

# Table of Contents

1.0	<i>Public Education and Outreach/Public Participation and Involvement</i> .....	2
1.1	Conduct ECO Course .....	2
1.2	Distribute P2 News .....	2
1.3	Distribute Disposal Guides .....	2
1.4	Distribute Non-Point Source (NPS) Educational Materials .....	2
1.5	Maintain Hazardous Materials Collections Program .....	33
1.6	Adopt-A-Stream/Promote Anti-Littering.....	44
1.7	Maintain Recycling Programs .....	44
1.8	Initiate School Programs.....	44
1.9	Develop Storm-drain Stenciling Program.....	44
1.10	Conduct Exhibit at Earthday Jamboree.....	55
1.11	Measurable Goals .....	55
2.0	<i>Illicit Discharge Detection and Elimination</i> .....	88
2.1	Conduct Dry Weather Screening .....	88
2.2	Minimize Sanitary Sewer Overflows (SSOs) .....	88
2.3	Develop Adequate Legal Authority .....	88
2.4	Develop Storm Water Sampling Plan .....	88
2.5	Measurable Goals .....	99
3.0	<i>Construction Site Storm Water Runoff Management</i> .....	1010
3.1	Maintain Storm Water Permitting Program .....	1010
3.2	Develop Contractor Education Program .....	1010
3.3	Develop a Design Manual.....	1010
3.4	Measurable Goals .....	1111
4.0	<i>Post-Construction Storm Water Management</i> .....	1212
4.1	Inspect Existing Storm Water Controls .....	1212
4.2	Maintain O&M of Storm Water Controls .....	1212
4.3	Create a GIS Database for Erosion Problem Sites .....	1212
4.4	Conduct Needs Assessment for Additional Non-Structural and Structural BMPs.....	1212
4.5	Measurable Goals .....	1313
5.0	<i>Pollution Prevention and Good Housekeeping</i> .....	1414
5.1	Develop Unpaved Road Management Plan .....	1414
5.2	Implement Education Program for Relevant Installation Personnel .....	1414
5.3	Control Animal Waste .....	1414
5.4	Perform Street Cleaning .....	1414
5.5	Measurable Goals .....	1515

---

# Fort Jackson Storm Water Management Plan

The following document dictates the intentions of Fort Jackson with regard to compliance with the National Pollutant Discharge Elimination System Phase II regulations covered under the South Carolina General Permit for Discharges from Small Municipal Separate Storm Sewer Systems – SCS000000.

Implementation of all Best Management Practices and goals is subject to the availability of funds.

## 1.0 Public Education and Outreach/Public Participation and Involvement

### 1.1 Conduct ECO Course

The Environmental Compliance Officer course at Fort Jackson is an excellent tool to increase environmental awareness on the installation. A representative from each unit on the installation is chosen to receive training and become the unit ECO. ECO representatives are given informative notebooks with a comprehensive environmental curriculum and phone numbers to contact for proper clean-ups and disposal. The curriculum encompasses virtually any situation that may be encountered during daily training operations. Topics include storm water management, pollution prevention, hazardous materials, mitigation during a spill, wetlands, and recycling. In the event of a spill or any type of question relating to the protection of the environment, soldiers are trained to consult with their respective ECO. Fort Jackson will continue to implement this program throughout the permit term.

### 1.2 Distribute P2 News

The Fort Jackson Pollution Prevention (P2) News is a periodic newsletter published by the Environmental Management Office (EMO) of the DLE. The publication promotes environmental awareness with each publication generally devoted to a particular issue. Non-point source runoff educational material will be included in future editions of the newsletter. Upon publication, each new newsletter will be sent to every Fort Jackson e-mail address.

### 1.3 Distribute Disposal Guides

The EMO has also developed another type of publication related to environmental protection. This informative two-page document is a disposal guide for numerous sorts of household waste. The EMO has developed two forms of the publication: Fort Jackson Disposal Guide for Housing Occupants and Fort Jackson Disposal Guide for Units and Activities. Each document is tailored to waste products commonly produced by each of these entities. The documents outline recyclables accepted by the Recycling Center and where to dispose of potential reusable items. The guide also explains logistics such as how, where, and when to dispose of yard waste, cardboard, hazardous materials, lead acid batteries, used motor oil, and antifreeze. The document even includes location maps and phone numbers for each proper disposal center. The disposal guide for units and activities is contained in the ECO handbook, while the guide for residents is presented at the orientation for new housing residents.

