN@ncdenr.gov or mail your notice/certification to the Public Water Supply Section, Compliance Services Branch, ATTN: Public Notification Rule Manager, 1634 Mail Service Center, Raleigh, NC 27699-1634. Retain a copy of these documents for your files.

It is a good idea to inform your consumers when the violation has been resolved. (04/2016)

APPENDIX C

Technical Memorandum:
Impaired Waters and Total Maximum Daily Loads (TMDLs)

(21 PAGES)

TO: Michael Taylor
Environmental Management Division
Marine Corps Installations East - Marine Corps Base Camp Lejeune (MCIEAST-MCB CAMLEJ)

FROM: AH/BC Navy JV, LLC (Operating in North Carolina [NC] as AH Environmental Contsultants, Inc. [AH])

DATE: 08 December 2021

SUBJECT: Technical Memorandum
Impaired Waters and Total Maximum Daily Loads (TMDLs)

1. INTRODUCTION

The North Carolina Department of Environmental Quality (NC DEQ), Division of Energy, Minerals, and Land Resources (DEMLR) issued National Pollutant Discharge Elimination System (NPDES) permit number NCS000290 to MCIEAST-MCB CAMLEJ. This permit requires that MCIEAST-MCB CAMLEJ implement specific best management practices (BMPs) to address receiving waters included on NC DEQ's 303(d) list of impaired waters or subject to an Environmental Protection Agency (EPA) approved TMDL.

The NPDES permit includes the following requirements for impaired waters included on the 303(d) list or subject to an approved TMDL:

- Enhance water quality recovery strategies:
  - Evaluate strategies and tailor and/or expand BMPs for impaired waters within the scope of the six minimum control measures (MCMs) to enhance water quality recovery strategies in the watershed(s) and describe the strategies and tailored and/or expanded BMPs in each annual report.
- Existing TMDL Waste Load Allocations (WLAs):
  - Comply with the requirements of any approved TMDL stormwater WLAs for any watershed directly receiving discharges from the permitted municipal separate storm sewer system (MS4).
  - If no stormwater WLA exists for an approved TMDL, evaluate strategies and tailor and/or expand BMPs within the scope of the six MCMs to enhance water quality recovery strategies and reduce pollutants of concern in the watershed(s) to which the TMDL applies. Describe the strategies and tailored and/or expanded BMPs in annual reports.

- Future TMDLs:
  - Within 12 months following the date of EPA's final approval of a TMDL, annual reports shall include a description of, and a brief explanation as to how existing programs, controls, partnerships, projects, and strategies address impaired waters.
  - Within 24 months following the date of EPA's final approval of a TMDL, annual reports shall include an assessment of whether additional structural and/or non-structural BMPs are necessary to address impaired waters.
  - Within 36 months following the date of EPA's final approval of a TMDL, this SWMP shall be updated to include appropriate BMPs to address impaired waters.

2. PURPOSE

This technical memorandum provides the following information (based on the final 2020 NC DEQ 303(d) list of impaired waters and approved TMDLs as of December 2021):

- Identifies, describes, and maps the watershed, outfalls, and streams.
- Describes the likely cause(s) of the impairment and/or the pollutant(s) of concern.
- Describes and assesses existing programs, controls, partnerships, projects, and strategies implemented to address the impaired water(s), where applicable.

3. IMPAIRED WATERS

This section presents detailed information about impaired waters at MCIEAST-MCB CAMLEJ.

3.1 IDENTIFICATION AND MAPPING

Table 1 identifies the 303(d) listed impaired waters located within the MCIEAST-MCB CAMLEJ watershed (per the final 2020 NC DEQ 303(d) list).

Table 1 Impaired Waters of MCIEAST-MCB CAMLEJ

Receiving Water [AU Number(s)]	Classification[1]	Description of 2020 303(d) Listed Impairment[2]	Map Figure Number
New River [19-(11)]	SC; HQW, NSW	Copper	C-1
New River [19-(15.5)]	SC; NSW	Copper	C-2
New River [19-(27)b]	SA; HQW	Prohibited shellfish harvesting (fecal)	C-4
Brinson Creek [19-12]	SC; NSW	Copper	C-1
Mill Creek (Stones Bay) [3] [19-30-1]	SA; HQW	Copper, chlorophyll a	C-3
Muddy Creek[3] [19-30-2]	SA; HQW	Prohibited shellfish harvesting (fecal)	C-3
Stones Creek [19-30-3]	SA; HQW	Prohibited shellfish harvesting (fecal)	C-4
Millstone Creek[3] [19-30-3-1]	SA; HQW	Prohibited shellfish harvesting (fecal)	C-3
Everett Creek[3] [19-32]	SA; HQW	Prohibited shellfish harvesting (fecal)	C-4
Courthouse Bay [19-36b]	SA; HQW	Prohibited shellfish harvesting (fecal)	C-5
Mile Hammock Bay[3] [19-41-2a]	SA; HQW	Prohibited shellfish harvesting (fecal)	C-5
Salliers Bay[3] [19-41-3]	SA; HQW	Prohibited shellfish harvesting (fecal)	C-5
Holover Creek[3] [19-41-3-1]	SA; HQW	Prohibited shellfish harvesting (fecal)	C-5
Gillets Creek[3] [19-41-4]	SA; HQW	Prohibited shellfish harvesting (fecal)	C-6
Freeman Creek[3] [19-41-5]	SA; HQW	Prohibited shellfish harvesting (fecal)	C-6
Browns Creek[3] [19-41-8]	SA; HQW	Prohibited shellfish harvesting (fecal)	C-6
Mill Creek (Bear Creek)[3] [19-41-11-1]	SA; HQW	Prohibited shellfish harvesting (fecal)	C-7

Notes:

(1) As per NC DEQ:

- **Class SC:** All tidal salt waters protected for secondary recreation such as fishing, boating, and other activities involving minimal skin contact; fish and noncommercial shellfish consumption; aquatic life propagation and survival; and wildlife.
- **Class SA:** Tidal salt waters used for commercial shellfishing or marketing purposes that are also protected for all Class SC and Class SB uses. All SA waters are also HQW by supplemental classification.
- **High Quality Waters (HQW):** Supplemental classification intended to protect waters that are rated excellent based on biological and physical/chemical characteristics through Division monitoring or special studies, primary nursery areas designated by the Marine Fisheries Commission (MFC), and other functional nursery areas designated by the MFC.
- **Nutrient Sensitive Waters (NSW):** Supplemental classification intended for waters needing additional nutrient management due to being subject to excessive growth of microscopic or macroscopic vegetation.

(2) As per final 2020 303(d) list of impaired waters of NC, published by NC DEQ.

(3) Receiving waters listed on the final 2020 303(d) list and located within the MCIEAST-MCB CAMLEJ boundary; however, these receiving waters are not included in the list of permitted receiving waters in MCIEAST-MCB CAMLEJ's NPDES permit.

3.2 LIKELY CAUSES OF IMPAIRMENTS

The following NC DEQ publications were referenced for determination of likely causes of the 303(d) listed impairments:

- *DRAFT* White Oak River Basinwide Water Quality Plan, September 2021
- Total Maximum Daily Loads for Fecal Coliform for Bear Creek, North Carolina, September 2011

3.2.1 New River (Copper)

Portions of the New River receiving flow from MCIEAST-MCB CAMLEJ are classified as impaired. The impairment information included in the draft 2021 White Oak River Basinwide Water Quality Plan is provided below:

- New River [AU# 19-(11)] (SC; HQW, NSW): located in the Headwaters of the New River watershed, from the Atlantic Coast Line railroad trestle to Mumford Point (574 acres). This section of the New River is impaired for copper with a TMDL required (Category 5) on the 2018 and 2020 Integrated Report and is in Category 4b (impaired with management strategy in place) for chlorophyll a.
  - The headwaters of the New River watershed encompass 103,078 acres (161 mi^2) and had an estimated 2010 population of 56,770 people. Wetlands comprise most of the watershed (29%), followed by forests (25%), agriculture (22%), and developed land (17%). Thirty of the 36 permitted animal feeding operations in the subbasin are located in this watershed, along with 11 wastewater, four non-discharge, and 13 stormwater permits.

- New River [AU# 19-(15.5)] (SC; NSW): located from Mumford Point to approximately 2,200 yards downstream from the mouth of Duck Creek (6,581 acres). This section of the New River is in Category 3 (data inconclusive) on the 2020 Integrated Report for chlorophyll a and in Category 5 (impaired with TMDL required) for copper. Ambient monitoring station P4600000 is in the estuary, just upstream of Frenchs Creek. Chlorophyll a concentrations have been rising steadily at this station since 2000 and that rise may be partially attributed to nonpoint source pollution in the watershed. Housing and commercial development, including a golf course, parks, an urban center, and a military base, are all located upstream of the monitoring station. There are also several NPDES outfalls upstream of the monitoring station. Comparing chlorophyll a concentrations to streamflow, there seems to be a correlation between higher flow measurements with higher concentrations and more extensive chlorophyll a exceedances in this portion of New River estuary.
  - This portion of the New River watershed encompasses 163,072 acres (255 mi^2) and had an estimated 2010 population of 75,417 people. Forests comprise most of the watershed (35%), followed by wetlands (27%), developed (13%), and agriculture (8%). Just over 10% of the land area is identified as open water. Six permitted animal feeding operations, five non-discharge, and 21 stormwater permits have been issued in this watershed.

The New River watershed contains a wide variety of land uses. MCIEAST-MCB CAMLEJ comprises 3% of the overall New River watershed. Based on the watershed assessment of the current and previous versions of the White Oak River Basinwide Water Quality Plan, the most likely sources of impairment are the following:

- NPDES wastewater treatment plant (WWTP) discharges
- Upstream water quality influences
- Stormwater runoff from residential areas, commercial areas, golf courses, industrial areas, and roadways
- Stormwater runoff and direct contact at various marinas located on the New River

MCIEAST-MCB CAMLEJ operates the Advanced WWTP within the pollutant discharge limits that are defined by NPDES Permit No. NC0063028.

MCIEAST-MCB CAMLEJ implements a comprehensive stormwater program according to NPDES Permit No. NCS000290. This permit requires the development and maintenance of a Stormwater Management Plan (SWMP), Stormwater Pollution Prevention Plan (SWPPP), Stormwater Outfall Monitoring Plan (SWOMP), and Illicit Discharge Detection and Elimination Program. The overall goal of the stormwater program is to reduce pollutant discharges from MCIEAST-MCB CAMLEJ.

3.2.2 Brinson Creek (Copper)

The Brinson Creek impairment information included in the draft 2021 White Oak River Basinwide Quality Plan is provided below:

- Brinson Creek [AU# 19-12] (SC: NSW): Brinson Creek, from its source to the New River (17.5 miles), continues to be impaired for copper (also previously impaired for chlorophyll a). Brinson Creek was first identified as impaired in 2008. Data collected from ambient monitoring station P2105000 near the confluence with the New River indicates that the creek is also impacted by low DO and pH. Overall, chlorophyll a concentrations and exceedance concentrations in Brinson Creek have decreased slightly since 2001, but percent exceedances are still high. While the MCIEAST-MCB CAMLEJ Camp Geiger outfall was removed from Brinson Creek in 1998, the privately owned/operated Osprey Cove WWTP (NPDES Permit NC0028215) is located upstream of the ambient monitoring station. Osprey Cove has a permitted discharge of 0.10 MGD. TN is a composite sample collected from the effluent quarterly and TP is a composite sample collected weekly. There are currently no TN limits, but TP is limited to a quarterly average of 2.0 mg/L. In addition to Osprey Cove, there are three additional minor NPDES permitted facilities within the Brinson Creek watershed. Point and nonpoint source runoff from the surrounding land use may be contributing to the elevated chlorophyll a levels at this ambient monitoring station.

The primary land uses within the Brinson Creek watershed are residential, commercial, and industrial (industrial facilities are located within Marine Corps Air Station [MCAS] New River). MCIEAST-MCB CAMLEJ comprises 26% of the Brinson Creek watershed. This portion of MCIEAST-MCB CAMLEJ contains military housing, training areas, and regulated industrial activities.

The most likely sources of impairment are the following:

- NPDES WWTP discharge (per the current and previous versions of the White Oak River Basinwide Water Quality Plan).
- Stormwater runoff from residential areas, commercial areas, industrial areas, and roadways.

MCIEAST-MCB CAMLEJ implements a comprehensive stormwater program according to NPDES Permit No. NCS000290. This permit requires the development and maintenance of a SWMP, SWPPP, SWOMP, and Illicit Discharge Detection and Elimination Program. The overall goal of the stormwater program is to reduce pollutant discharges from MCIEAST-MCB CAMLEJ.

3.2.3 Millstone Creek (Prohibited Shellfish Harvesting – Fecal Coliform)

Millstone Creek [AU# 19-30-3-1] (SA; HQW) is currently impaired for shellfish harvesting and is classified as prohibited due to elevated fecal coliform bacterial levels. The draft 2021 version of the White Oak River Basinwide Water Quality Plan does not include a discussion for Millstone Creek; however, previous versions of the plan identified stormwater runoff as the source of this impairment.

The Millstone Creek watershed is located entirely on MCIEAST-MCB CAMLEJ property. The primary land uses within the watershed are forestry and military training. No residential, commercial, or regulated industrial facilities are located within this watershed. A septic system inventory completed by MCIEAST-MCB CAMLEJ determined that there are no active septic systems within this watershed.

The most likely sources of impairment are the following:

- Stormwater runoff from roadways and military training exercises
- Wildlife wastes (either by direct deposition or by transportation through stormwater conveyances)

At this time, MCIEAST-MCB CAMLEJ is not taking targeted action to address the impairment of Millstone Creek for shellfish harvesting due to elevated fecal coliform bacteria levels.

3.2.4 Muddy Creek (Prohibited Shellfish Harvesting – Fecal Coliform)

Muddy Creek [AU# 19-30-2] (SA; HQW) is currently impaired for shellfish harvesting and is classified as prohibited due to elevated fecal coliform bacterial levels. The draft 2021 version of the White Oak River Basinwide Water Quality Plan does not include a discussion for Muddy Creek; however, previous versions of the plan identified stormwater runoff as the source of this impairment.

The Muddy Creek watershed is located entirely on MCIEAST-MCB CAMLEJ property. The primary land uses within the watershed are forestry and military training. No residential, commercial, or regulated industrial facilities are located within this watershed. A septic system inventory completed by MCIEAST-MCB CAMLEJ determined that there are no septic systems within this watershed.

The most likely sources of impairment are the following:

- Stormwater runoff from roadways and military training exercises
- Wildlife wastes (either by direct deposition or by transportation through stormwater conveyances)

At this time, MCIEAST-MCB CAMLEJ is not taking targeted action to address the impairment of Muddy Creek for shellfish harvesting due to elevated fecal coliform bacteria levels.

3.2.5 Mill Creek (Stones Bay) (Copper & Chlorophyll a)

Mill Creek [AU# 19-30-1] (SA;HQW) is currently impaired for copper and chlorophyll a. The draft 2021 version of the White Oak River Basinwide Water Quality Plan does not include a discussion for Mill Creek; however, previous versions of the plan identified stormwater runoff as the source of former impairments.

The Mill Creek watershed is located entirely on MCIEAST-MCB CAMLEJ property. The primary land uses within the watershed are forestry and military training. No residential, commercial, or regulated industrial facilities are located within this watershed. The training facilities located within the Mill Creek watershed are served by the sanitary sewer system. A septic system inventory completed by MCIEAST-MCB CAMLEJ determined that there are no active septic systems within the Mill Creek watershed.

The most likely sources of impairment are the following:

- Stormwater runoff from roadways and military training exercises
- Wildlife wastes (either by direct deposition or by transportation through stormwater conveyances)

At this time, MCIEAST-MCB CAMLEJ is not taking targeted action to address the impairment of Mill Creek for shellfish harvesting due to elevated fecal coliform bacteria levels.

3.2.6 Stones Creek (Prohibited Shellfish Harvesting – Fecal Coliform)

Stones Creek [AU# 19-30-3] (SA; HQW) is currently impaired for shellfish harvesting and is classified as prohibited due to elevated fecal coliform bacterial levels. The draft 2021 version of the White Oak River Basinwide Water Quality Plan does not include a discussion for Stones Creek; however, previous versions of the plan identified the source of impairment as “WTP NPDES.” The Dixon WTP (NPDES permit # NC0083551/001) is the only permitted WWTP discharge to Stones Creek.

The primary land uses within the Stones Creek watershed are forestry, residential, commercial, and industrial (industrial facilities are located within the Rifle Range and Marine Forces Special Operations Command [MARSOC] areas of MCIEAST-MCB CAMLEJ). MCIEAST-MCB CAMLEJ comprises 47% of the Stones Creek watershed. This portion of MCIEAST-MCB CAMLEJ contains training ranges, military housing, one active septic system, and regulated industrial activities.

