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Development Document for Final Action for Effluent Guidelines and Standards for the Construction and Development Category

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Disclaimer

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SECTION 1: SUMMARY AND SCOPE

1.1 INTRODUCTION

EPA published a final action withdrawing proposed effluent guidelines for storm water discharges associated with construction activities in March of 2004. This document presents technical information to support the Agency's decision and compliments "Economic Analysis for Final Action for Effluent Guidelines and Standards for the Construction and Development Category," EPA-821-B-04-002.

A summary of the information contained in the sections of this document is as follows:

- Section 2 presents a summary of the legal authority for effluent guidelines and the existing EPA storm water program.
- Section 3 summarizes the data collection activities and the analytical tools and processes followed to support the final action.
- Section 4 summarizes the characteristics of the construction and development industry, including major indicators of industry size and annual construction activity.
- Section 5 presents information and data on erosion and sediment control (ESC) best management practices (BMPs) used by the construction and development industry, including applicability, costs, and efficiencies of various technologies..
- Section 6 presents a description of the regulatory options considered by EPA for the final action.
- Section 7 presents EPA's methodology for estimating the costs of the options considered.
- Section 8 summarizes the approach used by EPA to estimate the pollutant loads, load reductions and environmental benefits of the options considered.

SECTION 2: BACKGROUND

2.1 LEGAL AUTHORITY

The Environmental Protection Agency (EPA) establishes Effluent Limitation Guidelines under the authority of Sections 301, 304, 306, 308, 402, and 501 of the Clean Water Act (CWA) (the Federal Water Pollution Control Act), 33 United States Code (U.S.C.) 1311, 1314, 1316, 1318, 1342, and 1361.

2.2 CLEAN WATER ACT

Congress adopted the Clean Water Act (CWA) to "restore and maintain the chemical, physical, and biological integrity of the nation's waters" (Section 101(a), 33 U.S.C. 1251(a)). To achieve this goal, the CWA prohibits the discharge of pollutants into navigable waters except in compliance with the statute. CWA sec. 402 requires "point source" discharges to obtain a permit under the National Pollutant Discharge Elimination System (NPDES). These permits are issued by EPA regional offices or authorized State agencies.

Following enactment of the Federal Water Pollution Control Amendments of 1972 (Pub.L. 92-500, October 18, 1972), EPA and the States issued NPDES permits to thousands of dischargers, both industrial (e.g. manufacturing, energy and mining facilities) and municipal (sewage treatment plants). As required under Title III of the Act, EPA promulgated effluent limitation guidelines and standards for many industrial categories, and these requirements are incorporated into the permits.

The Water Quality Act of 1987 (Pub.L. 100-4, February 4, 1987) amended the CWA. The NPDES program was expanded by defining municipal and industrial storm water discharges as point sources. Industrial storm water dischargers, municipal separate storm sewer systems and other storm water dischargers designated by EPA must obtain NPDES permits pursuant to Section 402(p) (33 U.S.C. 1342(p)).

2.2.1 BEST PRACTICABLE CONTROL TECHNOLOGY CURRENTLY AVAILABLE

In guidelines for a point source category, EPA may define Best Practicable Control Technology (BPT) effluent limits for conventional, toxic,[1] and non-conventional pollutants. In specifying BPT, EPA looks at a number of factors. EPA first considers the cost of achieving effluent reductions in relation to the effluent reduction benefits. The Agency also considers the age of the equipment and facilities, the processes employed and any required process changes, engineering aspects of the

[1] In the initial stages of EPA CWA regulation, EPA efforts emphasized the achievement of BPT limitations for control of the "classical" pollutants (e.g., TSS, pH, BOD_5). However, nothing on the face of the statute explicitly restricted BPT limitation to such pollutants. Following passage of the Clean Water Act of 1977 (Pub.L. 95-217, December 27, 1977) with its requirement for point sources to achieve best available technology limitations to control discharges of toxic pollutants, EPA shifted its focus to developing BAT limitations for the listed priority toxic pollutants.

control technologies, non-water quality environmental impacts (including energy requirements), and such other factors as the Agency deems appropriate (CWA sec. 304(b)(1)(B)). Traditionally, EPA establishes BPT effluent limitations based on the average of the best performance of facilities within the category of various ages, sizes, processes or other common characteristics. Where existing performance is uniformly inadequate, EPA may require higher levels of control than currently in place in a category if the Agency determines that the technology can be practically applied. See "A Legislative History of the Federal Water Pollution Control Act Amendments of 1972," U.S. Senate Committee of Public Works, Serial No. 93-1, January 1973, p. 1468.

In addition, the Act requires a cost-reasonableness assessment for BPT limitations. In determining the BPT limits, EPA considers the total cost of treatment technologies in relation to the effluent reduction benefits achieved. This inquiry does not limit EPA's broad discretion to adopt BPT limitations that are achievable with available technology unless the required additional reductions are "wholly out of proportion to the costs of achieving such marginal level of reduction." See Legislative History, op. cit., p. 170. Moreover, the inquiry does not require the Agency to quantify benefits in monetary terms. See, for example, American Iron and Steel Institute v. EPA, 526 F. 2d 1027 (3rd Cir., 1975).

In balancing costs against the benefits of effluent reduction, EPA considers the volume and nature of expected discharges after application of BPT, the general environmental effects of pollutants, and the cost and economic impacts of the required level of pollution control. In past effluent limitation guidelines and standards, BPT cost-reasonableness removal figures have ranged from $0.21 to $33.71 per pound removed in year 2000 dollars. In developing guidelines, the Act does not require consideration of water quality problems attributable to particular point sources, or water quality improvements in particular bodies of water. See Weyerhaeuser Company v. Costle, 590 F. 2d 1011 (D.C. Cir. 1978).

2.2.2 BEST CONVENTIONAL POLLUTANT CONTROL TECHNOLOGY

The 1977 amendments to the CWA required EPA to identify effluent reduction levels for conventional pollutants associated with Best Conventional Pollutant Control Technology (BCT) for discharges from existing point sources. BCT is not an additional limitation, but replaces Best Available Technology (BAT) for control of conventional pollutants. In addition to other factors specified in sec. 304(b)(4)(B), the CWA requires that EPA establish BCT limitations after consideration of a two- part "cost-reasonableness" test. EPA explained its methodology for the development of BCT limitations in July 1986 (51 FR 24974).

Section 304(a)(4) designates the following as conventional pollutants: biochemical oxygen demand (BOD_5), total suspended solids (TSS), fecal coliform, pH, and any additional pollutants defined by the Administrator as conventional. The Administrator designated oil and grease as an additional conventional pollutant on July 30, 1979 (44 FR 44501). A primary pollutant of concern at construction sites, sediment, is commonly measured as TSS.

2.2.3 BEST AVAILABLE TECHNOLOGY ECONOMICALLY ACHIEVABLE

In general, Best Available Technology (BAT) effluent guidelines (CWA sec. 304(b)(2)) represent the best existing economically achievable performance of direct discharging plants in the subcategory or category. The factors considered in assessing BAT include the cost of achieving BAT effluent reductions, the age of equipment and facilities involved, the processes employed, engineering aspects of the control technology, potential process changes, non-water quality environmental impacts (including energy requirements), and such factors as the Administrator deems appropriate. The Agency retains considerable discretion in assigning the weight to be accorded to these factors. An additional statutory factor considered in setting BAT is "economic achievability." Generally, EPA determines the economic achievability on the basis of the total cost to the subcategory and the overall effect of the rule on the industry's financial health. The Agency may base BAT limitations upon effluent reductions attainable through changes in a facility's processes and operations. As with BPT, where existing performance is uniformly inadequate, EPA may base BAT upon technology transferred from a different subcategory or from another category. In addition, the Agency may base BAT upon manufacturing process changes or internal controls, even when these technologies are not common industry practice.

2.2.4 NEW SOURCE PERFORMANCE STANDARDS

New Source Performance Standards (NSPS) reflect effluent reductions that are achievable based on the best available demonstrated control technology. New facilities have the opportunity to install the best and most efficient production processes and wastewater treatment technologies. As a result, NSPS should represent the greatest degree of effluent reduction attainable through the application of the best available demonstrated control technology for all pollutants (i.e., conventional, non-conventional, and priority pollutants). In establishing NSPS, CWA sec. 306 directs EPA to take into consideration the cost of achieving the effluent reduction and any non-water quality environmental impacts and energy requirements.

2.2.5 PRETREATMENT STANDARDS FOR EXISTING SOURCES AND PRETREATMENT STANDARDS FOR NEW SOURCES

The CWA also defines standards for indirect discharges, i.e. discharges into publicly owned treatment works (POTWs). These are Pretreatment Standards for Existing Sources (PSES) and Pretreatment Standards for New Sources (PSNS) under sec. 307(b).

2.2.6 EFFLUENT GUIDELINES SCHEDULE

Clean Water Act section 304(m) requires EPA to publish a plan every two years that consists of three elements. First, under sec. 304(m)(1)(A), EPA is required to establish a schedule for the annual review and revision of existing effluent guidelines in accordance with sec. 304(b). Section 304(b) applies to ELGs for direct dischargers and requires EPA to revise such regulations as appropriate. Second, under sec. 304(m)(1)(B), EPA must identify categories of sources discharging toxic or nonconventional pollutants for which EPA has not published BAT ELGs under sec.

304(b)(2) or new source performance standards under sec. 306. Finally, under sec. 304(m)(1)(C), EPA must establish a schedule for the promulgation of BAT and NSPS for the categories identified under subparagraph (B) not later than three years after being identified in the 304(m) plan. Section 304(m) does not apply to pretreatment standards for indirect dischargers, which EPA promulgates pursuant to sec. 307(b) and 307(c) of the Act.

On October 30, 1989, Natural Resources Defense Council, Inc. (NRDC), and Public Citizen, Inc., filed an action against EPA in which they alleged, among other things, that EPA had failed to comply with sec. 304(m). Plaintiffs and EPA agreed to a settlement of that action in a consent decree entered on January 31, 1992. (Natural Resources Defense Council et al v. Whitman, D.D.C. Civil Action No. 89-2980). The consent decree, which has been modified several times, established a schedule by which EPA is to propose and take final action for eleven point source categories identified by name in the decree and for eight other point source categories identified only as new or revised rules, numbered 5 through 12. EPA selected the Construction and Development (C&D) category as the subject for new or revised rule #10. The decree, as modified, calls for the Administrator to sign a proposed ELG for the C&D category no later than May 15, 2002, and to take final action on that proposal no later than March 31, 2004. A settlement agreement between the parties, signed on June 28, 2000, requires that EPA develop regulatory options applicable to discharges from construction, development and redevelopment, covering site sizes included in the Phase I and Phase II NPDES storm water rules (i.e. one acre or greater). EPA is required to develop options including numeric effluent limitations for sedimentation and turbidity; control of construction site pollutants other than sedimentation and turbidity (e.g. discarded building materials, concrete truck washout, trash); BMPs for controlling post-construction runoff; BMPs for construction sites; and requirements to design storm water controls to maintain pre-development runoff conditions where practicable. The June 2002 proposal contained discussion of these issues and the public docket contains further information. The settlement also requires EPA to issue guidance to MS4s and other permittees on maintenance of post-construction BMPs identified in the proposed ELGs. Since EPA's proposal or final action did not contain requirements for post-construction BMPs, this guidance is no longer necessary and therefore was not fully developed. However, a draft of the maintenance guidance that was prepared while EPA was considering including options for post-construction BMPs is contained in the public docket.

2.2.7 NPDES PHASE I AND II STORM WATER RULES

The National Pollutant Discharge Elimination System (NPDES) is a permit system established under the CWA to enforce effluent limitations. Operators of construction activities, which include clearing, grading and excavation are required to apply for permit coverage under the NPDES Phase I and II storm water rules. Under the Phase I rule (promulgated in 1990), construction sites of 5 or more acres must be covered by either a general or an individual permit. General permits covering the Phase I sites have been issued by EPA regional offices and state water quality agencies. Permittees are required to develop storm water pollution prevention plans that include descriptions of BMPs employed, although actual BMP selection and design are at the discretion of permittees (in conformance with applicable state or local requirements).

Construction sites between 1 and 5 acres in size are subject to the NPDES Phase II storm water rule (promulgated in 1999). The construction activities covered under Phase II are termed small construction activities and exclude routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the facility. Under the Phase II program, NPDES permit requirements for construction activities are similar to the Phase I requirements because they will be covered under similar general permits. EPA issued a new general permit that covers all sizes of construction sites subject to the NPDES rules on July 1, 2003.

2.3 POLLUTION PREVENTION ACT OF 1990

The Pollution Prevention Act of 1990 (PPA) (42 U.S.C. 13101 et seq., Pub. L. 101-508, November 5, 1990) makes pollution prevention the national policy of the United States. The PPA identifies an environmental management hierarchy in which pollution "should be prevented or reduced whenever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner, whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and disposal or release into the environment should be employed only as a last resort..." (42 U.S.C. 13103). In short, preventing pollution before it is created is preferable to trying to manage, treat or dispose of it after it is created. According to the PPA, source reduction reduces the generation and release of hazardous substances, pollutants, wastes, contaminants or residuals at the source, usually within a process. The term source reduction "...includes equipment or technology modifications, process or procedure modifications, reformulation or redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training, or inventory control. The term 'source reduction' does not include any practice which alters the physical, chemical, or biological characteristics or the volume of a hazardous substance, pollutant, or contaminant through a process or activity which itself is not integral to or necessary for the production of a product or the providing of a service." In effect, source reduction means reducing the amount of a pollutant that enters a waste stream or that is otherwise released into the environment prior to out-of-process recycling, treatment, or disposal.

Although the PPA does not explicitly address storm water discharges or discharges from construction sites, the principles of the PPA are implicit in many of the practices used to reduce pollutant discharges from construction sites. These include controls that minimize the potential for erosion such as proper phasing of construction, retention of on-site vegetation and stabilization of disturbed areas as soon as practicable. These controls and practices are described in Section 5 of this document.

2.4 STATE REGULATIONS

States and municipalities have been regulating discharges of runoff from the construction and land development industry to varying degrees for some time. A compilation of state construction general permits and regulations was prepared to help establish the baseline for national and regional levels of control. Data were collected by reviewing state construction general permits, web sites, summary references, state erosion and sediment control and/or storm water management guidance manuals. The state regulatory data are summarized in Section 3 and 7 of this document and the complete data sheets are included in Appendix D.

SECTION 3: DATA COLLECTION

3.1 INTRODUCTION

EPA gathered and evaluated technical and economic data from various sources in support of this final action. EPA used existing data sources to profile the industry with respect to general industry description, industry trends, environmental impacts, and erosion and sediment control best management practices (BMPs) and costs. This section details the data sources used in the development of the final action.

3.2 LITERATURE SEARCH

A literature search was performed to obtain information on various BMPs that pertain to the construction and land development industry. Journal articles and professional conference proceedings were used to summarize the most recent BMP effectiveness data, design and installation criteria, applicability, advantages, limitations, and cost.

3.3 COMPILATION OF STATE CONTROL STRATEGIES, CRITERIA, AND STANDARDS

A compilation of existing State programs for the control of construction site storm water was prepared. The data were collected by reviewing State construction general permits, web sites, summary references, and State regulations and erosion and sediment control design and guidance manuals. A summary of criteria and standards for construction site erosion and sediment control that are implemented by States as of September 2003 are presented in Table 3-1. More information on this analysis can be found in Section 7.2 and State-level data sheets are contained in Appendix D.

Table 3-1. State Requirements for Construction Site Erosion and Sediment Control

Element	Number of States with Equivalent Requirement
Initiate soil stabilization with 14 days after construction activity has ceased	27
Install sediment basins that provide storage for the 2-year, 24-hour storm or 3,600 cubic feet per acre for drainage areas with 10 or more disturbed acres at one time	30
Install smaller sediment basins and/or sediment traps for drainage areas serving less than 10 acres	22
Remove sediment from sediment traps or sedimentation ponds when the design capacity has been reduced by 50 percent	25
Conduct inspections at least every 7 calendar days or at least every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater	41

3.4 OTHER DATA SOURCES

3.4.1 PHASE II STORM WATER RULE ECONOMIC ANALYSIS

The *Economic Analysis of the Final Phase II Storm Water Rule* (USEPA, 1999) estimated Phase II Storm Water Rule compliance costs for two major categories of pollutant controls for construction sites: erosion and sediment control BMPs and post-construction storm water management controls. Total costs for implementing the Phase II Rule encompass expenditures for installation of erosion and sediment control technologies, labor requirements for submitting a Notice of Intent (NOI) to be covered by a general permit, a Notification to Municipalities, a Storm Water Pollution Prevention Plan (SWPPP), and maintenance costs. Costs were derived on a per-site basis and then aggregated to the State and national level based on the number of the building permits issued. As described in the Economic Analysis Report for the Phase II Rule, census data were used to project the annual number of construction permits by Standard Industrial Classification (SIC) Code and construction permit data from 14 municipalities were used to categorize construction activities by site size.

EPA used several data sources collected for the Phase II economic analysis in this rulemaking, including construction permit data collected in 14 municipalities and estimates of BMP installations on small construction sites.

3.4.2 USDA NATIONAL RESOURCES INVENTORY

The National Resources Inventory (NRI) (USDA, 2000) is a statistically based survey that has been designed and implemented using scientific principles to assess conditions and trends of soil, water, and related resources on non-Federal lands in the United States. The NRI is conducted every 5 years by the U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS), in cooperation with the Iowa State University Statistical Laboratory. The inventory provides scientifically valid, timely, and relevant information that is used to formulate effective agricultural and environmental policies and legislation, implement resource conservation programs, and enhance the public's understanding of natural resources and environmental conditions.

The NRI is a compilation of natural resource information on non-Federal land in the United States–nearly 75 percent of the country's land base. The inventory captures data on land cover and use, soil erosion, prime farmland, wetlands, habitat diversity, selected conservation practices, and related resource attributes at more than 800,000 scientifically selected sample sites. The NRI can be accessed at http://www.nrcs.usda.gov/technical/NRI/.

EPA used the NRI data in support of several analyses. First, NRI data was used to determine the amount of annual construction acreage in each state, which served as a basis for calculating state-level compliance costs of the options considered. NRI data was also used to estimate the amount of construction activity occurring in each of the watersheds in the U.S. based on the Hydrologic Unit Code (HUC) cataloging system. HUC-level data was used to estimate the number of construction sites and the associated loads occurring in each HUC and to link these loads to stream reaches for modeling of water quality improvements and benefits estimates using EPA's National Water Pollution Control Assessment Model (NWPCAM).

3.4.3 CENSUS OF CONSTRUCTION

The census of construction was used as a data source in a number of analyses including determining the amount of construction activity by sector (single-family residential, multi-family residential, commercial and industrial) and in EPA's analysis of financial impacts of the options considered. Additional information on these analyses can be found in the document "Economic Analysis for Final Action for Effluent Guidelines and Standards for the Construction and Development Category," EPA-821-B-04-002.

3.4.4 SOILS DATABASES, REVISED UNIVERSAL SOIL LOSS EQUATION AND SEDCAD

EPA utilized data from the USDA State Soil Geographic STATSGO database (USDA, 1995) to determine county-level soil textural information in support of the loadings estimates and BMP removals estimates. EPA utilized the Revised Universal Soil Loss Equation (RUSLE) in combination with the soils data to determine soil erosion rates from model construction sites in different areas of the county. In order to evaluate BMP removal efficiencies and to calculate national loadings reductions of the options considered, EPA used the SEDCAD (Warner, 1998) model to evaluate removals under various control strategies.

3.5 REFERENCES

USEPA. 1999. *Economic Analysis of the Final Phase II Storm Water Rule*. U.S. Environmental Protection Agency, Office of Wastewater Management. Washington D.C.

USDA. 1995. State Soil Geographic (STATSGO) Database, Miscellaneous Publication 1492, Revised 1994.

USDA. 2000. *1997 National Resources Inventory*. U.S. Department of Agriculture, National Resources Conservation Service, Washington, DC.

Warner, R.C. and P.J. Schwab. 1998. SEDCAD 4 for Windows 95 & NT-Design Manual and User's Guide. Civil Software Design, Ames, IA.

SECTION 4: INDUSTRY PROFILE

4.1 INTRODUCTION

The construction sector is among the largest and most important sectors in the national economy. The construction industry is divided into three major subsectors: general building contractors, heavy construction contractors, and special trade contractors. General contractors build residential, industrial, commercial, and other buildings. Heavy construction contractors build sewers, roads, highways, bridges, and tunnels. Special trade contractors typically provide carpentry, painting, plumbing, and electrical services. Additional information. including detailed descriptions of industry size and revenues, can be found in the document "Economic Analysis for Final Action for Effluent Guidelines and Standards for the Construction and Development Category," EPA-821-B-04-002.

4.2 INDUSTRY PRACTICES AND TRENDS

4.2.1 OVERVIEW OF CONSTRUCTION LAND-DISTURBING ACTIVITIES

Constructing a building or facility involves a variety of activities, including the use of equipment that alters the site's environmental conditions. These changes include vegetation and top soil removal, regrading, and drainage pattern alteration. The following provides a brief description of typical land-disturbing activities at construction sites and the types of equipment employed.

Construction Site Preparation. Construction activities generally begin with the planning and engineering of the site and site preparation. During this stage, mobile offices, which are usually housed in trailers, are established on the construction site. The construction company uses these temporary structures to handle vital activities such as preparing and submitting applicable permits, hiring employees and subcontractors, and ensuring that proper environmental requirements are met. The entire construction yard is delineated with erosion and sediment controls installed and security measures established. The latter includes installing fences and signs to warn against trespassing and to mark dangerous areas. After the site is secured, equipment is brought to the site (and is stored there throughout the construction period).

Clearing, Excavating, and Grading. Construction on any size parcel of land almost always calls for a remodeling of the earth (Lynch and Hack,1984). Therefore, actual site construction begins with site clearing and grading. Organic material—in particular, roots—cannot support the weight of buildings and must be removed from the top layer of ground. (Some developers stockpile the organic material for use during the landscaping phase of construction rather than paying for it to be hauled from the site.) Construction contractors must ensure that earthwork activities meet local, state, and federal regulations for soil and erosion control, runoff, and other environmental controls. The size of the site, extent of water present, soil types, topography, and weather determine the kinds of equipment used in site clearing and grading (Peurifoy and Oberlender, 1989). Material that will not be used on the site must be hauled away by tractor-pulled wagons, dump trucks, or articulated trucks (Peurifoy and Oberlender, 1989).

Equipment used for lifting excavated and cleared materials include aerial-work platforms, forwarders, cranes, rough-terrain forklifts, and truck-mounted cranes. In addition, track loaders are used for digging and dumping earth (Caterpillar, 2000; Construction Equipment On-Line, 1996-1998; Lynch and Hack, 1984; and Peurifoy and Oberlender, 1989).

Excavation and grading are performed by several different types of machines. These tasks can also be done by hand, but this is generally more expensive (Lynch and Hack, 1984). When grading a site, builders typically ensure that new grades are as close to the original as possible, to avoid erosion and storm water runoff (Lynch and Hack, 1984). Proper grading also ensures a flat surface for development and drains water away from constructed buildings.

Excavation and grading equipment includes backhoes, bulldozers (including the versatile tracked bulldozer), loaders, directional drilling rigs, hydraulic excavators, motor graders, scrapers, skid-steer loaders, soil stabilizers, tool carriers, trenchers, wheel loaders, and pipeliners. Equipment selection depends on functions to be performed and specific site conditions (Caterpillar, 2000; Construction Equipment On-Line, 1996-1998; Lynch and Hack, 1984; and Peurifoy and Oberlender, 1989). Therefore, multiple types of equipment are used throughout the clearing and grading process.

Self-transporting trenching machines, wheel-type trenching machines, and ladder-type trenching machines are also used during site excavation. Self-transporting trenching machines are used to create shallow trenches, such as for underground wire and cables. This type of machine has a bulldozer blade attached to the front, is highly maneuverable, and can be used to dig narrow, shallow trenches. Wheel-type trenching machines also dig narrow trenches, most often for water mains and gas and oil pipelines. Ladder-type trenching machines are used to dig deep trenches, such as for sewer pipes. These machines might have a boom mounted at the rear. Along the boom are cutter teeth and buckets that are attached to chains. As the machine moves, it digs dirt and moves it to the sides of the newly formed trench (Peurifoy and Oberlender, 1989).

Power shovels can also be used for excavating soils. They are used on all classes of earth that have not been loosened. For solid rock, prior loosening is required. As materials are excavated, they are immediately loaded onto trucks or tractor-pulled wagons and hauled from the site (Peurifoy and Oberlender, 1989). Hydraulic excavators, with either a front or a back shovel, are also used to dig into the earth and to load a hauling vehicle. There are several categories of hydraulic excavators, including backhoes, back shovels, hoes, and pull shovels. Hydraulic excavators are one of the most widely used types of excavating equipment because of their ease of use and their ability to remove the earth that caves as it is moved. They are effective excavating machines, and they are easy to use in terms of loading some a hauling vehicle (Peurifoy and Oberlender, 1989).

Draglines, used to dig ditches or build levees, can transport soil within casting limits, thus eliminating the need for hauling equipment (Peurifoy and Oberlender, 1989). Draglines have a bucket that hangs from a cable. The bucket is brought through the dirt and toward the operator (Lynch and Hack, 1984). Draglines can be used on both wet and dry ground and can dig earth out of pits that contain water (Peurifoy and Oberlender, 1989). They are most useful for making large cuts and channels below the level of the machine as well as for making valleys, mounds, slopes, and banks (Lynch and Hack, 1984). Draglines have a lower output than power shovels, and do not excavate rock as well as power shovels (Peurifoy and Oberlender, 1989).

Draglines can be converted to clamshells by replacing the dragline bucket with a clamshell bucket. A clamshell is typically used for handling sand, gravel, crushed stone, sandy loam, and other loose materials; it is not efficient in handling compacted earth, clay, or other dense materials. A clamshell is lowered into a material, and the bucket closes on the material. It is then raised over a hauling vehicle and the materials are deposited (Peurifoy and Oberlender, 1989).

Scrapers, either self-powered or drawn by tractors, dig and compact materials by taking up earth from its underside with toothed scoops and loading it into hauling vehicles. Scrapers are useful in removing earth and weak or broken rock, and for excavating hills and rock faces. Some scrapers are designed for long hauls; others with good traction are used on steep slopes (Lynch and Hack, 1984).

A crawler tractor, which pulls a rubber-tired self-loading scraper, is often used for short-haul distances. The crawler tractor uses a drawbar pull to load the scraper. It has good traction and can operate on muddy roads. It is, however, a slower vehicle and thus is more appropriate for shorter hauls.

Wheel-type tractor-pulled scrapers, which come in two- and four-wheel tractors, are used for longer hauling distances. Unlike the crawler tractor-pulled scrapers, the wheel-type tractor-pulled scrapers do not maintain good traction. Under such conditions, a helper tractor, such as a bulldozer, might be used (Peurifoy and Oberlender, 1989).

All of these machines shape and compact the earth, a crucial site preparation step. In addition, earthwork activities might require that fill be brought in. In such cases, the fill must be spread in uniform, thick layers and compacted to a specified density with an optimum moisture content. Graders and bulldozers are the most common earth-spreading machines. Machines that compact include tractor-pulled sheep's foot rollers, smooth-wheel rollers, pneumatic rollers, and vibrating rollers, among other equipment (Peurifoy and Oberlender, 1989). Rollers and scarifiers are used either to compact or to break up the ground (Lynch and Hack, 1984).

To remove rock, it must first be loosened and broken up–usually through drilling or blasting. Drilling equipment includes jackhammers, wagon drills, drifters, churn rills, and rotary drills; each is designed to work on a specific size and type of rock. Dynamite and other explosives are used to loosen rock (Peurifoy and Oberlender, 1989).

Once materials have been excavated and removed and the ground cleared and graded, the site is ready for construction.

4.2.2 CONSTRUCTION SITE SIZE CATEGORIES AND ESTIMATES OF AMOUNT OF DISTURBED LAND

The regulatory options evaluated apply to construction sites of all types (i.e., residential, commercial, and industrial) of more than 5 acres of disturbed land. Because the costs of best management practices (BMPs) for erosion and sediment control are largely driven by site size, EPA must estimate the distribution of construction sites by size category, land use type, and geographic region to estimate the total cost of the options. In addition, estimating distribution of sites by type allows EPA to estimate the cost to each construction sector.

The method used to estimate the number of construction sites by size category–and therefore the total area disturbed–is based on a number of data sources, including U.S. Census data and data collected during the Phase II Storm Water rulemaking.

4.2.2.1 National Estimates of Disturbed Acreage

EPA used the U.S. Department of Agriculture’s (USDA’s) 1997 National Resources Inventory (NRI) to estimate the level of new U.S. development each year. NRI is designed to track changes in land cover and land use over time. The inventory, conducted every five years, covers all non-federal lands in the U.S. (which constitutes 75 percent of the total land area in the U.S.). The program captures land use data from approximately 800,000 statistically selected locations. From 1992 to 1997, an average of 2.2 million acres per year were converted from non-developed to developed status. Table 4-1 shows the allocation of this converted land area by type of land or land cover. Table 4-2 shows the national allocation of developed acres by state.

Table 4-1. Acres Converted from Undeveloped to Developed State, 1992-1997

Type of Land	**Acres Converted to Development[a] 1992-1997 (thousands) Annual Average**	**Percent Contribution by Type of Land**
Cropland	574.8	26.6%
Conservation Reserve Program land	1.5	0.1%
Pastureland	391.2	17.4%
Rangeland	245.9	11.0%
Forest land	939.0	41.9%
Other rural area	89.1	4.0%
Water areas and federal land	1.8	0.1%
Total [b]	**2,243.4**	**100.0%**

[a] NRI defines *developed land* as a combination of the following land cover/use categories *large urban and built-up areas*, *small built-up areas*, and *rural transportation land*. These are defined as follows:
Large urban and built-up areas. A land cover/use category composed of developed tracts of at least 10 acres—meeting the definition of urban and built-up areas.
Small built-up areas. A land cover/use category consisting of developed land units of 0.25 to 10 acres, which meet the definition of urban and built-up areas.
Rural transportation land. A land cover/use category which consists of all highways, roads, railroads and associated right-of-ways outside urban and built-up areas; also includes private roads to farmsteads or ranch headquarters, logging roads, and other private roads (field lanes are not included).
Urban and built up areas are in turn defined as:
Urban and built-up areas. A land cover/use category consisting of residential, industrial, commercial, and institutional land; construction sites; public administrative sites; railroad yards; cemeteries; airports; golf courses; sanitary landfills; sewage treatment plants; water control structures and spillways; other land used for such purposes; small parks (less than 10 acres) within urban and built-up areas; and highways, railroads , and other transportation facilities if they are surrounded by urban areas. Also included are tracts of less than 10 acres that do not meet the above definition but are completely surrounded by urban and built-up land. Two size categories are recognized in the NRI: areas of 0.25 acre to 10 acres, and areas of at least 10 acres.
[b] Excludes Alaska
Source: USDA, 2000.

Table 4-2. State Rankings by Rate of Non-Federal Land Developed, 1992 - 1997*

Ranking	State	Average Annual Conversion Rate (acres)	Ranking	State	Average Annual Conversion Rate (acres)
1	Texas	178,700	26	West Virginia	35,360
2	Georgia	170,380	27	Oklahoma	35,340
3	Florida	165,040	28	Arkansas	33,780
4	California	110,680	29	Louisiana	26,720
5	Pennsylvania	109,020	30	Arizona	22,760
6	North Carolina	101,320	31	Colorado	22,500
7	Tennessee	80,380	32	Puerto Rico	22,480
8	Ohio	72,960	33	Maine	22,220
9	Michigan	72,820	34	Oregon	20,780
10	South Carolina	72,400	35	Kansas	19,300
11	Virginia	68,700	36	Idaho	18,380
12	New York	63,520	37	Utah	16,260
13	Alabama	63,060	38	Montana	15,260
14	Illinois	49,300	39	Iowa	13,820
15	Washington	48,160	40	New Hampshire	12,520
16	Kentucky	47,420	41	South Dakota	11,560
17	Minnesota	46,360	42	Nebraska	11,020
18	Missouri	44,840	43	Connecticut	7,880
19	New Mexico	43,440	44	Wyoming	6,880
20	New Jersey	42,720	45	North Dakota	6,560
21	Massachusetts	42,360	46	Nevada	5,340
22	Mississippi	41,280	47	Delaware	4,620
23	Indiana	39,060	48	Vermont	2,300
24	Wisconsin	37,640	49	Hawaii	1,360
25	Maryland	35,520	50	Rhode Island	1,320
* Excludes Alaska					

It is important to note that the 2001 NRI data was becoming available as EPA was finishing its analyses. However, since the national total of acres developed annually (2.2 million acres) was the same for both the 1997 and 2001 NRI datasets, EPA elected not to update its evaluation to reflect the 2001 values.

4.2.2.2 Distribution of Acreage by Project Type

To allocate the NRI acreage among the various segments of the industry, EPA has estimated the distribution of acres developed by type of project in the following way. First, EPA multiplied the number of building permits issued annually by estimates of the average site size for each project type. Thus for single-family residential construction, EPA multiplied the number of new single-family home building permits by the average lot size for new single-family construction. Estimates for other types of construction were based on extrapolations from the U.S. Census permit data and EPA estimates of average project size. Second, EPA adjusted the estimates of acres converted to reconcile any differences between the total number of acres accounted for using this approach and the total acres developed as estimated in the NRI.

Single-family Residential

Census data indicate that in recent years the number of new single-family housing units authorized has averaged just over 1.0 million units per year (see Table 4-3). The average lot size for new single-family housing units is 13,553 square feet, or 0.31 acres (1 acre = 43,560 square feet). Using the average lot size (see Table 4-4), however, will underestimate the total acreage converted for single-family residential projects because it does not include common areas of developments not counted as part of an owner's lot–for example, streets, sidewalks, parking areas, storm water management structures, and open spaces.