### 1.4 Distribute Non-Point Source (NPS) Educational Materials

The Fort will either develop their own educational materials or obtain existing published materials from other entities. Numerous state and federal agencies with potential sources of information available will be contacted for educational materials on non-point source pollution.

The Clemson Extension Service provides numerous water quality resources including an informative publication that addresses water quality concerns for the individual resident entitled South Carolina Home-A-Syst, An Environmental Risk Assessment Guide for Protecting Water Quality. This publication may be obtained for distribution on the installation. Distribution of these materials will utilize many existing communications media or forums on the installation such as these shown below:

Medium	Summary	Audience	Topic Areas
P2 News	See 1.2	See 1.2	NPS pollution
Disposal Guides	See 1.3	See 1.3	Waste disposal and recycling
The Leader	Installation newspaper	On-installation community	NPS pollution
Mayor's Meetings	Briefing	Representatives from on-post Housing	Presentation on water quality
DLE Home Page	Web page	Unlimited	Links to other web sites and back issues of P2 News related to water quality
Housing Orientation	New on-installation residents	New housing residents	Disposal guides, NPS pollution
DLE Breakfasts	Periodic breakfasts	FJ personnel	SWMP, NPS Pollution
Earthday Jamboree	Annual Earthday event	On-installation community	Installation watersheds, utilize diorama

### 1.5 Maintain Hazardous Materials Collections Program

Fort Jackson has some excellent measures in place for collection and proper disposal of household hazardous materials. The Paint Reissue Center accepts paint and paint-related materials, glues, solvents, and common household hazardous materials. Managed by the Furnishings Management Branch of the DLE, the facility was developed to provide a convenient way for soldiers to dispose of unused paint as well as provide an inexpensive source of useable paint. The Paint Reissue Center is also used by soldiers who are being reassigned and subsequently moving off the installation. The Paint Reissue Center not only offers a central location to dispose of these materials, but it offers a unique approach to minimizing hazardous material disposal entirely. The facility does not dispose of the collected materials, but rather re-distributes them. The facility is a free issue swap shop for anyone in the on-installation community. Soldiers or residents may pick-up any accepted materials that they need free of charge.

---

The Auto Craft Shop helps maintain water quality as well. Instead of privately owned automobiles being repaired and serviced at a residence, work can be accomplished at the Auto Craft Shop where used vehicle batteries, motor oil, and anti-freeze can be disposed. In order to meet NPDES permitting requirements, the Fort will simply continue to offer support to maintain these facilities and their daily operations. The Fort will also continue to publicize the existence of both facilities to ensure that the on-installation community is aware of both locations.

### **1.6 Adopt-A-Stream/Promote Anti-Littering**

The litter control program will consist of 3 major thrusts: soldier trash pickup, spring and fall clean-up day, and an Adopt-A-Stream type program. Soldiers in each training brigade will pick up trash in their assigned section of the cantonment area. This is usually done in early morning hours. Each fall and spring, the installation conducts a clean-up program. The cantonment area and housing areas are spruced up by mowing, trimming, raking, and trash and debris pick-up. An Adopt-A-Stream type program is anticipated to be developed to address select wooded areas in the cantonment area, many near streams, that are out of sight and are missed by other litter pick-up programs. Volunteers are expected to be utilized.

### **1.7 Maintain Recycling Programs**

Similar to the facilities mentioned in the Hazardous Materials section, the Fort also provides facilities for recycling numerous types of materials. The Fort Jackson disposal guides outline every type of accepted recyclable such as various types of paper, plastic, and aluminum. The Fort has a central recycling center as well as four recycling “igloos” located throughout the Cantonment Area. These facilities help to reduce the amounts of road refuse/floatables that concentrate in Fort Jackson waterways. The Fort will continue to utilize the existing recycling centers on the installation.