The most likely sources of impairment are the following:

- Dixon Water Treatment Plant (WTP) discharge (per previous versions of the White Oak River Basinwide Water Quality Plan)
  - High concentrations of fecal coliform in WTP effluent are unlikely
- Stormwater runoff from residential areas, commercial areas, industrial areas, and roadways
- Wildlife wastes (either direct contact to streams or runoff from deposition)
- Domestic wastewater septic systems

MCIEAST-MCB CAMLEJ implements a comprehensive stormwater program according to NPDES Permit No. NCS000290. This permit requires the development and maintenance of a SWMP, SWPPP, SWOMP, and Illicit Discharge Detection and Elimination Program. The overall goal of the stormwater program is to reduce pollutant discharges from MCIEAST-MCB CAMLEJ.

The MCIEAST-MCB CAMLEJ Septic System Inventory identified active and abandoned septic systems located at MCIEAST-MCB CAMLEJ. This report included recommendations for routine maintenance and upkeep, permitting and inspections, and abandonment procedures to minimize the environmental impact of MCIEAST-MCB CAMLEJ's septic systems.

3.2.7 Everett Creek (Prohibited Shellfish Harvesting – Fecal Coliform)

Everett Creek [AU# 19-32] (SA; HQW) is currently impaired for shellfish harvesting and is classified as prohibited due to elevated fecal coliform bacterial levels. The draft 2021 version of the White Oak River Basinwide Water Quality Plan does not include a discussion for Everett Creek; however, previous versions of the plan identified stormwater runoff as the source of former impairments.

The primary land uses within the watershed are forestry and residential. MCIEAST-MCB CAMLEJ comprises 24% of the Everett Creek watershed. There is no development within this portion of MCIEAST-MCB CAMLEJ (i.e., natural areas only).

The most likely sources of these impairments are the following:

- Stormwater runoff from roadways and residential areas
- Wildlife wastes (either by direct deposition or by transportation through stormwater conveyances)

At this time, MCIEAST-MCB CAMLEJ is not taking targeted action to address the impairment of Everett Creek for shellfish harvesting due to elevated fecal coliform bacteria levels.

3.2.8 Courthouse Bay (Prohibited Shellfish Harvesting – Fecal Coliform)

A 2.8-acre portion of Courthouse Bay [AU# 19-36b] (SA; HQW) is currently impaired for shellfish harvesting and is classified as prohibited due to elevated fecal coliform bacterial levels. The draft 2021 version of the White Oak River Basinwide Water Quality Plan does not include a discussion for Courthouse Bay; however, previous versions of the plan identified stormwater runoff as the source of former impairments.

The Courthouse Bay watershed is located entirely on MCIEAST-MCB CAMLEJ property. The primary land use within the watershed that contributes to the 2.8-acre portion of Courthouse Bay is military housing. No regulated industrial facilities are located within this watershed. A septic system inventory completed by MCIEAST-MCB CAMLEJ determined that there are no septic systems within this watershed. The military housing areas are connected to the MCIEAST-MCB CAMLEJ sanitary sewer system.

The most likely sources of impairment are the following:

- Stormwater runoff from military housing areas and roadways

- Wildlife wastes (either by direct deposition or by transportation through stormwater conveyances)

MCIEAST-MCB CAMLEJ implements a comprehensive stormwater program according to NPDES Permit No. NCS000290. This permit requires the development and maintenance of a SWMP, SWPPP, SWOMP, and Illicit Discharge Detection and Elimination Program. The overall goal of the stormwater program is to reduce pollutant discharges from MCIEAST-MCB CAMLEJ.

3.2.9 Mile Hammock Bay (Prohibited Shellfish Harvesting – Fecal Coliform)

Mile Hammock Bay [AU# 19-41-2a] (SA; HQW) is currently impaired for shellfish harvesting and is classified as prohibited due to elevated fecal coliform bacterial levels. The draft 2021 version of the White Oak River Basinwide Water Quality Plan does not include a discussion for Mile Hammock Bay; however, previous versions of the plan identified stormwater runoff as the source of former impairments.

The Mile Hammock Bay watershed is located entirely on MCIEAST-MCB CAMLEJ property. The primary land uses within the watershed are forestry and military training. No residential, commercial, or regulated industrial facilities are located within this watershed. A septic system inventory conducted by MCIEAST-MCB CAMLEJ determined that there are no active septic systems within this watershed. Mile Hammock Bay is an active boating area for military, government, recreational, and transient uses.

The most likely sources of impairment are the following:

- Waste from boating activities
- Stormwater runoff from roadways and military training exercises
- Wildlife wastes (either by direct deposition or by transportation through stormwater conveyances)

At this time, MCIEAST-MCB CAMLEJ is not taking targeted action to address the impairment of Mile Hammock Bay for shellfish harvesting due to elevated fecal coliform bacteria levels.

3.2.10 Holover Creek (Prohibited Shellfish Harvesting – Fecal Coliform)

Holover Creek [AU# 19-41-3-1] (SA; HQW) is currently impaired for shellfish harvesting and is classified as prohibited due to elevated fecal coliform bacterial levels. The draft 2021 version of the White Oak River Basinwide Water Quality Plan does not include a discussion for Holover Creek; however, previous versions of the plan identified stormwater runoff as the source of former impairments.

The Holover Creek watershed is located entirely on MCIEAST-MCB CAMLEJ property. The primary land uses within the watershed are forestry and military training. Other than training areas (e.g., ranges) there is no development within this portion of MCIEAST-MCB CAMLEJ. A septic system inventory conducted by MCIEAST-MCB CAMLEJ determined that there are no active septic systems within this watershed.

The most likely sources of impairment are the following:

- Stormwater runoff from forest clearing activities
- Stormwater runoff from roadways and military training exercises
- Wildlife wastes (either by direct deposition or by transportation through stormwater conveyances)

At this time, MCIEAST-MCB CAMLEJ is not taking targeted action to address the impairment of Holover Creek for shellfish harvesting due to elevated fecal coliform bacteria levels.

3.2.11 Salliers Bay (Prohibited Shellfish Harvesting – Fecal Coliform)

Salliers Bay [AU# 19-41-3] (SA; HQW) is currently impaired for shellfish harvesting and is classified as prohibited due to elevated fecal coliform bacterial levels. The draft 2021 version of the White Oak River Basinwide Water Quality Plan does not include a discussion for Salliers Bay; however, previous versions of the plan identified stormwater runoff as the source of former impairments.

The Salliers Bay watershed is located entirely on MCIEAST-MCB CAMLEJ property. The primary land uses within the watershed are forestry and military training. Other than training areas (e.g., ranges) there is no development within this portion of MCIEAST-MCB CAMLEJ. A septic system inventory completed by MCIEAST-MCB CAMLEJ determined that there are no active septic systems within this watershed.

The most likely sources of impairment are the following:

- Stormwater runoff from forest clearing activities
- Stormwater runoff from roadways and military training exercises
- Wildlife wastes (either by direct deposition or by transportation through stormwater conveyances)

At this time, MCIEAST-MCB CAMLEJ is not taking targeted action to address the impairment of Salliers Bay for shellfish harvesting due to elevated fecal coliform bacteria levels.

3.2.12 Browns Creek (Prohibited Shellfish Harvesting – Fecal Coliform)

Browns Creek [AU# 19-41-8] (SA; HQW) is currently impaired for shellfish harvesting and is classified as prohibited due to elevated fecal coliform bacterial levels. The draft 2021 version of the White Oak River Basinwide Water Quality Plan does not include a discussion for Browns Creek; however, previous versions of the plan identified stormwater runoff as the source of former impairments. Additionally, a former version of the plan stated “with few permanent residents in the area, potential sources of pollution include runoff from forest clearing and wildlife.”

The Browns Creek watershed is located entirely on MCIEAST-MCB CAMLEJ property. The primary land uses within the watershed are forestry and military training. Other than training areas (e.g., ranges) there is no development within this portion of MCIEAST-MCB CAMLEJ. A septic system inventory conducted by MCIEAST-MCB CAMLEJ determined that there are no active septic systems within the Browns Creek watershed.

The most likely sources of impairment are the following:

- Stormwater runoff from forest clearing activities
- Stormwater runoff from roadways and military training exercises
- Wildlife wastes (either by direct deposition or by transportation through stormwater conveyances)

At this time, MCIEAST-MCB CAMLEJ is not taking targeted action to address the impairment of Browns Creek for shellfish harvesting due to elevated fecal coliform bacteria levels.

3.2.13 Freeman Creek (Prohibited Shellfish Harvesting – Fecal Coliform)

Freeman Creek [AU# 19-41-5] (SA; HQW) is currently impaired for shellfish harvesting and is classified as prohibited due to elevated fecal coliform bacterial levels. The draft 2021 version of the White Oak River Basinwide Water Quality Plan does not include a discussion for Freeman Creek; however, previous versions of the plan referenced a March 2000 US Army Corps of Engineers report indicating human waste was a contributing factor to fecal loading in Freeman Creek and the source was exposed *cat hole* trenches. At the time, NC DEQ was not able to confirm the human waste sources.

The Freeman Creek watershed is located entirely on MCIEAST-MCB CAMLEJ property. The primary land uses within the watershed are forestry and military training. Other than training areas (e.g., ranges) there is no development within this portion of MCIEAST-MCB CAMLEJ. A septic system inventory completed by MCIEAST-MCB CAMLEJ determined that there are no active septic systems within this watershed.

The most likely sources of impairment are the following:

- Stormwater runoff from any forest clearing activities
- Stormwater runoff from roadways and military training exercises
- Wildlife wastes (either by direct deposition or by transportation through stormwater conveyances).

At this time, MCIEAST-MCB CAMLEJ is not taking targeted action to address the impairment of Freeman Creek for shellfish harvesting due to elevated fecal coliform bacteria levels.

3.2.14 Gillets Creek (Prohibited Shellfish Harvesting – Fecal Coliform)

Gillets Creek [AU# 19-41-4] (SA; HQW) is currently impaired for shellfish harvesting and is classified as prohibited due to elevated fecal coliform bacterial levels. The draft 2021 version of the White Oak River Basinwide Water Quality Plan does not include a discussion for Gillets Creek; however, previous versions of the plan identified stormwater runoff as the source of former impairments.

The Gillets Creek watershed is located entirely on MCIEAST-MCB CAMLEJ property. The primary land uses within the watershed are forestry and military training. Other than training areas (e.g., ranges) there is no development within this portion of MCIEAST-MCB CAMLEJ. A septic system inventory completed by MCIEAST-MCB CAMLEJ determined that there are no active septic systems within this watershed.

The most likely sources of impairment are the following:

- Stormwater runoff from forest clearing activities
- Stormwater runoff from roadways and military training exercises
- Wildlife wastes (either by direct deposition or by transportation through stormwater conveyances)

At this time, MCIEAST-MCB CAMLEJ is not taking targeted action to address the impairment of Gillets Creek for shellfish harvesting due to elevated fecal coliform bacteria levels.

3.2.15 Mill Creek (Bear Creek) (Prohibited Shellfish Harvesting – Fecal Coliform)

Mill Creek [AU# 19-41-11-1] (SA; HQW) is currently impaired for shellfish harvesting and is classified as prohibited due to elevated fecal coliform bacterial levels. The draft 2021 version of the White Oak River Basinwide Water Quality Plan does not include a discussion for Mill Creek; however, previous versions of the plan identified stormwater runoff as the source of former impairments.

The Mill Creek watershed (a sub-basin of the Bear Creek watershed) is located entirely on MCIEAST-MCB CAMLEJ property. This portion of MCIEAST-MCB CAMLEJ is designated for military training. No residential, commercial, or industrial development is present. A septic system inventory completed by MCIEAST-MCB CAMLEJ determined that there are no active septic systems within the Mill Creek watershed.

The most likely sources of impairment are the following:

- Stormwater runoff from forest clearing activities
- Stormwater runoff from roadways and military training exercises
- Wildlife wastes (either by direct deposition or by transportation through stormwater conveyances)

At this time, MCIEAST-MCB CAMLEJ is not taking targeted action to address the impairment of Mill Creek for shellfish harvesting due to elevated fecal coliform bacteria levels.

4. TOTAL MAXIMUM DAILY LOADS

This section presents detailed information about the Bear Creek TMDL for fecal coliform and evidence that suggests that MCIEAST-MCB CAMLEJ should not be subject to the requirements of this TMDL.

4.1 IDENTIFICATION AND MAPPING

Table 2 identifies the approved TMDLs at receiving waters located within the MCIEAST-MCB CAMLEJ watershed.

Table 2 Approved TMDLs at MCIEAST-MCB CAMLEJ

Receiving Water	Classification[1]	Description TMDL Target Pollutant	Map Figure Number
Bear Creek	SA; HQW	Prohibited shellfish harvesting, fecal coliform TMDL	C-7

Note:

(1) As per NC DEQ:

- **Class SA:** Tidal salt waters used for commercial shellfishing or marketing purposes that are also protected for all Class SC and Class SB uses. All SA waters are also HQW by supplemental classification.
- **High Quality Waters (HQW):** Supplemental classification intended to protect waters that are rated excellent based on biological and physical/chemical characteristics through Division monitoring or special studies, primary nursery areas designated by the MFC, and other functional nursery areas designated by the MFC.

4.2 BEAR CREEK (PROHIBITED SHELLFISH HARVESTING/FECAL COLIFORM)

Bear Creek is located along the southeastern boundary of MCIEAST-MCB CAMLEJ and receives stormwater runoff from MCIEAST-MCB CAMLEJ and the community of Hubert. The TMDL for fecal coliform was established in September 2011.

4.2.1 Likely Causes of Impairment

The following NC DEQ publications were referenced to determine likely causes of the 303(d) listed impairments:

- *DRAFT* White Oak River Basinwide Water Quality Plan, September 2021
- Total Maximum Daily Loads for Fecal Coliform for Bear Creek, North Carolina, September 2011

Bear Creek is not included in the final 2020 303(d) list and is listed under category 4 (impaired but not requiring a TMDL) in the final 2020 Integrated Report as impaired for shellfish harvesting due to potential elevated fecal coliform bacterial levels. Bear Creek is subject to an approved TMDL for fecal coliform. The TMDL for Bear Creek was established by NC DEQ and approved by EPA in September 2011. The TMDL documentation indicates that a 69% reduction in bacterial loading is required from the Upper Bear Creek.

According to the draft 2021 version of the White Oak River Basinwide Water Quality Plan, stormwater runoff from agricultural lands, residential areas, and roadways are the most significant threats to water quality in Bear Creek.

The primary land uses within the Bear Creek watershed are forestry, residential, and agricultural (e.g., cotton, corn, soybeans, tobacco, winter wheat). MCIEAST-MCB CAMLEJ comprises 65% of the Bear Creek watershed. This portion of MCIEAST-MCB CAMLEJ is designated for military training and for access control at NC Highway 172. No residential, commercial, or industrial development is present in these areas of the base. The majority of the watershed is undeveloped forest.

A septic system inventory conducted by MCIEAST-MCB CAMLEJ determined that one active septic system exists within the Bear Creek watershed. This system services the security gate at NC Highway 172 and was reportedly functioning properly. This system is routinely inspected by Public Works Department (PWD) personnel. No other septic systems were located within the Bear Creek Watershed. NC DEQ identified the following potential non-point pollution sources:

- Agricultural runoff (e.g., chemicals, sediment, and debris)
- Roadway runoff
- Farm animal waste
- Dog kennel waste
- Wildlife waste
- Runoff from two auto salvage yards
- Failing residential septic systems

The only permitted point source in the Bear Creek Watershed is the statewide NPDES stormwater permit (NCS000250) for the NC Department of Transportation.