Table 4-3. New Single-Family and Multifamily Housing Units Authorized, 1995-1997

Year	All Housing Units	Single-Family Housing Units	Multifamily Housing Units
1995	1,332,549	997,268	335,281
1996	1,425,616	1,069,472	356,144
1997	1,441,136	1,062,396	378,740
1995-1997 avg	**1,399,767**	**1,043,045**	**356,722**

Source: BOC, 2000b. Series C40 New Privately Owned Housing Units Authorized

Table 4-4. Average and Median Lot Size for New Single-Family Housing Units Sold, 1995-1997

Year	Average Lot Size (Square Feet)	Median Lot Size (Square Feet)
1995	13,665	9,375
1996	13,705	9,100
1997	13,290	9,000
1995-1997 avg	**13,553**	**9,158**

Source: BOC, 2000a. Series C25 Characteristics of New Housing

To account for these differences, EPA examined data obtained from a survey of municipalities conducted in support of the Phase II Storm Water rule (EPA 1999). This survey identified 14 communities that consistently collected project type and size data as part of their construction permitting programs.[2] EPA's review of permitting data from these communities covered 855 single-family developments encompassing 18,134 housing units. The combined area of these developments was 11,460 acres. This means that each housing unit accounted for 0.63 acres (11,460 acres ÷ 18,134 units = 0.63 acres per unit). This estimate, essentially double the average lot size, appears to more than account for the common areas and undeveloped areas in a typical single-family residential development. For this reason, EPA averaged the Census estimate of the national average lot size (0.31 acres) and the Phase II estimate of 0.63 acres per unit to arrive at an estimate of 0.47 acres per unit. This number was multiplied by the average number of single-family housing units authorized by building permit, 1.04 million, to arrive at an estimate of 490,231 acres (see Table 4-7).

Multifamily Residential

For residential construction other than single-family housing, EPA divided the average number of units authorized during 1995-1997 (356,722, from Table 4-3) by the average number of units per new multifamily building. The average number of units per building was obtained by examining the distribution of units by unit size class in Census data (BOC 2000b). EPA estimated the number of buildings in each size class by dividing the number of units in each class by the average number of units. The total number of units was then divided into the estimated number of buildings to arrive at an average number of 10.8 units across all building size classes.

EPA next examined data on the average site size for multifamily residential developments. The Center for Watershed Protection reports survey results showing that an average building footprint

[2] The communities were: Austin, TX; Baltimore County, MD; Cary, NC; Ft. Collins, CO; Lacey, WA; Loudoun County, VA; New Britain, CT; Olympia, WA; Prince George's County, MD; Raleigh, NC; South Bend, IN; Tallahassee, FL; Tuscon, AZ; and Waukesha, WI.

occupies 15.6 percent of the total site (CWP 2001). EPA assumed that the average-sized multifamily building (10.8 units) would have two floors and that each unit would occupy the national average of 1,095 square feet (NAHB 2002). The total square footage accounted for by living space is thus 11,826 square feet. Multiplying by a factor of 1.2 to account for common areas and other non-living space (utility rooms, hallways, stairways), and dividing by 2 to reflect the assumption of a 2-story structure, EPA obtained a typical building footprint of 7,096 square feet (11,826 x 1.2 ÷ 2 = 7,096). Combining this with the CWP estimate of the building footprint share of total site size (15.6 percent), the average site size was estimated to be 45,487 square feet (7,096 ÷ 0.156 = 45,487), or just over 1 acre (1.04 acres).

EPA compared the average site size obtained using this approach with data from the 14 community survey referenced above under the Phase II Storm Water rule. That study's review of permitting data identified 286 multifamily developments covering a total of 3,476 acres. The average site size, 12.1 acres, is considerably higher than that calculated above. EPA has no indication that the permits reviewed in these communities are for projects of a larger-than- average size. Therefore, for purposes of this analysis, EPA has taken the midpoint of the estimates, 6.5 acres, as the average size of multifamily projects. This number was multiplied by the average number of multifamily housing developments authorized by building permit, 35,672, to arrive at an estimate of 231,868 acres (see Table 4-7).

Nonresidential Construction

EPA lacked current data on the number of nonresidential construction and development projects authorized annually because the Census Bureau ceased to collect data on the number of permits issued for such projects in 1995. EPA used regression analysis to forecast the number of nonresidential building permits issued in 1997, based on the historical relationship between residential and nonresidential construction activity. Using this approach, EPA estimates that a total of 426,024 nonresidential permits were issued in 1997. These represent a variety of project types, including commercial and industrial, institutional, recreational, as well as nonresidential, nonbuilding projects such as parks and road or highway projects.

EPA first combined a number of project types into a larger "commercial" category, which included hotels and motels and retail and office projects, as well as religious, public works, and educational projects.[3] EPA's reasoning for including the latter categories under the commercial category is based on engineering judgment that erosion and sediment control practices would be similar across each project type. The total estimated number of commercial permits in 1997 was 254,566 (59.7 percent of the nonresidential total). (EPA calculated an estimate for the industrial category, which totaled 12,140 permits (2.8 percent), separately.) The residual 159,318 permits (37.4 percent), are nonbuilding, nonresidential projects that include parks, bridges, roads, and highways. EPA accounts for these projects in the steps described below.

[3] The commercial category included: hotels/motels, amusement, religious, parking garages, service stations, hospitals, offices, public works, educational, stores, and other nonresidential buildings.

For the industrial and commercial categories, EPA reviewed the project size data collected from the 14-community Phase II rule survey referenced earlier (EPA, 1999). This study identified 817 commercial sites occupying 5,514 acres and 115 industrial sites occupying 689 acres. The average site sizes are 6.7 and 6.0 acres, respectively.

EPA also reviewed estimates from CWP (2001) on the average percent of commercial and industrial sites taken up by the building footprint. These percentages, 19.1 and 19.6 respectively, were multiplied across the model project site sizes of 0.5, 3, 7.5, 25, 70, and 200 acres to estimate building size on each site, assuming single-story buildings in each case. These estimates are shown in Table 4-5.

Table 4-5. Average Building Square Footage

Project Size (Acres)	Commercial	Industrial
0.5	4,160	4,269
3	24,960	25,666
7.5	62,400	64,164
25	207,999	213,880
70	582,397	598,863
200	1,663,992	1,711,037

Estimates were obtained by multiplying the site size in square feet by the percentage of the site estimated to be occupied by the building footprint, based on data from CWP (2001).

As seen in the table, the average building size corresponding to the 6- to 7- acre sites estimated from the 14-community study are in the 60,000 square feet range. EPA next examined R.S. Means' *Building Construction Cost Data* (2000), which provides cost data for "typical" commercial and industrial buildings. As part of the cost data, R.S. Means identifies the typical range of building sizes based on a database of actual projects. Table 4-6 shows the typical size and size range for a variety of building types that would fall into either the commercial or industrial category. While some of the building types correspond with the estimated average of 60,000 square feet, these appear high for other categories, such as low-rise office and supermarkets, warehouses, and elementary schools. EPA believes generally that there are more small projects than large ones. As a result, EPA inferred that this approach would suggest an average building size of 25,000 square feet, which implies an average site size of 3 acres, based on Table 4-5.

To reconcile the estimates obtained from the two approaches, EPA has taken the midpoint of the estimates. For commercial development, EPA assumes an average site size of 4.85 acres (the average of 6.7 and 3.0 acres) and for industrial development EPA assumes an average site size of 4.5 acres (the average of 6.0 and 3.0 acres).

Table 4-6. Typical Building Sizes and Size Ranges by Type of Building

Building Category/Type	Typical Size (Gross Square Feet)	Typical Range (Gross Square Feet)	
		Low	High
Commercial - Supermarkets	20,000	12,000	30,000
Commercial - Department Store	90,000	44,000	122,000
Commercial - Low-Rise Office	8,600	4,700	19,000
Commercial - Mid-Rise Office	52,000	31,300	83,100
Commercial - Elementary[a]	41,000	24,500	55,000
Industrial - Warehouse	25,000	8,000	72,000

[a] For the purpose of this analysis EPA combined a number of building types, including educational, under the commercial category.
Source: R.S. Means, 2000.

The resulting average project sizes were then multiplied by the estimated number of commercial and industrial permits to obtain an estimate of the total acreage developed for these project categories. Table 4-7 shows the results of this “bottom-up” approach to estimating the number of acres of land developed. The overall estimate of the amount of land developed is 2.01 million acres per year. Residential single-family development accounts for 24.4 percent of the total, multifamily development for 11.5 percent, commercial for 61.4 percent, and industrial for 2.7 percent.

Table 4-7. National Estimates of Land Area Developed Per Year, Based on Building Permit Data

Type of Construction		Permits		Average Site Size[a]	Acres Disturbed	
		Number	Pct. of Total		Number	Pct. of total
Residential	Single-family	1,043,045	77.5%	0.47	490,231	24.4%
	Multifamily	35,672	2.7%	6.5	231,868	11.5%
Nonresidential	Commercial[b]	254,566	18.9%	4.9	1,234,645	61.4%
	Industrial	12,140	0.9%	4.5	54,630	2.7%
Total		**1,345,423**	**100.0%**	**--**	**2,011,374**	**100.0%**

[a] For single-family residential, this is the average of the average lot size for new construction in 1999 (BOC, 2000b) and the average obtained in EPA (1999). For all other categories, the site sizes are EPA assumptions based on representative project profiles contained in R.S. Means (2000) and the 14-community survey conducted in support of the Phase II NPDES storm water rule (EPA, 1999).
[b] A number of project types were grouped together to form the "commercial" category, including: hotels/motels, amusement, religious, parking garages, service stations, hospitals, offices, public works, educational, stores, other nonresidential buildings.

This estimate of 2.01 million acres of annual developed land (Table 4-7) is close to the estimate of 2.2 million acres obtained from NRI. For the purpose of developing national compliance costs of the options and calculating loadings reductions, EPA has allocated the entire NRI developed acreage (excluding Puerto Rico and Hawaii) into the four land use categories according to the percentages shown in the final column of Table 4-7. This revised estimate is shown in Table 4-8.

Table 4-8. National Estimates of Land Area Developed Per Year, Based on National Resources Inventory Totals

Type of Construction		Developed Area Based on Permits Data		Developed Acres Based on NRI Data [b]
		Acres[a]	Pct. of Total	
Residential	Single-family	490,231	24.4%	540,800
	Multifamily	231,868	11.5%	253,358
Nonresidential	Commercial [c]	1,234,645	61.4%	1,366,387
	Industrial	54,630	2.7%	59,009
Total		**2,011,374**	**100.0%**	**2,219,553**

[a] From Table 4-7.
[b] This column distributes the total acreage estimated in NRI to be converted on an annual basis according to the distribution by type of development estimated through analysis of permits data. See also Tables 4-2 through 4-6.
[c] A number of project types were grouped together to form the "commercial" category, including: hotels/motels, amusement, religious, parking garages, service stations, hospitals, offices, public works, educational, stores, other nonresidential buildings.

4.2.2.3 Distribution of Developed Acreage by Project Size

For each of the four land use categories in Table 4-8, EPA developed procedures to allocate developed acre estimates into six site size categories: 0.5, 3, 7.5, 25, 70 and 200 acres. EPA evaluated the survey data collected from 14 municipalities in support of the Phase II storm water rule. This survey identified 14 communities that consistently collect project type and size data as part of their construction permitting programs. From this data set, EPA was able to determine the percentage of projects and developed acreage for each of the six site size groups and four land use categories. Table 4-9 shows the distribution of the 14 community survey data by project size for each of the four land use categories (single family residential, multi-family residential, commercial and industrial). The percentages shown in the "Percent Acres by Size" column of Table 4-9 for each land use type were used to assign total estimated developed acres to site sizes for each of the four land use categories, based on the total developed NRI acreage by category shown in the last column of Table 4-8. The result of this allocation is shown in Table 4-10. The totals differ slightly as fractional sites were rounded to whole numbers. EPA further subdivided developed acreage to a state-level based on the state-specific developed acreage estimates contained in the NRI data and shown in Table 4-2. This distribution to a state-level was necessary for the costing analysis, since costs were calculated on a state-level basis to account for the existing state programs in place. Sites were further subdivided to a watershed level (based in Hydrologic Unit Codes, or "HUCs) for the loadings analysis. At both of these steps, fractional sites were again rounded to whole numbers. As a result, the state and HUC totals of sites and developed acreage do not sum to the national totals. However, the variation is minor.

Table 4-9. Distribution of 14 Community Survey Permits by Site Size

Site Size (Acres)	No. of Permits	Acres by Size	Pct. Acres by Size	Site Size (Acres)	No. of Permits	Acres by Size	Pct. Acres by Size
Single-Family Residential				***Commercial***			
0.5	266	133	1.2%	0.5	266	133	2.5%
3	228	684	6.0%	3	356	1,068	19.8%
7.5	138	1,035	9.1%	7.5	86	645	12.0%
25	175	4,375	38.6%	25	91	2,275	42.3%
70	30	2,100	18.5%	70	16	1,260	23.4%
200	15	3,000	26.5%	200	0	0	0.0%
Total	852	11,327	100.0%	Total	815	5,381	100.0%
Multifamily Residential				***Industrial***			
0.5	43	22	0.6%	0.5	39	20	2.9%
3	100	300	8.7%	3	55	165	24.6%
7.5	61	458	13.3%	7.5	10	75	11.2%
25	71	1,775	51.4%	25	8	200	29.9%
70	10	700	20.3%	70	3	210	31.4%
200	1	200	5.8%	200	0	0	0.0%
Total	286	3,455	100.0%	Total	115	670	100.0%
Total							
0.5	614	307	1.5%				
3	739	2,217	10.6%				
7.5	295	2,213	10.6%				
25	345	8,625	41.4%				
70	59	4,270	20.5%				
200	16	3,200	15.4%				
Total	2,068	20,832	100.0%				

Based on permitting data from the following municipalities or counties: Austin, TX; Baltimore County, MD; Cary, NC; Ft. Collins, CO; Lacey, WA; Loudoun County, VA; New Britain, CT; Olympia, WA; Prince George's County, MD; Raleigh, NC; South Bend, IN; Tallahassee, FL; Tuscon, AZ; and Waukesha, WI.
Assumes sites less than 1 acre are represented by an average of 0.5 acres.
Source: USEPA, 1999

Table 4-10. Distribution of National Construction by Site Size and Development Type

Site Size (Acres)	No. of Permits	Acres by Size	Pct. Acres by Size	Site Size (Acres)	No. of Permits	Acres by Size	Pct. Acres by Size
Single-Family Residential				***Commercial***			
0.5	12,753	6,377	1.2%	0.5	67,590	33,795	2.5%
3	10,932	32,796	6.1%	3	90,458	271,374	19.9%
7.5	6,611	49,582	9.2%	7.5	21,845	163,838	12.0%
25	8,387	209,675	38.8%	25	23,116	577,900	42.3%
70	1,431	100,170	18.5%	70	4,564	319,480	23.4%
200	711	142,200	26.3%	200	0	0	0.0%
Total	40,825	540,800	100.0%	Total	207,573	1,366,387	100.0%
Multifamily Residential				***Industrial***			
0.5	3,178	1,589	0.6%	0.5	3,491	1,746	3.0%
3	7,408	22,224	8.8%	3	4,931	14,793	25.1%
7.5	4,514	33,855	13.4%	7.5	888	6,660	11.3%
25	5,258	131,450	51.9%	25	710	17,750	30.1%
70	732	51,240	20.2%	70	258	18,060	30.6%
200	65	13,000	5.1%	200	0	0	0.0%
Total	21,155	253,358	100.0%	Total	10,278	59,009	100.0%
Total							
0.5	87,012	43,507	2.0%				
3	113,729	341,187	15.4%				
7.5	33,858	253,935	11.4%				
25	37,471	936,775	42.2%				
70	6,985	488,950	22.0%				
200	776	155,200	7.0%				
Total	279,831	2,219,554	100.0%				

Based on permitting data from the following municipalities or counties: Austin, TX; Baltimore County, MD; Cary, NC; Ft. Collins, CO; Lacey, WA; Loudoun County, VA; New Britain, CT; Olympia, WA; Prince George's County, MD; Raleigh, NC; South Bend, IN; Tallahassee, FL; Tuscon, AZ; and Waukesha, WI.
Assumes sites less than 1 acre are represented by an average of 0.5 acres.
Source: USEPA, 1999

4.2.2.4 State-Level Estimation of Developed Acreage and Sites

Based on the state-level estimates of the amount of construction acreage occurring annually, the number of national construction sites by land use in Table 4-9 was distributed to the state level. Table E-1 in Appendix E indicates the number of construction sites by site size and land use for each state.

4.2.2.5 Estimates of Number of Sites and Acreage Covered by Regulatory Options

Based on the information in Table 4-9 and 4-10, EPA was able to estimate the amount of acreage covered under the various regulatory options considered. This information is illustrated in Table 4-11. It is important to note, however, that these estimates include all national construction acreage occurring annually in the U.S. The actual number of sites that would be required to implement controls in response to the Option 4 is actually much lower than for Options 1 and 2, since in many states the existing requirements are equivalent to or more stringent than the requirements contained in this option. For Options 1 and 2, however, since no states currently have equivalent inspection and certification requirements the number of sites and acreage incurring costs are the same as the entire universe of sites that would have been subject to the guidelines under these options. Table 4-12 contains EPA's estimates of the number of sites and acreage that are actually expected to incur costs as a result of the regulatory options considered. This table integrates the results of the state equivalency analysis presented in Section 7 with the state-level estimates of construction sites by site size and land use presented in Table E-1 in Appendix E.

Table 4-11. National Construction Acreage Subject to Effluent Guidelines Requirements

Type of Construction	Option 1		Options 2 and 4	
	Acres	Number of Construction Sites	Acres	Number of Construction Sites
Single-family Residential	534,424	28,072	501,628	17,140
Multi-family Residential	251,769	17,977	229,545	10,569
Commercial	1,332,592	139,983	1,061,218	49,525
Industrial	57,263	6,787	42,470	1,856
Total	2,176,047	192,819	1,834,860	79,090
Percent of National Total	98.0 %	68.9 %	82.7 %	28.3 %

Table 4-12. Acreage Incurring Costs Under Options Considered

Type of Construction	Option 1		Option 2		Option 4	
	Acres	Number of Sites	Acres	Number of Sites	Acres	Number of Sites
Single-family Residential	534,424	28,072	501,628	17,140	324,478	11,087
Multi-family Residential	251,769	17,977	229,545	10,569	148,481	6,837
Commercial	1,332,592	139,983	1,061,218	49,525	686,450	32,035
Industrial	57,263	6,787	42,470	1,856	27,472	1,201
Total	2,176,047	192,819	1,834,860	79,090	1,186,881	51,159
Percent of National Total	98.0 %	68.9 %	82.7 %	28.3 %	53.5 %	18.3%

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SECTION 5: TECHNOLOGY ASSESSMENT

This technology assessment of available data sources is intended to determine the depth and breadth of effectiveness data for various erosion and sediment controls, and to identify the amount and quality of data available to describe the performance of all currently used and innovative construction site runoff control practices, the ability of each practice to effectively control impacts due to runoff, and the design criteria or standards currently used to size each practice to ensure effective control of runoff.

5.1 CONSTRUCTION EROSION AND SEDIMENT CONTROLS

5.1.1 INTRODUCTION

This assessment addresses the erosion and sediment control BMPs for the construction phase of development. Prior to initiating this aspect of the work, EPA reviewed the findings of information sources and literature assessments to identify the appropriate definition of "performance" or the various definitions or "levels" of performance that are considered in evaluating and defining the levels of performance for these BMPs. A scientific-based approach to describe the performance of erosion and sediment control BMPs was devised similar to the approach developed by Barfield and Clar (1985) in the evaluation of the Maryland Erosion and Sediment Control Standards, as well as the one recently developed in the American Society of Civil Engineers BMP Database (ASCE, 1999). The approach used in this assessment has been designed to provide the information needed to address several important issues, including whether to use a design-based approach, or an effluent-based concentration, or a loading approach in reporting on the current status of the technology. This sub-section identifies the following:

- The amount and quantity of data available to describe the performance of all currently used and innovative runoff control practices.
- The ability of each practice to effectively control impacts due to runoff.
- The design criteria or standards currently used to size each practice to ensure effective control of runoff.

Before a detailed evaluation of the BMPs can be provided, some background information is necessary. Sub-section 5.2 describes the procedure for assessing the technology. Sub-section 5.3 provides a historical background on the subject. Next, sub-section 5.4 presents a discussion of goals, control strategies, criteria, and standards in general, and sub-section 5.5 provides a detailed description and discussion of each BMP.

In the discussion of BMPs in sub-section 5.5, the major focus will be on sediment. This does not imply that there are no other impacts; however, construction BMPs have focused on erosion and sediment control rather than on other impacts.

In the assessment of BMPs, considerable attention is focused on whether to use a design-based approach, an effluent-based concentration, or a loading approach in reporting on the current status of the technology. Attention is also given to the recent emphasis in the literature on the use of an integrated approach to evaluate impacts to the receiving waters and downstream areas.

5.1.2 PROCEDURE FOR TECHNOLOGY ASSESSMENT

5.1.2.1 Identification of Performance Goals

In assessing the literature, particular consideration was given to definitions of performance of BMPs and how they addressed the range of receiving water impacts identified. It is important to point out that the overarching performance goal of all the BMPs is to minimize the impact of construction site runoff on receiving waters and downstream areas.

Control strategies that have been identified for construction BMPs can be divided into three categories.

Strategy 1. Control Based on Design Standards—Control at this level is based on standard designs that may include such things as volume requirements for reservoirs, detention time, and trapping efficiency that do not directly limit an allowable discharge to receiving waters or limit a downstream impact.

Strategy 2. Control Based on Effluent Standards—Control at this level is based on limiting the quantity of one or more substances such as peak discharge, runoff volume, TSS, and settleable solids. This directly addresses effluent but does not directly address downstream impacts.

Strategy 3. Control Based on an Integrated Approach—Control at this level uses an integrated approach (Snodgrass et al., 1998), including biological, chemical, and physical criteria, to define BMP performance. A combination of water quality, biohabitat, and geomorphic criteria is used to evaluate whether a receiving stream meets the targeted goal of fishable and swimmable, or the extent of departure from this goal.

The majority of BMPs address Strategies 1 or 2. Although Strategy 3 is being discussed in the literature, it has not been adopted in practice. There is an analog in the surface mining industry, where a cumulative hydrologic impact analysis on a watershed basis is required by the U.S. Surface Mining and Reclamation Act of 1977 (PL95-87). When moving from Strategy 2 to Strategy 3, a number of other parameters are added to the performance criteria in Strategy 2, including (1) stream buffer retention and thermal impacts considerations, (2) volume control considerations such as these presented in the Low Impact Development concept approach, which are added to the peak discharge and ground water recharge criteria to achieve maintenance of hydrologic function at a site-specific level, and (3) geomorphic criteria as described by Lane (1955), Leopold et al. (1964), Rosgen (1996), and others.

An important point must be made about controlling sediment. From a practical standpoint, a reasonably sized structure should not necessarily be expected to meet an effluent TSS standard unless the TSS specified in the standard is set at a very high value or unless some form of chemical treatment is used to enhance flocculation. The settling velocity for primary clay particles is in the range of feet per month for all but the largest particles. Since these size particles are frequently encountered in large percentages in sediment from construction sites, the expected trapping efficiencies will not approach 100 percent, nor will the effluent TSS be in the range of 100 mg/L or lower (Haan et al., 1994).

5.1.2.2 Goals, Environmental Impact Areas, And Assessment Scales

For the purposes of this report, impact areas are divided into three categories: local area, receiving water, and downstream areas.

Local Area. This is the area between the construction site and the receiving stream. Typically, these areas have ephemeral streams with low baseflows and highly variable flow rates. In these areas, flows fluctuate widely, with geomorphology and habitat being very susceptible to changes in hydrologic regime (Klaine, 2000). In some developments, there would essentially be no local area, and flows would exit directly into receiving waters.

Receiving Waters. This is the point at which flows enter a well-defined stream. Depending on the local geology, flows may primarily be ephemeral, there may be a well-established baseflow, or there may be intermediate flow. The degree to which flows, sediment, and chemicals impact receiving waters depends largely on the type of receiving water. For example, if the receiving waters have a low baseflow and highly variable flow rates, the habitat and geomorphology will be very sensitive to significant changes in the hydrologic regime. However, if the receiving waters have a high baseflow, the sensitivity to changes in flow rate will be much less and the primary problems will likely be chemical in nature. Thus, it is important to address impacts on a site-specific basis.

Downstream Areas. A definition of the downstream area can be somewhat nebulous. (A definition of the aerial extent of “downstream areas” is something that needs to be developed in follow-up studies.) However, consideration of this area is important. For example, use of peak discharge criteria may directly control the local area impacts and impacts to the point at which flow enters the receiving waters. If the watershed being considered is combined with other downstream watersheds and all use peak discharge control without controlling runoff volume, there can be an increase in flooding due to superposition of long duration peak flows exiting the numerous reservoirs (Smiley and Haan, 1976). This increased discharge can negatively impact channel geomorphology, habitat, and riparian areas.

Another important issue related to construction is the fraction of the watershed under construction at any one time. One argument about the relative importance of the construction phase versus the post-construction phase is that the construction phase is short-lived and the impact may be reversible after the site has stabilized. While this argument may have some validity on the local area, it is invalid when considering the downstream areas. On a larger watershed under development, major construction may occur in the watershed for a long time, with a potential long-term major cumulative impact. When considering the entire watershed, it may be desirable to limit the area under construction at any one time to prevent exceeding some threshold that would result in an irreversible impact. This indicates the need to conduct a cumulative impact analysis on a river basin scale to evaluate the potential for such an impact to occur.

When considering area impacts, the following comments can be made about the strategies listed above.

Strategy 1. No guarantees can be made that impacts would be controlled at any level unless the design standards are highly conservative. This would result in overdesign for most situations so that the standard would be adequate for all situations.

Strategy 2. This strategy should ensure control at the local level. Downstream, the impacts may be positive or negative as a result of the control. Examples include the control of peak discharge only in storm water runoff. Control of peak discharge on all construction areas at the local level can result in increased peak discharge downstream (Smiley and Haan, 1976). These increases result from detaining increased volumes of runoff resulting from urbanization and releasing them at the predisturbed peak rate over a long period of time.

Strategy 3. This approach should ensure control in both the local area and downstream areas.

Scale is very important to BMP effectiveness analyses. A given BMP may be quite effective in controlling impacts nearby but have a significant negative impact when applied over a large area. In the final analysis, effectiveness should be evaluated at multiple scales before a decision is made. This will require both local- and watershed-level analyses.

5.1.2.3 Qualitative Versus Quantitative Assessment

In the assessments, impacts may be addressed on a qualitative or a quantitative basis. The difference can be explained in the following manner, using water temperature as an example. It is well known that turbidity impacts the depth of penetration of solar energy into a waterbody; hence, turbidity impacts temperature. When evaluating the impact of standards on water temperature, it is obvious that a TSS standard directly addresses water temperature because of the impact of TSS on turbidity. Thus, a qualitative analysis would simply state that TSS standards may impact water temperature, but give no degree to which the standard does impact temperature. A quantitative analysis, however, would define the degree to which a given TSS standard increased or decreased the impact of TSS on temperature.

5.1.3 REVIEW OF HISTORICAL APPROACHES TO EROSION AND SEDIMENT CONTROL

Most early sediment control was related to agriculture and was installed as a way to maintain our natural resource base. On-site control was the primary emphasis, attempting to prevent erosion rather than trap sediment. Strategies were developed to minimize exposure of bare soil to the erosive power of rainfall and runoff, using aboveground cover management, residue management, strip cropping, and terracing to limit the length of overland flow. Impacts to receiving streams and downstream areas had not yet been identified as an issue. In the 1960s, concern began to be expressed about the quantities of sediment in streams and reservoirs, and sediment was first identified as a pollutant. Initially, the major focus of sediment control was on the surface mining industry, with the passage of the Clean Water Act and then the Surface Mining, Reclamation, and Control Act (SMRCA) (PL 95-87). The first approach taken to sediment control was a design standard, requiring a sediment detention basin with a 24-hour detention time; TSS standards of 35 mg/L average and 70 mg/L peak were also promulgated, but were not typically enforced. The U.S. Environmental Protection Agency (USEPA) later evaluated the TSS standard and moved to a settleable solids standard of 0.5 mL/L, based on a modeling effort that showed that it was not possible to trap fine sediments, but that a 0.5 mL/L settleable solids standard could be met with a reasonably sized sediment basin (Ettinger and Lichty, 1979).

In the late 1960s and early 1970s, sediment in streams and waterways originating from urban construction sites became an issue, which was then addressed in the Clean Water Act. EPA developed a list of BMPs and standards for their construction (USEPA, 1971). In general, these standards were adopted from those of other agencies and were not based on studies related to urban runoff.

In 1987, the Clean Water Act was amended to include storm water discharges from urban areas. The Phase I NPDES Storm Water regulations were published in 1990, requiring all municipalities with Municipal Separate Storm Sewer Systems (MS4) serving populations greater than 100,000, construction sites 5 acres and larger, and certain industrial sites to obtain a permit. The permit required the development of a storm water pollution prevention plan (SWPPP) that typically included a storm water and sediment control plan. In 1999, the Phase II NPDES storm water regulations were published, extending permit coverage to construction sites of 1 acre or larger and municipalities with populations greater than 50,000 (or populations greater than 10,000 where population density is more than 1,000 people per square mile). The regulations allow use of general permits in lieu of individual site or facility permits. The degree of oversight of construction varies widely among the states.

In the last two decades, increased concern at the local level has been focused on sediment pollution of streams and waterways, particularly originating from construction, while less concern has been focused on the impacts of increased construction on storm water and chemical production. Much of this government concern originated from the Phase I and Phase II NPDES storm water regulations. A number of states and their local agencies have developed standards and BMPs for sediment control, most of which do not have a scientific basis, but were adopted from other agencies. Some states, however, did conduct studies that gave their standards some scientific basis. For example, Maryland evaluated its BMP standards in the 1980s by using modeling techniques, and the state changed its sediment basin standards to account for the impacts of surface area on the trapping efficiency in sediment ponds. Based on typical soils in the region and modeling studies, the state adopted a surface area to peak discharge ratio of 0.01 cubic feet per second (cfs) per acre as a criterion (Barfield and Clar, 1985; McBurnie et al., 1990). Maryland was thus the first state to use a design criterion that was related to the overflow rate. Other states also used some of Maryland's results (Smolen et al., 1988).

Recent efforts have moved closer to an effluent standard approach. South Carolina conducted a detailed analysis and published regulations that required a trapping efficiency or settleable solids standard (SCDHEC, 1995). In addition, results from a detailed model were used to develop simplified design aids (Hayes and Barfield, 1995; Holbrook et al., 1998). Some municipalities are following suit to develop scientifically based standards of their own. For example, in 1998 Louisville, Kentucky, (Hayes et al., 2001) developed standards and design aids for storm water and sediment control, following the example of South Carolina.

There are no analogous examples in which the integrated approach to storm water and sediment control have been used on construction sites. The closest analog is the Cumulative Hydrologic Impact Analysis (CHIA) required in surface mining by the SMRCA. SMRCA requires each applicant for a surface mining permit to conduct a hydrologic impact analysis. Subsequently, the regulatory authority is required to conduct a CHIA for the entire watershed. It should be pointed out that although a CHIA is required, it is seldom undertaken on a scale that is useful.

Many of the advances in sediment control have been based on the capability to predict, *a priori*, the ability of a given design to meet a standard. For example, when the settleable solids standard was developed for surface mining, most regulatory authorities adopted it with the requirement that permit applicants would demonstrate through the use of widely accepted computer models that the proposed design would meet the settleable solids standard.

Most of the early work in modeling sediment production stemmed from efforts in the 1950s to develop a soil loss equation that would apply to the entire nation and allow evaluation of alternative erosion control practices. This led to the relationship known as the Universal Soil Loss Equation (USLE) (Wischmeier and Smith, 1965) and its subsequent derivative, the Revised USLE (RUSLE) (Renard et al., 1994). These efforts focus on erosion control; thus, the relationships do not predict sediment yield. A flurry of efforts in the late 1970s and early 1980s lead to the development of sediment yield relationships such as the Modified USLE (MUSLE) (Williams, No Date), the CREAMS model (Knisel, 1980), SEDCAD (Warner, 1998), and SEDIMOT II (Wilson et al., 1982) and its derivatives. The MUSLE and CREAMS models did not include methods to evaluate the impact of sediment trapping structures, but SEDIMOT II contained relationships developed at the University of Kentucky to predict the impact of reservoirs (Ward et al., 1977; Wilson and Barfield, 1984), check dams (Hirschi, 1981), and vegetative filter strips (Hayes et al., 1984). The MUSLE and , SEDCAD and SEDIMOT II models were based on single storms, while the CREAMS model was based on continuous simulation modeling. Details on these models can be found in Haan et al. (1994).

More recently, modeling has improved, resulting in several new relationships. The WEPP watershed model is one example of a continuous simulation approach. It includes computational procedures for a wide variety of sediment control structures (Lindley et al., 1998). Another example of a single storm-based model is SEDIMOT III (Barfield et al., 1996), which modifies the earlier SEDIMOT II model to include channel erosion routines and a wide variety of sediment control techniques. A significant drawback in the SEDIMOT III and WEPP models is that they do not have a good technique for predicting the impact of filter fence, which is the most common technique used today for sediment control. The authors of SEDCAD have attempted to provide algorithms to represent (silt) filter fence removals, although work remains prior to global acceptance in the literature.

Concerns for changes in geomorphology resulting from flow alterations have resulted in several modeling approaches. Early efforts were focused on what is known as the regime theory, in which changes in channel property are linked, qualitatively, to changes in flow. Examples include models of Lane (1955) and Schumm (1977). In addition, some statistically based models were developed, but they are not universally applicable (Blench, 1970; Simons and Albertson, 1960). More recently, models have been developed using physically based concepts to predict changes in geomorphology as related to changes in flow. The models of Chang (1988) are good examples. It is possible to predict, to a limited extent, the change in channel properties as impacted by changes in flow.

The impact of changes in flow and geomorphology on habitat is one major area where information is lacking. Although this deficiency can be addressed in a qualitative manner, it is not possible to predict quantitatively how a given change in geomorphology will impact habitat. Additional information is needed to develop a strategy based on the integrated assessment approach.