### **1.8 Initiate School Programs**

Fort Jackson does not currently have many programs or literature directed solely at educating school children on water quality. Currently, one program exists for fourth graders on America Recycle’s Day (November 15<sup>th</sup>) which helps reduce litter and floatables. Additional programs may be implemented at Fort Jackson schools. The Fort would encourage and support the schools to develop lessons, activities, and field trips that illustrate the importance of storm water quality. Members of ENRD would investigate the various existing state and federal literature and programs devoted to NPS pollution. Programs such as SC Water Watch or the Champions of the Environment may be selected as an appropriate program for the installation.

### **1.9 Develop Storm-drain Stenciling Program**

Fort Jackson will likely develop a storm drain stenciling program. This is expected to be a volunteer program using students from the Fort Jackson schools, after-school programs, or a volunteer program. Storm drains may be stenciled with various messages such as “Drains to Semmes Lake” or “No Dumping, Drains to Gills Creek”. Other options that may be utilized include plastic plates that indicate similar messages that can be glued directly to the inlets themselves.

## 1.10 Conduct Exhibit at Earthday Jamboree

ENRD will conduct a booth at the annual Earthday Jamboree celebration that includes information on NPS runoff and water quality. The booth could include NPS educational materials, information on current events taking place on the installation related to water quality, a hands-on demonstration that illustrates the affects of erosion in a watershed and/or an environmental-type diorama.

## 1.11 Measurable Goals

The following tables outline measurable goals for Public Education and Outreach as well as Public Involvement and Participation. The tables include a description of the activity to take place as well as the lead entity involved in its implementation. The following table (Table 1.11a) illustrates BMPs that will be performed throughout the life of the five-year permit term:

**Table 1.11a: Planned Activities Throughout the Permit Term**

Sect	Action Plan	Activity	Lead Entity	Frequency
1.1	Conduct ECO course	-Continue to conduct the training course	ENRD	Quarterly
1.2	Distribute P2 News	- Distribute through post-wide e-mail new issues of the P2 News	EMO	2 issues/year
1.3	Distribute disposal guides	-Continue to print and distribute the disposal guides	EMO	ongoing
1.4	Present at DLE breakfast	-Make presentation on SWMP and its implementation	DLE, ENRD	annually
1.4	Collect various NPS water quality educational materials	-Contact various regulatory agencies, web sites, and other MS4s to obtain existing publications	ENRD	ongoing
1.4	Distribute NPS information	-Place selected NPS information in appropriate on-installation medium (see table in Section 1.4)	ENRD	annually
1.4	Add NPS information to ENRD web page	-Upload NPS water quality information and pictures from SWMP related activities	ENRD	annually
1.5	Support Auto Craft Shop	-Provide Auto Craft Shop	Morale, Welfare, and Recreation (MWR)	ongoing
1.5 1.7	Support hazardous materials and recycling programs	-Provide Paint Reissue Center, central recycling center, recycling igloos	Furnishings Management Branch of DLE	ongoing

---

Sect	Action Plan	Activity	Lead Entity	Frequency
1.10	Conduct exhibit at Earthday Jamboree	- Conduct a booth at annual Earthday Jamboree that includes water quality information	ENRD	annually

\* 1.x – Refers to this section of the report for a detailed description of the action plan

The table below (Table 1.11b) lists BMPs that may be performed at some point during the five-year permit term. Each of these activities could be completed pending additional analysis of the need and benefits of the activities as well as available funding and resources. It is likely that at least a few these items will be completed.