Based on the NC DEQ assessments of the Bear Creek watershed, the most likely sources of impairment are the following:

- Stormwater runoff from agricultural areas, residential areas, and roadways
- Farm animal and wildlife wastes (either direct contact to streams or runoff from deposition or manure spreading)

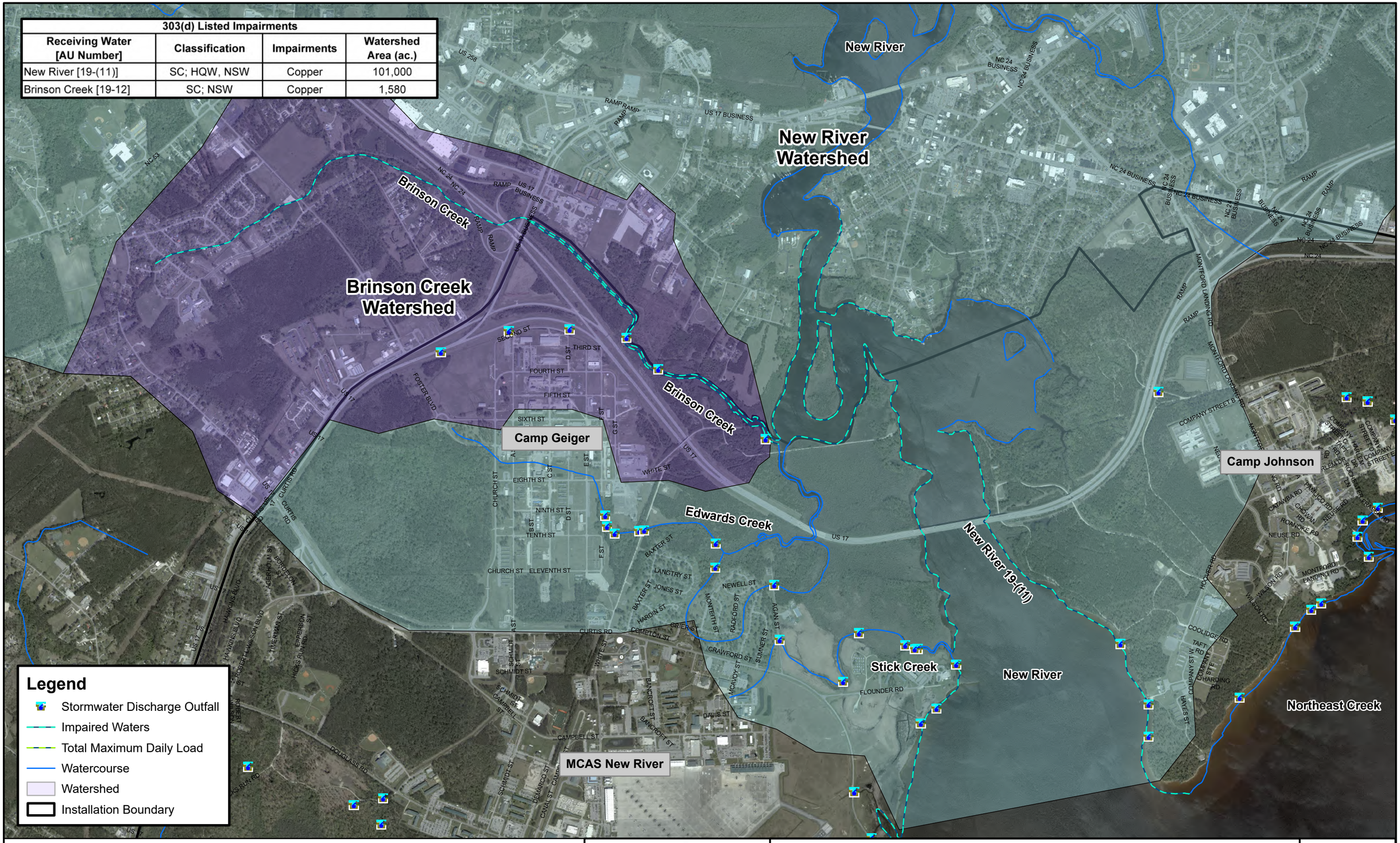
4.2.2 NPDES Permit Requirements

No waste load allocation (WLA) was assigned to MCIEAST-MCB CAMLEJ as a result of the fecal coliform TMDL established for Bear Creek. The MCIEAST-MCB CAMLEJ NPDES permit includes the following requirement: *if no stormwater WLA exists for an approved TMDL, evaluate strategies and tailor and/or expand BMPs within the scope of the six MCMs to enhance water quality recovery strategies and reduce pollutants of concern in the watershed(s) to which the TMDL applies. Describe the strategies and tailored and/or expanded BMPs in annual reports.*

The portion of MCIEAST-MCB CAMLEJ that drains to Bear Creek is designated for military training only and contains no residential, commercial, or industrial development. There is one active septic system at MCIEAST-MCB CAMLEJ within the Bear Creek watershed and it is functioning properly (based on the most recent MCIEAST-MCB CAMLEJ septic system inventory and interviews with PWD staff).

The information presented in this technical memorandum with respect to the TMDL for Bear Creek supports the finding that the impairment of Bear Creek is due to sources outside of the geographic limits and jurisdictional control of MCIEAST-MCB CAMLEJ.

303(d) Listed Impairments			
Receiving Water [AU Number]	**Classification**	**Impairments**	**Watershed Area (ac.)**
New River [19-(11)]	SC; HQW, NSW	Copper	101,000
Brinson Creek [19-12]	SC; NSW	Copper	1,580



Legend

- Stormwater Discharge Outfall
- Impaired Waters
- Total Maximum Daily Load
- Watercourse
- Watershed
- Installation Boundary

Source: AH, MCBCL, Esri
AH Project Number: 134-031
Contract Number: N62470-19-D-4001
Date: 12/01/2021
By: CJM

N

0 0.5 1 Miles

ENGINEERS & SCIENTISTS

Watershed Mapping for:
New River, Brinson Creek
303(d) List of Impaired Waters and TMDL Mapping
MCIEAST-MCB Camp Lejeune, North Carolina

Figure C-1

303(d) Listed Impairments			
Receiving Water [AU Number]	**Classification**	**Impairments**	**Watershed Area (ac.)**
New River [19-(15.5)]	SC; NSW	Copper	101,000

Note: New River Watershed not depicted. Watershed encompasses the entire New River area.

New River

New River 19-(15.5)

Hadnot Point

Frenchs Creek

Verona Loop Ranges

Legend

- Stormwater Discharge Outfall
- Impaired Waters
- Total Maximum Daily Load
- Watercourse
- Watershed
- Installation Boundary

Source: AH, MCBCL, Esri
AH Project Number: 134-031
Contract Number: N62470-19-D-4001
Date: 12/01/2021
By: CJM

N

0 0.5 1 Miles

ENGINEERS & SCIENTISTS

Watershed Mapping for:
New River
303(d) List of Impaired Waters and TMDL Mapping
MCIEAST-MCB Camp Lejeune, North Carolina

Figure C-2

303(d) Listed Impairments			
Receiving Water [AU Number]	**Classification**	**Impairments**	**Watershed Area (ac.)**
Mill Creek (Stones Bay) [19-30-1]	SA; HQW	Copper, chlorophyll a	2,490
Muddy Creek [19-30-2]	SA; HQW	Prohibited shellfish harvesting (fecal)	1,080
Millstone Creek [19-30-3-1]	SA; HQW	Prohibited shellfish harvesting (fecal)	1,430

Mill Creek (Stone) Watershed

Muddy Creek Watershed

Millstone Creek Watershed

Verona Loop Ranges

Rifle Range

Stones Bay

New River

Mill Creek

Muddy Creek

Millstone Creek

Stones Creek

Legend

- Stormwater Discharge Outfall
- Impaired Waters
- Total Maximum Daily Load
- Watercourse
- Watershed
- Installation Boundary

Source: AH, MCBCL, Esri
AH Project Number: 134-031
Contract Number: N62470-19-D-4001
Date: 12/01/2021
By: CJM

N

0 0.5 1 Miles

ENGINEERS & SCIENTISTS

Watershed Mapping for:
Mill Creek (Stones Bay), Muddy Creek, Millstone Creek
303(d) List of Impaired Waters and TMDL Mapping
MCIEAST-MCB Camp Lejeune, North Carolina

Figure C-3

303(d) Listed Impairments			
Receiving Water [AU Number]	**Classification**	**Impairments**	**Watershed Area (ac.)**
Stones Creek [19-30-3]	SA; HQW	Prohibited shellfish harvesting (fecal)	7,600
New River [19-(27)b]	SA; HQW	Prohibited shellfish harvesting (fecal)	2,300
Everett Creek [19-32]	SA; HQW	Prohibitied shellfish harvesting (fecal)	

Stones Bay
New River
Stones Creek
Rifle Range
New River
Stones Creek Watershed
New River
New River 19-(27)b
Everett Creek
Everett Creek & New River 19-(27)b Watershed
Stones Creek

Legend
- Stormwater Discharge Outfall
- Impaired Waters
- Total Maximum Daily Load
- Watercourse
- Watershed
- Installation Boundary

Source: AH, MCBCL, Esri
AH Project Number: 134-031
Contract Number: N62470-19-D-4001
Date: 12/01/2021
By: CJM

N
0 0.5 1 Miles

ENGINEERS & SCIENTISTS

Watershed Mapping for:
Stones Creek, New River, Everett Creek
303(d) List of Impaired Waters and TMDL Mapping
MCIEAST-MCB Camp Lejeune, North Carolina

Figure C-4

Amphibious Base

Courthouse Bay Watershed (Impaired)

Courthouse Bay

New River

Traps Creek

Traps Bay

Toms Creek

Gillets Creek Watershed

Holover Creek Watershed

Salliers Bay Watershed

Mile Hammock Bay Watershed

Mile Hammock Bay

Salliers Bay

Intercoastal Waterway

Legend

- Stormwater Discharge Outfall
- Impaired Waters
- Total Maximum Daily Load
- Watercourse
- Watershed
- Installation Boundary

303(d) Listed Impairments

Receiving Water [AU Number]	Classification	Impairments	Watershed Area (ac.)
Courthouse Bay (south arm of bay) [19-36b]	SA; HQW	Prohibited shellfish harvesting (fecal)	166
Mile Hammock Bay [19-41-2a]	SA; HQW	Prohibited shellfish harvesting (fecal)	243
Salliers Bay [19-41-3]	SA; HQW	Prohibited shellfish harvesting (fecal)	2,270
Holover Creek [19-41-3-1]	SA; HQW	Prohibited shellfish harvesting (fecal)	1,720

Source: AH, MCBCL, Esri
AH Project Number: 134-031
Contract Number: N62470-19-D-4001
Date: 12/01/2021
By: CJM

N

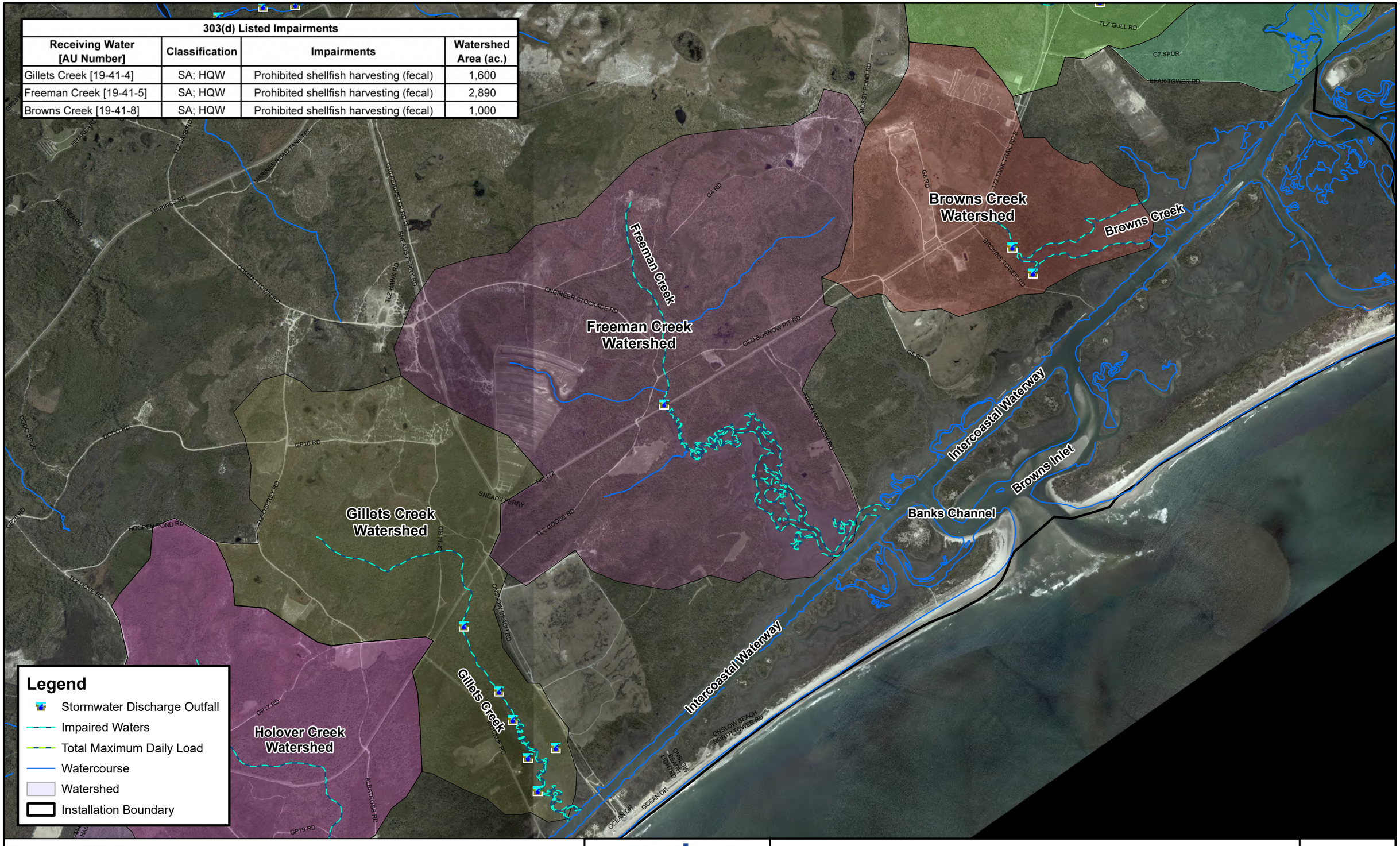
0 0.5 1 Miles

ENGINEERS & SCIENTISTS

Watershed Mapping for:
Courthouse Bay, Mile Hammock Bay, Salliers Bay, Holover Creek
303(d) List of Impaired Waters and TMDL Mapping
MCIEAST-MCB Camp Lejeune, North Carolina

Figure C-5

303(d) Listed Impairments			
Receiving Water [AU Number]	**Classification**	**Impairments**	**Watershed Area (ac.)**
Gillets Creek [19-41-4]	SA; HQW	Prohibited shellfish harvesting (fecal)	1,600
Freeman Creek [19-41-5]	SA; HQW	Prohibited shellfish harvesting (fecal)	2,890
Browns Creek [19-41-8]	SA; HQW	Prohibited shellfish harvesting (fecal)	1,000



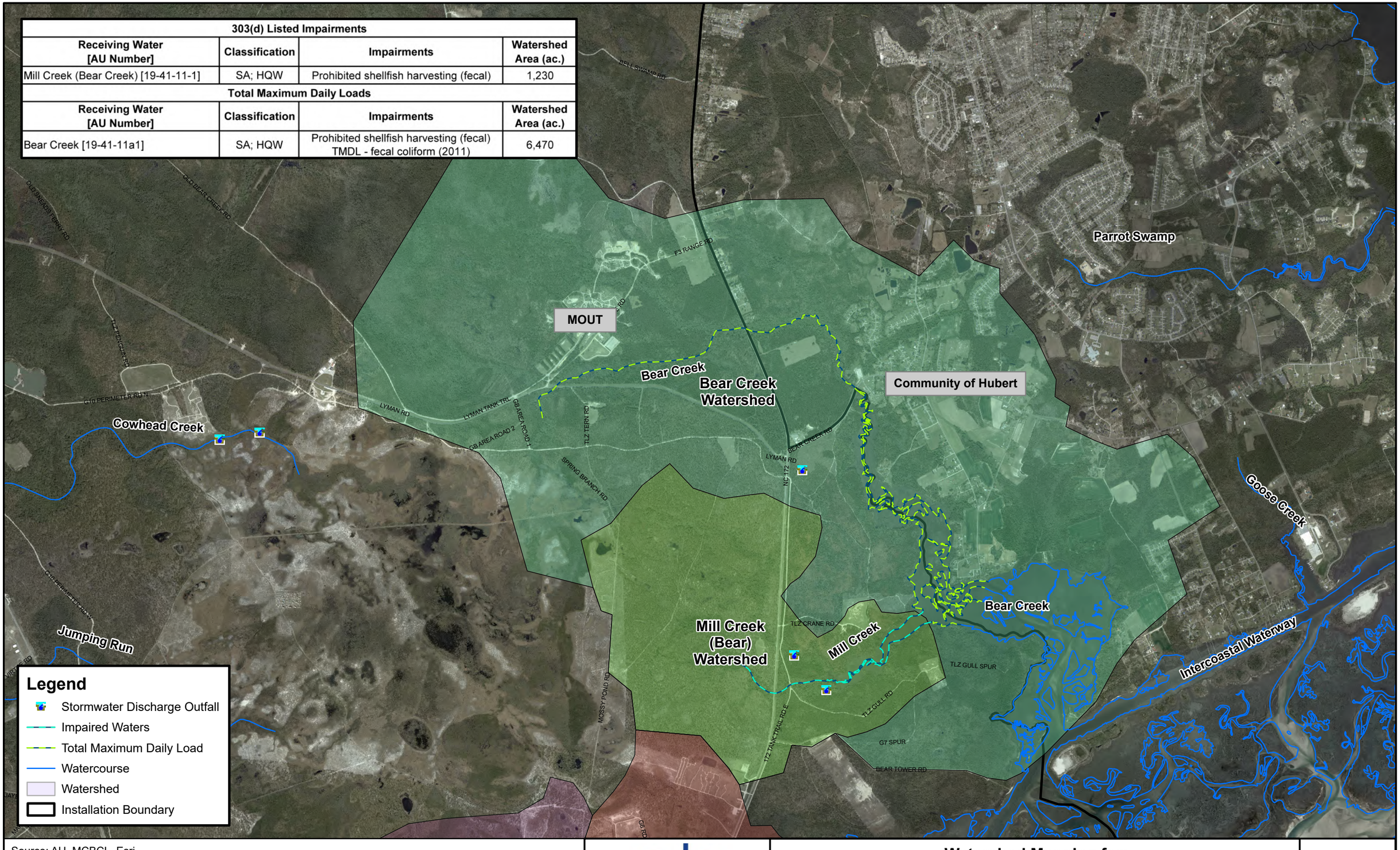
Source: AH, MCBCL, Esri
AH Project Number: 134-031
Contract Number: N62470-19-D-4001
Date: 12/01/2021
By: CJM