5.1.4 GOALS, CONTROL STRATEGIES, CRITERIA, AND STANDARDS

5.1.4.1 Goals, Control Strategies, Criteria, And Standards: How They Relate

The relationship between goals, control strategies, criteria, and standards can sometimes be confusing. For the purpose of the discussion of construction BMPs, the following definitions will be used.

Goal. The overarching objective of having a storm water, sediment, and pollution control program is known as the goal. It is what the program is trying to achieve. All BMPs should relate to that goal. As stated earlier, the goal of this program is to minimize the impact of construction on receiving water and downstream areas. The impacts of concern are identified in the Environmental Assessment.

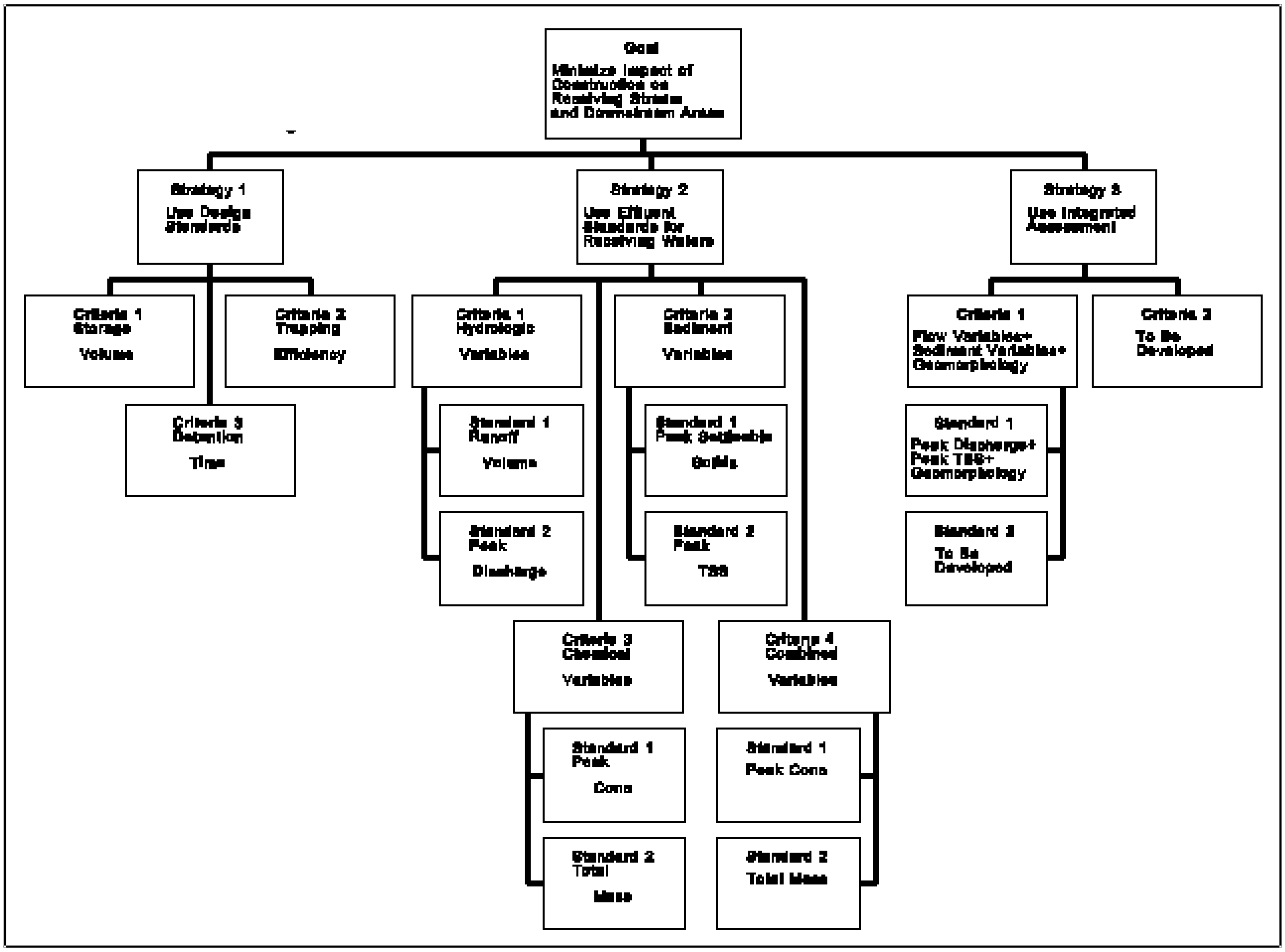
Control Strategies. The methods by which the regulatory agency tries to achieve the goal are called control strategies.

Criteria. The particular variables that are targeted by a given strategy are known as the criteria. For example, if the strategy is to control impacts by limiting the discharge of sediment to the receiving waters, then sediment becomes the criterion.

Standard. The specific variable chosen for the criteria and its numeric value is referred to as the standard. For example, if the control strategy is to limit sediment discharge to the receiving waters, the criterion is sediment, and the particular limiting variable and numeric value chosen is a peak settleable solids concentration of 0.5 mg/L, then the standard would be a peak settleable solids concentration of 0.5 mg/L.

The relationship among goals, control strategies, criteria, and standards is shown graphically in Figure 5-1.

Figure 5-1. Flow Diagram Showing Relationship Among Goals, Strategies, Criteria and Standards



5.1.4.2 Levels of Performance or "How Well Do The Strategies Work?"

Table 5-1 provides a description on the level of performance for the three strategies discussed in sub-section 5.2.1.

Table 5-1. Description of Levels of Performance of Three Control Strategies

Level	Description of Performance
0	No consideration of impact.
1	Performance defined by a design standard. No guarantee that the design will control the impact to a desired level on the specific watershed. Example: reservoir volume standard for runoff control.
2	Effluent standard based on controlling a single entity entering receiving waters. Control of the single parameter will not guarantee that the desired protection will occur for receiving waters or downstream impact. Example: controlling peak storm water discharge or peak TSS.
3	Effluent standard based on controlling two or more entities entering receiving waters, but not all entities causing environmental impact. Example: controlling peak discharge and sediment, but not storage volume or runoff volume.
4	Effluent standards for all entities entering receiving waters and causing environmental impact. Even controlling all quantities entering receiving waters will not guarantee that there are no undesired downstream impacts. Example: Controlling runoff rate, runoff volume, peak discharge, and TSS in receiving streams does not guarantee that there will be no undesirable biological impacts.
5	Control based on integrated evaluation of impacts on receiving stream and downstream.

5.1.4.3 Strategies, Criteria, Standards, And Enforcement

The effectiveness of a given strategy, criterion, or standard is directly related to the ability of an enforcement agency to enforce the rules. Thus, a given standard may theoretically provide excellent protection to the environment, but be so difficult to enforce that it is less effective than a less stringent standard that is enforceable. In general, the difficulty in enforcement increases as the level of desired performance increases. An estimate of relative difficulty in enforcement is given in Table 5-2 for the various levels of performance from Table 5-1. For example, it is easier to enforce the design standard, since enforcement is based entirely on reviewing plans and inspection of the site to ensure that the plans are put into action properly.

Important issues related to enforcement include the following:

- *A priori* demonstration by the best computational technology that the proposed design can meet the standard.

- As-built inspections to verify that the installed practices match the approved plan.

- Self-monitoring of effluent in the case of effluent standards, with spot checks by the regulatory authority to make sure that evaluations are being done properly.

- Evaluation of downstream impacts.

- Clearly defined rules for monitoring the effectiveness of a practice.

Table 5-2. Descriptions of Levels of Difficulty in Enforcement

Level of Performance from Table 5-1	Difficulty in Enforcing (Relative)	Description of Difficulty
0	0	Nothing to enforce.
1	1	Enforcement consists of reviewing plans and ensuring proper installation and maintenance.
2	2	Enforcement requires some monitoring and typically requires a preconstruction review of plans and submission of calculations showing that the standard can be met.
3	2.5	Same as above except multiple variables.
4	2.5	Same as above.
5	5	Enforcement requires some *a priori* demonstration of the expected flow and concentration changes and their impact on receiving waters and downstream variables. In addition, routine monitoring of downstream variables such as geomorphology, aquatic life, aesthetics, and riparian zones would be required.

***A Priori* Demonstration of Performance.** *A priori* demonstration that a given design can meet the standard is very important. Experience with the surface mining industry indicates that a sediment control plan is no better than its design. In other words, if the best computational technology indicates that the design will not meet the standard, then field monitoring of the BMP is not likely to show that the standards are being achieved. Thus, it will be important to have scientifically based and verified computational technologies to predict the performance of BMPs relative to meeting a specified standard.

In recognition of this need EPA funded the development of the National Stormwater BMP Database project by the Urban Water Resources Research Council of the American Society of Civil Engineers (ASCE, 1999) to establish the state of the art of BMP performance with respect to pollutant removal and peak discharge control (Level of performance 3, see Table 5-1). The database can be found at: http://www.bmpdatabase.org/. The ASCE project team prepared a report that contains several different methods for evaluating BMP efficiency data. This report presents statistically based approaches that involve conducting a statistical analysis to characterize inflow and outflow event mean concentrations (EMCs), and then evaluates whether or not there is a statistically significant difference between the two. The application of this approach in evaluating the data contained in the database has led the study team to conclude that evaluating effluent quality is a good indicator of performance of BMPs with respect to pollutant removal. Although the database currently is designed to address only permanent stormwater management practices, the methodologies could easily be adapted to the evaluation of erosion and sediment controls.

As-built Inspections. Another important issue related to enforcement is as-built inspections of installed practices. Although the rules may call for certification by an appropriately licensed professional, it is important that the regulatory authority conduct routine inspections to ensure that the licensed professionals are doing their job properly.

Monitoring. Finally, there are issues related to self-monitoring versus monitoring conducted by the regulatory authority. The use of effluent standards would require some type of monitoring to ensure that performance meets the standards. However, storm water and sediment control structures that control flows are highly variable and temporally stochastic. This means that it is not possible to plan ahead when the monitoring will occur. It will be necessary to have trained professionals to conduct the monitoring.

A monitoring methodology for BMPs should meet three criteria: (1) provide scientifically based numbers to evaluate effectiveness, (2) be executable and sufficiently simple to allow the use of trained technicians who would reasonably be available to do the monitoring, and (3) be adequate to ensure that the desired standards are met without excessive sampling or analysis. The first criterion could be met by providing clear documentation on the monitoring methodology that specifies times, frequency, and location of sampling relative to storms, as well as clearly articulated protocols for handling samples. The second criteria can be met by being sure that the techniques proposed have actually been field-applied by technicians in the monitoring business. The third criterion can be evaluated by an error analysis that determines the expected accuracy of measurement as a function of number and frequency of sampling.

Several possible criteria or standards have special measurement problems that should be mentioned. These include criteria or standards based on trapping efficiency, and/or effluent TSS and settleable solids (average or peak). The issues associated with these criteria are discussed below.

Trapping Efficiency. Literature citations frequently include studies that attempt to measure trapping efficiency by sampling one or more inflow and outflow concentrations (Barrett et al., 1995). While this simplicity seems attractive, it is a grossly erroneous measure of trapping efficiency. A correct definition of trapping efficiency is given in Equation 1:

Equation 1: $$TE = (M_i - M_o) / M_i$$

where: M_i is inflow total mass
M_o is outflow total mass
M_i is given by integrating the product of inflow concentration and inflow rate over the duration of a hydrograph

or

Equation 2: $$M_i = \int_0^{t_D} C_i \, q_i \, dt$$

where: C_i is inflow concentration
q_i is inflow flow rate
t is time
t_D is the duration of the storm

Outflow total mass M_o is calculated by substituting the subscript o for i in Equation 2. Thus, to monitor trapping efficiency correctly, it is necessary to measure both flow and concentration as a function of time over the duration of both inflow and outflow. Such measurement is quite difficult and time-consuming, requiring many samples.

Statistical Evaluation of Inflow/Outflow Data (mean, median, standard deviation, coefficient of variance). To measure average or peak TSS, it is necessary to measure TSS in the effluent over the duration of the outflow hydrograph as well as the flow rate. This requires that multiple samples be taken and that the samples be centered around the peak discharge. The ACSE database data analysis document has the ability, depending upon the number of samples collected, to show a difference between various samples. Again, this is time-consuming and difficult since the timing of an event and the timing of the peak discharge are not known *a priori*. The average concentration is a weighted concentration, using flow rate as a weighting function.

5.1.5 CONTROL TECHNIQUES, BMP SYSTEMS

5.1.5.1 Erosion Control and Prevention

5.1.5.1.1 Planning, Staging, Scheduling

General Description

A construction sequence schedule is a specified work schedule that coordinates the timing of land-disturbing activities and the installation of erosion and sediment control measures. The goal of a construction sequence schedule is to reduce on-site erosion and off-site sedimentation by performing land-disturbing activities and installing erosion and sediment control practices in accordance with a planned schedule (Smolen et al., 1988).

Construction site phasing involves disturbing only part of a site at a time to prevent erosion from dormant parts (Claytor, 1997). Grading activities and construction are completed and soils are effectively stabilized on one part of the site before grading and construction commence at another part. This differs from the more traditional practice of construction site sequencing, in which construction occurs at only one part of the site at the time, but site grading and other site-disturbing activities typically occur simultaneously, leaving portions of the disturbed site vulnerable to erosion. Construction site phasing must be incorporated into the overall site plan early on. Elements to consider when phasing construction activities include the following (Claytor, 1997):

- Managing runoff separately in each phase.
- Determining whether water and sewer connections and extensions can be accommodated.
- Determining the fate of already completed downhill phases.
- Providing separate construction and residential accesses to prevent conflicts between residents living in completed stages of the site and construction equipment working on later stages (USEPA, 2000).

Applicability

Construction sequencing can be used to plan earthwork and erosion and sediment control activities at sites where land disturbances might affect water quality in a receiving waterbody.

Design and Installation Criteria

Construction sequencing schedules should, at a minimum, include the following (NCDNR, 1988; MDE, 1994):

- The erosion and sediment control practices that are to be installed

- The principal development activities
- The measures that should be installed before other activities are started
- The compatibility with the general contract construction schedule

Table 5-3 summarizes other important scheduling considerations in addition to those listed above.

Table 5-3. Scheduling Considerations for Construction Activities

Construction Activity	Schedule Consideration
Construction survey stakeout	Prior to initiating any construction activity a construction survey stakeout should be conducted. The stakeout should identify the limits of disturbance and location of control structures, especially perimeter controls.
Pre-construction meeting between owner, contractor, and regulatory agency	This meeting should take place before any construction activity begins at the site. The survey stakeout is reviewed, especially the limits of disturbance and location of controls.
Construction access—entrance to site, construction routes, areas designated for equipment parking	This is the first land-disturbing activity. As soon as construction takes place, any bare areas should be stabilized with gravel and temporary vegetation.
Clearing and grading required for the installation of controls	In conjunction with the construction access, the clearing and grading required for the installation of E&S controls should take place.
Sediment traps and barriers—basin traps, silt fences, outlet protection	After the construction site has been accessed, principal basins should be installed, with the addition of more traps and barriers as needed during grading.
Runoff control—diversions, perimeter dikes, water bars, outlet protection	Install key practices after the installation of principal sediment traps and before land grading. Additional runoff control measures may be installed during grading.
Runoff conveyance system—stabilize streambanks, storm drains, channels, inlet and outlet protection, slope drains	If necessary, stabilize streambanks as soon as possible, and install the principal runoff conveyance system with runoff control measures. The remainder of the systems may be installed after grading.
Land clearing and grading—site preparation (cutting, filling, and grading; sediment traps; barriers; diversions; drains; surface roughening)	Implement major clearing and grading after installation of principal sediment and key runoff control measures, and install additional control measures as grading continues. Clear borrow and disposal areas as needed, and mark trees and buffer areas for preservation.
Surface stabilization—temporary and permanent seeding, mulching, sodding, riprap	Immediately apply temporary or permanent stabilizing measures to any disturbed areas where work has been either completed or delayed.
Building construction—buildings, utilities, paving	During construction, install any erosion and sediment control measures that are needed.
Landscaping and final stabilization—adding topsoil, trees, and shrubs; permanent seeding; mulching; sodding; riprap	This is the last construction phase. Stabilize all open areas, including borrow and spoil areas, and remove and stabilize all temporary control measures.

Effectiveness

Construction sequencing can be an effective tool for erosion and sediment control because it ensures that management practices are installed where necessary and when appropriate. A comparison of sediment loss from a typical development and from a comparable phased project showed a 42 percent reduction in sediment export in the phased project (Claytor, 1997).

Limitations

Weather and other unpredictable variables may affect construction sequence schedules. The proposed schedule and a protocol for making changes resulting from unforseen problems should be plainly stated in an applicable erosion and sediment control plan.

Maintenance

The construction sequence should be followed throughout the project, and the written erosion and sediment control plan should be modified before any changes in construction activities are executed. The plan can be updated if a site inspection indicates the need for additional erosion and sediment control as determined by contractors, engineers, or developers.

Cost

Construction sequencing is a low-cost BMP because it requires a limited amount of a contractor's time to provide a written plan for the coordination of construction activities and management practices. Additional time might be needed to update the sequencing plan if the current plan is not providing sufficient erosion and sediment control.

Although little research has been done to assess the costs of phasing versus conventional construction costs, it is known that it will be to implement successful phasing for a larger project (Claytor, 1997).

5.1.5.1.2 Vegetative Stabilization

Vegetation can be used during construction to stabilize and protect soil exposed to the erosive forces of water, as well as post-construction to provide a filtration mechanism for storm water pollutants. The following discussion refers to vegetative stabilization as a construction BMP that stabilizes and protects soil from erosion.

General Description

Vegetative stabilization measures employ plant material to protect soil exposed to the erosive forces of water and wind. Selected vegetation can reduce erosion by more than 90 percent (Fifield, 1999). Natural plant communities that are adapted to the site provide a self-maintaining cover that is less expensive than structural alternatives. Plants provide erosion protection to vulnerable surfaces by the following (Heyer, No Date):

- Protecting soil surface from the impact of raindrops.
- Holding soil particles in place.
- Maintaining the soil's capacity to absorb water.
- Using living root systems to hold soil in place, increasing overall bank stability.
- Directing flow velocity away from the streambank.
- Acting as a buffer against abrasive transported materials.
- Causing sediment deposition, which reduces sediment load and reestablishes the streambank.

The designer should be aware of and respond to local conditions that may influence the development of vegetative stabilization measures. As with any planting design, climate, maintenance practices, the availability of plant material (including native species), and many other factors will influence such considerations as plant or seed mix selection, installation methods, and project scheduling.

Slope Stabilization. On slopes, the goal of vegetative stabilization is not only to reduce surface erosion but also to prevent slope failure. Vegetation should provide dense coverage to protect soils from the direct impact of precipitation and help intercept runoff. A variety of plants should be used to provide root systems that are distributed throughout all levels of the soil, increasing slope shear strength and giving plants a greater ability to remove soil moisture. Uniform mats of shallow rooting plants should be avoided because, while such plants may increase runoff infiltration, they cannot remove soil moisture beyond the surface level, leaving slopes potentially saturated and prone to slippage. Shallow, interlocking root systems may also increase the size of a soil slippage by holding together and pulling down a larger area of slope after a small section has given way. Large trees that have become unstable may also pull down slopes and should be removed. Using plants with low water requirements can reduce the potential for soil saturation from irrigation.

Swale Stabilization. On swales, the goal of vegetative stabilization is to prevent erosion within the swale, where runoff is concentrated and flows at higher velocities. If natural stream channels are involved, vegetation with deep root systems should be preserved, or if absent, planted above the channel to help maintain the channel banks. More information is provided in the subsequent section dealing with grass-lined swales.

Surface Stabilization. On large, flat areas, the goal of vegetative stabilization is to reduce the loss of surface soil from sheet erosion. Vegetation should provide complete coverage to reduce the force of precipitation, which can shift soil particles to seal openings in the soil, reducing infiltration and increasing runoff. Vegetation should also provide many stem penetrations to slow runoff and increase infiltration. Deep rooting plants are less critical for erosion control in flat areas than on slopes because soils are not subject to the same forces that may cause slippage on a slope. However, trees and shrubs can increase infiltration, lessening the buildup of runoff, and transpire large volumes of water, reducing soil saturation.

In areas susceptible to wind erosion, the goal of vegetative stabilization is to establish direct protection of the soil. Vegetation should provide dense and continuous surface cover. Binding the soil deeply is generally not a requirement. The ideal vegetation for this purpose is grass, which forms a mat of protection. In areas where the vegetation is developed, the grass generally has high maintenance requirements. In less developed, open areas, unmown grass, including perennial native species, can be used to provide protection. Trees and shrubs also can provide protection from the wind.

Shoreline Stabilization. In lakes and ponds, the goal of vegetative stabilization is to prevent erosion of the shoreline. Wetland plants anchor the bottom of the lake or pond adjacent to the shore and help dissipate the erosive energy of waves. An important consideration in planting along shorelines is the need to establish favorable conditions for plant establishment and growth. These include the proper grading of side slopes and the control of upland erosion to prevent the buildup of silt and associated pollutants in the water. Designers should maintain awareness of regulatory requirements that may influence vegetation projects in a wetland environment (USAF, 1998).

Vegetation used for shoreline stabilization work should be native material selected on the basis of strength, resiliency, vigor, and ability to withstand periodic inundation. Woody vegetation with short, dense, flexible tops and large root systems works well. Other important factors include rapid initial growth, ability to reproduce, and resistance to disease and insects.

According to Heyer (No Date), most streambank stabilization plantings have used various willows, including black willow (*Salix nigra*), sandbar willow (*S. interior*), meadow willow (*S. petiolaris*), heartleaf willow (*S. rigida*), and Ward willow (*S. caroliniana*). The size used depends on the severity of the erosion and the type of bank to be stabilized. Whatever the size, it is important to use dormant cuttings and to remove all lateral branches. Most tree revetment projects used either eastern red cedar (*Juniperus virginiana*) or hardwoods such as northern pin oak (*Quercus ellipsoidalis*). Important suggestions include the following:

- Choose trees with many limbs and branches to trap as much sediment as possible.
- Select decay-resistant trees.
- Use recently cut trees—dead trees are more brittle and likely to break apart.
- The tree size-diameter of the tree crown should be about two-thirds of the height of the eroding bank.

- Cut off any trunk without limbs.
- Place the tree revetments overlapping, butt end pointing upstream.
- Begin and end revetments at stable points along the bank.
- Choose an anchoring system according to the bank material to be stabilized and the weight of the object to be anchored.

Vegetative measures for streambank stabilization offer an alternative to structural measures and are becoming well known as bioengineering techniques for streambanks. Utilizing vegetative material for streambank stabilization could be the first step in the reestablishment of the riparian forest, which is essential for long-term stability of the streamside and floodplain areas. Each site must be evaluated separately as to the feasibility of using natural material (Heyer, No Date).

Vegetative streambank stabilization, with the goal to protect streambanks from the erosive forces of flowing water, is generally applicable where bankfull flow velocity does not exceed 6 ft/sec and soils are erosion resistant (Smolen, 1988). Table 5-4 includes general guidelines for maximum allowable velocities in streams to be protected by vegetation.

Table 5-4. Conditions Where Vegetative Streambank Stabilization Is Acceptable

Frequency of Bankfull Flow	Maximum Allowable Velocity for Highly Erodible Soil	Maximum Allowable Velocity for Erosion-Resistant Soil
> 4 times/yr	4 ft/sec	5 ft/sec
1 to 4 times/yr	5 ft/sec	6 ft/sec
< 1 time/yr	6 ft/sec	6 ft/sec

Source: Smolen, 1988.

Temporary Vegetative Stabilization. Temporary vegetative cover such as rapidly growing annuals and legumes can be used to establish a temporary vegetative cover. Such covers are recommended for areas that (Fifield, 1999):

- Will not be brought to final grade within 30 days or are likely to be redisturbed.
- Require seeding of cut and fill slopes under construction.
- Require stabilization of soil storage areas and stockpiles.
- Require stabilization of temporary dikes, dams, and sediment containment systems.
- Require development of cover or nursery crops to assist with establishing perennial grasses.

Examples of temporary vegetation include wheat, oats, barley, millet, and sudan grass. Temporary seeding may not be effective in arid or semi-arid regions where seasonal lack of moisture prevents germination. It may be necessary to use a mixture of warm and cool season grasses to ensure germination. Mulching and geotextiles can be used to help provide temporary stabilization with vegetation, particularly in situations where establishing cover may be difficult.

Permanent Vegetative Stabilization. Permanent vegetative cover such as a perennial grass or a legume cover can be used to establish a permanent vegetative cover. Permanent vegetation is recommended for (Fifield, 1999):

- Final graded or cleared areas where permanent vegetative cover is needed to stabilize the soil
- Slopes designated to be treated with erosion control blankets
- Grass-lined channels or waterways designed to be protected with channel liners

The following sub-sections discuss the various types or means of providing vegetative stabilization.

5.1.5.1.2.1 Grass-lined Channels

General Description

Grass-lined channels, or swales, convey storm water runoff through a stable conduit. Vegetation lining the channel reduces the flow velocity of concentrated runoff. Grassed channels are usually not designed to control peak runoff loads by themselves and are often used in combination with other BMPs such as subsurface drains and riprap stabilization.

Applicability

Grassed channels should be used in areas where erosion-resistant conveyances are needed, such as in areas with highly erodible soils and slopes of less than 5 percent. They should be installed only where space is available for a relatively large cross-section. Grassed channels have a limited ability to control runoff from large storms and should not be used in areas where velocity exceeds 5 feet per second unless they are on erosion-resistant soils with dense groundcover at the soil surface.

Design and Installation Criteria

Because of their ease of construction and low cost, vegetation-lined waterways are frequently used for diversion and collection ditches. USDA's Soil Conservation Service's (SCS) *Engineering Field Manual* (1979) recommends the maximum permissible velocities for individual site conditions shown in Table 5-5.

Table 5-5. Maximum Permissible Velocities for Individual Site Conditions for Grass Swales

Site Location	Velocity
Areas where only a sparse cover can be established or maintained because of shale, soils, or climate	3.00 ft/sec (0.91 m/sec)
If the vegetation is to be established by seeding	3.00 to 4.00 ft/sec (0.91 to 1.22 m/sec)
Areas where a dense, vigorous sod is obtained quickly or where the runoff can be diverted out of the waterway while the vegetation is being established	4.00 to 5.00 ft/sec (1.22 to 1.52 m/sec)

Source: USDA, 1979

Grassed waterways typically begin eroding in the invert of the channel if the velocity exceeds the sheer strength of the vegetation soil interface. Once the erosion process has started, it will continue until an erosion-resistant layer is encountered. If erosion of a channel bottom is occurring, rock or stone should be placed in the eroded area or the design should be changed (UNEP, 1994).

Grassed waterways on construction land must be able to carry peak runoff events from snowmelt and rainstorms (in some areas limited to up to 1 cubic meter of water per second). The size of the waterway depends on the size of the area to be drained. A typical grassed waterway cross-section is parabolic with a nearly flat-bottom, a bottom width of 3 m, and channel depth of at least 30 cm. Side slopes usually rise about 1 m for every 10 m horizontal distance but may be as steep as a 1 m rise for every 2 m of horizontal distance. The waterway should follow the natural drainage path if possible (Vanderwel and Abday, 1998). The design should be site-specific and be derived using well-established procedures.

Lined channels are a means of carrying water to lower elevations along steep parts of a waterway. Those portions of the waterway are precisely shaped and carefully lined with heavy-duty erosion control matting (a geotextile product). The lining is covered with a layer of soil and seeded to grass. The resulting channel is highly resistant to erosion. Lined channels are appropriate for waterways that only carry water occasionally and have slopes of up to 10 percent. Companies that sell geotextile products provide detailed information on installation of their products (Vanderwel and Abday, 1998). The design should be site-specific and be derived using well-established procedures. No standard procedure is available for evaluating the effectiveness of geotextile liners for pollutant removal.

Grass-lined channels should be sited in accordance with the natural drainage system and should not cross ridges. The channel design should not have sharp curves or significant changes in slope. The channel should not receive direct sedimentation from disturbed areas and should be sited only on the perimeter of a construction site to convey relatively clean storm water runoff. They should be separated from disturbed areas by a vegetated buffer or other BMP to reduce sediment loads.

Although exact design criteria should be based on local conditions, basic design recommendations for grassed channels include the following:

- Construction and vegetation of the channel should occur before grading and paving activities begin.
- Design velocities should be less than 5 ft/sec.
- Geotextiles can be used to stabilize vegetation until it is fully established.
- Covering the bare soil with sod or geotextiles can provide reinforced storm water conveyance immediately.
- Triangular-shaped channels should be used with low velocities and small quantities of runoff; parabolic grass channels are used for larger flows and where space is available; trapezoidal channels are used with large flows of low velocity (low gradient).
- Outlet stabilization structures might be needed if the runoff volume or velocity has the potential to exceed the capacity of the receiving area.
- Channels should be designed to convey runoff from a 10-year storm without erosion.
- The sides of the channel should be sloped less than 3:1, with V-shaped channels along roads sloped 6:1 or less for safety.
- All trees, bushes, stumps, and other debris should be removed during construction.

Effectiveness

Grass-lined channels can effectively transport storm water from construction areas if they are designed for expected flow volumes and velocities and if they do not receive sediment directly from disturbed areas. The primary function is to carry the flow at a higher velocity without eroding or overtopping the channel.

Limitations

Grassed channels, if improperly installed, can alter the natural flow of surface water and have adverse impacts on downstream waters. Additionally, if the design capacity is exceeded by a large storm event, the vegetation might not be sufficient to prevent erosion and the channel might be destroyed. Clogging with sediment and debris reduces the effectiveness of grass-lined channels for storm water conveyance.

Maintenance

Maintenance requirements for grass channels are relatively minimal. During the vegetation establishment period, the channels should be inspected after every rainfall. Other maintenance activities that should be carried out after vegetation is established are mowing, litter removal, and spot vegetation replacement. The most important objective in the maintenance of grassed channels is the maintaining of a dense and vigorous growth of turf. Periodic cleaning of vegetation and soil buildup in curb cuts is required so that water flow into the channel is unobstructed. During the growing season, channel grass should be cut no shorter than the level of design flow, and the cuttings should be removed promptly.

Cost

Costs of grassed channels range according to depth, with a 1.5-foot-deep, 10-foot-wide grassed channel estimated to cost between $6,395 and $17,075 per trench, while a 3.0-foot-deep, 21-foot-wide grassed channel is estimated at $12,909 to $33,404 per trench (SWRPC, 1991).

As an alternative cost approximation, grassed channel construction costs can be developed using unit cost values. Shallow trenching (1 to 4 feet deep) with a backhoe in areas not requiring dewatering can be performed for $4 to $5 per cubic yard of removed material (R. S. Means, 2000). Assuming no disposal costs (i.e., excavated material is placed on either side of the trench), only the cost of fine grading, soil treatment, and grassing (approximately $2 per square yard of earth surface area) should be added to the trenching cost to approximate the total construction cost. Site-specific hydrologic analysis of the construction site is necessary to estimate the channel conveyance requirement, however, it is not unusual to have flows on the order of 2 to 4 cfs per acre served. For channel velocities between 1 and 3 feet per second, the resulting range in the channel cross-section area can be as low as 0.67 square foot per acre drained to as high as 4 square feet per acre. If the average channel flow depth is 1 foot, then the low estimate for grassed channel installation is $0.27 per square foot of channel bottom per acre served per foot of channel length. The high estimate is $1.63 per square foot of channel bottom per acre served per foot of channel length.

5.1.5.1.2.2 Seeding

General Description

Permanent seeding, is used to control runoff and erosion on disturbed areas by establishing perennial vegetative cover from seed. It is used to reduce erosion, decrease sediment yields from disturbed areas, and provide permanent stabilization. This practice is both economical and adaptable to different site conditions, and it allows selection of the most appropriate plant materials. Seeding is a best management practice that is particularly susceptible to local conditions such as the climatic conditions, physical and chemical characteristics of the soil, topography, and time of year.

Applicability

Permanent seeding is well-suited in areas where permanent, long-lived vegetative cover is the most practical or most effective method of stabilizing the soil. Permanent seeding can be used on roughly graded areas that will not be regraded for at least a year. Vegetation controls erosion by protecting bare soil surfaces from displacement by raindrop impacts and by reducing the velocity and quantity of overland flow. The advantages of seeding over other means of establishing plants include lower initial costs and labor inputs.

Design and Installation Criteria

Areas to be stabilized with permanent vegetation must be seeded or planted 1 to 4 months after the final grade is achieved unless temporary stabilization measures are in place. Successful plant establishment can be maximized with proper planning; consideration of soil characteristics; selection of plant materials that are suitable for the site; adequate seedbed preparation, liming, and fertilization; timely planting; and regular maintenance. Climate, soils, and topography are major factors that dictate the suitability of plants for a particular site. The soil on a disturbed site might require amendments to provide sufficient nutrients for seed germination and seedling growth. The surface soil must be loose enough for water infiltration and root penetration. Soil pH should be between 6.0 and 6.5 and can be increased with liming if soils are too acidic. Seeds can be protected with mulch to retain moisture, regulate soil temperatures, and prevent erosion during seedling establishment.

Seedbed preparation is critical in established vegetation. Spraying seeds on a scraped slope will generally not provide satisfactory results. Typical seedbed preparation will begin with a soil test to determine the amount of lime or fertilizer that should be added. In addition, tillage should be performed that will break up clods so that seed contact can be established. When the seed is applied, it should be covered and lightly compacted. A natural or synthetic mulch is recommended to provide surface stabilization until the vegetation is established. In addition to providing surface stabilization, the mulch will also retard evaporation and encourage rapid growth. A suitable tack to hold the mulch may be necessary if the mulch is not otherwise anchored. Mulch as an erosion control practice is covered in a subsequent sub-section.

Depending on the amount of use permanently seeded areas receive, they can be considered high- or low-maintenance areas. High-maintenance areas are mowed frequently, limed and fertilized regularly, and either (1) receive intense use (for example, athletic fields) or (2) require maintenance to an aesthetic standard (for example, home lawns). Grasses used for high-maintenance areas are long-lived perennials that form a tight sod and are fine-leaved. High-maintenance vegetative cover is used for homes, industrial parks, schools, churches, and recreational areas.