**Table 1.11b: Additional Potential Activities**

	Action Plan	Activity	Lead Entity
1.4	Present at Mayor's and Environmental Quality Control Committee (EQCC) meetings	-Develop and perform presentation on SWMP	ENRD
1.6	Conduct Adopt-A-Stream program	-Perform clean-up of cantonment stream	ENRD
1.8	Develop program for school children	-Initiate school program at both elementary schools	Elementary Schools, ENRD
1.9	Develop storm drain stenciling program	-Stencil storm drains in Cantonment area	Elementary Schools, volunteers
1.10	Purchase watershed diorama	-Demonstrate diorama at annual Earthday Jamboree, school programs, Mayor's meetings, or other appropriate place.	ENRD

---

## 2.0 Illicit Discharge Detection and Elimination

### 2.1 Conduct Dry Weather Screening

Fort Jackson has been very active in their initial steps to detect and eliminate non-stormwater illicit discharges. Field crews have already walked every stream mile identified on the USGS 7.5' quadrangle maps of the installation in order to develop a complete GIS inventory of their respective outfalls. In the process, field crews discovered three illicit discharges simply by visual observation only. Each illicit discharge was reported to the Fort Jackson plumbing shop and fixed immediately.

Fort Jackson will develop a program and methodology for identification of dry weather flows. These discharges will be detected by performing grab sampling during dry weather conditions. Dry weather flow attributes will include:

Chlorine	pH
Surfactants	Temperature
Phenols	Scum
Copper	Turbidity
Abnormal odor	Oil Sheen
Color	

Fort Jackson will then analyze the constituents detected in each sample in order to determine the source of the discharge and to eliminate any illicit connections or discharges. Fort Jackson will record and integrate dry weather flow data within the existing outfall inventory GIS database.

### 2.2 Minimize Sanitary Sewer Overflows (SSOs)

In an effort to document and assign responsibility, an SOP will be developed to outline specific procedures to follow and specific Points of Contact and telephone numbers in the event sewer overflows are detected. This will ensure that the overflow is repaired in an efficient manner.

### 2.3 Develop Adequate Legal Authority

Fort Jackson Regulation 200-8, Environmental Protection and Enhancement addresses compliance with state, federal, and local environmental and natural resources laws and regulations. Section 1.10 of FJ Reg 200-8 deals with enforcement issues. Violators of FJ Reg 200-8 are subject to the Unified Code of Military Justice (UCMJ), administrative action, or criminal prosecution. FJ Reg 200-8 will be amended to address Phase II NPDES requirements and subsequent enforcement procedures in Section 1.10.

### 2.4 Develop Storm Water Sampling Plan

Storm water runoff in areas surrounding Fort Jackson, through NPDES Phase I permit requirements in Richland County and the City of Columbia, is being sampled. Water sampling may be conducted at some point in the future on Fort Jackson in an effort to ensure that runoff from the installation is not harming downstream surface waters, or to prove that contaminated runoff detected downstream is not coming from Fort Jackson. The Fort will likely conduct a study to determine the need for such a plan. This would include an analysis of potential funding

sources, human and equipment resources, areas of risk, expected contaminants, types of sampling procedures, and the needed scale of such a study to make any conclusions.

## 2.5 Measurable Goals

The following table outlines measurable goals for Illicit Discharge Detection and Elimination throughout the five-year permit term:

	Action Plan	Activity	Lead Entity	Schedule/ Frequency
2.1	Conduct dry weather screening	-Screen 25% of inventoried outfalls in Cantonment area annually	ENRD	Year 1-4 annually
2.2	Minimize SSOs	-Determine high risk areas	ENRD	Year 1
2.2	Minimize SSOs	- Develop an SOP for procedures to follow when an overflow is detected.	ENRD	Year 1/ annually
2.3	Develop adequate legal authority	-Amend FJ Reg 200-8	ENRD, Attorney	Year 2
2.4	Develop storm water sampling plan	- Conduct detailed sampling feasibility study	ENRD	Year 3
2.4	Develop storm water sampling plan	- Implement sampling program	ENRD	if needed

---

## 3.0 Construction Site Storm Water Runoff Management

### 3.1 Maintain Storm Water Permitting Program

Fort Jackson chose to regulate its own respective sediment reduction and storm water management as promulgated under the South Carolina Storm Water Management and Sediment Reduction Act. Fort Jackson was delegated plan review and approval as well as construction and maintenance inspection responsibilities under a general permit. Land disturbance activities on Fort Jackson must obtain permit coverage from the Directorate of Logistics and Engineering, Environmental and Natural Resources Division. Details and requirements of the permit program are outlined in a Memorandum of Instruction (MOI) for Land Disturbing Activities.. The current general permit for the “United States Army Training Center and Fort Jackson” expires February 28, 2003. An extension of permit coverage will be applied for so that the permitting and inspection program can continue.