ENGINEERS & SCIENTISTS

Watershed Mapping for:
Gillets Creek, Freeman Creek, Browns Creek
303(d) List of Impaired Waters and TMDL Mapping
MCIEAST-MCB Camp Lejeune, North Carolina

Figure C-6

303(d) Listed Impairments			
Receiving Water [AU Number]	**Classification**	**Impairments**	**Watershed Area (ac.)**
Mill Creek (Bear Creek) [19-41-11-1]	SA; HQW	Prohibited shellfish harvesting (fecal)	1,230
Total Maximum Daily Loads			
Receiving Water [AU Number]	**Classification**	**Impairments**	**Watershed Area (ac.)**
Bear Creek [19-41-11a1]	SA; HQW	Prohibited shellfish harvesting (fecal) TMDL - fecal coliform (2011)	6,470



Source: AH, MCBCL, Esri
AH Project Number: 134-031
Contract Number: N62470-19-D-4001
Date: 12/01/2021
By: CJM

N

0 0.5 1 Miles

ENGINEERS & SCIENTISTS

Watershed Mapping for:
Mill Creek (Bear Creek), Bear Creek
303(d) List of Impaired Waters and TMDL Mapping
MCIEAST-MCB Camp Lejeune, North Carolina

Figure C-7

APPENDIX D

Total Maximum Daily Loads for Fecal Coliform for Bear Creek, North Carolina

(37 PAGES)

Total Maximum Daily Loads for Fecal Coliform for Bear Creek, North Carolina

[Waterbody IDs: 19-41-11a1; 19-41-11a2; 19-41-11a3; 19-41-11b1; 19-41-11b2]

Final Report

September 2011

White Oak River Basin

Prepared by:
NC Department of Environment and Natural Resources
Division of Water Quality
1617 Mail Service Center
Raleigh, NC 27699-1617

Table of Contents

List of Abbreviations

BMP	Best Management Practice
CAC	Conditionally-approved closed shellfish growing area classification
CAO	Conditionally-approved open shellfish growing area classification
CFR	Code of Federal Regulations
CWA	Clean Water Act
EPA	Environmental Protection Agency
FC	Fecal Coliform Bacteria
HQW	High Quality Water supplemental classification
HUC	Hydrologic Unit Code
LA	Load Allocation
MF	MF is an abbreviation for the membrane filter procedure for bacteriological analysis.
ml	Milliliter(s)
MOS	Margin of Safety
MPN	Most Probable Number
NCAC	NC Administration Code
NCDEH	North Carolina Division of Environmental Health
NCDOT	North Carolina Department of Transportation
NCDWQ	North Carolina Division of Water Quality
NLCD	National Land Cover Database
NOAA	National Oceanic and Atmospheric Administration
NSSP	National Shellfish Sanitation Program
ROW	NCDOT road right of way
SA	Class SA water body: suitable for commercial shellfishing and all other tidal saltwater use
TMDL	Total Maximum Daily Load
USGS	United States Geological Survey
WLA	Waste Load Allocation

SUMMARY

Total Maximum Daily Load (TMDL)

1. 303(d) Listed Waterbody Information

State: North Carolina

County: Onslow

Major River Basin: White Oak River Basin

Watershed: USGS HUC 03020106020070

Impaired Waterbody (2010 303(d) List):

Waterbody Name – [AU]	Description	Water Quality Classification	Acres
Bear Creek – [19-41-11a1]	From source to DEH closed area line	SA;HQW	88.1
Bear Creek – [19-41-11a2]	DEH CAC area along north shore of creek	SA;HQW	8.2
Bear Creek – [19-41-11a3]	DEH CAO area along south shore of creek	SA;HQW	19.2
Bear Creek – [19-41-11b1]	DEH CAC area along north shore of creek	SA;HQW	12.1
Bear Creek – [19-41-11b2]	DEH CAO area along south shore of creek	SA;HQW	179.8

Constituent(s) of Concern: Fecal Coliform Bacteria

Designated Uses: Shellfish harvesting, biological integrity, propagation of aquatic life, and recreation.

Applicable Tidal Salt Water Quality Standards for Class SA Waters:

"Organisms of coliform group: fecal coliform group not to exceed a median MF count of 14/100 ml and not more than 10 percent of the samples shall exceed an MF count of 43/100 ml in those areas most probably exposed to fecal contamination during the most unfavorable hydrographic and pollution conditions."

For the approval of shellfish growing areas "the median fecal coliform Most Probable Number (MPN) or the geometric mean MPN of water shall not exceed 14 per 100 milliliters, and not more than 10 percent of the samples shall exceed a fecal coliform MPN of 43 per 100 milliliters (per five tube decimal dilution) in those portions of areas most probably exposed to fecal contamination during most unfavorable hydrographic conditions" (15A NCAC 18A .0431 Standards for an Approved Shellfish Growing Area). In addition, "a minimum of the 30 most recent randomly collected samples from each sample station shall be used to calculate the median or geometric mean and 90th percentile to determine compliance with this standard" (NSSP, 2007).

2. TMDL Development

Development Tools (Analysis/Modeling): Steady-state tidal prism model

Critical Conditions: The 90th percentile concentration is the concentration exceeded only 10% of the time. Since the data used for model simulation spans 5 years, the critical condition is implicitly included in the value of the 90th percentile of model results.

Seasonal Variation: Given the long-term flow and water quality data record used to estimate the fecal coliform load, the seasonal variability is implicitly included in the analysis.

3. TMDL Allocation Summary

		Fecal Coliform Load (MPN/day)					
Waterbody	**AUs**	**Existing Load[1]**	**WLA[2]**	**LA**	**MOS**	**TMDL**	**% Reduction**
Lower Bear Creek	19-41-11b2	-	7.60E+09	6.07E+11	6.83E+10	6.83E+11	0%
Middle Bear Creek	19-41-11a2, 19-41-11a3, 19-41-11b1, 19-41-11b2	-	1.74E+09	1.39E+11	1.57E+10	1.57E+11	0%
Upper Bear Creek	19-41-11a1	3.67E+11	1.04E+09	1.02E+11	1.15E+10	1.15E+11	69%

1. *For Lower Bear Creek and Middle Bear Creek, the calculated existing loads are less than the estimated TMDL, and hence no reduction is needed. The FC water quality standard will be met in segments m1 and m2 once the TMDL is implemented and loading is reduced from the watershed of segment m3.*
2. *WLA applies to NCDOT.*

4. Public Notice Date: August 1, 2011

5. Submittal Date: September 7, 2011

6. Establishment Date: September 20, 2011

7. EPA Lead on TMDL (EPA or blank):

8. Endangered Species (yes or blank):

9. MS4s Contributions to Impairment (Yes or Blank):

10. TMDL Considers Point Source, Nonpoint Source, or both: Both

1 INTRODUCTION

Section 303(d) of the federal Clean Water Act (CWA) and the U.S. Environmental Protection Agency's (EPA) implementing regulations direct each State to develop a Total Maximum Daily Load (TMDL) for each impaired water quality limited segment on the Section 303(d) list, taking into account seasonal variations and a protective margin of safety (MOS) to account for uncertainty. A TMDL reflects the total pollutant loading that a waterbody can receive and still meet water quality standards.

TMDLs are established to achieve and maintain water quality standards. A water quality standard is the combination of a designated use for a particular body of water and the water quality criteria designed to protect that use. Designated uses include activities such as swimming, drinking water supply, and shellfish propagation and harvest. Water quality criteria consist of narrative statements and numeric values designed to protect the designated uses. Criteria may differ among waters with different designated uses.

The Bear Creek watershed is located in the White Oak River Basin (NC Subbasin 03-05-01 – HUC 03020106020070) along the North Carolina coast in Onslow County. The river is located within the shellfish area designated D-1 by the North Carolina Division of Environmental Health (NCDEH). All of the Bear Creek shellfish growing area is conditionally open or closed, or prohibited (Figure 1.1).

When shellfish harvesting is the designated use, the primary parameter of concern is fecal coliform bacteria (FC). Fecal coliform bacteria are found in the intestinal tract of humans and other warm-blooded animals. Few fecal coliform bacteria are pathogenic; however, the presence of elevated levels of fecal coliform in shellfish waters indicates recent sources of pollution. Some common waterborne diseases associated with the consumption of raw clams and oysters harvested from polluted water include viral and bacterial gastroenteritis and hepatitis A. Fecal coliform in surface waters may come from point sources (e.g., NPDES stormwater conveyances) and nonpoint sources.

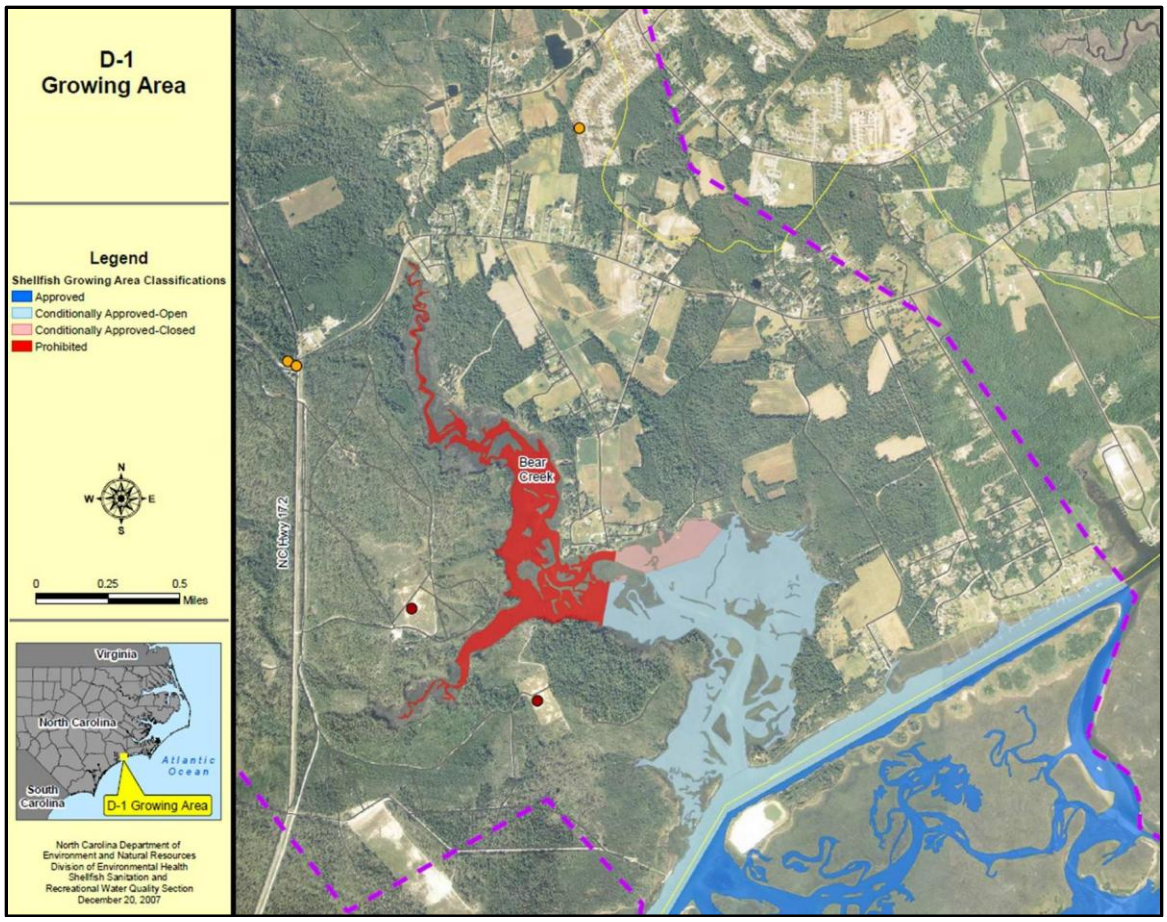


Figure 1.1 – Bear Creek Shellfish Growing Area (D-1) Classifications

1.1 TMDL Components

The 303(d) process requires that a TMDL be developed for each of the waters appearing in Category 5 of a state's Integrated Report. The objective of a TMDL is to estimate allowable pollutant loads and allocate to known sources so that actions may be taken to restore the water to its intended uses (USEPA, 1991). This TMDL is the total amount of a pollutant that can be assimilated by the receiving water while still achieving North Carolina's water quality criteria for shellfish waters. Currently, TMDLs are expressed as a "mass per unit time, toxicity, or other appropriate measure" (40 CFR 130.2(i)). It is also important to note that the TMDLs presented herein are not literal daily limits. These loads are based on an averaging period that is defined by the water quality criteria.

Generally, the primary components of a TMDL, as identified by EPA (1991, 2000) and the Federal Advisory Committee (USEPA, 1998) are as follows:

Target Identification or selection of pollutant(s) and end-point(s) for consideration. The pollutant and end-point are generally associated with measurable water quality related characteristics that indicate compliance with water quality standards. North Carolina indicates known pollutants on the 303(d) list.

Source Assessment. All sources that contribute to the impairment should be identified and loads quantified, where sufficient data exist.

Reduction Target. Estimation or level of pollutant reduction needed to achieve water quality goal. The level of pollution should be characterized for the waterbody, highlighting how current conditions deviate from the target end-point. Generally, this component is identified through water quality modeling.

Allocation of Pollutant Loads. Allocating pollutant control responsibility to the sources of impairment. The wasteload allocation portion of the TMDL accounts for the loads associated with existing and future point sources. Similarly, the load allocation portion of the TMDL accounts for the loads associated with existing and future non-point sources, stormwater, and natural background.

Margin of Safety. The margin of safety addresses uncertainties associated with pollutant loads, modeling techniques, and data collection. Per EPA (USEPA, 2000), the margin of safety may be expressed explicitly as unallocated assimilative capacity or implicitly due to conservative assumptions.

Seasonal Variation. The TMDL should consider seasonal variation in the pollutant loads and end-point. Variability can arise due to stream flows, temperatures, and exceptional events (e.g., droughts, hurricanes).

Critical Conditions. Critical conditions indicate the combination of environmental factors that result in just meeting the water quality criterion and have an acceptably low frequency of occurrence.

Section 303(d) of the CWA requires EPA to review all TMDLs for approval or disapproval. Once EPA approves a TMDL, then the waterbody may be moved to Category 4a of the Integrated Report. Waterbodies remain in Category 4a until compliance with water quality standards is achieved. Where conditions are not appropriate for the development of a TMDL, management strategies may still result in the restoration of water quality.

TMDL is comprised of the sum of individual wasteload allocations (WLAs) for point sources, load allocations (LAs) for nonpoint sources, and natural background levels. The TMDL must include a margin of safety (MOS), either implicitly or explicitly, that accounts for the uncertainty in the relationship between pollutant loads and the quality of the

receiving waterbody, and in the scientific and technical understanding of water quality in natural systems.

1.2 Documentation of Impairment

The North Carolina Division of Water Quality (NCDWQ) Surface Water and Wetlands classification for these impaired waters is Class SA, HQW Waters – Shellfish Harvesting Waters (15A NCAC 02B.0221 Tidal Salt Water Quality Standards for Class SA Waters). Class SA waters are waterbodies suitable for commercial shellfishing and all other tidal saltwater use (NCAD, 2003).

Five segments, or assessment units (AUs), of Bear Creek have been included in Category 5 of the 2010 North Carolina Integrated Report, as shown below in Table 1.1.

Table 1.1 – Bear Creek Impaired Assessment Units

Waterbody Name – [AU]	Description	Water Quality Classification	Acres
Bear Creek – [19-41-11a1]	From source to DEH closed area line	SA;HQW	88.1
Bear Creek – [19-41-11a2]	DEH CAC area along north shore of creek	SA;HQW	8.2
Bear Creek – [19-41-11a3]	DEH CAO area along south shore of creek	SA;HQW	19.2
Bear Creek – [19-41-11b1]	DEH CAC area along north shore of creek	SA;HQW	12.1
Bear Creek – [19-41-11b2]	DEH CAO area along south shore of creek	SA;HQW	179.8

These restricted shellfish harvesting areas are identified as areas that do not meet their designated uses. Waters within this classification, according to 15A NCAC 02B.0221 (Tidal Salt Water Quality Standards for Class SA Waters), must meet the following water quality standard in order to meet their designated use:

> *Organisms of coliform group: fecal coliform group not to exceed a median MF count of 14/100 ml and not more than 10 percent of the samples shall exceed an MF count of 43/100 ml in those areas most probably exposed to fecal contamination during the most unfavorable hydrographic and pollution conditions.*

In addition, for approval of shellfish growing areas “the median fecal coliform Most Probable Number (MPN) or the geometric mean MPN of water shall not exceed 14 per 100 milliliters, and not more than 10 percent of the samples shall exceed a fecal coliform MPN of 43 per 100 milliliters (per five tube decimal dilution) in those portions

of areas most probably exposed to fecal contamination during most unfavorable hydrographic conditions" (15A NCAC 18A .0431 Standards for an Approved Shellfish Growing Area). In addition, "a minimum of the 30 most recent randomly collected samples from each sample station shall be used to calculate the median or geometric mean and 90th percentile to determine compliance with this standard" (NSSP, 2007).