Low-maintenance areas are mowed infrequently or not at all and do not receive lime or fertilizer on a regular basis. Plants must be able to persist with minimal maintenance over long periods of time. Grass and legume mixtures are favored for these sites because legumes fix nitrogen from the atmosphere. Sites suitable for low-maintenance vegetation include steep slopes, streambanks or channel banks, some commercial properties, and "utility" turf areas such as road banks.

Effectiveness

Seeding that results in a successful stand of grass has been shown to remove between 50 and 100 percent of total suspended solids from storm water runoff, with an average removal of 90 percent (USEPA, 1993).

Limitations

The effectiveness of permanent seeding can be limited because of the high erosion potential during establishment, the need to reseed areas that fail to establish, limited seeding times depending on the season, and the need for stable soil temperature and soil moisture content during germination and early growth. Permanent seeding does not immediately stabilize soils—temporary erosion and sediment control measures should be in place to prevent off-site transport of pollutants from disturbed areas. Use of mulches and/or geotextiles may improve the likelihood of successfully establishing vegetation.

Maintenance

Grasses should emerge within 4 to 28 days and legumes within 5 to 28 days after seeding. A successful stand should exhibit the following:

- Vigorous dark green or bluish green seedlings—not yellow

- Uniform density, with nurse plants, legumes, and grasses well intermixed

- Green leaves—perennials remaining throughout the summer, at least at the plant bases

Seeded areas should be inspected for failure, and necessary repairs and reseeding should be made as soon as possible. If a stand has inadequate cover, the choice of plant materials and quantities of lime and fertilizer should be reevaluated. Depending on the condition of the stand, areas can be repaired by overseeding or reseeding after complete seedbed preparation. If the timing is bad, an annual grass seed can be overseeded to temporarily thicken the stand until a suitable time for seeding perennials. Consider seeding temporary, annual species if the season is not appropriate for permanent seeding. If vegetation fails to grow, the soil should be tested to determine whether low pH or nutrient imbalances are responsible. Local NRCS or county extension agents can also be contacted for seeding and soil testing recommendations.

On a typical disturbed site, full plant establishment usually requires refertilization in the second growing season. Soil tests should be used to determine whether more fertilizer needs to be added. Do not fertilize cool season grasses in late May through July. Grass that looks yellow may be nitrogen deficient. Nitrogen fertilizer should not be used if the stand contains more than 20 percent legumes.

Cost

Seeding costs range from $200 to $1,000 per acre and average $400 per acre. Maintenance costs range from 15 to 25 percent of initial costs and average 20 percent (USEPA, 1993). R. S. Means (2000) indicates the cost of mechanical seeding to be approximately $900 per acre, and demonstrates that the coverage cost varies with the seed type, seeding approach and scale (total acreage to be seeded). For example, hydro or water-based seeding for grass is estimated to be $700 per acre, but seeding of "field" grass species is only $540 per acre (Costs include materials, labor, and equipment, with profit and overhead). If surface preparation is required, then the installation costs increase. R. S. Means suggests the cost of fine grading, soil treatment, and grassing is approximately $2 per square yard.

5.1.5.1.2.3 Sodding

General Description

Sodding is a permanent erosion control practice that involves laying a continuous cover of grass sod on exposed soils. In addition to stabilizing soils, sodding can reduce the velocity of storm water runoff. Sodding can provide immediate vegetative cover for critical areas and stabilize areas that cannot be vegetated by seed. It can also stabilize channels or swales that convey concentrated flows and reduce flow velocities. While sodding is not as dependent as seeding on local conditions, it does depend on soil and climatic conditions to be successful. Watering immediately after installation and occasionally until establishment is generally beneficial.

Applicability

Sodding is appropriate for any graded or cleared area that might erode, requiring immediate vegetative cover. Locations particularly well-suited to sod stabilization are:

- Waterways and channels carrying intermittent flow
- Areas around drop inlets that require stabilization
- Residential or commercial lawns and golf courses where prompt use and aesthetics are important
- Steeply sloped areas

Design and Installation Criteria

Sodding eliminates the need for seeding and mulching and produces more reliable results with less maintenance. Sod can be laid during times of the year when seeded grasses can fail. The sod must be watered frequently within the first few weeks of installation. Some seedbed preparation is recommended, including smoothing to provide contact between the sod and the soil surface and soil testing to determine liming and fertilizer application rates. Since sod provides instantaneous cover, mulches are not typically recommended, but anchoring may be appropriate on steep slopes.

The type of sod selected should be composed of plants adapted to site conditions. Sod composition should reflect environmental conditions as well as the function of the area where the sod will be laid. The sod should be of known genetic origin and be free of noxious weeds, diseases, and insects. The sod should be machine cut at a uniform soil thickness of 15 to 25 mm at the time of establishment (this does not include top growth or thatch). Soil preparation and addition of lime and fertilizer may be needed—soils should be tested to determine whether amendments are needed. Sod should be laid in strips perpendicular to the direction of water flow and staggered in a brick-like pattern. The corners and middle of each strip should be stapled firmly. Jute or plastic netting may be pegged over the sod for further protection against washout during establishment.

Areas to be sodded should be cleared of trash, debris, roots, branches, stones, and clods larger than 2 inches in diameter. Sod should be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period should be inspected and approved prior to its installation.

Limitations

Compared to seed, sod is more expensive and more difficult to obtain, transport, and store. Care must be taken to prepare the soil and provide adequate moisture before, during, and after installation to ensure successful establishment. If sod is laid on poorly prepared soil or unsuitable surface, the grass will die quickly because it is unable to root. Sod that is not adequately irrigated after installation may cause root dieback because grass does not root rapidly and is subject to drying.

Effectiveness

Sod has been shown to remove between 98 and 99 percent of total suspended solids in runoff (USEPA, 1993). It is therefore a highly effective management practice for erosion and sediment control.

Maintenance

Watering is very important to maintain adequate moisture in the root zone and to prevent dormancy, especially within the first few weeks of installation, until it is fully rooted. Mowing should not result in the removal of more than one-third of the shoot. Grass height should be maintained to be 2–3 inches long. After the first growing season, sod might require fertilization or liming.

Permanent, fine turf areas require yearly fertilization. Warm-season grass should be fertilized in late spring to early summer, and cool-season grass in late winter and again in early fall.

Cost

Average installation costs of sod average $0.20 per square foot and range from $0.10 to $1.10 per square foot; maintenance costs are approximately 5 percent of installation costs (USEPA, 1993). R. S. Means (2000) indicates the sodding ranges between $250 and $750 per 1000 square feet for 1" deep bluegrass sod on level ground, depending on the size of the area treated (unit costs value are for orders over 8,000 square feet and less than 1000 square feet, respectively). Bent grass sod values range between $350 and $500 per 1,000 square feet; again the lower value is more likely for most construction sites because it is for large area applications. (Costs include materials, labor, and equipment, with profit and overhead).

5.1.5.1.2.4 Mulching

General Description

Mulching is a temporary erosion control practice in which materials such as grass, hay, wood chips, wood fibers, straw, or gravel are placed on exposed or recently planted soil surfaces. Mulching is highly recommended as a stabilization method and is most effective when anchored in place until vegetation is well established. In addition to stabilizing soils, mulching can reduce the velocity of storm water runoff. When used in combination with seeding or planting, mulching can aid plant growth by holding seeds, fertilizers, and topsoil in place; by preventing birds from eating seeds; by retaining moisture; and by insulating plant roots against extreme temperatures.

Mulch mattings are materials such as jute or other wood fibers that are formed into sheets and are more stable than loose mulch. They can also be easily unrolled during the installation process and are particularly useful in steeper areas or in channels. Netting can be used to stabilize soils while plants are growing, although netting does not retain moisture or insulate against extreme temperatures. Mulch binders consist of asphalt or synthetic materials that are sometimes used instead of netting to bind loose mulches, but these have been found to have limited usefulness.

Applicability

Mulching is often used in areas where temporary seeding cannot be used because of environmental constraints. Mulching can provide immediate, effective, and inexpensive erosion control. On steep slopes and critical areas such as waterways, mulch matting is used with netting or anchoring to hold it in place. Mulches can be used on seeded and planted areas where slopes are steeper than 2:1 or where sensitive seedlings require insulation from extreme temperatures.

Design and Installation Criteria

When possible, organic mulches should be used for erosion control and plant material establishment. Suggested materials include loose straw, netting, wood cellulose, or agricultural silage. All materials should be free of seed, and loose hay or straw should be anchored by applying tackifier, stapling netting over the top, or crimping with a mulch crimping tool. Materials that are heavy enough to stay in place do not need anchoring (for example, gravel). Steepness of the slope will also affect the extent of anchoring the mulch. Other examples include hydraulic mulch products with 100 percent post-consumer paper content, yard trimming composts, and wood mulch from recycled stumps and tree parts. Inorganic mulches such as pea gravel or crushed granite can be used in unvegetated areas.

Mulches may or may not require a binder, netting, or tacking. All straw and loose materials must have a binder to hold them in place. Mulch materials that float away during storms can clog drainage ways and lead to flooding. The extent of binding depends on the type of mulch applied. Effective use of netting and matting material requires firm, continuous contact between the materials and the soil. If there is no contact, the material will not hold the soil and erosion will occur underneath the material. Grading is not necessary before mulching.

There must be adequate coverage, or erosion, washout, and poor plant establishment will result. If an appropriate tacking agent is not applied, or if it is applied in an insufficient amount, mulch will not withstand wind and runoff. The channel grade and liner must be appropriate for the amount of runoff, or the channel bottom will erode. Also, hydromulch should be applied in spring, summer, or fall to prevent deterioration of the mulch before plants can become established. Table 5-6 presents guidelines for installing mulches, but local conditions may warrant additional requirements.

Table 5-6. Typical Mulching Materials and Application Rates

Material	Rate per Acre	Requirements	Notes
Organic Mulches			
Straw	1-2 tons	Dry, unchopped, unweathered; avoid weeds.	Spread by hand or machine; must be tacked or tied down.
Wood fiber or wood cellulose	0.5-1 ton		Use with hydroseeder; may be used to tack straw. Do not use in hot, dry weather.
Wood chips	5-6 tons	Air dry. Add fertilizer N, 12 lb/ton.	Apply with blower, chip handler, or by hand. Not for fine turf areas.
Bark	35 yd^3	Air dry, shredded or hammermilled, or chips.	Apply with mulch blower, chip handler, or by hand. Do not use asphalt tack.
Nets and Mats			
Jute net	Cover area	Heavy, uniform; woven of single jute yarn. Used with organic mulch.	Withstands water flow.
Excelsior (wood fiber) mat	Cover area		
Fiberglass roving	0.5-1 ton	Continuous fibers of drawn glass bound together with a non-toxic agent.	Apply with compressed air ejector. Tack with emulsified asphalt at a rate of 25-35 gal/1,000 ft^2.

Effectiveness

Mulching effectiveness varies with the type of mulch used and local conditions such as rainfall and runoff amounts. Percent soil loss reduction for different mulches ranges from 53 to 99.8 percent and associated water velocity reductions range from 24 to 78 percent (Harding, 1990). Table 5-7 shows soil loss and water velocity reductions for different mulch treatments.

Table 5-7. Measured Reductions in Soil Loss for Different Mulch Treatments

Mulch characteristics	Soil loss reduction (%)	Water velocity reduction (%) relative to bare soil
100% wheat straw/top net	97.5	73
100% wheat straw/two nets	98.6	56
70% wheat straw/30% coconut fiber	98.7	71
70% wheat straw/30% coconut fiber	99.5	78
100% coconut fiber	98.4	77
Nylon monofilament/two nets	99.8	74
Nylon monofilament/rigid/bonded	53.0	24
Vinyl monofilament/flexible/bonded	89.6	32
Curled wood fibers/top net	90.4	47
Curled wood fibers/two nets	93.5	59
Antiwash netting(jute)	91.8	59
Interwoven paper and thread	93.0	53
Uncrimped wheat straw–2,242 kg/ha	84.0	45
Uncrimped wheat straw–4,484 kg/ha	89.3	59

Source: Harding, 1990, as cited in USEPA, 1993.

Limitations

Mulching, matting, and netting might delay seed germination because the cover changes soil surface temperatures. The mulches themselves are subject to erosion and may be washed away in a large storm if not sufficiently anchored with netting or tacking. Maintenance is necessary to ensure that mulches provide effective erosion control.

Maintenance

Mulches must be anchored to resist wind displacement. Netting should be removed when protection is no longer needed and disposed of in a landfill or composted. Mulched areas should be inspected frequently to identify areas where mulch has loosened or been removed, especially after rain storms. Such areas should be reseeded (if necessary) and the mulch cover replaced immediately. Mulch binders should be applied at rates recommended by the manufacturer. If washout, breakage, or erosion occurs, surfaces should be repaired, reseeded, and remulched, and new netting should be installed. Inspections should be continued until vegetation is firmly established.

Cost

The costs of seed and mulch average $1,500 per acre and range from $800 to $3,500 per acre (USEPA, 1993). R. S. Means (2000) estimates the cost of power mulching to be $22.50 per 1,000 square feet, for large volume applications. In addition, hydro- and mechanical seeding are approximately $700 to $900 per acre. Coverage cost varies with the seed type, seeding approach, and scale (total acreage to be seeded). For example, hydro or water-based seeding for grass is estimated to cost $700 per acre, but seeding of "field" grass species is only $540 per acre. (Costs include materials, labor, and equipment, with profit and overhead.) If surface preparation is required, then the installation costs increase. R. S. Means (2000) suggests the cost of fine grading, soil treatment, and grassing is approximately $2 per square yard of earth surface area.

5.1.5.1.2.5 Geotextiles

General Description

Geotextiles are porous fabrics also known as filter fabrics, road rugs, synthetic fabrics, construction fabrics, or simply fabrics. Geotextiles are manufactured by weaving or bonding fibers made from synthetic materials such as polypropylene, polyester, polyethylene, nylon, polyvinyl chloride, glass, and various mixtures of these materials. As a synthetic construction material, geotextiles are used for a variety of purposes such as separators, reinforcement, filtration and drainage, and erosion control (USEPA, 1992). Some geotextiles are made of biodegradable materials such as mulch matting and netting. Mulch mattings are jute or other wood fibers that have been formed into sheets and are more stable than normal mulch. Netting is typically made from jute, wood fiber, plastic, paper, or cotton and can be used to hold the mulching and matting to the ground. Netting can also be used alone to stabilize soils while the plants are growing; however, it does not retain moisture or temperature well.

Geotextiles can aid in plant growth by holding seeds, fertilizers, and topsoil in place. Fabrics are relatively inexpensive for certain applications—a wide variety of geotextiles exist to match the specific needs of the site.

Applicability

Geotextiles can be used for erosion control by using it alone. Geotextiles can be used as matting, which is used to stabilize the flow of channels or swales or to protect seedlings on recently planted slopes until they become established. Matting may be used on tidal or streambanks where moving water is likely to wash out new plantings. They can also be used to protect exposed soils immediately and temporarily, such as when active piles of soil are left overnight.

Geotextiles are also used as separators. An example of such a use is geotextile as a separator between riprap and soil. This “sandwiching” prevents the soil from being eroded from beneath the riprap and maintaining the riprap’s base.

Design and Installation Criteria

Many types of geotextiles are available. Therefore, the selected fabric should match its purpose. State or local requirements, design procedures, and any other applicable requirements should be considered. In the field, important concerns include regular inspections to determine whether cracks, tears, or breaches are present in the fabric and to identify when repairs should be made. Effective netting and matting require firm, continuous contact between the materials and the soil. If there is no contact, the material will not hold the soil and erosion will occur underneath the material.

Effectiveness

A geotextile's effectiveness depends upon the strength of the fabric and proper installation. For example, when protecting a cut slope with a geotextile, it is important to properly anchor the fabric using appropriate length and spacing of wire staples. This will ensure that it will not be undermined by a storm event.

Limitations

Geotextiles (primarily synthetic types) have the potential disadvantage of being sensitive to light and must be protected prior to installation. Some geotextiles might promote increased runoff and might blow away if not firmly anchored. Depending on the type of material used, geotextiles might need to be disposed of in a landfill, making them less desirable than vegetative stabilization. If the fabric is not properly selected, designed, or installed, the effectiveness may be reduced drastically.

Maintenance

Regular inspections should be made to determine whether cracks, tears, or breaches have formed in the fabric—it should be repaired or replaced immediately. It is necessary to maintain contact between the ground and the geotextile at all times.

Cost

Costs for geotextiles range from $0.50 to $10.00 per square yard depending on the type chosen (SWRPC, 1991). Geosynthetic turf reinforcement mattings (TRMs) are widely used for immediate erosion protection and long-term vegetative reinforcement, usually for steeply sloped areas or areas exposed to runoff flows. The Erosion Control Technology Council (a geotextile industry support association) estimates TRMs cost approximately $7.00 per square yard (installed) for channel protection (ECTC, 2002a). Channel protection is one of the most demanding of installations (much more demanding than general coverage of denuded area). The ECTC (2002b) estimates the cost to install a simple soil blanket (or rolled erosion control product), seed, and fertilizer to be $1.00 per square yard.

5.1.5.1.2.6 Vegetated Buffer Strips

General Description

Vegetated buffers are areas of either natural or established vegetation that are maintained to protect the water quality of neighboring areas. Buffer zones reduce the velocity of storm water runoff, provide an area for the runoff to permeate the soil, allow ground water recharge, and act as filters to catch sediment. The reduction in velocity also helps to prevent soil erosion.

Applicability

Vegetated buffers can be used in any area that is able to support vegetation, but they are most effective and beneficial on floodplains, near wetlands, along streambanks, and on steep, unstable slopes. They are also effective in separating land use areas that are not compatible and in protecting wetlands or waterbodies by displacing activities that might be potential sources of nonpoint source pollution.

Design and Installation Criteria

To establish an effective vegetative buffer, the following guidelines should be followed:

- Soils should not be compacted.
- Slopes should be less than 5 percent.
- Buffer widths should be determined after careful consideration of slope, vegetation, soils, depth to impermeable layers, runoff sediment characteristics, type and quantity of storm water pollutants, and annual rainfall.
- Buffer widths should increase as slope increases.
- Zones of vegetation (native vegetation in particular), including grasses, deciduous and evergreen shrubs, and understory and overstory trees, should be intermixed.
- In areas where flows are concentrated and velocities are high, buffer zones should be combined with other structural or nonstructural BMPs as a pretreatment.

Vegetated strips have been studied extensively, with emphasis placed on their effectiveness in removing sediment and other pollutants. Vegetated strips are most appropriate at sites where sediment loads are relatively low, as high sediment loads will cause large quantities of deposition along the leading edge of the vegetation. This deposition will cause the flow to divert around the vegetation in a concentrated flow pattern, which will cause short-circuiting and greatly reduce removal efficiency. Variability in vegetation density and uniformity often causes similar problems. Removal efficiency depends on a combination of slope, length, and width of the filter; density of the vegetation; sediment characteristics, hydraulics of the flow; and infiltration. The interaction of these variables is complex and prevents the process from being reduced to a simple relationship except on a local basis. For site-specific local conditions, methods have been developed that allow trapping to be related to strip length and slope.

Effectiveness

Considerable data have been collected on the effectiveness of buffer strips for specific conditions. Numerous factors such as infiltration rate, flow depth, slope, dimensions of the buffer, density and type of vegetation, sediment size, and sediment density impact removal rates. Recent studies show that even short vegetative buffers can trap high percentages of sediment and certain chemicals. A significant concern is whether flow is allowed to concentrate, which will greatly reduce the travel time through the buffer and prevent the removal of pollutants.

Several researchers have measured greater than 90 percent reductions in sediment and nitrate concentrations; buffer/filter strips do a reasonably good job of removing phosphorus attached to sediment, but are relatively ineffective in removing dissolved phosphorus (Gillman, 1994). However, since the hydraulics of flow through buffer strips are not well defined and can vary considerably based on site conditions, it is difficult to consistently estimate the effectiveness of buffer strips.

Limitations

Vegetated buffers require plant growth before they can be effective, and land must be available on which to plant the vegetation. If land costs are very high, buffer zones might not be cost-effective. Although vegetated buffers help to protect water quality, they usually do not effectively mitigate concentrated storm water flows to neighboring or downstream wetlands.

Maintenance

Keeping the vegetation in vegetated buffers healthy requires routine maintenance, which (depending on species, soil types, and climatic conditions) can include weed and pest control, mowing, fertilizing, liming, irrigating, and pruning. Inspection and maintenance are most important when buffer areas are first installed. Once established, vegetated buffers do not require much maintenance beyond the routine procedures listed earlier and periodic inspections of the areas, especially after any heavy rainfall and at least once a year. Inspections should focus on encroachment, gully erosion, density of vegetation, evidence of concentrated flows through the areas, and any damage from foot or vehicular traffic. If there are more than 6 inches of sediment in one place, it should be removed.

Cost

Conceptual cost estimates for grassed buffer strips can be made based on square footage using unit cost values. R. S. Means (2000) estimates the cost of fine grading, soil treatment, and grassing to be $2 per square yard. This cost estimate is based on application of traditional lawn seed. The cost for field seed is lower than lawn seed, reducing the coverage price. Where gently sloping areas just need to be grassed with acceptable species, the cost can be as low as $0.38 per square yard.

5.1.5.1.2.7 Erosion Control Matting

General Description

Erosion control mats can be either organic or made from a synthetic material. A wide variety of products exist to match the specific needs of the site. Organic mats are made from such materials as wood fiber, jute net, and coconut coir fiber. Unlike organic matter, synthetic mats are constructed from non-biodegradable materials and remain in place for many years. These organic mats are classified as Turf Reinforcement Mats (TRMs) and Erosion Control and Revegetation Mats (ECRMs) (USDOT, 1995).

Erosion control matting aids in plant growth by holding seeds, fertilizers, and topsoil in place. Matting can be used to stabilize the flow of channels or swales or to protect seedlings on recently planted slopes until they become established. Matting can be used on tidal or streambanks where moving water is likely to wash out new plantings. It can also be used to protect exposed soils immediately and temporarily, such as when active piles of soil are left overnight.

Applicability

Mulch mattings, netting, and filter fabrics are particularly useful in steep areas and drainage swales where loose seed is vulnerable to being washed away or failing to survive dry soil (UNEP, 1994). Erosion control mats can also be used to separate riprap and soil. This results in a “sandwiching” effect, maintaining the riprap’s base and preventing the soil beneath from being eroded.

Design and Installation Criteria

Matting is especially recommended for steep slopes and channels (UNEP, 1994).

Many types of erosion control mats are available. Therefore, the selected product should match its purpose. Effective netting and matting require firm, continuous contact between the materials and the soil. If there is no contact, the material will not hold the soil and erosion will occur underneath the material.

Wood fiber or curled wood mat consists of curled wood with fibers, 80 percent of which are 150 mm or longer, with a consistent thickness and even distribution of fiber over the entire mat. The top side of the mat is covered with a biodegradable plastic mesh. The mat is placed in the channel or on the slope parallel to the direction of flow and secured with staples and check slots. This is applied immediately after seeding operations (USDOT, 1995).

Jute net consists of jute yarn, approximately 5 mm in diameter, woven into a net with openings that are approximately 10 by 20 mm (or 0.40 to 0.79 inches). The jute net is loosely laid in the channel parallel to the direction of flow. The net is secured with staples and check slots at intervals along the channel. Placement of the jute net is done immediately after seeding operations (USDOT, 1995).

Coconut blankets are constructed of biodegradable coconut fibers that resist decay for 5 to 10 years to provide long, temporary erosion control protection. The materials are often encased in ultraviolet stabilized nets and sometimes have a composite, polypropylene structure to provide permanent turf reinforcement. These materials are best used for waterway stabilization and slopes that require longer periods to stabilize (USDOT, 1995).

Within the synthetic mat category are TRMs and ECRMs. *Turf reinforcement mats* are three-dimensional polymer nettings or monofilaments formed into a mat. They have sufficient thickness (>13 mm or 0.5 inch) and void space (>90 percent) to allow for soil filling and retention. The mat acts as a traditional mat to protect the seed and increase germination. As the turf establishes, the mat remains in place as part of the root structure. This gives the established turf a higher strength and resistance to erosion (USDOT, 1995).

Erosion control and revegetation mats are composed of continuous monofilaments bound by heat fusion or stitched between nettings. They are thinner than TRMs and do not have the void space to allow for filling of soil. They act as a permanent mulch and allow vegetation to grow through the mat (USDOT, 1995).

Effectiveness

The effectiveness of erosion control matting depends upon the strength of the material and proper installation. For example, when protecting a cut slope with an erosion control mat, it is important to anchor the mat properly. This will ensure that it will not be undermined by a storm event.

While erosion control blankets can be effective, their performance varies. Some general trends are that organic materials tend to be the most effective (Harding, 1990) and that thicker materials are typically superior (Fifield, 1992), but there are exceptions to both of these trends. Information about product testing of blankets is generally lacking. One notable exception is the Texas Department of Transportation, which publishes the findings of their testing program in the form of a list of acceptable and unacceptable materials for specific uses.

Limitations

Erosion control mats (primarily synthetic types) are sensitive to light and for this reason must be protected prior to installation. Some erosion control mats might cause an increase in runoff or blow away if not firmly anchored. Erosion control mats might need to be properly disposed of in a landfill, depending on the type of material. Effectiveness may be reduced if the fabric is not properly selected, designed, or installed.

Maintenance

Regular inspections are necessary to determine whether cracks, tears or breaches have formed in the fabric. Contact between the ground and erosion control mat should be maintained at all times and trapped sediment removed after each storm event.

Cost

Costs for erosion control mats range from $0.50 to $10.00 per square yard depending on the type chosen (SWRPC, 1991). Geosynthetic turf reinforcement mattings are widely used for immediate erosion protection and long-term vegetative reinforcement, usually for steeply sloped areas or areas exposed to runoff flows. The Erosion Control Technology Council (a geotextile industry support association) estimates that TRMs cost approximately $7.00 per square yard (installed) for channel protection (ECTC, 2002a). Channel protection is one of the most demanding of installations (much more demanding than general coverage of denuded area). The ECTC estimates the cost to install a simple soil blanket (or rolled erosion control product), seed, and fertilizer to be $1.00 per square yard (ECTC, 2002b).

5.1.5.1.2.8 Topsoiling

General Description

Topsoiling is the placement of a surface layer of soil enriched in organic matter over a prepared subsoil to provide a suitable soil medium for vegetative growth on areas with poor moisture, low nutrient levels, undesirable pH, and/or the presence of other materials that would inhibit the establishment of vegetation. Advantages of topsoil include its high organic matter content and friable consistency and its water-holding capacity and nutrient content. The texture and friability of topsoil are usually more conducive to seedling emergence and root growth. In addition to being a better growth medium, topsoil is often less erodible than subsoils, and the coarser texture of topsoil increases infiltration capacity and reduces runoff. During construction, topsoil is often removed from the project area and stockpiled. It is replaced on areas to be grassed or landscaped during the final stages of the project.

Applicability

Conditions where topsoiling applies include the following:

- Where a sufficient supply of quality topsoil is available.

- Where the subsoil or areas of existing surface soil present the following problems:
  - The structure, pH, or nutrient balance of the available soil cannot be amended by reasonable means to provide an adequate growth medium for the desired vegetation.
  - The soil is too shallow to provide adequate rooting depth or will not supply necessary moisture and nutrients for growth of desired vegetation.
  - The soil contains substances toxic to the desired vegetation.

- Where high quality turf or ornamental plants are desired.

- Where slopes are 2:1 or flatter.

Design and Installation Criteria

The topsoil should be uniformly distributed over the subsoil to a minimum compacted depth of 50 mm (2 inches) on slopes steeper than 3:1 and 100 mm (4 inches) on flatter slopes. Thicknesses of 100 to 150 mm is preferred for vegetation establishment via seeding. The topsoil should not be placed while in a frozen or muddy condition or when the subsoil is excessively wet, frozen, or in a condition that is detrimental to proper grading or seedbed preparation. The final surface should be prepared so that any irregularities are corrected and depressions and water pockets do not form. If the topsoil has been treated with soil sterilants, it should not be placed until the toxic substances have dissipated (USDOT, 1995). Table 5-8 summarizes the cubic yards of topsoil required for application to various depths.

Table 5-8. Cubic Yards of Topsoil Required for Application to Various Depths

Depth (inches)	Per 1,000 Sq Ft	Per Acre
1	3.1	134
2	6.2	268
3	9.3	403
4	12.4	536
5	15.5	670
6	18.6	804

Source: Smolen et al., 1988.

On slopes and areas that will not be mowed, the surface may be left rough after spreading topsoil. A disk may be used to promote bonding at the interface between the topsoil and subsoil (Smolen et al., 1988).

Effectiveness

No information is available describing the effectiveness of applying topsoil as a BMP.

Limitations

Limitations of applying topsoil can include to following:

- Topsoil spread when conditions are too wet, resulting in severe compaction.
- Topsoil mixed with too much unsuitable subsoil material, resulting in poor vegetation establishment.
- Topsoil contaminated with soil sterilants or chemicals, resulting in poor or no vegetation establishment.
- Topsoil not adequately incorporated or bonded with the subsoil, resulting in poor vegetation establishment and soil slippage on sloping areas.
- Topsoiled areas not protected, resulting in excessive erosion.

Maintenance

Newly topsoiled areas should be inspected frequently until the vegetation is established. Eroded or damaged areas should be repaired and revegetated.

Cost

Topsoiling costs are a function of the price of topsoil, the hauling distance, and the method of application. R. S. Means (2000) report unit cost values of $3 and $4 per square yard, for 4 and 6 inches of topsoil cover, respectively. This price is for furnishing and placing of topsoil, and includes materials, labor, and equipment, with profit and overhead.

5.1.5.2 Water Handling Practices

5.1.5.2.1 Earth Dike

General Description

An earth dike is a temporary or permanent ridge of soil designed to channel water to a desired location. Dikes are used to divert the flow of runoff by constructing a ridge of soil that intercepts and directs the runoff to the desired outlet or alternative management practice, such as a pond. This practice serves to reduce the length of a slope for erosion control and protect downslope areas. An earth dike can be used to prevent runoff from going over the top of a cut and eroding the slope, directing runoff away from a construction site or building; to divert clean water from a disturbed area; or to reduce a large drainage area into a more manageable size. Dikes should be stabilized with vegetation after construction (NAHB, No Date).

Applicability

Earth dikes are applicable to all areas; the size of the dike is correlated to the size of the drainage area (NAHB, No Date).

Design and Installation Criteria

The location of dikes should take into consideration outlet conditions, existing land use, topography, length of slope, soils, and development plans. The capacity of earth dikes and diversions should be suitable for the area that is being protected, including adequate freeboard, or extra depth that is added as a safety margin. For homes, schools, and industrial buildings, the recommended design frequency storm is 50 years and the freeboard is 0.5 feet (NAHB, No Date).

Earth dikes can be employed as a perimeter control. For small sites, a compacted 2-foot-tall dike is usually suitable, if hydroseeded. Larger dikes will actually divert runoff to another portion of the site, usually to a downstream sediment trap or basin. Therefore, the designer should ensure that they have the capacity for the 10-year storm event, and that the channel created behind the dike is properly stabilized to prevent erosion (Brown and Schueler, 1997). In addition, the downstream structure must be sized to handle the flow from the dike. Dikes should be designed using standard hydrologic and hydraulic calculations and certified by a professional hydrologist or engineer. Diversion dikes should be installed prior to the majority of the soil-disturbing activity. As soon as the dike form is completed, it should be machine compacted, fertilized, and either seeded and mulched or sodded. Excavated materials should be properly stockpiled for future use or disposed of properly. Dikes should have an outlet that functions with a minimum of erosion. Depending on site conditions and outlet structures, the runoff directed by dikes may need to be conveyed to a sediment-trapping device, such as a sediment basin or detention pond. As grades increase over 4 percent, geotextile material or sod may be required to control erosion. Slopes greater than 8 percent may require riprap. Dikes may be removed when stabilization of the drainage area and outlet are complete (NAHB, No Date). Dike design criteria must incorporate site-specific conditions, as dimensions depend on expected flows, soil types, and climatic conditions. All of these inputs vary tremendously over different sections of the country.

Effectiveness

No information has been found on the effectiveness of earth dikes used as BMPs, although terraces often have sediment removal rates of up to 90 percent.

Limitations

An erosion-resistant lining in the channel may be needed to prevent erosion in the channel caused by excessive grade. In addition, the channel should be deepened and the grade realigned if there is overtopping caused by sediment in the channel where the grade decreases or reverses. If overtopping occurs at low points in the ridge where the diversion crosses the shallow draw, the ridge should be reconstructed with a positive grade toward the outlet at all points. Finally, if there is erosion at the outlet, an outlet stabilization structure should be installed; if sedimentation occurs at the diversion outlet, a temporary sediment trap should be installed.

Maintenance

An earth dike should be inspected for signs of erosion after every major rain event. Any repairs and/or revegetation should be completed promptly (NAHB, No Date). The following actions can be taken to properly maintain an earth dike:

- Remove debris and sediment from the channel immediately after the storm event.
- Repair the dike to its original height.
- Check outlets and make necessary repairs to prevent gully formation.
- Clean out sediment traps when they are 50 percent full.
- Once the work area has been stabilized, remove the diversion ridge, fill and compact the channel to blend with the surrounding area, and remove sediment traps, disposing of unstable sediment in a designated area.

Cost

The cost of an earth dike depends on the design and materials used. Small dikes can cost approximately $2.00 per linear foot, while larger dikes can cost approximately $2.00 per cubic yard. EPA states that an earth dike can cost approximately $4.50 per linear foot (NAHB, No Date).

An alternative means to estimate conceptual costs for earthen dikes is to use unit cost values and a rough estimate of the quantities needed. Shallow trenching (1 to 4 feet deep) with a backhoe in areas not requiring dewatering can be performed for $4 to $5 per cubic yard of removed material (R. S. Means, 2000). Based on this value, $2 per linear foot provides for 11 square feet of flow area and $4.50 per linear foot provides for 24 square feet of flow area. This suggests that the size of the dike is required prior to specifying a cost, which requires a site-specific hydrologic evaluation. Based on standards for Virginia, most small drainage areas (made up of 5 acre or less) require 18-inch tall diversion dikes with a 4.5-foot base. Assuming the excavation volume equals the volume of the dike, the resulting excavation volume is approximately 7 cubic feet per linear foot, which (conservatively) equates to $1.03 to $1.30 per linear foot for construction costs.