All actions on Fort Jackson require submission of a Record of Environmental Consideration (REC). Each REC is reviewed to determine what permits, if any, may be applicable. For actions that are considered land disturbing, the proponent will be notified of permit requirements. Contractors may not break ground until receiving permit approval in writing from ENRD. For qualifying projects, NOIs and NOTs will be submitted to DHEC. During construction, ENRD performs periodic site inspections to ensure that storm water and sediment and erosion control plans are followed to the full extent. The current general permit and respective storm water permitting program is adequately addressing storm water management and sediment reduction from construction sites.

### 3.2 Develop Contractor Education Program

The Fort will develop an education program directed at area contractors and the Fort Jackson Roads and Grounds maintenance section. Contractors and Fort Jackson personnel will be educated on the detrimental effects of sediment transport and proper installation of BMPs found on approved Storm Water Management and Sediment Control plans. Many contractors do not follow approved plans and fails to implement BMPs properly and at the right time. The installation will develop an informative presentation to attempt to alter their views on proper construction and maintenance of these controls. Contractors will also be informed of potential penalties for non-compliance as outlined in FJ Reg. 200-8. Contractor education requirements will be required in the Storm Water Management and Sediment Control Plan prior to approval.

### 3.3 Develop a Design Manual

The Fort will develop a construction design manual. The design manual will provide engineers, developers, plan reviewers, inspectors, contractors, and others involved in land development with stormwater management requirements, a summary of the permit application and plan review process, and technical guidance for designing, implementing, and maintaining BMPs. The manual will include general site specific BMP recommendations for both water quality and quantity (i.e. volume and peak discharges). The manual should streamline the entire design and permitting process. However, the manual will not be intended to restrain engineering creativity or freedom of design. The design manual will allow and encourage engineers to develop procedures, techniques, and innovative stormwater BMPs where applicable with supporting documentation. Design approaches that follow Fort recommendations will likely be expedited

through the permitting approval process. New products on the market may be purchased and tested on construction sites and if found to be effective, added to the design manual. The design manual will be posted on the Fort ENRD web site for download.

### 3.4 Measurable Goals

	Action Plan	Activity	Lead Entity	Schedule/ Frequency
3.1	Conduct construction permitting program	-Conduct construction plan review and subsequent inspections -Apply for an extension for General Permit	ENRD	Ongoing  March 2003
3.2	Develop contractor education program	-Create presentation and handout materials for contractors	ENRD	Year 2
3.3	Develop design manual	-Create design aid manual	ENRD	Year 4

---

## 4.0 Post-Construction Storm Water Management

### 4.1 Inspect Existing Storm Water Controls

Members of ENRD will inspect existing structural BMPs (ex. detention ponds) and additional structural controls (ex. Semmes lake) on a routine basis. Schedules for inspection will be developed along with a standardized protocol for each inspection. The protocol will include a detailed preventative maintenance checklist to ensure that the control structure can function properly. The checklist will include primarily visual inspections such as debris accumulation on trash racks, substantial sedimentation, and excessive vegetation on a dam or spillway. The checklist will allow ENRD to prioritize maintenance and repairs as discussed in the measure 4.2.

### 4.2 Maintain O&M of Storm Water Controls

The checklists completed during the inspection process will dictate maintenance of control structures on the installation. ENRD will ensure that both routine maintenance such as mowing and infrequent major repairs to outlet structures or emergency spillways are completed as required.