For this report, the monitoring data averaging period was based on monitoring procedures for approval of SA water. The most recent five-year period of data was used, September 2005 – August 2010. A detailed analysis of the data used can be found in Appendix A.

1.3 Watershed Description

Bear Creek falls within the NCDEH D-1 Growing Area in Onslow County. The watershed was delineated using EPA BASINS (http://water.epa.gov/scitech/datait/models/basins/). The resulting watershed outline is provided below in Figure 1.2. The watershed area is less than 11 square miles.

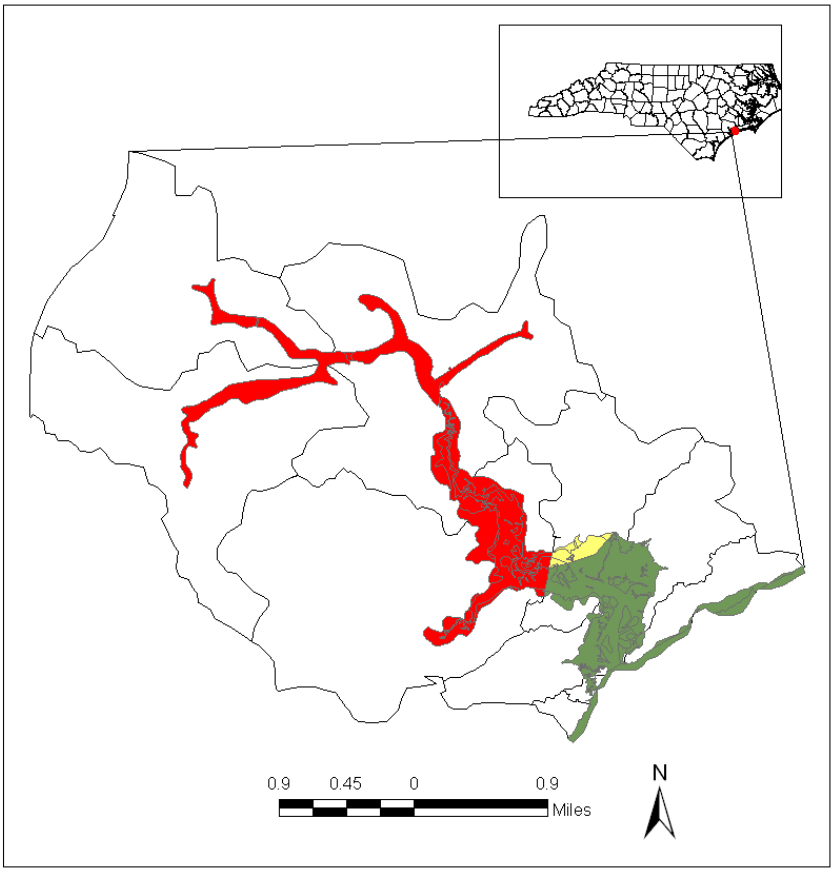


Figure 1.2 – Bear Creek watershed delineation overlaid with NCDEH shellfish growing area classifications (red: prohibited; yellow: CAC; green: CAO)

The 2006 National Land Cover Database (NLCD) was used to obtain land cover characteristics of the watershed (http://www.mrlc.gov/nlcd2006_downloads.php). Land cover distribution is shown in Figure 1.3 and land cover acreages are provided in Table 1.2. The dominant land covers in this watershed are shrub/scrub, forest, and wetlands.

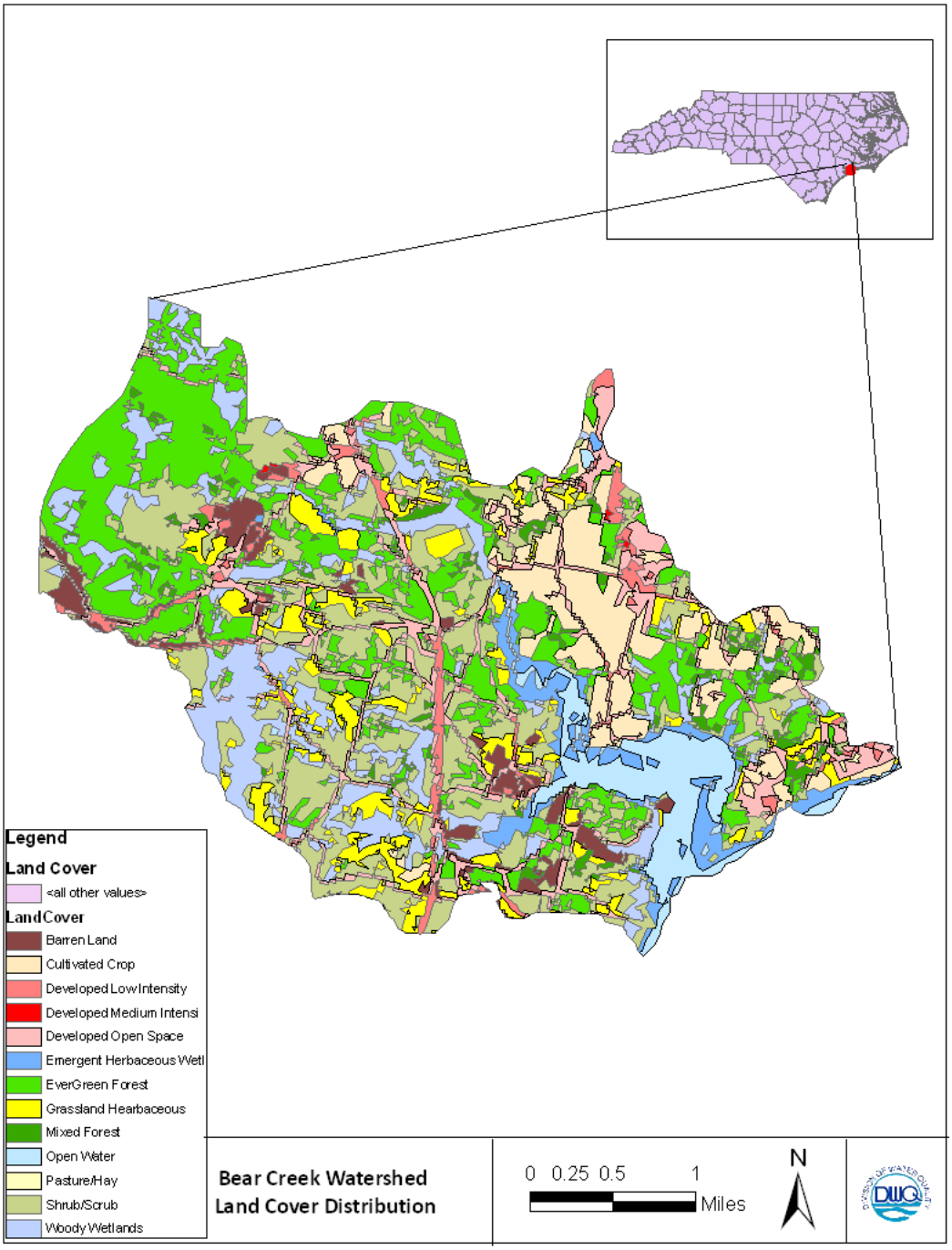


Figure 1.3 – 2006 NLCD Land Cover of the Bear Creek Watershed

Table 1.2 – 2006 Land Cover Distribution of the Bear Creek Watershed

Land Cover Category	Area (acres)	Percent Total
Developed Low Intensity	200.0	2.89%
Developed Medium Intensity	4.3	0.06%
Developed Open Space	593.5	8.56%
Cultivated Crop	612.7	8.84%
Pasture/Hay	2.4	0.03%
Evergreen Forest	1450.7	20.93%
Mixed Forest	169.0	2.44%
Herbaceous Grassland	511.1	7.37%
Shrub/Scrub	1672.6	24.13%
Emergent Herbaceous Wetland	253.6	3.66%
Woody Wetlands	879.6	12.69%
Barren Land	217.9	3.14%
Open Water	365.2	5.27%
Total Area	6932.8	100.00%

The D-1 growing area is not densely inhabited, with a total population of less than 1,900 according to US Census data from 2000. Residential development is isolated to the eastern shore of the Bear Creek. The entire western shore is part of the Camp LeJeune Marine Corps Base. This portion of the Base is used for training purposes.

The dominant tide in this region is the lunar semi-diurnal (M_2) tide with a mean tidal range of 3.11 ft based on the NOAA station at Beaufort, NC (NOAA, 2010). Oysters and clams grow well throughout the area with clam production being the most significant commercial species.

1.4 Water Quality Characterization

The Shellfish Sanitation and Recreational Water Quality Section of the NCDEH is responsible for classifying shellfish harvesting waters to ensure oysters and clams are safe for human consumption. NCDEH adheres to the requirements of the National Shellfish Sanitation Program (NSSP), with oversight by the U.S. Food and Drug Administration. NCDEH conducts shoreline surveys and collects routine bacteria water quality samples in the shellfish-growing areas of North Carolina. The data are used to determine if the water quality criteria are being met. If the water quality criteria are exceeded, the shellfish areas are closed to harvest, at least temporarily, and consequently the designated use is not being achieved.

NCDEH has monitored shellfish growing regions throughout North Carolina for the past several decades. Bear Creek is sampled using the systematic random sampling strategy as outlined in the National Shellfish Sanitation Program's Model Ordinance and guidance document. In addition to the routine random monitoring of the areas, conditional area samples are collected after rainfall events for some stations.

There are 18 fecal coliform monitoring stations sampled by the NCDEH in the D-1 Growing Area, as shown in Figure 1.4. Most of the data available were collected through the random monitoring strategy, although five stations are regularly sampled under the conditional monitoring strategy after rainfall events (Stations 6, 7, 8, 8A, 9). NCDEH data from September 2005-August 2010 are summarized in Appendix A. The 2009 NCDEH Sanitary Survey Report notes one station did not meet standards for growing area criteria (NCDEH, 2009).

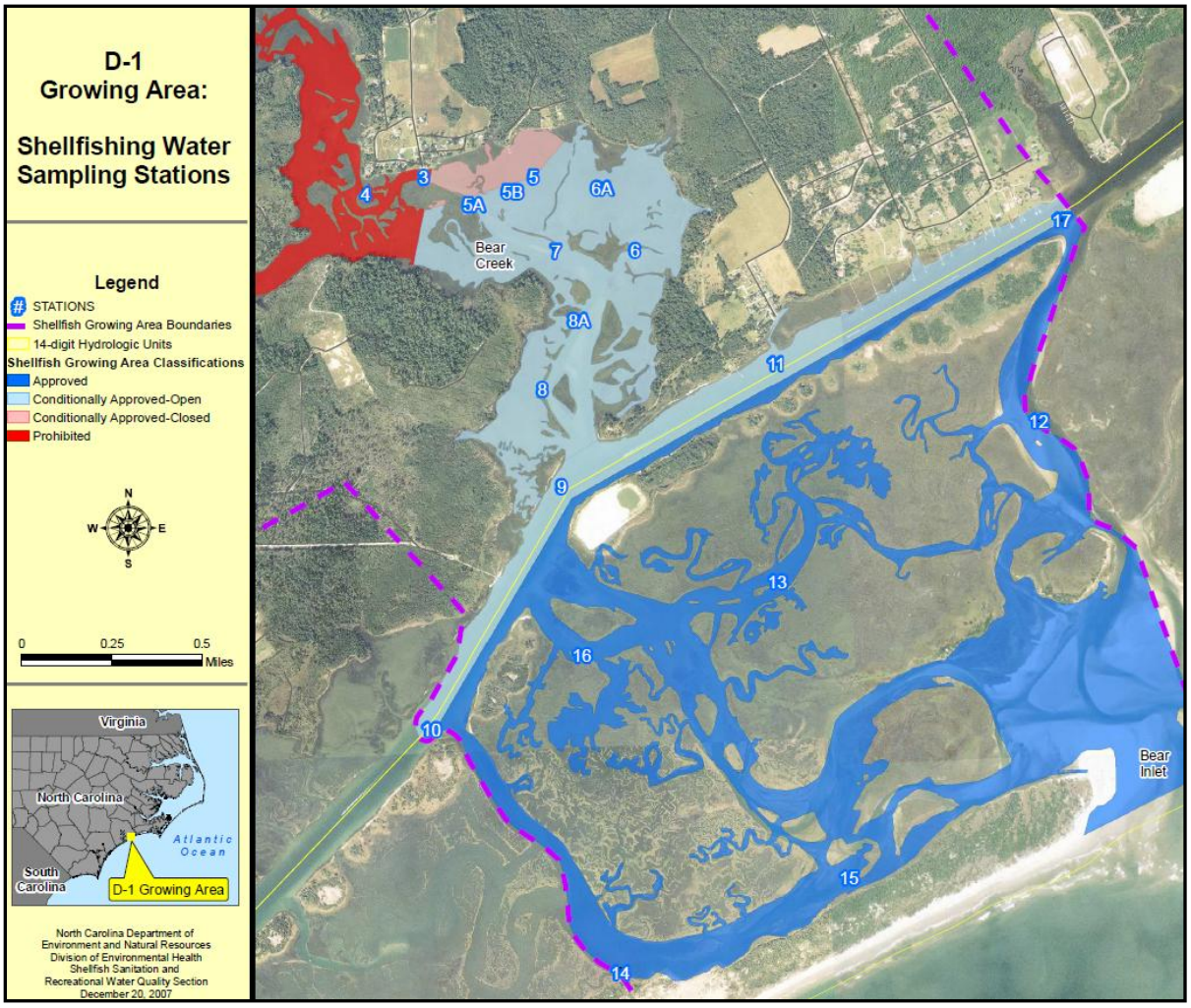


Figure 1.4 – NCDEH Fecal Coliform Monitoring Stations (note that station 4 has not been sampled since May 2005)

2 SOURCE ASSESSMENT

2.1 Nonpoint Source Assessment

Non-point sources are diffuse sources that typically cannot be identified as entering a water body at a single location. Nonpoint source loading typically occurs during rain events when surface runoff transports water carrying fecal coliform over the land surface and discharges it into the stream network. The transport of fecal coliform from the land to the restricted shellfish harvesting area is dictated by the hydrology, soil type, land use, and topography of the watershed.

There are many types of nonpoint sources in watersheds that contribute to the restricted shellfish harvesting areas. The most recent NCDEH Shoreline Survey (NCDEH, 2009) documented and mapped potential sources of fecal coliform in Bear Creek. The survey found that stormwater draining off of agricultural lands, residential areas, and roadways into Bear Creek and its tributaries is of particular concern due to the steep grades along the shoreline throughout the area.

Nonpoint source contributions to the bacterial levels from human activities generally arise from malfunctioning or improperly-sited septic systems and their associated drain fields, or illicit connections of sanitary sewage to the stormwater conveyance system. The majority of onsite systems in the growing area were visited and inspected during the shoreline survey (NCDEH, 2009) and were found to be functioning properly. Pet waste can also be a significant source of fecal coliform bacteria loading.

Grazing animals contribute fecal coliform through either direct access to streams or runoff from deposition or manure spreading. According to the shoreline survey, there are several animal farms within the D-1 watershed, although none are particularly large. Land cover data for the watershed indicates that pasture/hay land area (grazing land) represents less than 1 percent of the watershed.

Agricultural fields are widespread in the D-1 watershed. Common crops include cotton, tobacco, hay, and corn. Several of these fields have drainages that reach either Bear Creek itself or have a tributary to Bear Creek and are likely to contribute fecal coliform bacteria to the creeks and waterways following rain events (NCDEH, 2009).

Wildlife in the watershed are considered to make up background concentrations of fecal coliform. There are various forested areas and agricultural fields scattered throughout the watershed, so wildlife is prevalent throughout the majority of this region. Large populations of deer, foxes, raccoons, and other small mammals are found in the area, as well as waterfowl and other birds. Waste from these animals can reach the creek either through direct deposition or through transportation through stormwater ditches.

2.2 Point Source Assessment

All wastewater discharges to surface water in the State of North Carolina must receive a permit to control water pollution. Stormwater has previously been considered to be a nonpoint source; however, NPDES-permitted sources are to be included in the wasteload allocation (WLA) per EPA guidance (USEPA, 2002).

The only point source in the Bear Creek watershed is the NC Department of Transportation (NCDOT) which has a statewide Phase I NPDES stormwater permit (NCS000250).