If the earthen dikes are to be permanent, then additional costs are incurred to vegetate the dike. R. S. Means (2000) estimates the cost of fine grading, soil treatment, and grassing is approximately $2 per square yard of earth surface area. This adds approximately $6 per linear foot of dike. Where gently sloping areas just need to be grassed with acceptable species, the cost can be as low as $0.38 per square yard.

5.1.5.2.2 Temporary Swale

General Description

The term swale (grassed channel, dry swale, wet swale, biofilter) refers to a series of vegetated, open channel management practices designed specifically to treat and attenuate storm water runoff for a specified water quality volume. As storm water runoff flows through these channels, it is treated by filtering through the vegetation in the channel, filtering through a subsoil matrix, and/or infiltrating into the underlying soils. Variations of the grassed swale include the grassed channel, dry swale, and wet swale. The specific design features and methods of treatment differ in each of these designs, but all are improvements on the traditional drainage ditch and incorporate modified geometry and other features for use of the swale as a treatment and conveyance practice.

Applicability

Grassed swales can be applied in most situations with some restrictions and are very well suited for treating highway or residential road runoff because they are linear practices. Perimeter dikes/swales should be limited to a drainage area of no more than 0.8 hectare and usually work best on gently sloping terrain. Perimeter dikes may not work well on moderate slopes, and they should never be established on slopes exceeding 20 percent (UNEP, 1994).

Regional Applicability. Grassed swales can be applied in most regions of the country. In arid and semi-arid climates, however, the value of these practices needs to be weighed against the water needed to irrigate them.

Ultra-Urban Areas. Ultra-urban areas are densely developed urban areas in which little pervious surface exists. Grassed swales are generally not well suited to ultra-urban areas because they require a relatively large area of pervious surface.

Storm Water Hot Spots. Storm water hot spots are areas where land use or activities generate highly contaminated runoff, with concentrations of pollutants in excess of those commonly found in storm water. A typical example is a gas station or convenience store. With the exception of the dry swale design, hot spot runoff should not be directed toward grassed channels. These practices either infiltrate storm water or intersect the ground water, making use of the practices for hot spot runoff a threat to ground water quality.

Storm Water Retrofit. A storm water retrofit is a storm water management practice (usually structural), put into place after development has occurred, to improve water quality, protect downstream channels, reduce flooding, or meet other specific objectives. One retrofit opportunity using grassed swales modifies existing drainage ditches. Ditches have traditionally been designed to convey storm water away from roads as quickly as possible. In some cases, it may be possible to incorporate features to enhance pollutant removal or infiltration such as check dams (for example, small dams along the ditch that trap sediment, slow runoff, and reduce the longitudinal slope). Since grassed swales cannot treat a large area, using this practice to retrofit an entire watershed would be expensive because of the number of practices needed to manage runoff from a significant amount of the watershed's land area.

Cold Water (Trout) Streams. Grassed channels are a good treatment option in watersheds that drain to cold water streams. These practices do not retain water for a long period of time and often induce infiltration. As a result, standing water will not typically be subjected to warming by the sun in these practices.

Design and Installation Criteria

Temporary swales should be designed using standard hydrologic and hydraulic calculations. Designs should be certified by a professional hydrologist, engineer, or other appropriate professional.

Perimeter dikes/swales should be established before any major soil-disturbing activity takes place. Dikes should be compacted with construction equipment to the design height plus 10 percent to allow for settlement. If they are to remain in place for longer than 10 days, they should be stabilized using vegetation, filter fabric, or other material. Diverted water should be directed to a sediment trap or other sediment treatment area (UNEP, 1994).

In addition to the broad applicability concerns described above, designers need to consider conditions at the site level. In addition, they need to incorporate design features to improve the longevity and performance of the practice while minimizing the maintenance burden.

Siting Considerations

In addition to considering the restrictions and adaptations of grassed swales to different regions and land uses, designers must ensure that this management practice is feasible at the site in question. Depending on the design option, grassed channels can be highly restricted practices based on site characteristics.

Drainage Area. Grassed swales generally should treat small drainage areas of less than 5 acres. If the practices are used to treat larger areas, the flows and volumes through the swale become too large to achieve storm water treatment through infiltration and filtration.

Slope. Grassed swales should be used on sites with relatively flat slopes (less than 4 percent). Runoff velocities within the channel become too high on steeper slopes. This can cause erosion and does not allow for infiltration or filtration in the swale.

Soils /Topography. Grassed swales can be used on most soils, with some restrictions on the most impermeable soils. In the dry swale, a fabricated soil bed replaces on-site soils to ensure that runoff is filtered as it travels through the soils of the swale.

Ground water. The depth to ground water depends on the type of swale used. In the dry swale and grassed channel options, designers should separate the bottom of the swale from the ground water by at least 2 feet to prevent a moist swale bottom or contamination of ground water. In the wet swale option, treatment is enhanced by a wet pool, which is maintained by intersecting the water table.

Design Considerations

Although the grass swale has different design variations, including the grassed channel, dry swale, and wet swale, some design considerations are common to all three. One similarity is their cross-sectional geometry. Swales should generally have a trapezoidal or parabolic cross-section with relatively flat side slopes (flatter than 3:1). Designing the channel with flat side slopes maximizes the wetted perimeter, which is the length along the edge of the swale's cross-section where runoff flowing through the swale is in contact with the vegetated sides and bottom of the swale. Increasing the wetted perimeter slows runoff velocities and provides more contact with vegetation to encourage filtering and infiltration. Another advantage to flat side slopes is that runoff entering the grassed swale from the side receives some pretreatment along the side slope. The flat bottom of all three should be between 2 and 8 feet wide. The minimum width ensures an adequate filtering surface for water quality treatment, and the maximum width prevents braiding (the formation of small channels within the swale bottom).

Another similarity among all three designs is the type of pretreatment needed. A small forebay should be used at the inflow area of the swale to trap incoming sediments. A pea gravel diaphragm (a small trench filled with river run gravel) should be used to pretreat runoff entering along the sides of the swale.

Two other features designed to enhance the treatment ability of grassed swales are a flat longitudinal slope (generally between 1 and 2 percent) and a dense vegetative cover in the channel. The flat slope helps to reduce the velocity of flow in the channel. Dense vegetation also helps reduce velocities, protect the channel from erosion, and act as a filter to treat storm water runoff. During construction, it is important to stabilize the channel before the turf has been established, either with a temporary grass cover or with the use of natural or synthetic erosion control products.

In addition to treating runoff for water quality, grassed swales need to convey larger storms safely. Typical designs allow the runoff from the 2-year storm to flow through the swale without causing erosion. Swales should also have the capacity to pass larger storms (typically a 10-year storm) safely.

The length of the swale necessary to infiltrate runoff can be calculated by using a mass balance of runoff and infiltration for a triangular-shaped cross-sectional area.

Design Variations

The following discussion identifies three different variations of open channel practices, including the grassed channel, the dry swale, and the wet swale.

Grassed Channel. (Discussed in more length in sub-section 5.5.1.2.1) Of the three grassed swale designs, grassed channels are the most similar to a conventional drainage ditch, with the major differences being flatter side slopes and longitudinal slopes and a slower design velocity for water quality treatment of small storm events. Of all of the grassed swale options, grassed channels are the least expensive, but they also provide the least reliable pollutant removal performance. The best application of a grassed channel is as pretreatment to other storm water treatment practices.

One major difference between the grassed channel and most of the other structural practices is the method used to size the practice. Most water quality practices for storm water management are sized by volume. This method sets the volume available in the practice equal to the water quality volume, or the volume of water to be treated in the practice. The grassed channel, on the other hand, is a flow rate-based design. Based on the peak flow from the water quality storm (this varies from region to region but a typical value is the 1-inch storm), the channel should be designed so that runoff takes, on average, 10 minutes to flow from the top to the bottom of the channel. A procedure for this design can be found in *Design of Storm Water Filtering Systems* (CWP, 1996).

Dry Swales. Dry swales are similar in design to bioretention areas. These practices incorporate a fabricated soil bed into their design. The existing soil is replaced with a sand/soil mix that meets minimum permeability requirements. An underdrain system is used under the soil bed. This system is a gravel layer that encases a perforated pipe. Storm water treated in the soil bed flows through the bottom into the underdrain, which conveys this treated storm water to the storm drain system. Dry swales are a relatively new design, but studies of swales with a native soil similar to the man-made soil bed of dry swales suggest high pollutant removal rates.

Wet Swales. Wet swales intersect the ground water and behave similarly to a linear wetland cell. This design variation incorporates a shallow permanent pool and wetland vegetation to provide storm water treatment. This design also has potentially high pollutant removal. One disadvantage of the wet swale is that its use in residential or commercial settings is unpopular because the shallow standing water in the swale is sometimes viewed as a potential nuisance by property owners.

Regional Variations

Cold Climates. In cold or snowy climates, swales may serve a dual purpose by acting as both a snow storage/treatment practice and a storm water management practice. This dual purpose is particularly relevant when swales are used to treat road runoff. If used for this purpose, swales should incorporate salt-tolerant vegetation, such as creeping bentgrass.

Arid Climates. In arid or semi-arid climates, swales should be designed with drought-tolerant vegetation, such as buffalo grass. As pointed out in the Applicability discussion, the value of vegetated practices for water quality needs to be weighed against the cost of water needed to maintain them in arid and semi-arid regions.

Effectiveness

Swales act to control peak discharges in two ways. First, the grass reduces runoff velocity, depending on the length and slope of the swale. Second, a portion of the storm water runoff volume passes through the swale and infiltrates into the soil. Table 5-9 summarizes grassed swale pollutant removal efficiencies.

Table 5-9. Grassed Swale Pollutant Removal Efficiency Data

Grassed Swale Removal Efficiencies							
Study	**TSS**	**TP**	**TN**	**NO_3**	**Metals**	**Bacteria**	**Type**
Goldberg, 1993	67.8	4.5	-	31.4	42–62	-100	Grassed channel
Seattle Metro and Washington Department of Ecology, 1992	60	45	-	-25	2–16	-25	Grassed channel
Seattle Metro and Washington Department of Ecology, 1992	83	29	-	-25	46–73	-25	Grassed channel
Wang et al., 1981	80	-	-	-	70–80	-	Dry swale
Dorman et al., 1989	98	18	-	45	37–81	-	Dry swale
Harper, 1988	87	83	84	80	88–90	-	Dry swale
Kercher, Landon, and Massarelli, 1983	99	99	99	99	99	-	Dry swale
Harper, 1988	81	17	40	52	37–69	-	Wet swale
Koon, 1995	67	39	-	9	-35 to 6	-	Wet swale
Occoquan Watershed Monitoring Lab, 1983	-100	-100	-100	-	-100	-	Drainage channel
Yousef et al., 1985	-	8	13	11	14–29	-	Drainage channel
Occoquan Watershed Monitoring Lab, 1983	-50	-9.1	-18.2	-	-100	-	Drainage channel
Yousef et al., 1985	-	-19.5	8	2	41–90	-	Drainage channel
Occoquan Watershed Monitoring Lab, 1983	31	-23	36.5	-	-100 to 33	-	Drainage channel
Welborn and Veenhuis, 1987	0	-25	-25	-25	0	-	Drainage channel
Yu, Barnes, and Gerde, 1993	68	60	-	-	74	-	Drainage channel
Dorman et al., 1989	65	41	-	11	14–55	-	Drainage channel
Pitt and McLean, 1986	0	-	0	-	0	0	Drainage channel
Oakland, 1983	33	-25	-	-	20–58	0	Drainage channel
Dorman et al., 1989	-85	12	-	-100	14–88	-	Drainage channel

Limitations

Common problems associated with swales include excessive erosion along unlined channels (usually because of excessive grade), erosion or sedimentation at the outlet point, or overtopping of the dike at low points (UNEP, 1994).

Additional limitations of the grass swale include the following:

- Grassed swales cannot treat a very large drainage area.

- Swales do not appear to be effective at reducing bacteria.

- Wet swales may become a nuisance because of mosquito breeding.

- If designed improperly (for example, improper slope), grassed channels will have very little pollutant removal.

- A thick vegetative cover is needed for these practices to function properly.

Maintenance

As with any BMP, swales must be maintained to continue to effectively remove pollutants. Maintenance may include occasional mowing, fertilizing, and liming. In addition, any areas that become damaged by erosion should be immediately repaired and replanted. The swales should be protected from concentrated flows and be checked periodically for downstream obstructions.

Cost

To produce a conceptual cost approximation, grassed channel construction costs can be developed using unit cost values. Shallow trenching (1 to 4 feet deep) with a backhoe in areas not requiring dewatering can be performed for $4 to $5 per cubic yard of removed material (R. S. Means, 2000). Assuming no disposal costs (i.e., excavated material is placed on either side of the trench), only the cost of fine grading, soil treatment, and grassing (approximately $2 per square yard) should be added to the trenching cost to approximate the total construction cost. Site-specific hydrologic analysis of the construction site is necessary to estimate the channel conveyance requirement and the desired retention time in the swale. It is not unusual to have flows on the order of 2 to 4 cfs per acre served.

For a design channel velocity of 1 foot per second, the resulting range in the channel cross-section area can be as low as 2 but as high as 4 square feet per acre drained. If the average channel flow depth is 1 foot, then the low estimate for grassed channel installation is $0.74 per square foot of channel bottom per acre served per foot of channel length. The high estimate is $1.48 per square foot of channel bottom per acre served per foot of channel length.

Table 5-10 summarizes additional costs of grass swales.

Table 5-10. Average Annual Operation and Maintenance Costs for a Grass Swale

Component	Estimated Unit Cost ($)	$ for Swale Size: 0.5 m Deep X 0.3 m Bottom Width X 3 m Top Width	$ for Swale Size: 1 m Deep X 1 m Bottom Width X 7 m Top Width	Comments
Mowing	0.89/100 m^2	145.0	241.0	Mow 2-3 times per year
General grass care	8.8/100 m^2	162.98	274.0	Grass maintenance area is (top width + 3 m) x length
Debris/litter removal	0.51/m^2	93.0	93.0	
Reseeding/ fertilization	0.35/m^2	5.9	10.37	Area revegetated is 1% of maintenance area per year
Inspection and general administration	0.74/m^2	231.0	231.0	Inspection once per year
TOTAL		638.0	850.0	

Source: Ellis, 1998.

5.1.5.2.3 Temporary Storm Drain Diversion

General Description

A temporary storm drain diversion is a pipe that reroutes an existing drainage system to discharge flow into a sediment trap or basin. This practice reduces the amount of sediment-laden runoff from construction sites that enters waterbodies without treatment. Temporary storm drain diversions can be used when a permanent storm water drainage system has not yet been installed. It should be recognized that diversion channels can also be installed but are not considered in the following discussion.

Applicability

A temporary storm drain diversion should be used to temporarily redirect discharge to a permanent outfall and should remain in place until the area draining to the storm sewer is no longer disturbed. Temporary storm drain diversions can also be combined with other structures and used as a sediment-trapping device when the completion of a permanent outfall has been delayed; alternatively, a sediment trap can be placed below a permanent outfall to remove sediment before the final flow discharge.

Design and Installation Criteria

Since the diversion is only temporary, the layout of piping and the overall impact of the diversion's installation on post-construction drainage patterns must be considered. Once construction is completed, the temporary diversion should be moved to restore the original system. The following activities should be done at this time:

- The storm drain should be flushed before the sediment trap is removed.
- The outfall should be stabilized.
- Graded areas should be restored.
- State or local requirements should be checked for more detailed requirements and an appropriate professional should certify that the design meets local hydrologic and hydraulic requirements.

Effectiveness

If installed properly to capture the bulk of runoff from a construction site, temporary storm drain diversions can be effective in reducing the discharge of sediment-laden, untreated water to waterbodies. When used in combination with other erosion and sediment control practices such as minimized clearing or vegetative and chemical stabilization, the level of pollution from a construction site can be substantially reduced or eliminated.

Limitations

Installation of a temporary storm drain diversion may result in the disturbance of existing storm drainage patterns. Care must be taken to ensure that the original system is properly restored once the temporary system is removed. The most common source of problems is excessive velocity at the outlet. Installation of an outlet stabilization structure is typically required and may be constructed of riprap, reinforced concrete, geotextile linings, or a combination.

Maintenance

Once installed, temporary storm drain diversions require very little maintenance. Frequent inspection and maintenance of temporary storm drain systems, especially after large storms, should ensure that pipe clogging does not occur and that runoff from the site is being successfully diverted. After removal of the temporary diversion, the permanent storm drain system should be carefully inspected to ensure that drainage patterns have not been altered by the temporary system.

Cost

Depending on the size of the construction site, a temporary storm drain diversion can be costly. Costs include those associated with materials needed to construct the diversion and sediment trap or basin (mainly piping, concrete, and gravel), and also labor costs for installation and removal of the system, all of which may involve excavation, regrading, and inspections. Based on the variety of conditions that can affect storm drain diversion designs, typical costs per installation are not presented here. However, site-specific cost estimates can be produced using unit cost values along with site-specific quantity estimates. R. S. Means (2000) indicates a range of pipe costs for surface placement, between $5.00 per linear foot for 4" diameter PVC piping, and $9.20 per linear foot for 10" diameter PVC piping. On construction sites, temporary inlets and outlets are usually formed by small rock-lined depressions. Assuming 4 cubic yards of crushed rock (1.5" mean diameter) per opening, an inlet and outlet combine to add approximately $200 per pipe installation, based on $25 per cubic yard of stone (R. S. Means, 2000).

5.1.5.2.4 Pipe Slope Drain

General Description

Pipe slope drains are used to reduce the risk of erosion on slopes by discharging runoff to stabilized areas. Consisting of a metal or plastic flexible pipe if temporary, or pipes or paved chutes if permanent, these drains carry surface runoff from the top to the bottom of a slope that has already been damaged by erosion or is at high risk for erosion. These drains are also used to drain saturated slopes that have the potential for soil slides.

Applicability

Temporary slope drains can be used on most disturbed slopes to eliminate gully erosion problems resulting from concentrated flows discharged at a diversion outlet. Slope drains should be used as a temporary measure for as long as the drainage area remains disturbed. They will need to be moved once construction is complete and a permanent storm drainage system is established. Appropriate restoration measures will then need to be taken, such as adjusting grades and flushing sediment from the pipe before it is removed (UNEP, 1994).

Design and Installation Criteria

Pipe slope drains can be placed directly on the ground or buried under the surface. The inlet should be located at the top of the slope and should be fitted with an apron, attached with a watertight connection. Filter cloth should be placed under the inlet to prevent erosion. Flexible pipes, which are positioned on top of the ground, should be securely anchored with grommets placed 10 feet on center. The outlet at the bottom of the slope should also be stabilized with riprap. The riprap should be placed along the bottom of a swale that leads to a sediment-trapping structure or another stabilized structure.

Slope drain pipe sizes are based on drainage area and the size of the design storm. Pipes should be connected to a diversion ridge at the top of the slope by covering it with compacted fill material where it passes through the ridge. Discharge from a slope drain should be to a sediment trap, sediment basin, or other stabilized outlet (UNEP, 1994).

Pipe slope drains should be installed perpendicular to the contour down the slope, and the design should be able to handle the peak runoff for the 10-year storm. Recommendations of slope drain diameter are summarized in Table 5-11 (NAHB, n.d).

Table 5-11. Recommended Pipe/Tubing Sizes for Slope Drains

Maximum Drainage Area (acres)	Pipe/Tubing Diameter[a](inches)	Pipe/Tubing Diameter[b] (inches)	Pipe/Tubing Diameter[c] (inches)
0-0.5			
0.5	12	12	8
0.75			10
1.0			12
1.5	18	18	Individually designed
2.5	21		
3.5	24	24	
5.0	30		

[a] UNEP, 1994.
[b] USDOT, 1995.
[c] IDNR, 1992.

Recently graded slopes that do not have permanent drainage measures installed should have a temporary slope drain and a temporary diversion installed. A temporary slope drain used in conjunction with a diversion conveys storm water flows and reduces erosion until permanent drainage structures are installed.

The following are design recommendations for temporary slope drains:

- The drain should consist of heavy-duty material manufactured for the purpose and have grommets for anchoring at a spacing of 10 feet or less.

- Minimum slope drain diameters should be observed for varying drainage areas.

- The entrance to the pipe should consist of a standard flare end section of corrugated metal. The corrugated metal pipe should have watertight joints at the ends. The rest of the pipe is typically corrugated plastic or flexible tubing, although for flatter, shorter slopes, a polyethylene-lined channel is sometimes used.

- The height of the diversion at the pipe should be the diameter of the pipe plus 0.5 foot.

- The outlet should be located at a reinforced or erosion-resistant location.

Temporary slope drains should be designed to adequately convey runoff for a desired frequency storm, typically either 2 years or 10 years depending on local regulations. Both the size and the spacing can be determined based on the contributing drainage area. Drains are spaced at intervals corresponding to the specified drainage areas. For larger drainage areas and critical locations, the drains should be sized on an individual basis (USDOT, 1995).

Slope drains should be constructed in conjunction with diversion berms such that the berms are not overtopped. At the pipe inlet, the top of the berm should be a minimum of 300 mm (11.81 inches) higher than the top of the pipe. The entrance should be constructed of a standard flared end section or a Tee section if designed properly. The entrance should be placed in a sump that is depressed 150 mm (5.90 inches) (USDOT, 1995).

The outlet of the slope drain must be protected with a riprap apron. If the slope drain is draining a disturbed area and sufficient right-of-way is available, the drain may empty into a sediment trap (USDOT, 1995). Table 5-12 summarizes slope drain characteristics.

Table 5-12. Slope Drain Characteristics

Capacity	2-yr frequency, 24-hr-duration storm event
Material	Strong, flexible pipe, such as heavy duty, nonperforated, corrugated plastic
Inlet section	Standard “T” or “L” flared-end section with metal toe plate
Connection to ridge at top of slope	Compacted fill over pipe with minimum dimensions, 1.5 ft depth, 4 ft top width, and 6 in higher than ridge
Outlet	Pipe extends beyond toe of slope and discharges into a sediment trap or basin unless contributing drainage area is stable

Source: IDNR, 1992.

Effectiveness

There is currently no information on the effectiveness of pipe slope drains.

Limitations

The area drained by a temporary slope drain should not exceed 5 acres. Physical obstructions substantially reduce the effectiveness of the drain. A common slope drain problem is overtopping of the inlet due to an undersized or blocked pipe, or erosion at the outlet point due to insufficient protection (UNEP, 1994). Other concerns are failures from overtopping because of inadequate pipe inlet capacity and reduced diversion channel capacity and ridge height.

Solutions to common problems include the following (IDNR, 1992):

- Washout - A washout along a pipe due to seepage and piping may be caused by inadequate compaction, insufficient fill, or installation that may be too close to the edge of the slope.

- Overtopping caused by undersized or blocked pipe - The drainage area may be too large.

- Overtopping caused by improper grade of channel and ridge - A positive grade should be maintained.

- Overtopping caused by poor entrance conditions and trash buildup at the pipe inlet - Deepen and widen the channel at the pipe entrance and frequently inspect and clear the inlet.

- Erosion at outlet - The pipe should be extended to a stable grade or an outlet stabilization structure is needed.

- Displacement or separation of pipe - The pipe should be tied down and the joints secured.

Maintenance

Pipe slope drains must be inspected after each significant runoff event for evidence of erosion and uncontrolled runoff. Any repairs to the drain should be made immediately. Significant amounts of sediment trapped at the outfall should also be removed in a timely manner and disposed of properly (NAHB, No Date).

The following actions should be taken to properly maintain a pipe slope drain (IDNR, 1992):

- Inspect slope drains and supporting diversions once a week and after every storm event.

- Check the inlet for sediment or trash accumulation; clear and restore to proper entrance condition.

- Check the fill over the pipe for settlement, cracking, or piping holes; repair immediately.

- Check for holes where the pipe emerges from the dike; repair immediately.

- Check the conduit for evidence of leaks or inadequate anchoring; repair immediately.

- Check the outlet for erosion or sedimentation; clean and repair, or extend if necessary.

- Once slopes have been stabilized, remove the temporary diversions and slope drains, and stabilize all disturbed areas.

Cost

The cost of pipe slope drains and their installation varies with the design and materials used. Site-specific cost estimates can be produced using unit cost values with site-specific quantity estimates. R. S. Means (2000) indicates a range of pipe costs for surface placement between $5.00 per linear foot for 4-inch diameter PVC piping, and $9.20 per linear foot for 10-inch diameter PVC piping. On construction sites, temporary inlets and outlets are usually formed by small rock-lined depressions. Assuming 4 cubic yards of crushed rock (1.5-inch mean diameter) per opening, an inlet and outlet together add approximately $200 per pipe installation, based on $25 per cubic yard of stone (R. S. Means, 2000).

5.1.5.2.5 Stone Check Dam

General Description

A check dam is a small temporary barrier constructed across a drainage channel or swale to reduce the velocity of the flow. By reducing the flow velocity, the erosion potential is reduced, detention times are lengthened, and more sediments are able to settle out of the water column. Check dams can be constructed of stone, gabions, treated lumber, or logs (NAHB, No Date).

Check dams are inexpensive and easy to install. They may be used permanently to settle sediment, reduce the velocity of runoff, and provide aeration. However, the use of check dams in a channel should not be a substitute for the use of other sediment-trapping and erosion control measures. As with most other temporary structures, check dams are most effective when used in combination with other storm water and erosion and sediment control measures.

Applicability

Check dams are commonly used (1) in channels that are degrading but where permanent stabilization is impractical because of their short period of usefulness and (2) in eroding channels where construction delays or weather conditions prevent timely installation of erosion-resistant linings (IDNR, 1992).

Check dams are also useful in steeply sloped swales, in small channels, in swales where adequate vegetative protection cannot be established, or in swales or channels that will be used for a short period of time where it is not practical to line the channel or implement other flow control practices (USEPA, 1993). In addition, check dams are appropriate where temporary seeding has been recently implemented but has not had time to fully develop and take root. The contributing drainage area should range from 2 to 10 acres. Check dams should be used only in small open channels that will not be overtopped by flow once the dams are built and should not be built in stream channels, either intermittent or perennial (UNEP, 1994).

Design and Installation Criteria

Check dams can be constructed from a number of different materials. Most commonly, they are made of rock, logs, sandbags, or straw bales. Rock or stone is often preferred because of its cost-effectiveness and longevity. Logs and straw bales will decay with time and are not recommended as they may cause waterway blockage if they fail. When using rock or stone, the material diameter should be 2 to 15 inches. The stones should be extended 18 inches beyond the banks, and the side slopes should be 2:1 or flatter. Lining the upstream side of the dam with a foot of 1- to 2-inch gravel may improve the efficiency of the dam (NAHB, No Date). Logs should have a diameter of 6 to 8 inches. Regardless of the material used, careful construction of a check dam is necessary to ensure its effectiveness.

The distance between rock check dams will vary depending on the slope of the ditch, with closer spacing when the slope is steeper. The size of stone used in the check dam should also vary with the expected design velocity and discharge. As velocity and discharge increase, the rock size should also increase. For most rock check dams, 3 inches to 12 inches is a suitable stone size. To improve the sediment-trapping efficiency of check dams, a filter stone can be applied to the upstream face. A well-graded coarse aggregate that is less than 1 inch in size can be used as a filter stone.

All check dams should have a maximum height of 3 feet. The center of the dam should be at least 6 inches lower than the edges. This design creates a weir effect that helps to channel flows away from the banks and prevent further erosion. Additional stability can be achieved by implanting the dam material approximately 6 inches into the sides and bottom of the channel (VDCR, 1995).

When installing more than one check dam in a channel, outlet stabilization measures should be installed below the final dam in the series. Because this area is likely to be vulnerable to further erosion, riprap or some other stabilization measure is highly recommended.

Effectiveness

Field experience has shown that rock check dams are more effective than silt fences or straw bales to stabilize wet-weather ditches (VDCR, 1995). Straw bales have been shown to have very low trapping efficiencies and should not be used for check dams. For long channels, check dams are most effective when used in a series, creating multiple barriers to sediment-laden runoff.

Limitations

Check dams should not be used in perennial streams unless approved by an appropriate regulatory agency (USEPA, 1992; VDCR, 1995). Because the primary function of check dams is to slow runoff in a channel, they should not be used as a stand-alone substitute for other sediment-trapping devices. Also, leaves have been shown to be a significant problem, as they clog check dams; therefore, increased inspection and maintenance might be necessary in the fall. Common problems with check dams include channel bypass and severe erosion when overtopped and ineffectiveness due to accumulated sediment and debris. When designing check dams, the fact that they will reduce the capacity of a channel to transmit storm water runoff and thus will need to be sized appropriately should be taken into account (UNEP, 1994). The check dam may also kill grass linings in the channel if the water level remains high after it rains or if there is significant sedimentation. In addition, a check dam may reduce the hydraulic capacity of the channel and create turbulence, which erodes the channel banks (NAHB, No Date).

Maintenance

Check dams should be inspected periodically to ensure that they have not been repositioned as a result of storm water flow. In addition, the center of a check dam should always be lower than its edges. Additional stone may have to be added to maintain the correct height. Sediment should not be allowed to accumulate to more than half the original dam height. Any required maintenance should be performed immediately. When check dams are removed, care must be taken to remove all dam materials to ensure proper flow within the channel. The channel should subsequently be seeded for stabilization (NAHB, No Date).

Cost

The cost of check dams varies based on the material used for construction and the width of the channel to be dammed. In general, it is estimated that check dams constructed of rock cost about $100 per dam (USEPA, 1992). Brown and Schueler (1997) estimated that a rock check dam would cost approximately $62 per installation, including the cost for filter fabric bedding. Other materials, such as logs and sandbags, may be a less expensive alternative, but they might require higher maintenance costs.

5.1.5.2.6 Lined Waterways

General Description

Lined channels convey storm water runoff through a stable conduit. Vegetation lining the channel reduces the flow velocity of concentrated runoff. Lined channels usually are not designed to control peak runoff loads by themselves and are often used in combination with other BMPs such as subsurface drains and riprap stabilization. Where moderately steep slopes require drainage, lined channels can include excavated depressions or check dams to enhance runoff storage, decrease flow rates, and enhance pollutant removal. Peak discharges can be reduced through temporary detention in the channel. Pollutants can be removed from storm water by filtration through vegetation, by deposition, or in some cases by infiltration of soluble nutrients into the soil. The degree of pollutant removal in a channel depends on the residence time of the water in the channel and the amount of contact with vegetation and the soil surface, but pollutant removal is not generally the major design criterion.

Often construction increases the velocity and volume of runoff, which causes erosion in newly constructed or existing urban runoff conveyance channels. If the runoff during or after construction will cause erosion in a channel, the channel should be lined or flow control practices instituted. The first choice of lining should be grass or sod because this reduces runoff velocity and provides water quality benefits through filtration and infiltration. If the velocity in the channel would erode the grass or sod, riprap, concrete, or gabions can be used (USEPA, 2000). Geotextile materials can be used in conjunction with either grass or riprap linings to provide additional protection at the soil-lining interface.

Applicability

Lined channels typically are used in residential developments, along highway medians, or as an alternative to curb and gutter systems. Grass-lined channels should be used to convey runoff only where slopes are 5 percent or less. These channels require periodic mowing, occasional spot-seeding, and weed control to ensure adequate grass cover (UNEP, 1994).

Lined channels should be used in areas where erosion-resistant conveyances are needed, such as in areas with highly erodible soils and slopes of less than 5 percent. They should be installed only where space is available for a relatively large cross-section. Grassed channels have a limited ability to control runoff from large storms and should be used with the recommended allowable velocities for the specific soil types and vegetative cover.

Design and Installation Criteria

The design of a lined waterway requires proper determination of the channel dimensions. It must ensure that (1) the velocity of the flowing water will not wash out the waterway and that (2) the capacity of the waterway is sufficient to carry the surface flow from the watershed without overtopping.

Vegetation-Lined Channels. Grass-lined channels have been previously discussed in detail and are only summarized in this section. The allowable velocity of water in the waterway depends upon the type, condition, and density of the vegetation, as well as the erosive characteristics of the soil. Uniformity of vegetative cover is important because the stability of the most sparsely covered area determines the stability of the channel. Grasses are a better vegetative cover than legumes because grasses resist water velocity more effectively.

Vegetative-lined channels may have triangular, parabolic, or trapezoidal cross-sections. Side slopes should not exceed 3:1 to facilitate the establishment, maintenance, and mowing of vegetation. A dense cover of hardy, erosion-resistant grass should be established as soon as possible following grading. This may necessitate the use of straw mulch and the installation of protective netting until the grass becomes established. If the intent is to create opportunities for runoff to infiltrate into the soil, the channel gradient should be kept near zero, the channel bottom must be well above the seasonal water table, and the underlying soils should be relatively permeable (generally, with an infiltration rate greater than 2 centimeters [0.78 inches] per hour).

Rock-Lined Channels. Riprap-lined channels may be installed on somewhat steeper slopes than grass-lined channels. They require a foundation of filter fabric or gravel under the riprap. Generally, side slopes should not exceed 2:1, and riprap thickness should be 1.5 times the maximum stone diameter. Riprap should form a dense, uniform, well-graded mass (UNEP, 1994).

Lined channels should be sited in accordance with the natural drainage system and should not cross ridges. The channel design should not have sharp curves or significant changes in slope. Channels should not receive direct sedimentation from disturbed areas and should be established only on the perimeter of a construction site to convey relatively clean storm water runoff. They should also be separated from disturbed areas by a vegetated buffer or other BMP to reduce sediment loads.

Basic design recommendations for lined channels include the following:

- Construction and vegetation of the channel should occur before grading and paving activities begin.

- Design velocities should be less than 5 feet per second.

- Geotextiles can be used to stabilize vegetation until it is fully established.

- Covering the bare soil with sod or geotextiles can provide reinforced storm water conveyance immediately.

- Triangular-shaped channels should be used with low velocities and small quantities of runoff; parabolic grass channels are used for larger flows and where space is available; trapezoidal channels are used with large flows of low velocity (low slope).