### 4.3 Create a GIS Database for Erosion Problem Sites

Sediment is one major pollutant of concern on Fort Jackson. Bare areas exist from past construction, soldier activity, rifle ranges, maintenance activities, unpaved roads, and unknown causes. These eroding areas are unsightly, contribute to erosion, impact the infrastructure, hinder military training activities, and contribute to non-point source pollution. Sediments and other pollutants that attach to soil particles enter streams, lakes and wetlands directly from the eroding site or via open ditches or storm drains. Even small eroding areas can contribute sediment when located near a storm drain inlet. Fort Jackson will maintain a GIS database inventory of erosion sites that require remediation. Sites from this database will be reviewed, prioritized, and rehabilitated. Programs are already in effect that address erosion on some sites; this storm water management program will address erosion on sites not eligible for these other programs.

### 4.4 Conduct Needs Assessment for Additional Non-Structural and Structural BMPs

ENRD will conduct a needs assessment for implementation of additional non-structural and structural BMPs that would address runoff volume, reduce or minimize impervious areas and improve water quality. BMPs that are proven to be effective, considered appropriate, low maintenance, and economical will be incorporated into the design manual.

#### 4.5 Measurable Goals

	Action Plan	Activity	Lead Entity	Schedule/ Frequency
4.1	Inventory existing storm water controls	-Develop schedules and protocol for periodic inspections	ENRD	Year 1
4.1	Inspect existing storm water controls	-Perform inspections	ENRD	Year 2/ ongoing
4.2	Maintenance of storm water controls	-Perform maintenance and repairs as needed	ENRD O&M	ongoing
4.3	Create GIS database of erosion problems	-Design database for erosion control inventory	ENRD	Year 1
4.3	Maintain GIS database of erosion problems	-Update database with known erosion sites	ENRD	ongoing
4.4	Conduct needs assessment of additional BMPs	-Determine need and feasibility of additional development requirements	ENRD	Year 5

---

## 5.0 Pollution Prevention and Good Housekeeping

### 5.1 Develop Unpaved Road Management Plan

Military installations like Fort Jackson require rural areas for various types of training exercises. It would be cost prohibitive to pave roads in these areas, training operations that require the use of tracked vehicles would destroy these surfaces, and impervious areas would increase, thus increasing runoff volumes. However, many unpaved roads are a significant source of sediment. Fort Jackson will therefore develop an unpaved road management plan. The plan will have standard drawings for road design, maintenance requirements, and BMPs that can be used to control erosion and minimize sedimentation from these roads. A map and GIS database will be produced that will somewhat generally prioritize unpaved roads that need improvements. Based on this priority, BMPs will be applied over time and as funding permits.

### 5.2 Implement Education Program for Relevant Installation Personnel

The Fort will establish a training program for their staff regarding the importance of storm water pollution prevention and good housekeeping. ENRD will tailor brief programs for targeted audiences, such as Roads and Grounds personnel, with BMPs related to their respective operations.

### 5.3 Control Animal Waste

Animal waste from pets, livestock, and wildlife can be a potential source of pollution. Little can be done about wildlife waste other than population control through hunting programs. There is not a large pet population on Fort Jackson, but pets are primarily found in the housing areas. Pet waste in the housing area will be addressed through the education program. There are no livestock on Fort Jackson, other than a small horse stable. A management plan will be prepared for the horse stable and appropriate Best Management Practices applied.

### 5.4 Perform Street Cleaning

Street sweeping is not widely needed across the installation. However, from time to time, some areas of streets will collect small amounts of sediment. Plans are to utilize street sweepers on an as-needed basis to clean up sediment that may collect on a street. However, BMPs on construction sites and bare areas should keep the necessity of street sweeping to a minimum.

## 5.5 Measurable Goals

	Action Plan	Activity	Lead Entity	Schedule/ Frequency
5.1	Develop unpaved road management plan	-Develop plan with standard designs and BMPs	ENRD	Year 2
5.1	Implement unpaved road management plan	-Conduct field visits to prioritize repairs	ENRD, Forestry	Year 2/ annually
5.2	Implement education program for installation personnel	-Develop education program for roads and grounds and other specialized personnel	ENRD	Year 3
5.3	Control animal waste	-Develop management plan for horse stables and implement BMPs -Include in education program	ENRD	Year 5/ ongoing
5.4	Perform street and parking lot cleaning	-Use street sweepers on an as-needed basis.	ENRD	Year 5/ as-needed