3 TOTAL MAXIMUM DAILY LOADS AND LOAD ALLOCATION

3.1 TMDL Objective

The TMDL objective is to meet North Carolina water quality fecal coliform standards of a median MF count of 14 per 100 ml and not more than 10 percent of the samples shall exceed an MF count of 43 per 100 ml. In addition, the National Shellfish Sanitation Program (NSSP) standard for the approved classification of growing areas requires that fecal coliform concentrations not exceed a median or geometric mean of a MPN of 14 per 100 ml and the 90^{th} percentile of a MPN of 43 per 100 ml, with a minimum of the 30 most recent samples used to calculate compliance.

Both standards have the same numeric targets but the NSSP standard uses a minimum 30- sample averaging period. Data collected from September 2005 through August 2010 were used for the purpose of this TMDL.

3.2 Modeling

3.2.1 Approach

Bay and coastal waters such as Bear Creek are subject to the action of the tides. The ebb and flood of the tide serves to move water between locations exchanging and mixing with other water. The tide and amount of freshwater discharge into the embayment are the dominant influences on the transport of fecal coliform. Therefore, the TMDL was calculated using the spreadsheet-based steady-state tidal prism model. This modeling approach has been used in approved TMDLs in several other states (MDE, 2004; VADEQ, 2005).

The steady-state tidal prism model is spreadsheet-based and incorporates the influences of tidally induced transport, freshwater input, and removal of fecal coliform via decay. Depending on the geometry of the embayment, the model may have multiple segments. The model assumes that the embayment is well mixed within a single segment, and freshwater input, tidal range, and the first-order decay of fecal coliform are all constant. A brief description of the model is presented below.

The steady-state tidal prism model calculates fecal coliform load using equation 3.1:

$$L = [C(Q_b + kV) - Q_0C_0] \times Cf \qquad (3.1)$$

where:

- L = fecal coliform load (counts per day)
- C = mean fecal coliform concentration (MPN /100ml) of the segment
- k = the fecal coliform removal/decay rate (per tidal cycle)

C_0 = the fecal coliform concentration (MPN/100ml) entering the segment on the flood tide
Q_0 = the quantity of water that enters the segment on the flood tide that did not flow out of the segment on the previous ebb tide (m^3 per tidal cycle)
Q_b = the quantity of mixed water that leaves the segment on the ebb tide that did not enter the segment on the previous flood tide (m^3 per tidal cycle)
V = the mean volume of the segment (m^3)
Cf = the unit conversion factor

The fecal coliform decay rate, *k*, was set at 0.36 per tidal cycle, which is considered a conservative estimate. The value of the decay rate varies from between 0.3 and 3.0 in salt water (Thomann and Mueller, 1987). Q_b and Q_0 are estimated based on the steady state condition as follows:

$$Q_b = Q_0 + Q_f$$
$$Q_0 = \beta Q_T$$

where:
Q_f = mean freshwater input during one tidal cycle
β = exchange ratio
Q_T = the quantity of water that enters the segment on the flood tide

Q_T is calculated based on the tidal range. The dominant tide in this region is the lunar semi-diurnal (M_2) tide with a tidal period of 12.42 hours. The mean tidal range is assumed to be 3.11 ft, as monitored at a nearby NOAA station at Beaufort, NC. In general, the exchange ratio varies from 0.3 to 0.7, based on the previous model tests in coastal embayments (Kuo et al., 1998; Shen et al., 2002). A mean value of 0.5 was used for the exchange ratio.

The stream flow (Q_f) used to represent the fresh water inflow was based on a ratio of the drainage area of the Bear Creek watershed as compared to the drainage area and the stream flows measured by the U.S. Geological Survey at the New River gaging station (USGS 02093000) near Gum Branch, NC. The selection of the gaging station for use in the model is determined by its similarity in watershed characteristics to the Bear Creek watershed and the proximity of the station to the TMDL study area. Appendix B provides model inputs and parameters used for the 90th percentile calculations.

3.2.2 Existing Load Calculation

Model segmentation is provided below in Figure 3.1. Existing median and 90th percentile concentrations for each segment are required as model inputs. These were calculated by combining monitoring data from all monitoring stations within each segment and calculating the overall median and the 90th percentile fecal coliform

concentrations. Table 3.1 provides the monitoring stations used in each model segment and the overall median and 90th percentile concentrations.

NCDEH conditional monitoring data were not used to calculate existing concentrations because conditional monitoring only takes place in a few stations close to the mouth of Bear Creek after rainfall events to see if waters can be reopened to shellfishing. These concentrations tend to be inconsistently higher compared to stations where conditional monitoring data were not collected (as shown in Appendix A, Table A.1). Therefore, to avoid creating bias in the model, conditional data were not used to calculate existing loads.

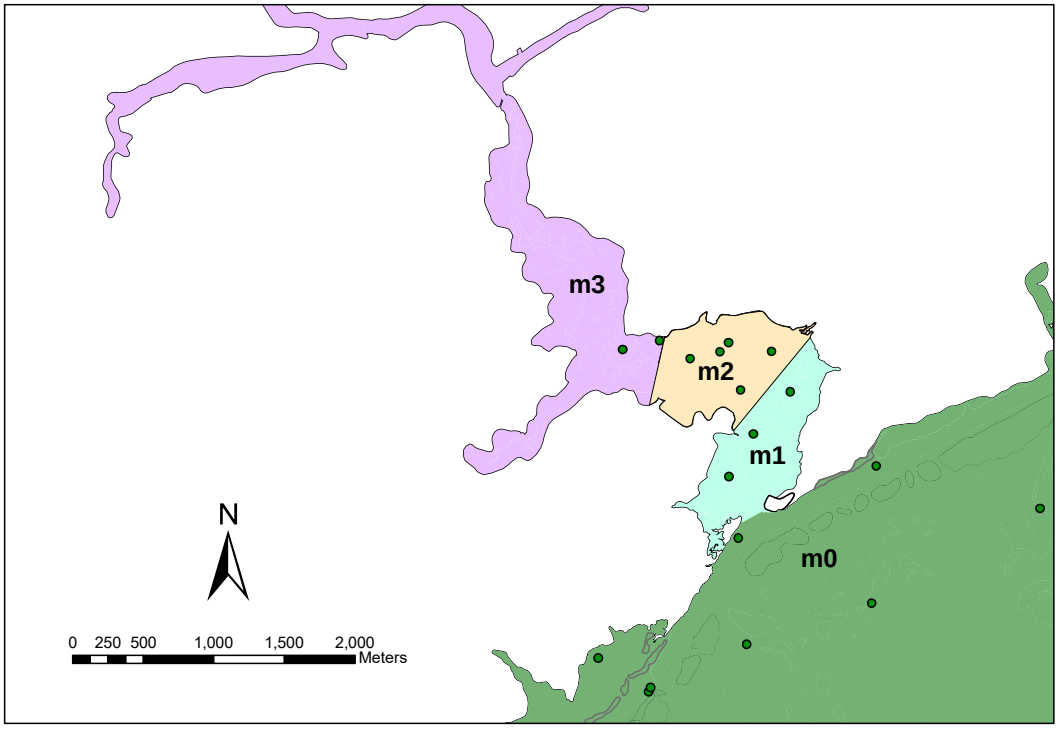


Figure 3.1 – Model Segmentation

Table 3.1 – Monitoring stations and assessment units associated with each model segment

Model Segment	Waterbody	AUs	NCDEH Monitoring Station(s)	Median FC (MPN/100 ml)	90th Percentile FC (MPN/100ml)
m0	Ocean Boundary		9, 10, 11	2.0	8.0
m1	Lower Bear Creek	19-41-11b2	6, 8, 8A	2.0	18.0
m2	Middle Bear Creek	19-41-11a2, 19-41-11a3, 19-41-11b1, 19-41-11b2	5, 5A, 5B, 6A, 7	4.5	24.0
m3	Upper Bear Creek	19-41-11a1	3	7.8	75

The concentrations listed in Table 3.1 were then used in Equation 3.1 to calculate the existing fecal coliform loads associated with both the median and the 90th percentile concentrations. Table 3.2 presents the estimated existing loads for each segment.

3.2.3 TMDL Calculation

The TMDL was calculated by using Equation 3.1 and the North Carolina water quality fecal coliform standards of a median of 14 counts per 100 ml and a 90th percentile of 43 counts per 100 ml. Table 3.2 presents the estimated TMDL for each segment.

The percent load reduction needed to meet the fecal coliform standard was estimated using equation 3.2:

$$Reduction = (Existing\ Load - TMDL)/Existing\ Load \quad (3.2)$$

Table 3.2 – Load reduction requirements under variations of standard criteria

Standard Category	Segment	AUs	Standard (MPN/100ml)	Estimated Existing Load (MPN/day)	TMDL (MPN/day)	Percent Reduction Required
Median	m1	19-41-11b2	14	Less than TMDL	2.29E+11	0%
	m2	19-41-11a2, 19-41-11a3, 19-41-11b1, 19-41-11b2	14	Less than TMDL	5.11E+10	0%
	m3	19-41-11a1	14	Less than TMDL	3.74E+10	0%
90th percentile	m1	19-41-11b2	43	Less than TMDL	6.83E+11	0%
	m2	19-41-11a2, 19-41-11a3, 19-41-11b1, 19-41-11b2	43	Less than TMDL	1.57E+11	0%
	m3	19-41-11a1	43	3.67E+11	1.15E+11	69%

Using median concentration and the corresponding median standard, the calculated existing loads are less than the TMDL in all segments. This is also reflected in the low median concentrations calculated from the monitoring data. In contrast, when 90th percentile concentrations and the corresponding 90th percentile water quality standard are used, a 69% load reduction is needed in the watershed of segment m3. No reduction in loading is needed from the watersheds of segment m1 and m2 due to their lower existing load than the TMDL. The FC water quality standard will be met in segments m1 and m2 once the TMDL is implemented and loading is reduced from the watershed of segment m3.

Required reductions in loading are higher for the 90th percentile model results (highlighted in orange in Table 3.2) and allow for both standards to be met. Therefore, the TMDL was calculated using the 90th percentile criterion.

3.3 TMDL Allocation

Total Maximum Daily Load (TMDL) can be defined as the total amount of pollutant that can be assimilated by the receiving water body while achieving water quality standards. A TMDL can be expressed as the sum of all point source allocations (WLAs), nonpoint source allocations (LAs), and an appropriate margin of safety (MOS), which takes into account any uncertainty concerning the relationship between effluent limitations and water quality. This definition can be expressed by equation 3.3.

$$TMDL = \sum WLAs + \sum LAs + MOS \quad (3.3)$$

The objective of the TMDL is to estimate allowable pollutant loads and to allocate those loads in order to implement control measures and to achieve water quality standards. The Code of Federal Regulations (40 CFR § 130.2 (1)) states that TMDLs can be expressed in terms of mass per time, toxicity, or other appropriate measures. The systematic procedures adopted to estimate TMDLs are described below.

3.3.1 Margin of Safety (MOS)

A Margin of Safety (MOS) is required as part of a TMDL in recognition of many uncertainties in the understanding and simulation of water quality in natural systems. For example, knowledge is incomplete regarding the exact nature and magnitude of pollutant loads from various sources and the specific impacts of those pollutants on the chemical and biological quality of complex, natural water bodies. The MOS is intended to account for such uncertainties in a manner that is conservative from the standpoint of environmental protection.

As a conservative estimate in the TMDL calculation, an explicit MOS of 10% is included. The explicit MOS was achieved by multiplying the TMDL by 10%. These loads are shown in Table 3.3.

Table 3.3 – Margin of Safety Allocation

		Fecal Coliform Load (MPN/day)		
Standard Category	**Segment**	**TMDL**	**MOS**	**Allowable Load (TMDL – MOS)**
90th Percentile	m1	6.83E+11	6.83E+10	6.15E+11
	m2	1.57E+11	1.57E+10	1.41E+11
	m3	1.15E+11	1.15E+10	1.03E+11

3.3.2 Waste Load Allocation (WLA)

As described in Section 2.2, NCDOT is the only NPDES-permitted discharge in the watershed. Data is not available to calculate the existing load for the NCDOT.

The WLA for NCDOT land was isolated from other sources by multiplying the total load and the ratio of NCDOT road right of way (ROW) area to total subwatershed area. The NCDOT ROW area was calculated by multiplying the road length and width of US highways, NC roads, and state route roads within the watershed. The NCDOT ROW is only 1.0% of the total watershed area, as shown below in Table 3.4, and is therefore not considered to be a major source of fecal bacteria loading. The resulting WLA for NCDOT is provided below in Table 3.5.

NCDOT will continue to implement measures required by the permit, including illicit discharge detection and elimination, post-construction controls, management of hydraulic encroachments, sediment and erosion control, BMP retrofits, stormwater pollution prevention for industrial facilities, research, and education programs.

Table 3.4 - Bear Creek Watershed NCDOT Contributing Area by Subwatershed

Segment #	Total Sub-Watershed Area (acres)	NCDOT Land Area (acres)	NCDOT Land Area (% of total)
m1	696	8.6	1.2%
m2	644	7.9	1.2%
m3	5298	53.5	1.0%
Total	6638	70	1.0%

Table 3.5 – NPDES Wasteload Allocations

NPDES Permittee	Segment #	NCDOT Existing Permitted Load (MPN/day)	WLA (MPN/day)	Percent Reduction
NCDOT	m1	N/A	7.60E+09	0%
	m2	N/A	1.74E+09	0%
	m3	N/A	1.04E+09	0%

3.3.3 Load Allocation (LA)

All fecal coliform loadings from nonpoint sources such as non-MS4 urban land, agriculture land, and forestlands are reported as LAs. The LA allocations were estimated by subtracting the MOS and WLA allocations from the TMDL. The estimated allocations of fecal coliform loading from nonpoint sources are presented in Table 3.6 and equate to the overall TMDL percent reduction.

Table 3.6 – Nonpoint Source Allocation

Segment #	LA (MPN/day)
m1	6.07E+11
m2	1.39E+11
m3	1.02E+11

3.3.4 Critical Condition and Seasonal Variation

The EPA Code of Federal Regulations (40 CFR 130.7 (c) (1)) requires TMDLs to take into account critical conditions for stream flow, loading, and water quality parameters. The intent of this requirement is to ensure that the water quality of the waterbody is protected during times when it is most vulnerable. The critical condition accounts for the hydrologic variation in the watershed over many sampling years whereas the critical period is the condition under which a waterbody is the most likely to violate the water quality standard(s).

The 90th percentile concentration is the concentration exceeded only 10% of the time. Since the data used for model simulation spans 5 years, the critical condition is implicitly included in the value of the 90th percentile of model results. Given the length of the monitoring record and the standard's recognition of unusual and infrequent events, the 90th percentile is used instead of the absolute maximum.

The EPA also requires that these TMDL studies take into account seasonal variations. The consideration of critical condition and seasonal variation is to account for the hydrologic and source variations. Seasonal variations involve changes in surface runoff,

stream flow, and water quality as a result of hydrologic and climatologic patterns. For the Bear Creek TMDL study, variations due to changes in the hydrologic cycle as well as temporal variability in fecal coliform sources are accounted for by the use of the long-term data record to estimate the current load.

The seasonal fecal coliform distribution for the stations in Segment m1 of Bear Creek is presented in Figure 3.2 and includes both the random and conditional monitoring data. The seasonal distributions of fecal coliform concentrations for the other segments are presented in Appendix A. The results show that high fecal coliform levels occur throughout the year in the estuary. The largest standard deviation corresponds to the highest concentration for each station. These high concentrations result in a high 90th percentile concentration. Given the long-term flow and water quality data record used to estimate the fecal coliform load, the seasonal variability is implicitly included in the analysis.