- Outlet stabilization structures might be needed if the runoff volume or velocity has the potential to exceed the capacity of the receiving area.

- Channels should be designed to convey runoff from a 10-year storm without erosion.

- The sides of the channel should be sloped less than 3:1, with V-shaped channels along roads sloped 6:1 or less for safety.

- All trees, bushes, stumps, and other debris should be removed during construction.

Effectiveness

Lined channels can effectively transport storm water from construction areas if they are designed for expected flow volumes and velocities and if they do not receive sediment directly from disturbed areas.

Limitations

Lined channels, if improperly installed, can alter the natural flow of surface water and have adverse impacts on downstream waters. Additionally, if the design capacity is exceeded by a large storm event, the vegetation might not be sufficient to prevent erosion and the channel might be destroyed. Clogging with sediment and debris reduces the effectiveness of grass-lined channels for storm water conveyance.

Common problems in lined channels include erosion of the channel before vegetation is fully established and gullying or head cutting in the channel if the grade is too steep. In addition, trees and brush tend to invade lined channels, causing maintenance problems.

Riprap-lined channels can be designed to safely convey greater runoff volumes on steeper slopes. However, they should generally be avoided on slopes exceeding 10 percent because stone displacement, erosion of the foundation, or channel overflow and erosion resulting from a channel that is too small can occur. Thus, channels established on slopes greater than 10 percent will usually require protection with rock gabions, concrete, or other highly stable and protective surfaces (UNEP, 1994).

Maintenance

Maintenance requirements for lined channels are relatively minimal. During the vegetation establishment period, the channels should be inspected after every rainfall. Other maintenance activities that should be carried out after vegetation is established are mowing, litter removal, and spot vegetation repair. The most important objective in the maintenance of lined channels is maintaining a dense and vigorous growth of turf. Periodic cleaning of vegetation and soil buildup in curb cuts is required so that water flow into the channel is unobstructed. During the growing season, channel grass should be cut no shorter than the level of design flow, and the cuttings should be removed promptly.

Cost

Costs of grassed channels range according to depth, with a 1.5-foot-deep, 10-foot-wide grassed channel estimated at $6,395 to $17,075 per trench, while a 3.0-foot-deep, 21-foot-wide grassed channel is estimated at $12,909 to $33,404 per trench (SWRPC, 1991).

Readers are also referred to the discussion of costs for grass-lined channels, which contains many of the design and cost elements required for installing lined waterways. Designers have a range of options for lining new channels. Geosynthetic turf reinforcement mattings (TRMs) can be used for immediate erosion protection in channels exposed to runoff flows. The Erosion Control Technology Council (a geotextile industry support association) suggests TRMs cost approximately $7.00 per square yard (installed) for channel protection (ECTC, 2002a). R. S. Means indicates machine-placed riprap costs of approximately $40 per cubic yard. The riprap maximum size is typically between 6 and 12 inches, depending on the channel design velocity. A cubic yard of riprap will cover between 36 and 18 square feet of channel bed for these riprap sizes (assuming depth of riprap is 1.5 times the maximum size). These estimates suggest that riprap lining will be between $10 and $20 per square foot of channel (costs include materials, labor, and equipment, with overhead and profit).

5.1.5.3 Sediment Trapping Devices

The devices listed under this group of BMPs trap sediment primarily through impounding water and allowing for settling to occur (Haan et al., 1994). Silt fence, super silt fence, straw bale dikes, sediment traps, and sediment basins all control flow through a porous flow control system such as filter fabric or straw bales or they use a dam to impound water with a pipe, open channel, or rock fill outlet. The filtering capacity of silt fence (filter fabric) contributes only a small amount of trapping, but serves to make the fence less porous and hence increases ponding. For steady-state flows, the trapping that occurs behind the flow control device can be shown to be directly proportional to the surface area and indirectly proportional to flow through the system (Haan et al., 1994). The ratio of the surface area to flow is known as the overflow rate, and trapping in such systems is predicted by the ratio of overflow rate to particle settling velocity. Although flows in nature are inherently non-steady state and more complex than steady-state systems, studies have shown that the best predictor of trapping in such systems is still the ratio of settling velocity to overflow rate (Hayes et al., 1984). In the case of non-steady state, the overflow rate is best defined by the ratio of peak discharge to surface area (Hayes et al., 1984; McBurnie et al., 1990).

The amount of trapping in these structures depends on the size of the structure, flow rates into the system, hydraulics of the flow control system, the size distribution of the sediment flowing into the structure, and the chemistry of the sediment-water system (Haan et al., 1994). Trapping can be enhanced by chemical treatment of flows into the structure, but the impacts have not been widely defined for varying mineralogy and chemistry of the sediment-water system (Haan et al., 1994; Tapp and Barfield, 1986). Recent studies have been conducted on the application of polyacrylamides (PAM) to disturbed areas for enhancing settling (Benik et al., 1998; Masters et al., 2000; Roa-Espinosa et al., 2000), but results have not been definitive. No known studies have evaluated the impacts of PAM application to disturbed areas on settling in sediment trapping devices.

Sediment flowing into sediment trapping devices is composed of primary particles and aggregated particles. Aggregates are formed when clays, silts, and sands are cemented together to form larger particles that have settling velocities far greater than those of any individual particles alone, although the degree of aggregation depends on the amount of cementing material present (typically clays and organic matter). Since the aggregates have higher settling velocities than primary particles, the degree of aggregation that is present has a large impact on the trapping that occurs. Procedures are available to measure the combined size distribution of aggregate and primary particle size distribution (Barfield et al., 1979; Haan et al., 1994). Procedures are also available to predict particle size distributions of aggregates and primary particles (Foster et al., 1985), but have not been found to be very accurate for subsoils exposed during construction in at least one study (Barfield et al., 1983).

In the absence of chemical treatment, the sediment that can be captured in sediment trapping devices is typically the larger settleable solids. To trap the smaller size clay particles, structures with surface areas larger than the construction site itself would have to built in many cases (Barfield, 2000). Chemical treatment can be used to reduce the size captured, but it has not been adopted on a wide scale because of the cost and complexity of the operation (Tapp et al., 1981).

Sediment trapping devices also provide some storm water detention by virtue of detaining flows long enough to allow sediment to settle out and be deposited. However, to operate as a storm water detention structure, the design should include adequate volume for detention.

Virtually all of the available information on sediment trapping structures, both theoretical and experimental, is on impacts to receiving waters and not downstream effects. In a very limited analysis, Barfield (2000) combined the SEDIMOT II computer model together with the FLUVIAL model to theoretically evaluate the impact of sediment trapping structures on downstream geomorphology in a Puerto Rican watershed.

5.1.5.3.1 Silt Fence

General Description

Silt fences are used as temporary sediment barriers consisting of filter fabric anchored across and supported by posts. Their purpose is to retain sediment from small disturbed areas by reducing the velocity of sediment-laden runoff and promoting sediment deposition (Smolen et al., 1988). Silt fences capture sediment by ponding water and allowing for deposition, not by filtration. Silt fence fabric first screens silt and sand from runoff, resulting in clogging of the lower part of the fence. The pooling water allows sediments to settle out of the runoff. Silt fences work best in conjunction with temporary basins, traps, or diversions.

Applicability

Silt fences are generally placed at the toe of fills, along the edge of waterways, and along the site perimeter. The fences should not be used in drainage areas with concentrated and high flows, in large drainage areas, or in ditches and swales where concentrated flow is present.

The drainage area for the fence should be selected based on design storms and local hydrologic conditions so that the silt fence is not expected to overtop. A typical design calls for no greater than ¼ acre of drainage area per 100 feet of fence, but this is highly variable depending on climate. The fence should be stable enough to withstand runoff from a 10-year peak storm. Table 5-13 lists the maximum slope length specified by the USDOT. These slope lengths should be based on sediment load and flow rates. This would mean that the values given below should be adjusted for climatic conditions instead of "one size fits all" to ensure maximum effectiveness.

Table 5-13. Maximum Slope Lengths for Silt Fences

Slope (%)	18- inch (460 mm) Fence	30- inch (760 mm) Fence
≤2	250 ft (75 m)	500 ft (150 m)
5	100 ft (30m)	250 ft (75 m)
10	50 ft (15 m)	150 ft (45 m)
20	25 ft (8 m)	70 ft (21 m)
25	6 m (20 ft)	55 ft (17 m)
30	15 ft (5 m)	45 ft (14 m)
35	15 ft (5 m)	40 ft (12 m)
40	15 ft (5 m)	35 ft (10 m)
45	10 ft (3 m)	30 ft (9 m)
50	10 ft (3m)	25 ft (8m)

Source: USDOT, 1995.

Typical standards and specifications call for the silt fence to be located on fairly level ground and follow the land contour. However, field evaluations by Barfield and Hayes (1992, 1999) in South Carolina and Kentucky indicate that installations on the contour as well as along a slope have problems with undercutting. In either case, the installations are such that a slight slope may occur along the fence in spite of the best installation practices. Runoff can move down the contour until a weak spot occurs in the buried toe and undercuts the fence. Alternatively, flow may move to a low spot where it accumulates and causes an overtopping. In either case, trapping by the silt fence is essentially zero, and flows will then have been concentrated, causing downslope erosion.

Design and Installation Criteria

Design criteria are of two types:

- Hydrologic design for a required trapping of sediment and flow rate to pass the design storm.

- Selection of appropriate installation criteria such that the silt fence will perform as designed.

Hydrologic Design

The fence should be designed to pass the design storm without causing damage while trapping the required amount of sediment. It is necessary to use either a database or some type of model to develop the appropriate hydrologic design. Efforts to model the sediment trapping that occurs through the use of a silt fence have resulted in models that predict the settling in the ponded area upstream from the fence (Barfield et al., 1996; Lindley et al., 1998). The results from model simulations show that trapping depends primarily on the surface area of the impounded water and the flow rate through the filter. The models utilize a clear water flow rate, typically specified by the manufacturer, to predict discharge. However, numerous studies have shown that sediment laden flows cause clogging of the geotextiles used to construct the fence, dependent on the opening size and size of the sediment (Britton et al., 2001; Wyant, 1980; Barrett et al., 1995; Fisher and Jarret, 1984). Thus, results from model studies to date are suspect and need to be modified to account for the impacts of clogging on flow rate. Barfield et al., (2001) developed a model of flow rate using conditional probability concepts, but the results have not been experimentally verified.

Design aids have been developed for silt fence, using simulations from the SEDIMOT III model (Hayes and Barfield, 1995). In the model, predictions are made about trapping efficiency using the ratio of settling velocity for the d_{15}[4] of the eroded sediment, divided by the ratio of discharge to ponded surface area. The design aids yield conservative estimates as compared to the SEDIMOT III model, but the database used for generating the design aid is based on the assumption that clogging does not impact flow rates. The discussion above shows that assumption to be erroneous.

SEDCAD takes the approach of using a slurry flow rate, not a clean water flow rate, when it simulates fence effectiveness, reporting slurry rates rangING between 0.1 and 15 gpm/sq. ft. Based on this discussion, one can conclude that it is difficult to predict with accuracy the trapping efficiency of silt fence under a given set of conditions. In addition, the quality of installation and maintenance are important to the long-term performance of the fence. The best available estimate of sediment trapping obtained from modeling of hydrologic events should be applied with care in any site design problem.

Installation Criteria

General installation criteria for the silt fence should incorporate the following factors:

- The fabric must have sufficient strength to counter forces created by contained water and sediment (Sprague, 1999).
- The posts must have sufficient strength to counter the forces transferred to them by the fabric (Sprague, 1999).
- The fabric must be installed to ensure that the loads are all adequately transferred through the fabric to the posts or the ground without overstressing (Sprague, 1999).
- The fence must be designed based on site-specific hydrologic and soil conditions such that it will not overtop during design events.
- The fence must be installed (anchored) with a buried toe of sufficient depth so that it does not become detached from the soil surface.

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[4] d_{15}:15 percent by weight of suspended solids are smaller than those that are trapped by this device; Similarly d_{50} indicates that 50 percent by weight of suspended solids are smaller than those trapped.

- In general, the fence requires a metal wire backing to provide sufficient strength to prevent failure from the weight of trapped sediment and to prevent the toe of the fabric from being removed from the ground.

- Maximum drainage area behind the fence should be determined based on the local rainfall and the infiltration characteristics of the soil and cover.

Silt fence material is typically synthetic filter fabric or a pervious sheet of polypropylene, nylon, polyester, or polyethylene yarn. The fabric should have ultraviolet ray inhibitors and stabilizers to provide for a minimum useful construction life of 6 months or the duration of construction, whichever is greater. The height of the fence fabric should not exceed 3 feet. If standard strength filter fabric is used, it should be reinforced with a wire fence, extending down into the trench that buries the toe. The wire should be of sufficient strength to support the weight of the deposited sediment and water. In general, a minimum 14 gauge and a maximum mesh spacing of 6 inches is called for (Smolen et al., 1988). Typical requirements for the silt fence physical properties, as specified in selected local BMP standards and specifications, are included in Table 5-14.

Table 5-14. Typical Requirements for Silt Fence Fabric

Physical Property	Requirements	
	Woven Fabric	Non-Woven Fabric
Filtering Efficiency	85%	85%
Tensile Strength at 20% (maximum) Elongation	Standard Strength —30 pound/linear inch Extra Strength —50 pound/linear inch	Standard Strength —50 pound/linear inch Extra Strength —70 pound/linear inch
Slurry Flow Rate	0.3 gallon/square feet/minute	4.5 gallon/square feet/minute
Water Flow Rate	15 gallon/square feet/minute	220 gallon/square feet/minute
UV Resistance	70%	85%

Source: NCDNR, 1988; IDNR 1992.

It should be pointed out that these numbers, particularly the flow rates, could vary widely depending on the local soil condition due to possible clogging of the filter material.

Material for the posts used to anchor the filter fabric can be constructed of either wood or steel. Wooden stakes should be buried at a depth sufficient to keep the fence, when loaded with sediment and water, from falling over. The depth of burial should depend on post diameter and soil strength characteristics when saturated. Many standards and specifications set a minimum post length of 5 feet with 4-inch diameter for posts composed of softwood (e.g, pine) and 2-inch diameter for posts composed of hardwood (e.g., oak) (Smolen et al., 1988). Steel posts should also be designed based on local wet soil strength characteristics. Some standards and specifications for these posts set a minimum weight of 1.33 pounds per linear feet with a minimum length of 4 feet. Steel posts should also have projections to adhere filter fabric to the post (Smolen et al., 1988).

A silt fence should be erected in a continuous fashion from a single roll of fabric so as to eliminate unwanted gaps in the fence. If a continuous roll of fabric is not available, the fabric should overlap from both directions only at posts with a minimum overlap of 6 inches and be rolled together with a special flexible rod to keep the ends from separating. Fence posts should be spaced at a distance based on wet soil strength characteristics and post size and strength; generally, the posts are spaced approximately 4 to 6 feet apart. If standard strength fabric is used in combination with wire mesh, the spacing can be larger. Typically, standards and specifications call for the posts to be no more than 10 feet apart. If extra-strength fabric is used without wire mesh reinforcement, some standards call for the support posts to be spaced no more than 6 feet apart (VDCR, 1995). Again, this spacing should depend on wet soil strength characteristics and post size.

A silt fence must provide sufficient storage capacity or be stabilized over flow outlets such that the storage volume of water will not overtop the fence. The return period event (size of the rainfall event managed) used for design is typically a prerogative of the regulatory agency. For temporary fences, a 2-year storm event is typically used as a design standard. Fences that will be in place for 6 months or longer are commonly designed based on a 10-year storm event (Sprague, 1999). The space behind the fence used for impoundment volume must be sufficient to adequately contain the sediment that will be deposited. Each storm will deposit sediment behind the fence, and after a period of time the amount of sediment accumulated will render the fence useless. Frequency of fence management is a function of its sizing (i.e. whether the fence was installed for a 2-year or a 10-year storm event) (Sprague, 1999) and the amount of erosion that occurs in the area draining to the fence.

Effectiveness

The performance of silt fences has not been well defined. Laboratory studies using carefully controlled conditions have shown trapping efficiencies in the range of 40 to 100 percent, depending on the type of fabric, overflow rate, and detention time (Barrett et al., 1995; Wyant, 1980; Wishowski et al., 1998). Field studies have been limited and quite inadequate; however, the results show that field-trapping efficiencies are very low. In fact, Barrett et al. (1995) obtained a value of zero percent trapping averaged over several samples with a standard error of 26 percent. Barrett et al. (1995) cite the following reasons for the field tests not showing the expected results:

- Inadequate fabric splices
- Sustained failure to correct fence damage resulting from overtopping
- Large holes in the fabric
- Under-runs due to inadequate “toe-ins”
- Silt fence damaged and partially covered by the temporary placement of stockpiles of materials

Field inspections conducted by Barfield and Hayes (1992) were made in which more than 50 construction sites in South Carolina and Kentucky were visited. Inspections found that silt fence was seldom installed and, when installed, was rarely set up according to specifications. In areas where installations did meet standards, it was obvious that flows sought the weakest spot on the fence and either flowed through cuts in the fabric or undercut or overtopped the fence. This flow was thus changed from the overland flow coming into the site to concentrated flow, causing significant erosion.

Silt fences are effective at removing large particle sediment, primarily aggregates, sands, and larger silts. Sediment is removed through impounding of water to slow velocity. It is argued that the silt fence will not contribute to a reduction in small particle sediment and is not effective against other pollutants (WYDEQ, 1999). EPA (1993) reports the following effectiveness ranges for silt fences constructed of filter fabric: average total suspended solids removal of 70 percent, sand removal of 80 to 90 percent, silt-loam removal of 50 to 80 percent, and silt-clay-loam removal of 0 to 20 percent. However, the EPA numbers from the Nationwide Urban Runoff Program should not be considered to apply to every location. The actual trapping will vary widely for a given design because of differences in hydrologic regimes and soil types.

The advantages of using silt fences include minimal labor requirement for installation, low cost, high efficiency in removing sediment, durability, and sometimes reuse (Sprague, 1999). Silt fences are the most readily available and cost-effective control options where options like diversion are not possible. Silt fences are also a popular choice because contractors have used them extensively and their familiarity makes silt fence use more likely for future construction activities. The visibility of a silt fence is also an advantage (i.e., the fence is “advertising” the use of erosion and sediment control practices). In addition, the silt fence visibility makes site inspection easier for contractors and government inspectors (CWP, 1996).

Limitations

Silt fences should not be installed along areas where rocks or other hard surfaces will prevent uniform anchoring of fence posts and entrenching of the filter fabric because an insufficient anchor will greatly reduce their effectiveness and may create runoff channels. In addition, open areas where wind velocity is high may present a maintenance challenge, as high winds may accelerate deterioration of the filter fabric (Smolen et al., 1988). When the pores of the silt fence fabric become clogged with sediment, pools of water are likely to form uphill of the fence. Siting and design of the silt fence should account for this problem, and care should be taken to avoid unnecessary diversion of storm water from these pools which might cause further erosion damage. Silt fences can act as a diversion if placed slightly off-contour and can control shallow, uniform flows from small, disturbed areas and deliver sediment-laden water to deposition areas.

Silt fences will sag or collapse if a site is too large, if too much sediment accumulates, if the approach slope is too steep, or if the fence was not adequately supported. If the fence bottom is not properly installed or the flow velocity is too fast, fence undercuts or blowouts can occur because of excess runoff. Erosion around the end of the fence can occur if the fence ends do not extend upslope to prevent flow around the fence (IDNR, 1992).

Maintenance

Site operators should inspect silt fences after each rainfall event to ensure they are intact and that there are no gaps at the fence-ground interface or tears along the length of the fence. If gaps or tears are found, they should be repaired or the fabric should be replaced immediately. Accumulated sediments should be removed from the fence base when the sediment reaches one-third to halfway up the height of the fence. Sediment removal should occur more frequently if accumulated sediment is creating a noticeable strain on the fabric and there is the possibility that the fence might fail from a sudden storm event.

Cost

There is a wide range of data on installation costs for silt fences. EPA estimates these costs at approximately $6.00 per linear foot (USEPA, 1992) while SWRPC estimates unit costs between $2.30 and $4.50 per linear foot (SWRPC, 1991). Silt fences have an annual maintenance cost that is 100 percent of installation cost (Brown and Schueler, 1997). These values are significantly greater than that reported by R. S. Means (2000), which indicates a 3-foot-tall silt fence installation cost between $0.68 and $0.92 per linear foot (for favorable and challenging installations). It should be noted that the R. S. Means value covers just a single installation, without the expected costs of maintenance (e.g., removal of collected sediment). In addition, the type of silt fence fabric employed will also affect the total installation costs.

5.1.5.3.2 Super Silt Fence

General Description

Super silt fence is a modification of a standard silt fence. The two central differences between the standard silt fence and the super silt fence is that the super silt fence has toe that is buried more deeply and the backing material is chain link fence held in place by steel posts—a concept that originated in Maryland. The Maryland super silt fence requires a Geotextile Class F fabric over a chain link fence to intercept sediment-laden runoff from small drainage areas. The super silt fence provides a barrier that can collect and hold debris and soil more effectively than a standard silt fence, preventing material from entering critical areas. It is best used where the installation of a dike would destroy sensitive areas, woods, and wetlands.

Applicability

Super silt fences can be used in the same conditions as a silt fence. Fences should follow the contour of the land. Table 5-15 lists the distance a super silt fence should be from a slope to ensure maximum effectiveness (MDE, 1994).

Table 5-15. Slope Lengths for Super Silt Fences

	Slope Length	
Slope (%)	**Minimum**	**Maximum**
0-10	Unlimited	Unlimited
10-20	200 feet	1,500 feet
20-33	100 feet	1,000 feet
33-50	100 feet	500 feet
50+	50 feet	250 feet

Design and Installation Criteria

As with the standard silt fence, design criteria are of two types, hydrologic design for a required trapping of sediment and flow rate to pass the design storm and selection of appropriate installation criteria such that the silt fence will perform as designed.

Hydrologic Design

Hydrologic design criteria are the same as the criteria for the standard silt fence.

Installation Criteria

The criteria used for the Maryland super silt fence indicate the following, although they have not been tested with field data:

- The fence should be placed as close to the contour as possible, with no section of the silt fence exceeding a grade of 5 percent for a distance of more than 50 feet.

- Fabric should be no more than 42 inches in height and should be held in place with a 6-foot chain link fence.

- Fabric should be attached to the steel pole using wire ties or staples. Fabric should be securely fastened to the chain link fence with ties spaced every 24 inches at the top and midsection.

- Fabric should be embedded into the ground at a minimum of 8 inches.

- Edges of fabric should overlap by 6 inches.

Table 5-16 describes the physical properties of Geotextile class F fabric (MDE, 1994).

Table 5-16. Minimum Requirements for Super Silt Fence Geotextile Class F Fabric

Physical Properties	Requirements
Tension Strength	50 pound/inch
Tensile Modulus	20 pound/inch
Flow Rate	0.3 gallon/ft^2/minute
Filtering Efficiency	75%

Effectiveness

Performance data have not been collected for super silt fences. The fences have been proposed for locations within a sensitive watershed, or where site conditions prohibit the use of a standard silt fence. However, until performance data are collected under field conditions, effectiveness is speculative.

Limitations

Super silt fences are not as likely to fail structurally as are standard silt fences, but they are more expensive than standard silt fences.

Maintenance

Maintenance requirements for super silt fences are generally the same as for standard silt fences.

Cost

The cost of the super silt fence is more than the standard silt fence because of deeper burial at the toe and the cost of chain linked fencing. R. S. Means (2000) indicates a rental price of $10 to $11 per linear foot of chain linked fence for periods up to 1 year. Overall, rental is expected for most construction site installation because rental rates are approximately half the price of permanent chain link fencing.

5.1.5.3.3 Straw Bale Dike

General Description

The straw bale dike is a temporary measure used to trap sediment from small, sloping disturbed areas. It is constructed of straw bales (not hay bales) wedged tightly together and placed along the contour downslope of disturbed areas. The bales are placed in a shallow excavation, and the upslope side is sealed with soil. Stakes are driven through the bales into the soil to help hold the bales in place. The dike works by impounding water, which allows sediment to settle out in the upslope area (Haan et al., 1994). Straw bale dikes are recommended for short duration application and are usually effective for less than 3 months because of rapid decomposition (USDOT, 1995).

Applicability

Straw bale dikes are generally placed at the toe of fills to provide for a broad shallow sediment pool. The dikes should not be used in drainage areas with concentrated and high flows, in large drainage areas, or in ditches and swales. The location of the straw bale dike should be fairly level, at least 10 feet from the toe, and should follow the land contour. Table 5-17 lists the distance a straw bale dike should be placed from a slope to ensure maximum effectiveness.

Table 5-17. Maximum Land Slope and Distances Above a Straw Bale Dike

Land Slope (%)	Maximum Distance Above Dam (ft)
Less than 2	100
2-5	75
5-10	50
10-20	25
More than 20	15

Source: USDOT, 1995.

Design and Implementation Criteria

Hydrologic Design

Hydrologic design dictates the structure necessary to withstand a storm without causing damage while trapping the required amount of sediment. Either a database or some type of model are needed to find the appropriate design. Efforts to model the sediment trapping that occurs in straw bale dikes have resulted in models that predict the settling in the ponded area upstream from the fence (Barfield et al., 1996; Lindley et al., 1998). The results from model simulations show that trapping depends primarily on the surface area of the impounded water and flow rate through the filter. The models use a clear water slurry flow rate to predict discharge. It is anticipated, based on visual observations, that sediment will clog the straw bale barrier, reducing the slurry flow rate. Thus, results from model studies to date are suspect and need to be modified to account for the impact of clogging on flow rate.

Installation Criteria

The US DOT’s BMP Manual and the Indiana BMP Manual call for bales to be:

- Anchored by driving two 36-inch long (minimum) steel rebars or 2 x 2-inch hardwood stakes through each bale;

- Sized according to the standard bale size of 14 inches x 18 inches x 35 inches;

- Placed in an excavated trench at least 4 inches deep, a bale’s width, and long enough that the end bales are somewhat upslope of the sediment pool;

- Abutted tightly against each other; and,
- Sized such that impounded water depth should not exceed 1.5 feet.

The USDOT BMP Manual does not require that straw bale dikes be designed; however, the Indiana Manual limits the drainage area to 1/4 acre per 100 feet of dam and the total drainage area draining to a straw bale dike to 2 acres.

Effectiveness

The information on performance of straw bale dikes is very limited. In laboratory studies of bales at varying orientations, Kouwen (1990) found that trapping efficiencies ranged from 60 to 100 percent. Field data on trapping have not been collected; however, visual inspection of sites indicate that straw bales are not properly installed to prevent flows from undercutting or flowing between bales (Barfield and Hayes, 1992, 1999). In addition, bales deteriorate rapidly and need to be replaced frequently. Because of these problems, the use of straw bale dikes as a perimeter control is not recommended, except in special circumstances. Only 27 percent of erosion and sediment control experts rated the straw bale dike as an effective erosion and sediment control practice, although its use was still allowed in half of the communities surveyed (Brown and Caraco, 1997).

Limitations

Straw bale dikes should not be used as a diversion, in streams, in channels, or in areas with concentrated flow. The bales are not recommended for paved areas because of the inability to anchor the bales (IDNR, 1992).

Care must be taken to ensure that the bales are not installed in an area where there is a concentrated flow of runoff, in a drainage area that is too large, or on an excessive slope (IDNR, 1992). Under these conditions, erosion around the end of the bales, overtopping and undercutting of the bales, and bale collapsing and dislodging are likely to occur. Overtopping will also occur if the storage capacity is underestimated and where provisions are not made for safe bypass of storm flow (IDNR, 1992). Undercutting will occur if the bales are not entrenched at least 4 inches and backfilled with compacted soil or were not abutted or chinked properly. Straw bale dikes are likely to collapse or dislodge if the bales are not adequately staked, or if too much sediment is allowed to accumulate before cleanout (IDNR, 1992).

Maintenance

For the straw bale dike to be most effective, it is important to replace deteriorated bales when appropriate.

Cost

The cost of straw bale dikes are relatively low, making their use attractive. R. S. Means (2000) indicates a staked straw bale unit cost of $2.61 per linear foot (Costs include materials, labor, and equipment, with profit and overhead).

5.1.5.3.4 Sediment Trap

General Description

A sediment trap is a temporary control device used to intercept sediment-laden runoff and to trap sediment to prevent or reduce off-site sedimentation. It is normally a more temporary type of structure than a sediment pond and is constructed to control sediment on the construction area during a selected phase of the construction operation. A sediment trap can be formed by excavation and/or embankments constructed at designated locations accessible for cleanout. The outlet for a sediment trap is typically a porous rock fill structure, which serves to detain the flow, but a pipe structure can also be used. A temporary sediment trap may be located in a drainageway, at a storm drain inlet, or at other points of discharge from a disturbed area. They may be constructed independently or in conjunction with diversions and may be used in most drainage situations to prevent excessive siltation of pipe structures (USEPA, 1992).

Applicability

Sediment traps can simplify the storm water control plan design process by trapping sediment at specific spots at a construction site (USEPA, 1992). They should be installed as early in the construction process as possible and are primarily effective as a short-term solution to trapping sediment from construction sites (WYDEQ 1999). Natural drainage patterns should be noted, and sites where runoff from potential erosion can be directed into the traps should be selected. Traps are most effective when capturing runoff from areas where 2 to 5 acres drain to one location. Sediment traps should not be located in areas where their failure resulting from excess runoff can lead to further erosive damage of the landscape. Alternative diversion pathways should be designed to accommodate these potential overflows. Traps should be accessible for clean-out and located so that they do not interfere with construction activity. In addition, the traps are easily adaptable to most conditions.

Design and Implementation Criteria

Hydrologic Design

A sediment trap should be designed to maximize surface area and sediment settling. This will increase the effectiveness of the trap and decrease the likeliness of backup during and after periods of high runoff intensity. The design of a trap includes determining the storage volume, surface area, dimensions of spillway or outlet, and elevations of embankment (USDOT, 1995). Sediment traps should be designed to meet a 2-year, 24-hour storm event, but the selection of a return period varies among regulatory agencies (IDNR, 1992).

Storage volume is created by a combination of excavation of land and construction of an embankment to detain runoff (USDOT, 1995). Trap storage volume and length of spillway are determined as a function of the runoff volume and rate for the design storm. These parameters will vary depending on return period rainfall and watershed hydrologic characteristics. Some standards specify a storage volume per acre disturbed. For example, Smolen et al. (1998) specified that approximate storage capacity of each trap should be at least 67 cubic yards per acre disturbed draining into the trap, but more recent guidelines suggest 134 cubic yards per acre of drainage area (VDCR, 2001). Any national standard, however, should be based on runoff volume and peak discharge to be generally applicable. Local regulations can translate this into applicable volume and area standards.

A more important criterion than storage volume relates to sediment trapping. If a trapping efficiency is specified, as in the case of South Carolina (SCDHEC, 1995), it is necessary to design for trapping efficiency. If a TSS or settleable solids effluent criterion is adopted (SCDHEC, 1995), settleable solids must be estimated. In both cases, a national standard should address how to estimate trapping efficiency or settleable solids. Efforts to model the sediment trapping that occurs in sediment traps have resulted in models that predict the settling in the ponded area (Barfield et al., 1996; Lindley et al., 1998). The results from model simulations show that trapping depends primarily on surface area of the impounded water and flow rate through the rock fill outlet. In fact, the ratio of peak outflow rate to surface area is the best simple predictor of trapping. The models use a modification of the Herrera and Felton (1991) relationship developed by Haan et al. (1994) to predict discharge rates. The predicted flow rates do not take into account clogging that can occur in rock fill. No models or procedures are available to estimate this clogging or its impact on flow criteria.

Design aids have also been developed for sediment traps, using simulations from the SEDIMOT III (Barfield et al., 2001; Hayes et al., 2001). In the model, predictions are made of trapping efficiency using the ratio of settling velocity for the d_{15} of the eroded sediment, divided by the ratio of discharge to ponded surface area. The design aid yields conservative estimates, but the database used for generating the design aid is based on the assumption that flow rates are not impacted by clogging. This latter assumption is not likely to be a critical issue, but should be addressed in future research.

Installation Specifications

USDOT standards call for the embankment to be constructed of compacted earth, at a maximum height of 5 feet (1.5 meters), a width of 4 to 5 feet (1.2 meters), and side slopes of 2:1or flatter. These values may change as a result of local criteria and with changing soil characteristics. Temporary vegetation should be applied to the embankment.

Two types of outlet structures are typically used for sediment traps, a rock outlet and a pipe outlet. Spillways of large stones or aggregate are the most common type of outlet designed for sediment traps. The crest of the spillway should be constructed 1 foot below the top of the embankment and the spillway depth 1.5 feet below the top of the embankment. Weir length of the spillway is determined based on the contributing drainage area (Table 5-18) (USDOT, 1995). The outlet apron should be a minimum of 5 feet long, and situated on level ground with a filter fabric foundation to ensure exit velocity of drainage to receiving stream is nonerosive (IDNR, 1992).

The length of the rock outlet should be determined based on peak discharge required and rock characteristics, typically rock diameter. Flow rate calculations can be made with the relationship of Herrera and Felton (1991) as modified by Haan et al. (1994). Alternatively, the USDOT has specified the weir length for a given drainage area as shown in Table 5-18. However, the values should be adjusted for each climatologic area to account for local hydrologic and return period rainfall.

Table 5-18. Weir Length for Sediment Traps

Contributing Drainage Area	Weir Length (ft)
1	4
2	5
3	6
4	10
5	12

Source: USDOT, 1995.

The pipe outlet, constructed of corrugated metal or PVC pipe riser, is an alternative to the rock outlet. Pipe diameter is based on the peak discharge rate required. To obtain appropriate freeboard, the top of pipe should be placed 1.5 feet below embankment elevation. Perforated pipe is sometimes used. USDOT suggests perforations of 1-inch (25 mm) diameter holes or 0.5 x 6 inch (13 x 15 mm) slits in the upper two-thirds of the pipe; however, the discharge should be calculated for this pipe specification to ensure that it matches the required peak discharge.

The pipe should be placed vertically and horizontally above wet storage elevation (USDOT, 1995). Riprap should be used as an outlet protection and placed at the outlet of the barrel to prevent scour from occurring (USDOT, 1995). A stable channel should be provided to convey discharge to the receiving channel (USDOT, 1995).

Effectiveness

If it is assumed that the flow can be accurately controlled by the rock fill outlet, sediment traps should operate as effectively as sediment basins, with trapping efficiencies reduced as a result of smaller surface areas. The NURP study (USEPA, 1993), Stahre and Urbonas (1990), and Haan, et al., (1994), report that sediment basins effectively trapped sediment and chemicals as shown in Table 5-19.

Table 5-19. Range of Measured Pollutant Removal for Sediment Detention Basins

Item	Removable Percentage
Total suspended solids (TSS)	50-70
Total phosphorus (TP)	10-20
Nitrogen	10-20
Organic matter	20-40
Lead	75-90
Zinc	30-60
Hydrocarbons	50-70
Bacteria	50-90

Source: Stahre and Urbonas, 1990.

Information on the actual effectiveness of sediment traps is limited. The discussion should start first with the flow hydraulics of the rock fill outlet typically employed as a principal spillway for sediment traps. Procedures for estimating flow through rock fill have been developed by Herra and Felton (1991) to estimate flow as a function of average rock diameter, standard deviation of rock size, and flow length. If these parameters could be controlled in an actual situation, the flow could be accurately predicted. However, given that standard construction practices consist of end-dumping the rock fill in place, one would expect little correlation between design and construction and the actual discharge and trapping efficiency would be expected to be dramatically different from the design. This analysis does not mean that sediment traps are ineffective, but that a given design could not be guaranteed to meet the effluent criteria, even though the predictions indicate compliance. Sediment trapping efficiency is a function of surface area and inflow rate (Smolen et al., 1988). Those traps that provide pools with large length-to-width ratios have a greater chance of success.

Sediment traps remove larger sized sediment, primarily sized from silt to sands, by slowing water velocity and allowing for sediment settling in ponded water (Haan et al., 1994). Although sediment traps allow for settling of eroded soils, because of their short detention periods for storm water they typically do not remove fine particles such as silts and clays without chemical treatment. Sediment settling ability is related to the square of the particle size; halving particle sizes quadruples the time needed to achieve settlement (WYDEQ 1999). To increase overall effectiveness, traps should be constructed in smaller areas with low slopes.

Sediment traps are typically designed to remove only sediment from surface water, but some non-sediment pollutants are trapped as well (Haan et al., 1994).

Limitations

Common concerns associated with sediment traps are included in Table 5-20.

Table 5-20. Common Concerns Associated with Sediment Traps

Common Concern	Result
Inadequate spillway size	Results in overtopping of the dam and possible failure of the structure
Omission or improper installation of geotextile fabric	Results in piping under the sides or bottom of the stone and outlet section
Low point in embankment caused by inadequate compaction and settling	Results in overtopping and possible failure
Stone outlet apron does not extend to stable grade	Results in erosion below the dam
Stone size too small or backslope too steep	Results in stone displacement
Inadequate vegetative protection	Results in erosion of embankment
Sediment not removed from the basin with enough frequency	Results in inadequate storage capacity
Contact slope between stone spillway and earth embankment too steep	Results in piping failure
Outlet pipe installed in vertical side of trench	Results in piping failure of embankment
Corrugated tubing used as outlet pipe	Results in crushed pipe and inadequate outlet capacity

Source: IDNR, 1992.

Maintenance

The primary maintenance consideration for temporary sediment traps is the removal of accumulated sediment from the basin, which must be done periodically to ensure the continued effectiveness of the sediment trap. Sediments should be removed when the basin reaches approximately 50 percent sediment capacity.

A sediment trap should be inspected after each rainfall event to ensure the trap is draining properly. Inspectors should also check the structure for damage from erosion or piping. The depth of the spillway should be checked and maintained at a minimum of 1.5 feet below the low point of the trap embankment.

Cost

The cost of installing temporary sediment traps ranges from $0.20 to $2.00 per cubic foot of storage (about $1,100 per acre of drainage). EPA estimated the following costs for sediment traps, which vary as a function of the volume of storage: $513 for 1,800 cubic yards, $1,670 for 3,600 cubic yards, and $2,660 for 5,400 cubic yards (USEPA, 1993). Evaluation of a series of more recent data sources (USEPA, 2003) indicated that sediment traps have an average cost of $0.30 per cubic foot of storage. In addition, it has been reported that a sediment trap has an annual maintenance cost of 20 percent of installation cost (Brown and Schueler, 1997).

5.1.5.3.5 Sediment Basin

General Description

A sediment basin is a storm water detention structure formed by constructing a dam across a drainageway or excavating a storage volume at other suitable locations and using it to intercept sediment-laden runoff. Sediment basins are generally larger and more effective in retaining sediment than temporary sediment traps and typically remain active throughout the construction period. Jurisdictions that require postdevelopment flow to be less than or equal to predevelopment flow during construction may employ the designed detention facilities as a temporary sediment basin during construction.

When sediment basins are designed properly, they can control sediment pollution through the following functions (Faircloth, 1999):

- Sediment-laden runoff is caught to form an impoundment of water and create conditions where sediment will settle to the bottom of the basin.
- Treated runoff is released with less sediment concentration than when it entered the basin.
- Storage is provided for accumulated sediment, and resuspension by subsequent storms is limited.

Applicability

Sediment basins should be located at a convenient concentration point for sediment-laden flows (NCDNR, 1988). Ideal sites are areas where natural topography allows a pond to be formed by constructing a dam across a natural swale; such sites are preferred to those that require excavation (Smolen et al., 1988).

Sediment basins are also applicable in drainage areas where it is anticipated that other erosion controls, such as sediment traps, will not be sufficient to prevent off-site transport of sediment. Choosing to construct a sediment basin with either an earthen embankment or a stone/rock dam will depend on the materials available, location of the basin, and desired capacity for storm water runoff and settling of sediments.

Rock dams are suitable where earthen embankments would be difficult to construct or where riprap is readily available. Rock structures are also desirable where the top of the dam structure is to be used as an emergency overflow outlet. These riprap dams are best for drainage areas of less than 50 acres. Earthen damming structures are appropriate where failure of the dam will not result in substantial damage or loss of property or life. If properly constructed, sediment basins with earthen dams can handle storm water runoff from drainage basins as large as 100 acres.

Design and Implementation Criteria

Hydrologic Design

A sediment basin can be constructed by excavation or by erecting an earthen embankment across a low area or drainage swale. Sediment basins can be designed to drain completely during dry periods, or they can be constructed so that a shallow, permanent pool of water remains between storm events. Depending on the size of the basin constructed, the basin may be subject to additional regulation, particularly state and federal regulations related to dam safety.

Sediment basins can be used for any size watershed, but the U.S. Department of Transportation recommends a drainage area range of 5 to 100 acres (USDOT, 1995). Components of a sediment basin that must be considered in the hydrologic design include the following (Haan et al., 1994):

- A sediment storage volume sized to contain the sediment trapped during the life of the structure or between cleanouts.

- A permanent pool volume (if included) above the sediment storage to protect trapped sediment and prevent resuspension as well as providing a first flush of discharge that has been subjected to an extended detention period.

- A detention volume that contains storm runoff for a period sufficient to trap the necessary quantity of suspended solids.

- A principal spillway that can be a drop-inlet pipe and barrel, a trickle tube, or other type of controlled release structure.

- An emergency spillway that is designed to handle excessive runoff from the rarer events and prevent overtopping.

The following recommended procedures for conducting the hydrologic design are summarized from Haan et al. (1994).

Sediment Storage Volume. This volume should be sufficient to store the sediment trapped during the life of the structure or between cleanouts. Sediment storage volume can be calculated based on sediment yield using relationships such as the Revised Universal Soil Loss Equation with an appropriate delivery ratio (Renard et al., 1994) or a computer model such as SEDIMOT III (Barfield et al., 1996) or SEDCAD (Warner, 1998). Many design specifications, however, base the sediment storage volume on a volume per acre disturbed. This volume is highly site-specific, depending on rainfall distributions, soil types, and construction techniques. It is recommended that care be exercised in developing appropriate values to be sure that variations in rainfall throughout a state or region are incorporated in statutory requirements.

Permanent Pool Volume. Providing a first flush of discharge that has been subjected to an extended detention period can help to minimize degradation of water quality and justify some permanent pool. The recommended capacity of the permanent pool varies with the regulatory agency. The U.S. Department of Transportation, for example, recommends 67 cubic yards per acre (126 m^3/ha) (USDOT, 1995). If an effluent criterion such as allowable peak TSS or peak settleable solids is used, the final design of both permanent pool and detention volume should be selected only after using a computer model to predict the expected peak effluent concentrations.

Detention Volume. Storm runoff must be contained for a period of time sufficient to trap the necessary quantity of suspended solids. Since inflow is occurring simultaneously with outflow, the detention time for each plug of flow is different and should be considered individually. The size of the detention volume, as stated above, should also be developed in concert with determining the size of the permanent pool volume as well as the size of the principal spillway. When effluent TSS and settleable solids criteria are used, the size of the detention volume and permanent pool volume should be determined through a computer model calculation of expected effluent concentrations for a given design. The return period used to size the detention volume depends on the regulatory agency, but a return period of 10 years is typical for sediment basins that eventually become storm water detention ponds (i.e., are used to limit future flooding due to storm water). EPA's review of State construction site regulations found the majority of States specify detention volume in terms of cubic feet per acre that drains to the sediment basin. State design values range between 1,800 and 5,400 cubic feet per acre, with 3,600 cubic feet per acre as the typical value.

Principal Spillway. The principal spillway is a hydraulic outlet structure sized to provide the appropriate outflow rate to meet the effluent or trapping efficiency criteria. The principal spillway should have a dewatering device that slowly releases water contained in the detention storage over an extended period of time and at a rate determined to trap the required amount of sediment and/or provide for the appropriate effluent concentration in the design storm. The more common outlet structures are the drop-inlet structure and the trickle tube. Sizing of the principal spillway should follow standard design procedures with respect to hydrology and sediment considerations, but sizing the structure to simply pass the design storm is inappropriate and will not result in meeting an effluent or trapping efficiency standard. The size to be used in a given structure should be determined based on the effluent or trapping efficiency standard being targeted and site-specific hydrologic and soil conditions. Appropriate design will require the use of a computer model such as SEDIMOT III (Barfield et al., 1996) or design aids such as those developed for South Carolina (Hayes and Barfield, 1995). In general, the design is developed to maximize surface area, which will minimize peak discharge. Since failure of the dam could result in downstream damage, the design should be done and certified by a licensed engineer with expertise in hydrologic computation.

It has been proposed that a surface skimmer made of PVC, aluminum, or stainless steel and designed to prevent trash from clogging can also be used to replace conventional principal spillways. The skimmer puts the basin drain just below the water surface, allowing for a constant head rather than variable head from the bottom. It is proposed that the skimmer allows water to be released from the top of the basin, which would be the cleanest water, and that the skimmer properly regulates the filling and draining of the basin (Fairchild, 1999). The skimmer floats on the surface of the basin and rises as water in the basin rises during a storm. After the storm the skimmer slowly releases water from the basin. As the basin drains, the skimmer settles to the bottom, draining the entire pool except for a pool directly under the skimmer. The skimmer can be attached directly to an outlet pipe that drains through the dam or can be attached to an outlet pipe through a riser. It is important to point out that use of the skimmer is controversial and not universally recognized as a good concept. Conventional hydraulic flow theory would not concur with the statement that the flow would come only from the surface, unless the pond had significant thermal gradients preventing flow from deeper levels. A single hole placed just above the sediment cleanout level can also dewater the basin slowly.

Emergency Spillway. Since overtopping of the dam can cause failure and downstream damage, an emergency spillway is necessary to handle excessive runoff from the larger, less frequent events and prevent overtopping. The design storm for the emergency spillway will depend on the hazard classification of the sediment basin. Typical return periods vary between 25 and 100 years, with 25 years recommended by the USDOT. Sizing of the emergency spillway is typically accomplished to simply transmit the rare event without eroding the base of the spillway. Procedures for making the hydrologic and hydraulic computations are summarized in Haan et al. (1994). Again, since failure of the dam could result in downstream damage, the design should be done and certified by a licensed engineer with expertise in hydrologic computation.

Installation Criteria

The embankment for permanent sediment basins should be designed using standard geotechnical construction techniques. The fill is typically constructed of earthen fill material placed and compacted in continuous layers over the entire length of the fill. USDOT recommends 6- to 8-inch layers (USDOT, 1995). The embankment should be stabilized with vegetation after construction of the basin. A cutoff trench should be excavated along the centerline of the dam to prevent excessive seepage beneath the dam and be sized using standard geotechnical computations. USDOT recommends that a minimum depth of the cutoff trench should be approximately 2 feet (600 mm), the height should be to the riser crest elevation, the minimum bottom width should be 4 feet (1.2 m) or wide enough for compaction equipment, and slopes should be no steeper than 1:1.

Sediment basins can also be constructed with rock dams in a design that is similar to a sediment basin with an earthen embankment. It is important to remember that rock fill is highly heterogeneous and that flow rates calculated with any available procedure are not likely to match those that will actually occur. Since sediment trapping is inversely proportional to flow rate, the trapping efficiency will be impacted significantly. No data are available to determine the variability of rock fill in actual installations so that confidence intervals can be placed on predicted flow rates. Such data should be collected and the confidence intervals calculated prior to recommending the use of rock dams as outlets on any structures other than sediment traps.

Effectiveness

The effectiveness of a sediment basin depends primarily on the sediment particle size and the ratio of basin surface area to inflow rate (Smolen et al., 1988; Haan et al., 1994). Basins with a large surface area-to-volume ratio will be most effective. Studies by Barfield and Clar (1985) showed that a surface area-to-peak discharge ratio of 0.01 acres per cubic foot would trap more than 75 percent of the sediment coming from the Coastal Plain and Piedmont regions in Maryland. This efficiency might vary for other regions of the country and should not be used as a national standard. Studies by Hayes et al. (1984) and Stevens et al. (2001), however, show that similar relationships can be developed for other locations.

Laboratory data collected on pilot-scale facilities are available on the trapping efficiency of sediment basins, effluent concentrations, dead storage and flow patterns, and the impacts of chemical flocculants on sediment trapping (Tapp et al., 1981; Wilson and Barfield, 1984; Griffin et al., 1985; Jarrett, 1999; Ward et al., 1977, 1979). In general, the laboratory studies show that pilot-scale ponds can be expected to trap 70 to 90 percent of sediment, depending on the sediment characteristics, pond volume, and flow rate. The trapping efficiency and effluent concentration are, in general, related to the overflow rate and can be reasonably well predicted using a plug flow model (Ward et al., 1977, 1979) and a Continuously Stirred Tank Reactor (CSTR) model (Wilson et al., 1982; Wilson et al., 1984). Extensive field-scale data are available on long term trapping efficiency in storm water detention basins (Brune, 1953) in which the annual trapping efficiency is related to the annual capacity inflow ratio of the basin. These structures are not representative of those used for sediment ponds but would be representative of those used for regional detention. A more limited database is available on single storm sediment trapping in the larger structures (Ward, et al., 1979) and on a field laboratory structure at Pennsylvania State University (Jarret et al., 1999).

For maximum trap efficiency, Smolen et al. (1988) recommend the following:

- Allow the largest surface area possible, maximize the length-to-width ratio of the basin to prevent short circuiting, and ensure use of the entire design settling area;
- Locate inlets for the basin at the maximum distance from the principal spillway outlet;
- Allow the maximum reasonable time to detain water before dewatering the basin; and,
- Reduce the inflow rate into the basin and divert all sediment-free runoff.

Jarett (1999) has shown that the smaller the depth of the basin, the more sediment is discharged. A 0.15-meter-deep (0.49-foot-deep) basin lost twice as much sediment as a 0.46-meter-deep (1.50-foot-deep) basin. Jarrett also found that the performance of a sediment basin will increase with the use of a skimmer in the principal spillway. The sediment discharged was 1.8 times greater with only a perforated riser than with a skimmer in the principal spillway. In addition, increasing the dewatering time, which will allow for more sediment deposition, decreases the sediment loss from the basin (Jarett, 1999).

Limitations

Neither a sediment basin with an earthen embankment nor a rock dam should be used in areas of continuously running water (live streams). The use of sediment basins is not intended for areas where failure of the earthen or rock dam will result in loss of life, damage to homes or other buildings, or interference with the use of public roads or utilities.

Because sediment basins are usually temporary structures, they are often designed poorly and rarely receive adequate attention and maintenance. As a result, these basins will not achieve the function for which they were designed, especially when conventional outlets cannot properly meter outflow to create an impoundment, thus allowing rapid release of sediment-laden water from the bottom of the basin to escape (Faircloth, 1999).

Common concerns associated with sediment basins are included in Table 5-21.

Table 5-21. Common Concerns Associated with Sediment Basins

Common Concern	Result
Improper compaction, omission of anti-seep collar, leaking pipe joints, or use of unsuitable soil	Results in piping failure along conduit
Inadequate vegetation or improper grading and sloping	Results in erosion of spillway or embankment slopes
Inadequate compaction or use of unsuitable soil	Results in slumping or settling of embankment
Steep side slopes	Results in bank failure due to slumping
Inadequate outlet protection	Results in erosion and caving below principal spillway
Basin not located properly for access	Results in difficult, ineffective, and costly maintenance
Sediment not properly removed	Results in inadequate storage capacity and potential resuspension
Lack of anti-flotation measures	Results in the riser and barrel being blocked with debris
Principal and emergency spillway on design plans	Results in improper disposal of accumulated sediment
Gravel clogging the dewatering system	Results in a safety or health hazard from pond water
Principal spillway too small	Results in frequent operation of emergency spillway and increased erosion potential

Source: IDNR, 1992.

Maintenance

Routine inspection and maintenance of sediment basins is essential to their continued effectiveness. Basins should be inspected after each storm event to ensure proper drainage from the collection pool and determine the need for structural repairs. Erosion from the earthen embankment or stones moved from rock dams should be repaired or replaced immediately.

Sediment basins must be located in an area that is easily accessible to maintenance crews for removal of accumulated sediment. Sediment should be removed from the basin when its storage capacity has reached approximately 50 percent. Trash and debris from around dewatering devices should be removed promptly after rainfall events.

Cost

If constructing a sediment basin with less than 50,000 cubic feet of storage space, the cost of installing the basin ranges from $0.20 to $1.30 per cubic foot of storage (approximately $1,100 per acre of drainage) with an average cost of approximately $0.60 per cubic foot of storage (USEPA, 1993). If constructing a sediment basin with more than 50,000 cubic feet of storage space, the cost of installing the basin ranges from $0.10 to $0.40 per cubic foot of storage (approximately $550 per acre of drainage) with an average cost of approximately $0.30 per cubic foot of storage (USEPA, 1993). A review of state highway project bids and county bonding estimates conducted in 2003 confirmed this value of $0.30 per cubic foot (USEPA, 2003). Annual maintenance costs are 25 percent of installation costs (Brown and Schueler, 1997).

As an alternative costing method, designers can use cost curves developed for permanent basins used to manage storm water from urban areas. However, since permanent storm water basins typically include design features that would not be included in temporary sediment basins, this approach is expected to greatly overestimate the actual costs to construct sediment basins. For many sites, sediment basins installed for erosion and sediment control during the construction phase are retained/modified to meet other runoff management requirements. For example, site flood prevention requirements for the 10-year rainfall event can be met with a pond made from a converted sediment basin. As a result, sediment basin installation costs are partially offset by a later cost reduction or savings. Work by the Center for Watershed Protection (1996) provides capital cost equations for different types of sediment basins for permanent installations. For example, for dry extended detention ponds, the following equation can be used to estimate costs:

$$CC = 8.16\ (Vs)^{0.78}$$

For all ponds regardless of type (including wet ponds), the following equation can be used:

$$CC = 20.18\ (Vs)^{0.70}$$

Where:
CC = base construction cost, not including design, engineering, and contingencies
Vs = Storage volume below the crest of the emergency spillway, in cubic feet

Design, engineering, and contingency costs are given as approximately 32 percent of the base construction costs. Base construction costs for permanent ponds are composed of approximately 48 percent excavation/grading cost, 36 percent control structure cost, and 16 percent appurtenances cost. R. S. Means (2000) suggests the cost to remove the eroded sediment collected in a small basin during construction is approximately $4 per cubic yard (this value includes a 100 percent surcharge for wet excavation). Disposal of material on-site will result in an additional cost that can only be computed from site-specific conditions. The cheapest management of dredged material is application to land areas adjacent to the basin followed with application of a vegetative cover.

5.1.5.4 Other Control Practices

5.1.5.4.1 Stone Outlet Structure

Description

A stone outlet structure is a temporary stone dike installed in conjunction with and as a part of an earth dike. The purpose of the stone outlet structure is to impound sediment-laden runoff, provide a protected outlet for an earth dike, provide for diffusion of concentrated flow, and allow the area behind the dike to dewater slowly. The stone outlet structure can extend across the end of the channel behind the dike or be placed in the dike itself. In some cases, more than one stone outlet structure can be placed in a dike.

Applicability

Stone outlet structures apply to any point of discharge where there is a need to discharge runoff at a protected outlet or to diffuse concentrated flow for the duration of the period of construction. The drainage area to this practice is typically limited to one-half acre or less to prevent excessive flow rates. The stone outlet structure should be located so as to discharge onto an already stabilized area or into a stable watercourse. Stabilization should consist of complete vegetative cover and paving that are sufficiently established to be erosion resistant.

Design and Installation Criteria

Design criteria are of two types, hydrologic design for a required trapping of sediment and/or flow rate to pass the design storm; and selection of appropriate installation criteria such that the stone outlet will perform as designed.

Hydrologic Design

The hydrologic design should be based on the design storm and standard hydraulic calculations. It should include the following considerations:

- Design rainfall and design storm. The design storm should be specified by the regulatory authority. Typically a return period of 2 to 5 years is used. Runoff rates should be calculated with standard hydrologic procedures as allowed by the regulatory authority.

- Drainage area. The drainage area to this structure is typically limited to less than half an acre to ensure that the flow rates are not excessive.

- Length of crest and height of stone fill. The crest length and height of stone fill should be of sufficient size to transmit the design storm without overtopping. The volume of water stored behind the dike can be estimated, but would require routing the storm flow in the design storm. Flow through the stone outlet can be calculated using the relationships of Herrera and Felton (1991) as modified by Haan et al. (1994). The height of the fill should be small enough to prevent excessive flow velocities through the stone fill and prevent undercutting.

- Outlet stabilization. The discharge from the stone outlet should be stabilized with vegetated waterways or riprap until the flow reaches a stable channel. Design of the stabilized outlet should follow procedures presented earlier.

Installation Criteria Specifications

A stone outlet structure should conform to the following specifications:

- The outlet should be composed of 2- to 3-inch stone or recycled concrete, but clean gravel may be used if stone is not available.

- The crest of the stone dike should be at least 6 inches lower than the lowest elevation of the top of the earth dike and should be level.

- The stone outlet structure should be embedded into the soil a minimum of 4 inches.

- The minimum length of the crest of the stone outlet structure should be 6 feet.

- The baffle board should extend 1 foot into the dike and 4 inches into the ground and be staked in place.

- The drainage area to this structure should be less than half an acre.

5.1.5.4.2 Rock Outlet Protection

Description

Rock outlet structures are rocks that are placed at the outfall of channels or culverts to reduce the velocity of flow in the receiving channel to nonerosive rates.

Applicability

This practice applies where discharge velocities and energies at the outlets of culverts are sufficient to erode the next downstream reach and is applicable to outlets of all types such as sediment basins, storm water management ponds, and road culverts.

Design and Installation Criteria

Hydrologic Design

Hydrologic design consists primarily of selecting the design runoff rate and sizing outlet protection. Standard hydrologic calculations should be used with an appropriate return period storm for the outlet being protected (typical return periods range from 2 to 10 years).

The process for sizing outlet protection involves selecting the type and geometry of the outlet protection and the size of the rock lining. The outlet protection may consist of a plunge pool (scour hole), an apron-type arrangement, or an energy dissipation basin (Haan et al., 1994). The design of each differs. Plunge pools are typically used for outlet pipes that are elevated above the water surface. Aprons are used for other types of outlets. Plunge pool geometry is based on the flow rate, pipe size and slope, tailwater depth, and size of the riprap lining (Haan et al., 1994). Apron dimensions are determined by the ratio of the tailwater depth to pipe diameter (Haan et al., 1994). Energy dissipation basins are used as an alternative to the plunge pool. Dimensions are a function of the brink depth in the pipe at the design flow, pipe diameter, and size of riprap (Haan et al., 1994). The size of the rock lining is a function of the discharge, pipe size, tailwater depth, and geometry selected. Details on sizing the rock are given in Haan et al. (1994).

The design method presented here applies to the sizing of rock riprap and gabions to protect a downstream area. It does not apply to rock lining of channels or streams. The design of rock outlet protection depends entirely on the location. Pipe outlets at the top of cuts or on slopes steeper than 10 percent cannot be protected by rock aprons or riprap sections due to reconcentration of flows and high velocities encountered after the flow leaves the apron.

Installation Criteria

The following criteria should be considered:

- Bottom grade: The outlet protection apron should be constructed with zero slope along its length. There should be no obstruction at the end of the apron. The elevation of the downstream end of the apron should be equal to the elevation of the receiving channel or adjacent ground.

- Alignment: The outer protection apron should be located so that there are no beds in the horizontal alignment.

- Materials: The outlet protection may be accomplished using rock riprap or gabions. Riprap should be composed of a well-graded mixture of stone sized so that 50 percent of the pieces, by weight, should be larger than the size determined using charts. The minimum d_{50} size to be used should be 9 inches. A well-graded mixture is defined as a mixture composed primarily of larger stone sizes but with a sufficient mixture of other sizes to fill the smaller voids between the stones. The diameter of the largest stone in such a mixture should be 2 times the size selected in Table 5-22 (MDE, 1994).

- Thickness: The SHA riprap specification values are summarized in Table 5-22.

Table 5-22. Riprap Sizes and Thicknesses (SHA Specifications)

	D_{50} (inches)	**D_{100} (inches)**	**Thickness (inches)**
Class I	9.5	15	19
Class II	16	24	32
Class III	23	34	46

- Stone Quality: Stone for riprap should consist of field stone or rough-hewn quarry stone. The stone should be hard and angular and of a quality that will not disintegrate on exposure to water or weathering. The specific gravity of the individual stones should be at least 2.5. Recycled concrete equivalent may be used provided it has a density of at least 150 pounds per cubic foot and does not have any exposed steel or reinforcing bars.

- Filters: A layer of material placed between the riprap and the underlying soil surface can prevent soil movement into and through the riprap to prevent piping, reduce uplift pressure, and collect water. Riprap should have a filter placed under it in all cases. A filter can be of two general forms: a gravel layer or a geotextile.

- Gabions: Gabion baskets may be used as rock outlet protection, provided they are made of hexagonal triple twist mesh with heavily galvanized steel wire. The maximum lined dimension of the mesh opening should not exceed 4.5 inches. The area of the mesh opening should not exceed 10 square inches. Gabions should be fabricated in such a manner that the sides, ends, and lid can be assembled at the construction site into a rectangular basket of the specified sizes.

Gabions should be of a single unit construction and should be installed according to the manufacturer's specifications. Foundation conditions should be the same as for placing rock riprap. Geotextiles should be placed under all gabions, and gabions must be keyed in to prevent undermining of the main gabion structure.

- The subgrade for the filter, riprap, or gabion should be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.

- The rock or gravel should conform to the specified grading limits when installed in the riprap or filter, respectively.

- Geotextiles should be protected from punching, cutting, or tearing. Any damage other than occasional small holes should be repaired by placing another piece of geotextile fabric over the damaged part or by completely replacing the geotextile fabric. All overlaps, whether for repairs or for joining two pieces of geotextile fabric, should be a minimum of 1 foot in length.

- Stone for the riprap or gabion outlets may be placed by equipment. They should be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. Care should be taken to ensure that the stone is not placed so that rolling will cause segregation of stone by size, i.e., the stone for riprap or gabion outlets should be delivered and placed in a manner that will ensure that it is reasonably homogeneous, with smaller stones filling the voids between larger stones. Riprap must be placed in a manner to prevent damage to the filter blanket or geotextile fabric. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

- Stone should be placed so that it blends in with the existing ground and the depth to the stone surface is sufficient to transmit the flow without spilling over onto the unprotected surface.

Effectiveness

There is currently no information on the effectiveness of rock outlet structures.

Limitations

Common problems with rock outlet structures include the following:

- If the foundation is not excavated deeply or wide enough, the flow cross-section might be restricted, resulting in erosion around the apron and scour holes at the outlet. Also, the riprap apron should be placed on a suitable foundation to prevent downstream erosion.

- If the riprap that is installed is smaller than specified, rock displacement might result; selectively grouting over the rock materials may stabilize the installation.

- If the riprap is not extended enough to reach a stable section of the channel, downstream erosion could result.

- If a filter is not installed under the riprap, stone displacement and erosion of the foundation might result.

Maintenance

Once a riprap outlet has been installed, the maintenance needs are very low. It should be inspected after high flows to see if scour has occurred beneath the riprap, if flows have occurred outside the boundaries of the riprap and caused scour, or if any stones have been dislodged. Repairs should be made immediately.

Cost

R. S. Means (2000) indicates machine-placed riprap costs of approximately $40 per cubic yard. For a riprap maximum size between 15 and 24 inches, a cubic yard of riprap will cover between 13.5 and 17 square feet at channel bed (assuming depth of riprap as given in Table 5-22). This suggests that riprap lining will be between $21 and $27 per square foot of outlet (includes materials, labor, and equipment, with overhead and profit). R. S. Means (2000) provides a cost range for gabions ($2.80 to $9 per square foot of coverage) for stone fill depths of 6 to 36 inches, respectively. These costs include all costs of materials, labor, and installation.

5.1.5.4.3 Sump Pit

Description

A sump pit is a temporary pit from which pumping is conducted to remove excess water while minimizing sedimentation. The purpose of the sump pit is to filter water being pumped to reduce sedimentation to receiving streams.

Applicability

Sump pits are constructed when water collects and must be pumped away during excavating, cofferdam dewatering, maintenance or removal of sediment traps and basins, or other uses as applicable, such as for concrete wash out.

Design and Installation Criteria

Hydrologic Design

The only hydrologic calculation is determining the expected flow rate and volume to be handled. This should follow standard hydrologic computational procedures based on design rainfall, surface and soil conditions, and the size of the pump.

Installation Criteria and Specifications

The number of sump pits and their locations should be determined by the designer and included on the plans. Contractors may relocate sump pits to optimize use, but discharge location changes should be coordinated with inspectors.

A perforated vertical standpipe should be wrapped with ½-inch hardware cloth and geotextiles and then placed in the center of an excavated pit, which is then backfilled with filter material ranging from clean gravel to stone. Water is then pumped from the center of the standpipe to a suitable discharge area such as into a sediment trap, sediment basin, or stabilized area.

A sump pit should conform to the following specifications:

- Pit dimensions are variable, with the minimum diameter being twice the diameter of the standpipe.

- The standpipe should be constructed by perforating a 12- to 36-inch diameter pipe, then wrapping it with ½-inch hardware cloth and geotextiles. The perforations should be ½-inch slits or 1-inch diameter holes placed 6 inches on center.

- The standpipe should extend 12 to 18 inches above the lip of the pit or riser crest elevation (basin dewatering), and filter material should extend 3 inches minimum above the anticipated standing water level.

Effectiveness

There is currently no information on the effectiveness of the sump pit.

Limitations

The sump pit must be properly maintained and pumped regularly to avoid clogging.

Maintenance

To maintain, sump pits must be removed and reconstructed when water can no longer be pumped out of the standpipe.

Cost

R. S. Means (2000) provides information appropriate for assessment of a wide range of dewatering scenarios (i.e., different sump sizes, dewatering durations, and discharge conditions). In general, installation of earthen sump pits are listed as costing approximately $1.50 per cubic foot of sump volume. Piping to and away from the sump ranges from $30 to $60 per linear foot. Pump rentals and operation range between $150 and $500 per day of pumping, depending on the rate of dewatering. All costs include materials, labor, and equipment, with overhead and profit.

5.1.5.4.4 Sediment Tank

Description

A sediment tank is a compartmented container through which sediment-laden water is pumped to trap and retain sediment prior to pumping the water to drainageways, adjoining properties, and rights-of-way below the sediment tank site.

Applicability

A sediment tank should be used on sites where excavations are deep and space is limited, such as urban construction, where direct discharge of sediment-laden water to streams and storm drainage systems should be avoided.

Design and Installation Criteria

The location of sediment tanks should facilitate easy cleanout and disposal of the trapped sediment to minimize interference with construction activities and pedestrian traffic. The tank size should be determined according to the storage volume of the sediment tank, with 1 cubic foot of storage for each gallon per minute of pump discharge capacity.

Effectiveness

There is currently no information on the effectiveness of sediment tanks.

Limitations

The sediment tank does not provide any natural infiltration; thus, the trapped sediment and storm water must be disposed of properly.

Maintenance

To facilitate maintenance of sediment tanks, they need to be located with easy access for regular pump out. The rate at which a tank is pumped depends on site specific considerations such as rainfall and sediment loads to the system. Regular inspections will help to determine pump out frequency and prevent overloading and failure of the system.

Cost

There is currently no information on the cost of sediment tanks.

5.1.5.4.5 Stabilized Construction Entrance

Description

The purpose of stabilizing entrances to a construction site is to minimize the amount of sediment leaving the area as mud attached to tires. Installing a pad of gravel over filter cloth where construction traffic leaves a site can help stabilize a construction entrance. As a vehicle drives over the gravel pad, mud and other sediments are removed from the vehicle's wheels (sometimes by washing) and offsite transport of sediment is reduced. The gravel pad also reduces erosion and rutting on the soil beneath the stabilization structure. The fabric reduces the amount of rutting caused by vehicle tires by spreading the vehicle's weight over a larger soil area than just the tire width. The filter fabric also separates the gravel from the soil below, preventing the gravel from being ground into the soil.