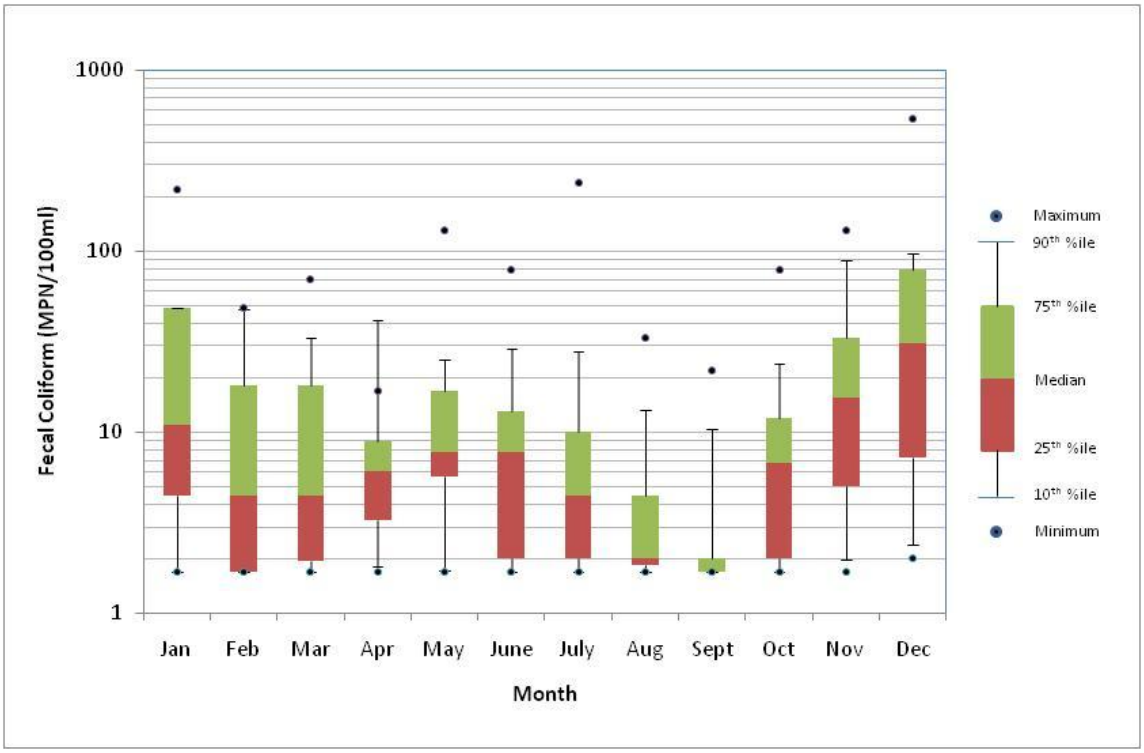


Figure 3.2 - Seasonal distribution of fecal coliform concentrations (random and conditional monitoring data combined) in Segment m1 (log scale)

3.3.5 TMDL Summary

A summary of the TMDL is provided below in Table 3.7. Reductions in fecal coliform loading are required for the Upper Bear Creek watershed (AU# 19-41-11a1). Upper Bear Creek corresponds to the NCDEH shellfish growing area classified as prohibited. As

shown above in Table 3.4, Upper Bear Creek receives drainage from about 80% of the total Bear Creek watershed and has the lowest calculated TMDL (Table 3.7). Reductions in loading from the Upper Bear Creek watershed allows for standards to be met throughout Bear Creek.

Table 3.7 – Estimated TMDL and Load Allocation for Fecal Coliform for Bear Creek

		Fecal Coliform Load (MPN/day)					
Waterbody	**AUs**	**Existing Load[1]**	**WLA[2]**	**LA**	**MOS**	**TMDL**	**% Reduction**
Lower Bear Creek (m1)	19-41-11b2	-	7.60E+09	6.07E+11	6.83E+10	6.83E+11	0%
Middle Bear Creek (m2)	19-41-11a2, 19-41-11a3, 19-41-11b1, 19-41-11b2	-	1.74E+09	1.39E+11	1.57E+10	1.57E+11	0%
Upper Bear Creek (m3)	19-41-11a1	3.67E+11	1.04E+09	1.02E+11	1.15E+10	1.15E+11	69%

1. *For Lower Bear Creek and Middle Bear Creek, the calculated existing loads are less than the TMDL, and hence no reduction is needed. The FC water quality standard will be met in segments m1 and m2 once the TMDL is implemented and loading is reduced from the watershed of segment m3.*
2. *WLA applies to NCDOT.*

4 TMDL IMPLEMENTATION PLAN

An implementation plan is not included in this TMDL. Local stakeholder groups, governments, and agencies are encouraged to develop an implementation plan and utilize funding sources for water quality improvement projects targeted at BMP construction and public outreach. Some potential funding sources include the North Carolina Clean Water Management Trust Fund, and Section 319 and 205j funds. Individual land owners may apply for the Community Conservation Assistance Program and Agriculture Cost Share Program to improve the condition of their property. The next NCDEH Sanitary Survey for the D-1 shellfish growing area will help further identify current sources of bacteria and drainage pathways that allow bacteria to enter Bear Creek.

NCDEH will continue to monitor water quality in Bear Creek using the systematic random sampling strategy as outlined in the National Shellfish Sanitation Program's Model Ordinance and guidance document. This data will be used to evaluate progress towards the goal of reaching water quality standards.

5 PUBLIC PARTICIPATION

A draft of the TMDL was publicly noticed through various means. NCDWQ electronically distributed the draft TMDL and public comment information to known interested parties. The announcement is provided in Appendix C. The TMDL was also available from the NCDWQ's website at http://portal.ncdenr.org/web/wq/ps/mtu/tmdl/tmdls during the comment period. The public comment period lasted from August 1 – September 1, 2011. NCDWQ received comments from NCDOT. A summary of their comments and NCDWQ's response is provided in Appendix D.

6 FURTHER INFORMATION

Further information concerning North Carolina's TMDL program can be found on the Internet at the Division of Water Quality website**:**
http://portal.ncdenr.org/web/wq/ps/mtu

Technical questions regarding this TMDL should be directed to the following members of the NCDWQ Modeling/TMDL Unit:

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Appendix A: NCDEH Monitoring Data Summary

Table A.1 – Bear Creek NCDEH Monitoring Data Summary, September 2005 - August 2010

			Fecal Coliform Bacteria Concentration (MPN/100 ml)		
Station	**# Samples**	**Type of Sampling**	**Median**	**Geometric Mean**	**90th Percentile**
3	31	Random	7.8	9.6	75
5	31	Random	6.8	8.0	36
5A	31	Random	4.5	6.0	31
5B	31	Random	4.5	6.2	25
6	31	Random	2.0	5.3	29
	78	Conditional	11	9.9	55
6A	31	Random	4.5	4.7	15
7	31	Random	4	4.8	20
	79	Conditional	11	11.4	56
8	31	Random	2.0	3.8	14
	86	Conditional	7.8	10.3	59
8A	31	Random	4	4.0	13
	77	Conditional	11	10.2	56
9	31	Random	2	3.5	10
	61	Conditional	6.8	8.2	54
10	31	Random	1.8	2.5	5
11	31	Random	2.0	3.6	10
12	31	Random	2	3.6	16
13	31	Random	1.8	2.9	8
14	31	Random	4	3.6	10
15	31	Random	2.0	4.1	17
16	31	Random	2	3.8	20
17	31	Random	2.0	3.1	9

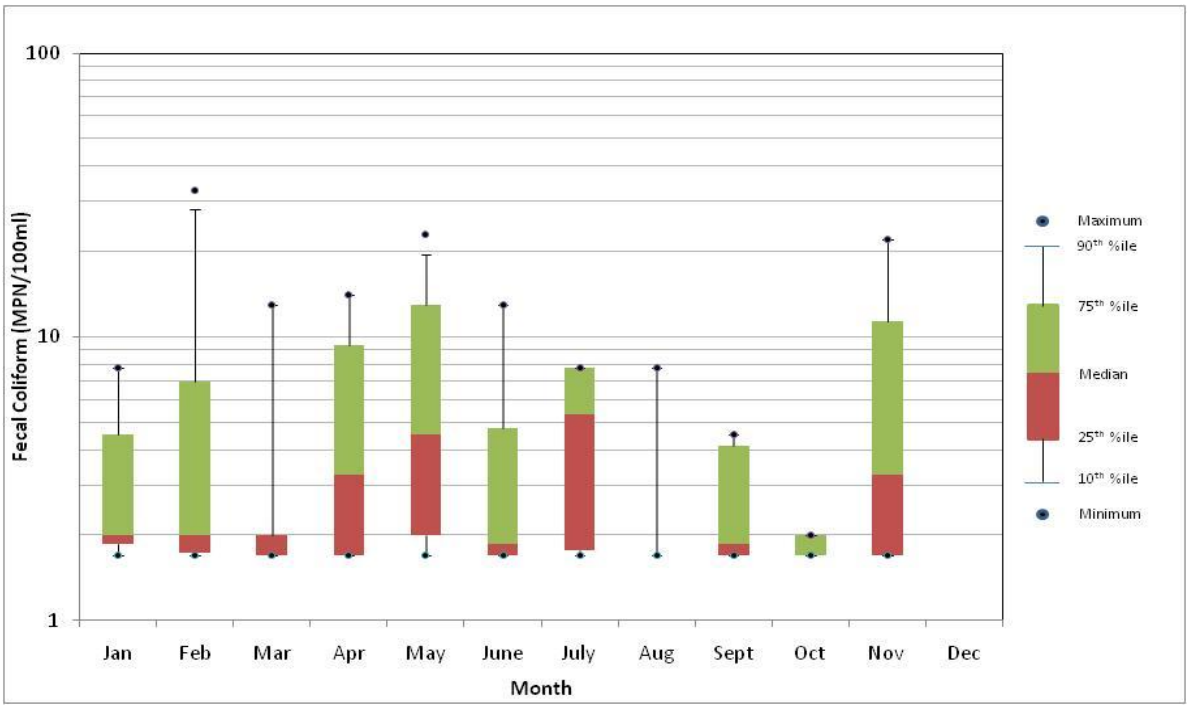

Figure A.1 - Seasonal distribution of fecal coliform concentrations (random monitoring data only) in Segment m0 (log scale)

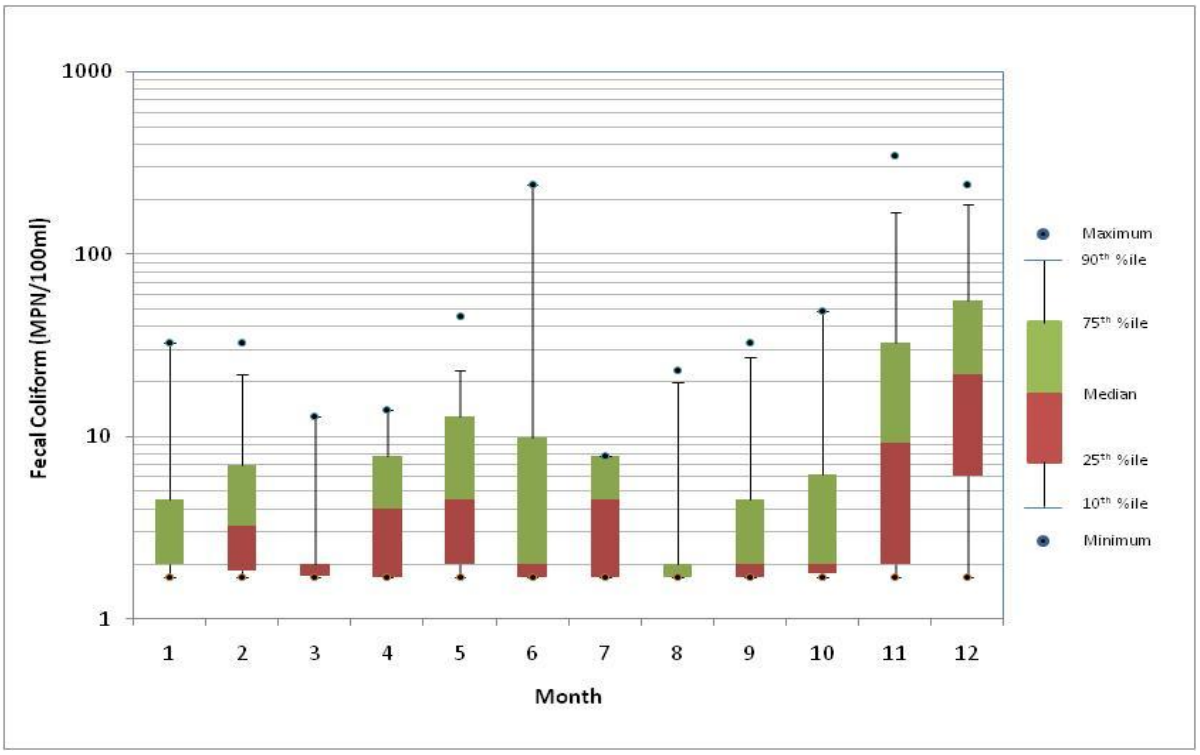

Figure A.2 - Seasonal distribution of fecal coliform concentrations (random and conditional monitoring data combined) in Segment m0 (log scale)

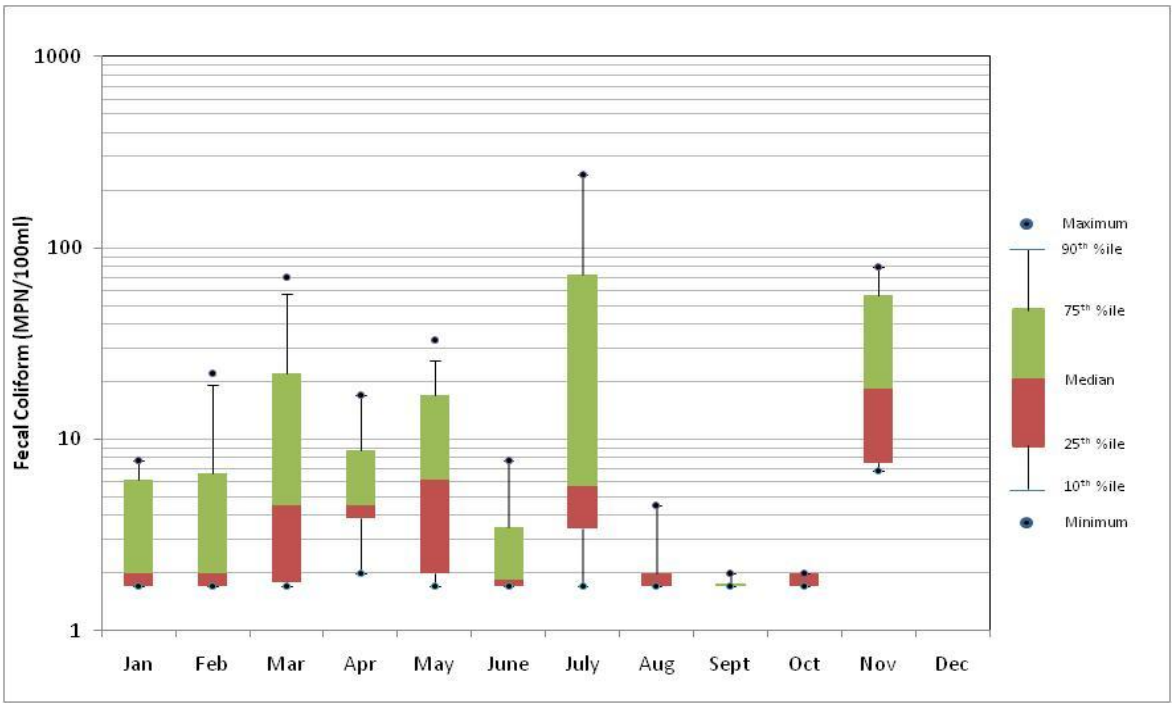

Figure A.3 - Seasonal distribution of fecal coliform concentrations (random monitoring data only) in Segment m1 (log scale)

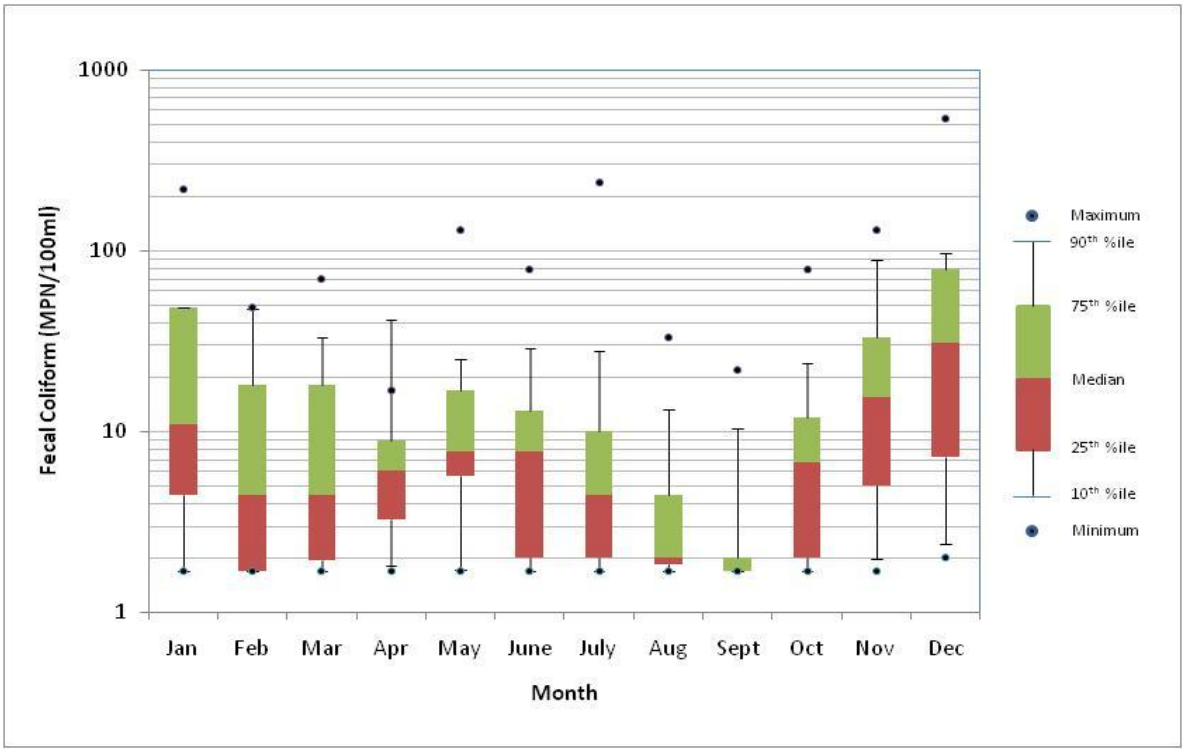

Figure A.4 - Seasonal distribution of fecal coliform concentrations (random and conditional monitoring data combined) in Segment m1 (log scale)

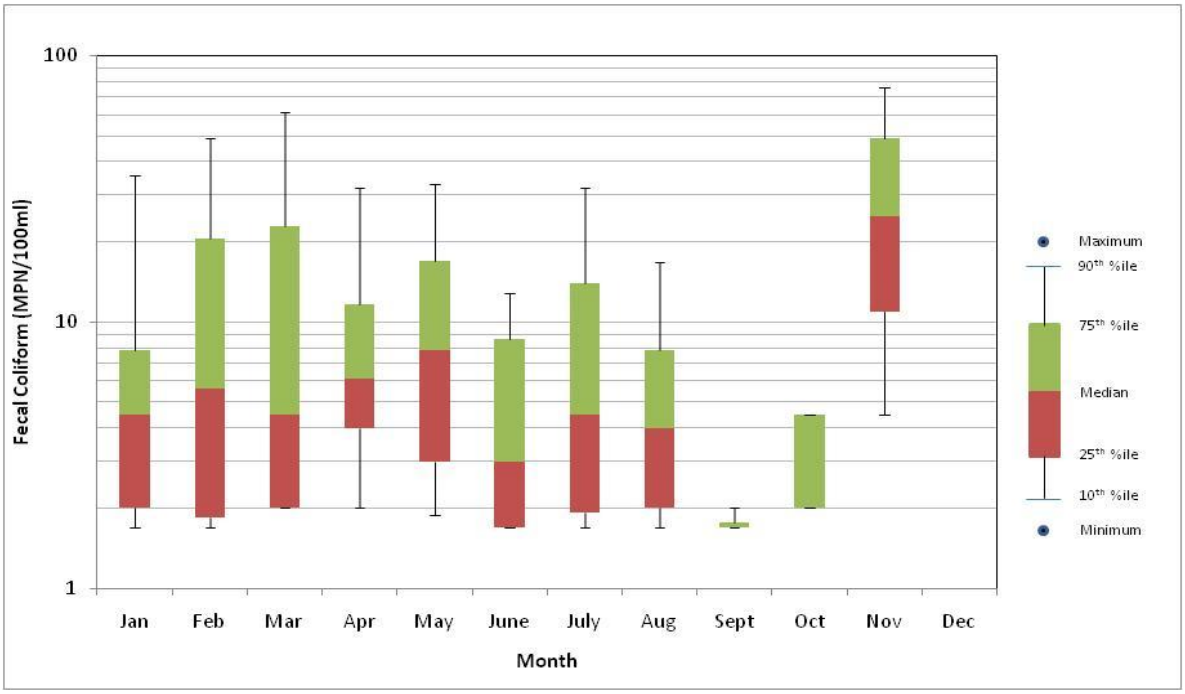

Figure A.5 - Seasonal distribution of fecal coliform concentrations (random monitoring data only) in Segment m2 (log scale)

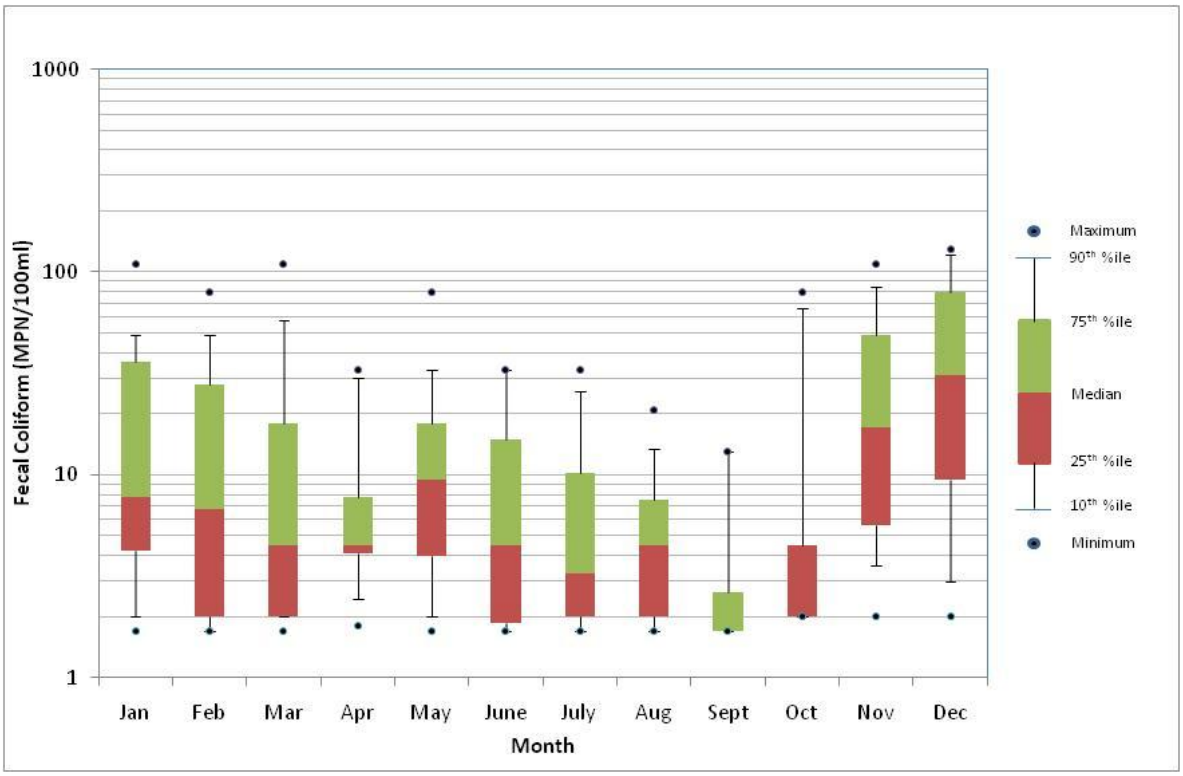

Figure A.6 - Seasonal distribution of fecal coliform concentrations (random and conditional monitoring data combined) in Segment m2 (log scale)

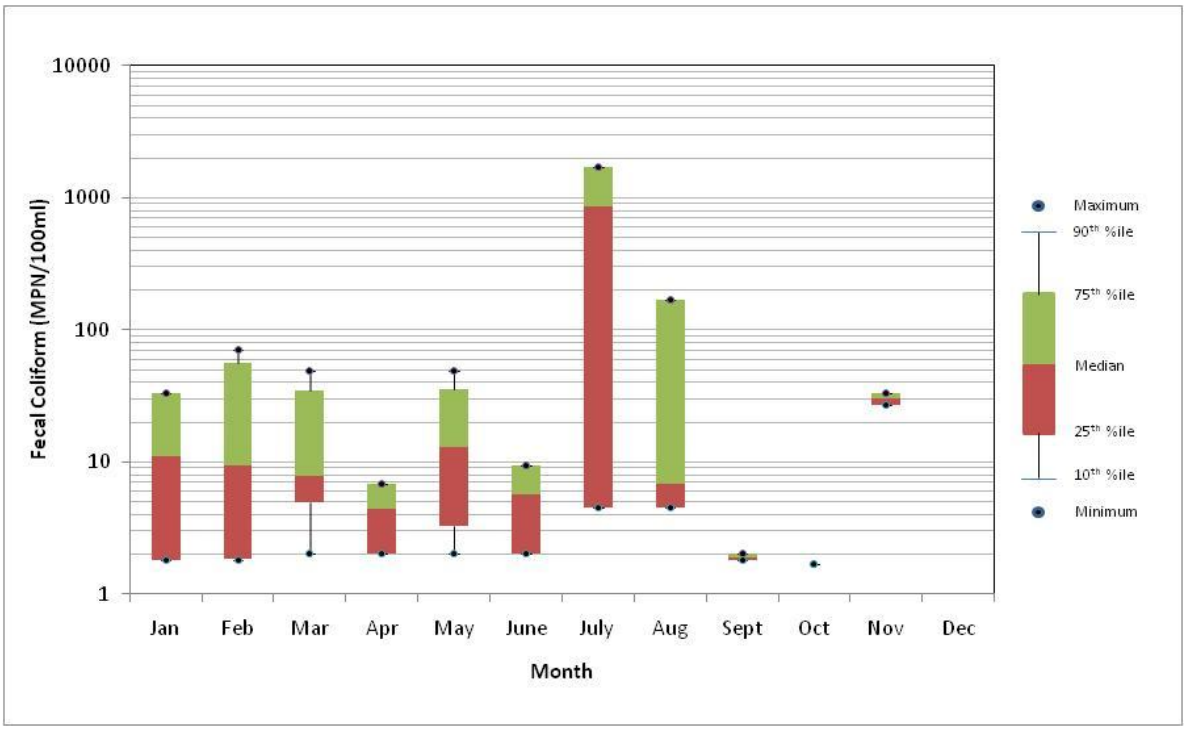

Figure A.7 - Seasonal distribution of fecal coliform concentrations (random monitoring data) in Segment m3 (log scale)

Appendix B: Bear Creek Steady-State Tidal Prism Model Inputs and Parameters

Table B-1. Model Parameters

Parameters	**TR**	**β**	**k**	**Cf**
Description	Mean tidal range	Exchange Ratio	Decay Rate	Unit Conversion Factor
Unit	m	N/A	Per Tidal Cycle (T^{-1})	T/day *100ml/m^3
Value	0.95	0.5	0.36	19323.67

Table B-2. Model Inputs for 90th percentile Existing Loads Calculation

Parameters	**V**	**C**	**C_0**	**Q_0**	**Q_b**	**Q_f**
Brief Description	Mean Volume	Mean FC Conc. of the segment	FC Conc. enters the segment	Water Quantity enters the segment	Water Quantity leaves the segment	Fresh Water Input
Unit	m^3	MPN/100ml	MPN/100ml	m^3T^{-1}	m^3T^{-1}	m^3T^{-1}
M1	941519	18	8 (from BC)	590902	957733	1700
			24(from m2)	365132		
M2	519969	24	18(from m1)	350618	534483	1573
			75(from m3)	182292		
M3	347615	75	24(from m2)	169351	182292	12941

Table B-3. Model Inputs for 90th percentile TMDL Loads Calculation

Parameters	**V**	**C**	**C_0**	**Q_0**	**Q_b**	**Q_f**
Brief Description	Mean Volume	Mean FC Conc. of the segment	FC Conc. enters the segment	Water Quantity enters the segment	Water Quantity leaves the segment	Fresh Water Input
Unit	m^3	MPN/100ml	MPN/100ml	m^3T^{-1}	m^3T^{-1}	m^3T^{-1}
M1	941519	43	8 (from BC)	590902	957733	1700
			43(from m2)	365132		
M2	519969	43	43(from m1)	350618	534483	1573
			43(from m3)	182292		
M3	347615	43	43(from m2)	169351	182292	12941

Appendix C: Public Announcement

-----Original Message-----
From: wrri-news-owner@lists.ncsu.edu [mailto:wrri-news-owner@lists.ncsu.edu]
Sent: Tuesday, August 02, 2011 4:22 AM
To: wrri-news@lists.ncsu.edu
Subject: [wrri-news] Digest (1 messages)

The WRRI Daily Digest
Volume 1 : Issue 787 : "text" Format

Messages in this Issue:
201108/2 : DRAFT Total Maximum Daily Load for fecal coliform for Bear Creek, White Oak River Basin, North Carolina
"Behm, Pamela" <pamela.behm@ncdenr.gov>

Date: Mon, 1 Aug 2011 14:43:10 +0000
From: "Behm, Pamela" <pamela.behm@ncdenr.gov>
To: "wrri-news@lists.ncsu.edu" <wrri-news@lists.ncsu.edu>
Subject: DRAFT Total Maximum Daily Load for fecal coliform for Bear Creek, White Oak River Basin, North Carolina
Message-ID: <02CA0C092108494BA1EF9743399BEEE8BD0A@NCWITMXMBX33.ad.ncmail>

Now Available for Public Comment

DRAFT Total Maximum Daily Load for fecal coliform for Bear Creek, White Oak River Basin, North Carolina

8/1/11
North Carolina Department of Environment and Natural Resources, Division of Water Quality

This draft TMDL report was prepared as a requirement of the Federal Water Pollution Control Act, Section 303(d). Interested parties are invited to comment on the draft TMDL report by September 1, 2011. Comments concerning the report should be directed to Pam Behm at pamela.behm@ncdenr.gov<mailto:pamela.behm@ncdenr.gov> or write to:

Pam Behm
NC Division of Water Quality
Planning Section
1617 Mail Service Center
Raleigh, NC 27699

The draft TMDL can be downloaded from the following website:
http://portal.ncdenr.org/web/wq/ps/mtu/tmdl/tmdls#Draft

****
Pam Behm
NC DWQ Modeling and TMDL Unit
1617 Mail Service Center
Raleigh, NC 27699

Email: pamela.behm@ncdenr.gov
Phone: 919-807-6419
Fax: 919-807-6497

[Attachment of type text/html removed.]

End of [wrri-news] Digest (1 messages)
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Appendix D: Public Comments Responsiveness Summary

The public comment period lasted from August 1 - September 1, 2011. Comments were received from NCDOT. A summary of their comments and NCDWQ's response is provided below.

1. The modeling approach used to calculate the TMDLs is referred to on p. 11 as the "spreadsheet-based steady-state tidal prism model." Is this model maintained and distributed by EPA?

   NCDWQ Response: The tidal prism model is one of the models that have been used to estimate pollutant loading in tidal areas and is one of the tools recommended by USEPA. The original model is maintained by the Virginia Institute of Marine Sciences (VIMS). As stated in the TMDL report, the simplified spreadsheet based tidal prism model used for this TMDL was also used by States of Maryland and Virginia to develop bacteria TMDLs for shellfish growing areas.

2. What is the version number and release date of the model used for these TMDLs?

   NCDWQ Response: There is no version number associated with the model. The simplified spreadsheet based tidal prism model used for the Bear Creek TMDL is the Bear Creek Version.

3. Is the model in the public domain? How can the public obtain a copy of the model?

   NCDWQ Response: The simplified spreadsheet based tidal prism model used for the Bear Creek TMDL is implemented in Excel and can be obtained from NCDWQ Modeling and TMDL Unit.

4. Is a user's manual/model documentation available for download on the internet? If so, please provide the URL. If not, can DWQ provide model documentation?

   NCDWQ Response: There is no separate manual for the model, but all the necessary guidelines to develop the model and the model description are included above in Section 3.2. The information included in this section is sufficient to setup the model. The spreadsheet is set-up to solve the equation given in Section 3.2 and there is no embedded code. A detailed description of the tidal prism model is published by VIMS researchers (Kuo et al., 1994).

5. For each model segment (m1, m2, and m3) please provide all the parameter values that were used to calculate the existing load and the TMDLs. When estimates of the parameters were used as opposed to measured values, please explain the basis for why the estimate is believed to be reasonable and appropriate.

   NCDWQ Response: The TMDL report has been revised to include this information in Appendix B. The derivation of model inputs is fully described in Section 3.2.

6. The existing fecal coliform loads for segments m1 and m2 are not reported. Please report the existing loads for these two segments.

   NCDWQ Response: As stated above in Section 3.2.3, these loads were estimated to be lower than the TMDL, thus there is no reduction required from sources draining into these segments.

7. Assessment Unit (AU) 19-41-11b2 is listed as being within both segments m1 and m2 and thus is subject to 2 different TMDLs. Please clarify which TMDL applies to this AU. Also, the TMDL for AU 19-41-11b2 calculated based on the 90th percentile standard category is higher than the TMDL for this AU calculated based on the median standard category. Please clarify why DWQ believes the higher allowable loading is protective of water quality standards.

   NCDWQ Response: The model segmentation is not based on assessment units. For this reason, the part of assessment unit contained within m1 would have a TMDL allocation of m1 and similarly the other part of assessment unit contained in m2 would have a TMDL allocation of m2. However, neither segment m1 nor m2 has an assigned percent reduction. Had there been a required percent reduction for these segments, the TMDL would be based on the water quality standard (either median or 90th percentile) requiring the highest percent reduction, not necessarily the lowest allowable loading. By definition, the 90th percentile calculation of allowable load will always be higher than the median calculation.

   A sentence has been added to the footnote of Table 3.7 in the report to reiterate that the FC water quality standard will be met in segments m1 and m2 once the TMDL is implemented and loading is reduced from the watershed of segment m3.

8. Please describe the time period over which the NCDOT's load should be averaged and how this time period was derived.

   NCDWQ Response: The time period used to derive the TMDL and associated NCDOT's WLA was September 2005-August 2010. NCDEH will continue to monitor water quality in Bear Creek using the systematic random sampling strategy as outlined in the National Shellfish Sanitation Program's Model Ordinance and guidance document. This data will be used to evaluate progress towards the goal of reaching water quality standards.

APPENDIX E

Post-Construction Program Base Order and Standard Operating Procedures

(TO BE ADDED TO SWMP AT A LATER DATE)