Applicability

Stabilized construction entrances typically are installed at locations where construction traffic leaves or enters an existing paved road. However, the applicability of site entrance stabilization should be extended to any roadway or entrance where vehicles will access or leave the site.

From a public relations point of view, stabilizing construction site entrances can be a worthwhile exercise. If the site entrance is the most publicly noticeable part of a construction site, stabilized entrances can improve the appearance to passersby and improve public perception of the construction project by reducing the amount of mud tracked onto adjacent streets.

Design and Installation Considerations

Hydrologic Design

Not applicable.

Installation Criteria and Specifications

All entrances to a site should be stabilized before construction begins and further disturbance of the site area occurs. The stabilized site entrances should be long enough and wide enough so that the largest construction vehicle that will enter the site will fit in the entrance with room to spare. If many vehicles are expected to use an entrance in any one day, the site entrance should be wide enough for the passage of two vehicles at the same time with room on either side of each vehicle. For optimum effectiveness, a rock construction entrance should be at least 50 feet long and at least 10 to 12 feet wide (USEPA, 1992).
If a site entrance leads to a paved road, the end of entrance should be "flared" (made wider as in the shape of a funnel) so that long vehicles do not go off the stabilized area when turning onto or off of the paved roadway.

If a construction site entrance crosses a stream, swale, roadside channel, or other depression, a bridge or culvert should be provided to prevent erosion from unprotected banks.

Stone and gravel used to stabilize the construction site entrance should be large enough so that nothing is carried off-site with vehicle traffic. In addition, sharp-edged stone should be avoided to reduce the possibility of puncturing vehicle tires. Stone or gravel should be installed at a depth of at least 6 inches for the entire length and width of the stabilized construction entrance.

Effectiveness

Stabilizing construction entrances to prevent sediment transport off-site is effective only if all entrances to the site are stabilized and maintained. Also, stabilization of construction site entrances may not be very effective unless a wash rack is installed and routinely used (Corish, 1995), although this can be problematic for sites with multiple entrances that have high vehicle traffic.

Limitations

Although stabilizing a construction entrance is a good way to help reduce the amount of sediment leaving a site, some sediment may still be deposited from vehicle tires onto paved surfaces. To further reduce the chance that these sediments will pollute storm water runoff, sweeping of the paved area adjacent to the stabilized entrance is recommended.

For sites using wash stations, a reliable water source to wash vehicles before leaving the site might not be initially available. In this case, water may have to be trucked to the site at an additional cost. Discharge from the wash station should be directed to an appropriate sediment control structure.

Maintenance

Stabilization of site entrances should be maintained until the remainder of the construction site has been fully stabilized. Stone and gravel might need to be periodically added to each stabilized construction site entrance to maintain its effectiveness. Soil that is tracked offsite should be swept up immediately and disposed of properly.

For sites with wash racks at each site entrance, sediment traps will have to be constructed and maintained for the life of the project. Maintenance will entail the periodic removal of sediment from the traps to ensure their continued effectiveness.

Cost

Without a wash rack, construction site entrance stabilization costs range from $1,000 to $4,000. On average, the initial construction cost is approximately $2,000 per entrance. When maintenance costs are included, the average total annual cost for a 2-year period is approximately $1,500. If a wash rack is included in the construction site entrance stabilization, the initial construction costs range from $1,000 to $5,000, with an average initial cost of $3,000 per entrance. Total annual cost, including maintenance for an estimated 2-year life span, is approximately $2,200 per year (USEPA, 1993).

5.1.5.4.6 Land Grading

Description

Land grading involves reshaping the ground surface to planned grades as determined by an engineering survey, evaluation, and layout. Land grading provides more suitable topography for buildings, facilities, and other land uses and helps to control surface runoff, soil erosion, and sedimentation both during and after construction.

Applicability

Land grading is applicable to sites with steep topography or easily erodible soils because it stabilizes slopes and decreases runoff velocity. Grading activities should maintain existing drainage patterns as much as possible.

Design and Installation Criteria

Before grading activities begin, decisions should be made regarding the steepness of cut-and-fill slopes and how the slopes will be protected from runoff, stabilized, and maintained. A grading plan that establishes which areas of the site will be graded, how drainage patterns will be directed, and how runoff velocities will affect receiving waters should be prepared. The grading plan also includes information regarding when earthwork will start and stop, establishes the degree and length of finished slopes, and dictates where and how excess material will be disposed of (or where borrow materials will be obtained if needed). Berms, diversions, and other storm water practices that require excavation and filling should also be incorporated into the grading plan.

One low-impact development technique that can be incorporated into a grading plan is site fingerprinting. This involves clearing and grading only those areas necessary for building activities and equipment traffic. Adhering to strict limits of clearing and grading helps to maintain undisturbed temporary or permanent buffer zones in the grading operation and provides a low-cost sediment control measure that will help reduce runoff and off-site sedimentation. The lowest elevation of the site should remain undisturbed to provide a protected storm water outlet before storm drains or other construction outlets are installed.

Effectiveness

Land grading is an effective means of reducing steep slopes and stabilizing highly erodible soils when implemented with storm water management and erosion and sediment control practices in mind. Land grading is not effective when drainage patterns are altered or when vegetated areas on the perimeter of the site are destroyed.

Limitations

Construction sites are routinely graded to prepare a site for buildings and other structures. Improper grading practices that disrupt natural storm water patterns might lead to poor drainage, high runoff velocities, and increased peak flows during storm events. Clearing and grading of the entire site without vegetated buffers promotes off-site transport of sediments and other pollutants. Grading plans should be designed with erosion and sediment control and storm water management goals in mind; grading crews should be carefully supervised to ensure that the plan is implemented as intended.

Maintenance

All graded areas and supporting erosion and sediment control practices should be periodically checked, especially after heavy rainfalls. All sediment should be promptly removed from diversions or other storm water conveyances. If washouts or breaks occur, they should be repaired immediately. Prompt maintenance of small-scale eroded areas is essential to prevent these areas from becoming significant gullies.

Cost

Land grading is practiced at virtually all construction sites—additional site planning to incorporate storm water and erosion and sediment controls in grading plans can require several hours of planning by a certified engineer or landscape architect. Extra time might be required to excavate diversions and construct berms, and fill materials might be needed to build up low-lying areas or fill depressions.

Where grading is performed to manage on-site storm water, R. S. Means (2000) suggests the cost of fine grading, soil treatment, and grassing to be approximately $2 per square yard of earth surface area. Shallow excavation/trenching (1 to 4 feet deep) with a backhoe in areas not requiring dewatering can be performed for $4 to $5 per cubic yard of removed material. Larger scale grading requires a site-specific assessment of an alternative grading apparatus and a detailed fill/excavation material balance to retain as much soil on site as possible.

5.1.5.4.7 Temporary Access Waterway Crossing

Description

A temporary stream crossing is a structure erected to provide a safe and stable way for construction vehicle traffic to cross a running watercourse. The primary purpose of such a structure is to provide streambank stabilization, to reduce the risk of damaging the streambed or channel, and to reduce the risk of sediment loading from construction traffic. A temporary stream crossing may be a bridge, culvert, or ford.

Applicability

Temporary stream crossings are applicable wherever heavy construction equipment must be moved from one side of a stream channel to the other or where lighter construction vehicles will cross the stream a number of times during the construction period. In either case, an appropriate method for ensuring the stability of the streambanks and preventing large-scale erosion is necessary.

A bridge or culvert is the best choice for most temporary stream crossings. If properly designed, each can support heavy loads, and materials used to construct most bridges and culverts can be salvaged after they are removed. Fords are appropriate in steep areas subject to flash flooding, where normal flow is shallow or intermittent across a wide channel. Fords should be used only where stream crossings are expected to be infrequent.

Design and Installation Criteria

Because of the potential for stream degradation, flooding, and safety hazards, stream crossings should be avoided on a construction site whenever possible. Consideration should be given to alternative site access routes before arrangements are made to erect a temporary stream crossing. If it is determined that a stream crossing is necessary, an area where the potential for erosion is low should be selected. The stream crossing structure should be installed during a dry period if possible to reduce sediment transport into the stream.

If needed, over-stream bridges are generally the preferred temporary stream crossing structure. The expected load and frequency of the stream crossing, however, will govern the selection of a bridge as the correct choice for a temporary stream crossing. These types of temporary bridges usually cause minimal disturbance to a stream's banks and cause the least obstruction to stream flow and fish migration. They should be constructed only under the supervision and approval of a qualified engineer.

As general guidelines for constructing temporary bridges, clearing and excavation of the stream shores and bed should be kept to a minimum. Sufficient clearance should be provided for floating objects to pass under the bridge. Abutments should be parallel to the stream and be placed on stable banks. If the stream is less than 8 feet wide at the point where a crossing is needed, no additional in-stream supports should be used. If the crossing is to extend across a channel wider than 8 feet (as measured from the top of one bank to the other), the bridge should be designed with one in-water support for each 8 feet of stream width.

A temporary bridge should be anchored by steel cable or chain on one side only to a stable structure on shore. Examples of anchoring structures include trees with a large diameter, large boulders, and steel anchors. By anchoring the bridge on one side only, there is a decreased risk of causing a downstream blockage or flow diversion if a bridge is washed out.

When constructing a culvert, filter cloth should be used to cover the streambed and streambanks to reduce settlement and improve the stability of the culvert structure. The filter cloth should extend a minimum of 6 inches and a maximum of 1 foot beyond the end of the culvert and bedding material. The culvert piping should not exceed 40 feet in length and should be of sufficient diameter to allow for complete passage of flow during peak flow periods. The culvert pipes should be covered with a minimum of 1 foot of aggregate. If multiple culverts are used, at least 1 foot of aggregate should separate the pipes.

Fords should be constructed of stabilizing material such as large rocks.

Effectiveness

Both temporary bridges and culverts provide an adequate path for construction traffic crossing a stream or watercourse.

Limitations

Bridges can be considered the greatest safety hazard of all temporary stream crossing structures if not properly designed and constructed. Bridges might also prove to be more costly in terms of repair costs and lost construction time if they wash out or collapse (Smolen et al., 1988).

The construction and removal of culverts are usually very disturbing to the surrounding area, and erosion and downstream movement of sediments are often great. Culverts can also create obstructions to flow in a stream and inhibit fish migration. Depending on their size, culverts can be blocked by large debris and are therefore vulnerable to frequent blockage and washout.

If given a choice between building a bridge or a culvert as a temporary stream crossing, a bridge is preferred because of the relative minimal disturbance to streambanks and the opportunity for unimpeded flow through the channel. The approaches to fords often have high erosion potential. In addition, excavation of the streambed and approach to lay riprap or other stabilization material causes major stream disturbance. Mud and other debris are transported directly into the stream unless the crossing is used only during periods of low flow.

Maintenance

Temporary stream crossings should be inspected at least once a week and after all significant rainfall events. If any structural damage is reported to a bridge or culvert, construction traffic should be excluded until appropriate repairs are made. Streambank erosion should be repaired immediately.

Fords should be inspected closely after major storm events to ensure that stabilization materials remain in place. If the material has moved downstream during periods of peak flow, the lost material should be replaced immediately.

Cost

In general, temporary bridges are more expensive to design and construct than culverts. Bridges are also associated with higher maintenance and repair costs should they fail. Temporary bridging costs vary as a function of the width of the bridge span and the amount of time the bridge is installed. If the bridging is permanent, a mean cost of $50 per square foot for an 8-foot wide steel arch bridge (no foundation costs included) can be used for conceptual cost estimation (R. S. Means, 2000). If rental bridging is employed, then rates are probably on the order of 20 to 50 percent of the bridge (permanent) cost, but will vary based on the rental duration and mobilization distance.

5.1.5.4.8 Dust Control

General Description

Dust control measures are practices that help reduce ground surface and air movement of dust from disturbed soil surfaces. Construction sites are good candidates for dust control measures because land disturbance from clearing and excavation generates a large amount of soil disturbance and open space for wind to pick up dust particles. To illustrate this point, research at construction sites has established an average dust emission rate of 1.2 tons/acre/month for active construction (WA Dept. of Ecology, 1992). These airborne particles pose a dual threat to the environment and human health. First, dust can be carried off-site, thereby increasing soil loss from the construction area and increasing the likelihood of sedimentation and water pollution. Second, blowing dust particles can contribute to respiratory health problems and create an inhospitable work environment.

Applicability

Dust control measures are applicable to any construction site where dust is created and there is the potential for air and water pollution from dust traveling across the landscape or through the air. Dust control measures are particularly important in arid or semiarid regions where soil can become extremely dry and vulnerable to transport by high winds.

Also, dust control measures should be implemented on all construction sites where there will be major soil disturbances or heavy construction activity, such as clearing, excavation, demolition, or excessive vehicle traffic. Earthmoving activities are the major source of dust from construction sites, but traffic and general disturbances can also be major contributors (WA Dept. of Ecology, 1992).

The specific dust control measures implemented at a site will depend on the topography, land cover, soil characteristics and amount of rainfall at the site.

Design and Installation Criteria

When designing a dust control plan for a site, the amount of soil exposed will dictate the quantity of dust generation and transport. Therefore, construction sequencing and disturbing small areas at one time can greatly reduce problematic dust from a site. If land must be disturbed, additional temporary stabilization measures should be considered prior to disturbance.

A number of methods can be used to control dust from a site. The following is a brief list of control measures and their design criteria. Not all control measures will be applicable to a given site. The owner, operator, and contractors responsible for dust control should determine which practices accommodate their needs based on specific site and weather conditions.

Sprinkling/Irrigation: Sprinkling the ground surface with water until it is moist is an effective dust control method for haul roads and other traffic routes (Smolen et al., 1988). This practice can be applied to almost any site.

Vegetative Cover: In areas not expected to handle vehicle traffic, vegetative stabilization of disturbed soil is often desirable. Vegetative cover provides protection to surface soils and slows wind velocity at the ground surface, thus reducing the potential for dust to become airborne.

Mulch: Mulching can be a quick and effective means of dust control for a recently disturbed area (Smolen et al., 1988).

Wind Breaks: Wind breaks are barriers (either natural or constructed) that reduce wind velocity and therefore reduce the possibility of carrying suspended particles. Wind breaks can be trees or shrubs left in place during site clearing or constructed barriers such as a wind fence, snow fence, tarp curtain, hay bale, crate wall, or sediment wall (USEPA, 1992).

Tillage: Deep tillage in large open areas brings soil clods to the surface where they rest on top of dust, preventing it from becoming airborne.

Stone: Stone can be an effective dust deterrent for construction roads and entrances.

Spray-on Chemical Soil Treatments (palliatives): Examples of chemical adhesives include anionic asphalt emulsion, latex emulsion, resin-water emulsions, and calcium chloride. Chemical palliatives should be used only on mineral soils. When considering chemical application to suppress dust, consideration should be taken as to whether the chemical is biodegradable or water-soluble and what effect its application could have on the surrounding environment, including waterbodies and wildlife.

Table 5-23 shows application rates for some common spray-on adhesives as recommended by Smolen et al. (1988).

Table 5-23. Application Rates for Spray-On Adhesives

Spray on Adhesive	Water Dilution	Type of Nozzle	Application
Anionic Asphalt Emulsion	7:1	Coarse spray	1,200
Latex Emulsion	12.5:1	Fine spray	235
Resin in Water	4:1	Fine spray	300

Source: Smolen et al., 1988.

Effectiveness

Sprinkling/irrigation: Not available.

Vegetative cover: Not available.

Mulch: Can reduce wind erosion by 80 percent.

Wind breaks/barriers: For each foot of vertical height, an 8- to 10-foot deposition zone develops on the leeward side of the barrier. The barrier density and spacing will change its effectiveness at capturing windborne sediment.

Tillage: Roughening the soil can reduce soil losses by approximately 80 percent.

Stone: The sizes of the stone can affect the amount of erosion that will take place. In areas of high wind, small stones are not as effective as 20-cm stones.

Spray-on chemical soil treatments (palliatives): Effectiveness of polymer stabilization methods ranges from 70 to 90 percent.

Limitations

In areas where evaporation rates are high, water application to exposed soils may require near constant attention. If water is applied in excess, runoff may result from the site and possibly create conditions where vehicles could track mud onto public roads.

Chemical applications should be used sparingly and only on mineral soils (not high organic content soils) because their misuse can create additional surface water pollution from runoff or could contaminate ground water if infiltrated. Chemical applications might also present a health risk if excessive amounts are used.

Maintenance

Because dust controls are dependent on specific site conditions, including the weather, inspection and maintenance are unique for each site. Generally, however, dust control measures involving application of either water or chemicals require more monitoring than structural or vegetative controls to remain effective. If structural controls are used, they should be inspected for deterioration on a regular basis to ensure they are still achieving their intended purpose.

Cost

Chemical dust control measures can vary widely in cost depending on specific needs of the site and level of dust control desired. One manufacturer of a chloride product estimated a cost of $1,089 per acre for application to road surfaces, but cautioned that cost estimates without a specific site evaluation can be inaccurate.

5.1.5.4.9 Storm Drain Inlet Protection

Description

Storm drain inlet protection measures are controls that help prevent soil and debris from on-site erosion from entering storm drain inlets. Typically, these measures are temporary controls that are implemented prior to large-scale disturbance of the surrounding site. These controls are advantageous because their implementation allows storm drains to be used during even the early stages of construction activities. The early use of storm drains during project development significantly reduces the occurrence of future erosion problems (Smolen et al., 1988).

Three temporary control measures to protect storm drain drop inlets are:

- Excavation around the perimeter of the drop inlet
- Fabric barriers around inlet entrances
- Block and gravel protection

Excavation around a storm drain inlet creates a settling pool to remove sediments. Weep holes protected by gravel are used to drain the shallow pool of water that accumulates around the inlet. A filter fabric barrier erected around an inlet can create an effective shield to sediment while allowing water to flow into the storm drain. This type of barrier can slow runoff velocity while catching soil and other debris at the drain inlet. Block and gravel inlet protection uses standard concrete blocks and gravel to form a barrier to sediments while permitting water runoff through select blocks that are laid sideways. In addition to these materials, limited temporary storm water drop inlet protection can also be achieved with the use of straw bales or sandbags to create barriers to sediment.

For permanent storm drain drop inlet protection after the surrounding area has been stabilized, sod can be installed as a barrier to slow storm water entry to storm drain inlets and capture sediments from erosion. This final inlet protection measure can be used as an aesthetically pleasing way to slow storm water velocity near drop inlet entrances and remove sediments and other pollutants from runoff.

A new technology that uses an insert trap into the inlet itself has been developed (Adams et al., 2000). This technique showed good results on initial tests, trapping more than 50 percent of the incoming sediment in flows typical of those into urban storm drains. This technique is being further developed with a pending patent application.

Applicability

All temporary controls should have a drainage area no greater than 1 acre of drainage area per inlet. It is also important for temporary controls to be constructed prior to disturbance of the surrounding landscape. Excavated drop inlet protection and block and gravel inlet protection are applicable to areas of high flow where overflow is anticipated into the storm drain. Fabric barriers are recommended for smaller, relatively flat drainage areas (slopes less than 5 percent leading to the storm drain).

Temporary drop inlet control measures are often used in combination with each other and with other storm water control techniques.

Design and Installation Considerations

Hydrologic Design

Hydrologic computations are not necessary with present technologies. A specified limitation of 1 drainage acre per inlet limits flow rates, dependent on local rainfall and runoff considerations.

Installation Criteria and Specifications

The following criteria should be followed until future research establishes better techniques:

- With the exception of sod drop inlet protection, these controls should be installed before any soil disturbance in the drainage area.

- Excavation around drop inlets should be dug a minimum of 1 foot deep (2 feet maximum) with a minimum excavated volume of 35 cubic yards per acre disturbed. Side slopes leading to the inlet should be no steeper than 2:1. The shape of the excavated area should be designed such that the dimensions fit the area from which storm water is anticipated to drain. For example, the longest side of an excavated area should be along the side of the inlet expected to drain the largest area.

- Fabric inlet protection is essentially a filter fence placed around the inlet. The fabric should not be used as a stand-alone sediment control measures. To increase inlet protection effectiveness, these practices should be used in combination with other measures, such as small impoundments or sediment traps (USEPA, 1992). Temporary storm drain inlet protection is not intended for use in drainage areas larger than 1 acre. Generally, storm water inlet protection measures are practical for relatively low sediment and low volume flows.

- Frequent maintenance of storm drain controls is necessary to prevent clogging. If sediment and other debris clog the water intake, drop intake control measures can actually cause erosion in unprotected areas.

Maintenance

All temporary control measures must be checked after each storm event. To maintain the sediment capacity of the shallow settling pools created from these techniques, accumulated sediment should be removed from the area around the drop inlet (i.e., from the excavated area, around the fabric barrier, or around the block structure) when the sediment storage is reduced by approximately 50 percent. Additional debris should be removed from the shallow pools on a periodic basis.

Weep holes in excavated areas around inlets can become clogged and prevent water from draining from the shallow pools that form. Should this happen, unclogging the water intake may be difficult and costly.

Cost

The cost of implementing storm drain drop inlet protection measures will vary depending on the control measure chosen. Generally, initial installation costs range from $50 to $150 per inlet, with an average cost of $100 (USEPA, 1993). Maintenance costs can be high (annually, up to 100 percent of the initial construction cost) because of frequent inspection and repair needs. The Southeastern Wisconsin Regional Planning Commission has estimated that the cost of installation of inlet protection devices ranges from $106 to $154 per inlet (SWRPC, 1991).

5.1.5.4.10 Polyacrylamide (PAM)

General Description

The term polyacrylamide (PAM) is a generic term that refers to a broad class of compounds. There are hundreds of specific PAM formulations, and all have unique properties that depend on polymer chain length and number and kinds of functional group substitutions along the chain. PAMs are classified according to their molecular weight and ionic charge and are available in solid, granular, liquid, or emulsion forms.

PAM's effectiveness to prevent or reduce erosion is due to its affinity for soil particles, largely via coulombic and Van der Waals attraction. These surface attractions enhance particle cohesion, stabilizing soil structure against shear-induced detachment and transport in runoff. In a soil application, PAM aggregates soil particles, increasing pore space and infiltration capacity and resulting in reduced runoff. These larger particle aggregates are less susceptible to raindrop and scour erosion, thus reducing the potential to mobilize sediments.

Applicability

Because of ease in application, PAM is well suited as a short-term erosion prevention BMP, especially for areas with limited access or steep slopes that hinder personnel from applying other cover materials. PAM can be used to augment other cover practice BMPs, though it can be effective when applied alone. Thus, the ease of application, low maintenance, and relatively low cost associated with PAM make it a practical solution to soil stabilization during construction.

Application Criteria

PAM can be applied to soil through either a dry granular powder or a liquid spray form. Optimal application rates to prevent erosion on construction sites are generally less than 1 kg/ha (approximately 1 lb/ac) (Tobiason et al., 2000). However, the concentration required can vary for specific soil properties and construction phases. WDOT (2002) suggests a dosage of 60 mg/L for roadway erosion and sediment control. This is higher than the rate recommended by the University of Nebraska for an agricultural application (10 parts per million). To put this into context, one half pound of PAM in1,000 gallons of water results in a PAM concentration of 60 mg/L, which treats 1 acre of exposed soil according to WDOT recommendations.

Effectiveness

A study performed in Dane County, Wisconsin, analyzed 15 meter square plots for runoff and sediment yield on a construction site. The study concluded that when a solution of PAM-mix with mulch/seeding was applied to dry soil and compared with the control (no PAM-mix application to dry soil), an average reduction of 93 percent in sediment yield was found. The lowest performance (average reduction in sediment yield of 77 percent) occurred when PAM-mix in solution was applied to moist soil. The application of dry PAM-mix to dry soil reduced sediment by 83 percent and decreased runoff by 16 percent when compared to the control. The results show that regardless of the application method, PAM-mix was effective in reducing sediment yield in the test plots (Roa-Espinosa et al., 2000).

A second study performed in Washington analyzed the runoff from three different construction sites: an erosion control test facility, a highway construction site, and an airport runway. Table 5-24 summarizes the 225 samples analyzed by Tobiason et al. (2000).

Table 5-24. Turbidity Reduction Values from PAM

	Volume, m^3	Turbidity Reduction (%)
Maximum	350	99.97
Median	285	97.6
Minimum	133	46

Limitations

Currently PAMs are most commonly produced as dry granules. They completely dissolve and remain dissolved if mixed properly. If added too quickly or if not stirred vigorously, the granules rapidly form nondissolvable gels on contact with water or collect in low turbulence areas as syrupy concentrations that dissolve slowly in an uncontrolled pattern over a period of hours or days (USDA, 1994). In addition, when spilled on hard surfaces, PAM solutions are extremely slippery and hazardous to foot and vehicle traffic. PAM dust is highly hygroscopic and, if inhaled, could impair breathing. Certain neutral and cationic PAMs at very high exposure levels produce irritation in humans and are somewhat toxic to certain aquatic organisms; therefore, PAM should be used in strict compliance with state and federal label requirements. Finally, although PAM is relatively inexpensive, there are considerable infrastructure needs and operating costs; thus, sophisticated onsite polymer treatment systems may not be appropriate for certain projects.

Cost

The cost of PAM ranges from $1.25 per pound to $5.00 per pound (Entry et al., 1999). The cost of PAM application depends on the system employed. PAM can be used in a centralized treatment system (e.g., at a sedimentation basin) to treat larger areas, or dispersed in granular or liquid form. In Tobiason et al. (2000), the startup costs for the batch treatment system amounted to $90,000. Monthly expenses averaged $18,000 for operations and maintenance and $13,000 for materials and equipment. The total costs for this phase totaled about $245,000, less than 1 percent of total construction costs. If dispersed through irrigation systems (for agriculture), the seasonal cost of PAM treatment is $9 to $15 per acre (Kay-Shoemake, et al., 2000), where a season probably requires between 5 and 10 applications.

For construction sites, it is more likely that PAM would be applied as an additive to the hydroseed mix and applied when final grade is established and cover vegetation is installed. There are numerous suppliers who provide PAM as a low-cost additive for hydroseeding, suggesting PAM application costs can be incorporated into that of hydroseeding ($540 to $700 per acre depending on which seed is applied). An additional cost would be incurred to sample site soils to customize the dosage and delivery mechanisms for individual sites. In addition, re-application of PAM in granular or liquid form to areas with rill development (poor vegetation cover) would require additional funds. Where re-application of granular PAM is used, R. S. Means (2000) suggests a cost of approximately $5 per 1,000 square feet for spreading soil admixtures by hand.

5.1.6 SUMMARY

The BMP information presented in sub-section 5.1 is summarized in Tables 5-25 through 5-28.

Table 5-25. Summary of Information on Erosion Control and Prevention BMPs (Sub-section 5.1.5.1)

BMP Type	Physical Impact Mitigation: Receiving Water Quality	Physical Impact Mitigation: Downstream Impacts	Other Impacts
Planning/ Staging/ Scheduling	• Could be low cost. • One data set shows 42% reduction in sediment yield due to planning/staging/scheduling. • Requires additional advance planning and management. • Impact could be evaluated with models as well as experimentally since several computer models are available.	• Could be low cost. • Database is poor. • No validated urban runoff models available for theoretical analysis of downstream impacts. • Potential exists to modify existing models to analyze downstream impacts on geomorphology.	• No good cause-effect relationships available. • Other impacts not evaluated.
Vegetative Stabilization	• Could be low cost • Can be very effective in some cases with advance planning. • Can be important on streambanks. • Limited applicability in the active construction area. • Complements other practices. • Practice is seasonally dependent in most of nation. • Impact could be evaluated with models as well as experimentally since several computer models are available.	• Could be low cost. • Database is poor. • No validated urban runoff models available for theoretical analysis of downstream impacts. • Potential exists to modify existing models to analyze downstream impacts on geomorphology.	• No good cause-effect relationships available. • Other impacts not evaluated.
Grass-Lined Channels	• Long history of use in channels draining disturbed areas. • Well established procedures for design and extensive database on stable designs under widely varied conditions. • Some procedures are available, with limited validation, to obtain a first estimate of sediment trapping by grass-lined channels. • Limited database on trapping of sediment. • Maintenance is critical for pollution prevention.	• Database is poor. • No validated urban runoff models available for theoretical analysis of downstream impacts. • Some potential exists to modify existing models to analyze downstream impacts on geomorphology.	• No good cause-effect relationships available. • Database shows wide variations in effectiveness in trapping chemicals. • Other impacts not evaluated.

Table 5-25. Summary of Information on Erosion Control and Prevention BMPs (Sub-section 5.1.5.1)

BMP Type	Physical Impact Mitigation		Other Impacts
	Receiving Water Quality	Downstream Impacts	
Seeding	• Low-cost method for establishing vegetation. • Occurs near the end of active construction. • Requires significant time for establishment. • Needs a prepared seedbed. • Good database with impacts on soil erosion. • Should be supported by other BMPs.	• Should not be evaluated as stand-alone practice, but as part of a system. • Database is poor. • No validated urban runoff models available for theoretical analysis of downstream impacts. • Some potential exists to modify existing models to analyze downstream impacts on geomorphology.	• No good cause-effect relationships available. • Other impacts not evaluated.
Sodding	• High-cost method of establishing vegetation. • Immediate stabilization. • Requires significant management attention during establishment. • Good database with impacts on soil erosion. • Very effective way of controlling erosion. • Works well for grass waterways and other significant problem areas. • Should be supported by other BMPs.	• Should not be evaluated as stand-alone practice, but as part of a system. • Database is poor. • No validated urban runoff models available for theoretical analysis of downstream impacts. • Some potential exists to modify existing models to analyze downstream impacts on geomorphology.	• No good cause-effect relationships available. • Other impacts not evaluated.
Mulching	• Relatively low-cost method of providing cover. • Can be highly effective in reducing soil loss when properly anchored. • Good database with impacts on soil erosion. • Variety of materials can be used. • Installation is rapid. • Not a stand-alone practice. • Due to interference with construction operations, the times that it can be used during active construction are limited.	• Database is poor. • No validated urban runoff models available for theoretical analysis of downstream impacts. • Some potential exists to modify existing models to analyze downstream impacts on geomorphology.	• No good cause-effect relationships available. • Other impacts not evaluated.

Table 5-25. Summary of Information on Erosion Control and Prevention BMPs (Sub-section 5.1.5.1)

BMP Type	Physical Impact Mitigation: Receiving Water Quality	Physical Impact Mitigation: Downstream Impacts	Other Impacts
Erosion Control Matting /Geotextiles	• Cost is highly variable. • Effectiveness in controlling sediment is variable depending on types of materials. • Can provide immediate protection to exposed soils. • Not a stand-alone practice. • Due to interference with construction operations, the times that it can be used during active construction are limited. • Disposal is a significant problem and may require landfilling. • Can be used for channel linings as astand-alone practice or under riprap. • Fair database on effectiveness in preventing erosion.	• Database is poor. • No validated urban runoff models available for theoretical analysis of downstream impacts. • Some potential exists to modify existing models to analyze downstream impacts on geomorphology.	• No good cause-effect relationships available. • Other impacts not evaluated.
Vegetative Buffer Strips	• Can be highly effective in trapping sediment. • Effectiveness is well established and considerable data have been collected. • Well-validated models are available to predict the impacts of constructed filter strips on sediment trapping. • Models are included in watershed storm water and sediment models. • Modifications needed for natural riparian zones. • Require routine maintenance. • May be most appropriate where sediment loads are relatively low.	• Database is poor. • No validated urban runoff models available for theoretical analysis of downstream impacts. • Some potential exists to modify existing models to analyze downstream impacts on geomorphology.	• No good cause-effect relationships available. • Other impacts not evaluated.
Topsoiling	• Important in vegetative establishment. • No protection until cover is established. • Not a stand-alone practice; must be supported by other BMPs. • No known information to describe effectiveness • Cost not currently available.	• Database is poor. • No validated urban runoff models available for theoretical analysis of downstream impacts. • Some potential exists to modify existing models to analyze downstream impacts on geomorphology	• No good cause-effect relationships available. • Other impacts not evaluated.

Table 5-26. Summary of Information on Erosion Control and Prevention BMPs (Sub-section 5.1.5.2)

BMP Type	Physical Impact Mitigation: Receiving Water Quality	Physical Impact Mitigation: Downstream Impacts	Other Impacts
Earth Dike	• Used to protect down slope areas. • Should be stabilized prior to use. • Requires maintenance after every major storm. • Can be significant source of sediment if not properly constructed. • Little data available on its effectiveness as a BMP. • Can be relatively inexpensive, depending on design. • Not a stand-alone procedure.	• No known information available.	• No known information available.
Temporary Swale	• Effectively a grass-lined drainage ditch with shallow side slopes. • Can be applied in many areas, but use limited in arid areas. • Contaminants that will harm vegetation, such as oils and greases, cannot be discharged to the system. • Continuous water flow cannot be tolerated by the grass lining. • Effectiveness depends on infiltration. Ground water pollution might occur in areas with a high water table. • Export of bacteria might occur. • Some studies show high removal efficiency for TSS, fair removal for nutrients, are variable removal for metals. • No general relationships available to predict impacts under widely varied climates and conditions, hence the effectiveness cannot be predicted for a given situation beyond the limited database.	• No known information available.	• No known information available.

Table 5-26. Summary of Information on Erosion Control and Prevention BMPs (Sub-section 5.1.5.2)

BMP Type	Physical Impact Mitigation		Other Impacts
	Receiving Water Quality	**Downstream Impacts**	
Temporary Storm Drain Diversion (Pipe)	• Reroutes existing drainage systems. Primary benefit is to separate drainage water originating from undisturbed and construction and reduce the volume of water to be treated. • Can be combined with other structures, such as sediment traps, and used for sediment trapping. • Require little maintenance. • Requires outlet stabilization. Can be a significant source of sediment without outlet stabilization. • Can be costly, depending on size, installation, and removal.	• No known information available.	• No known information available.
Pipe Slope Drain	• Routes runoff from concentrated flow to stabilized areas. • Can be very effective in eliminating gully erosion problems, if properly installed and maintained. • Can be constructed from low-cost corrugated PVC, but must be anchored or buried along slope. • Needs to be checked frequently for sedimentation and other maintenance problems.	• No known information available.	• No known information available.

Table 5-26. Summary of Information on Erosion Control and Prevention BMPs (Sub-section 5.1.5.2)

BMP Type	Physical Impact Mitigation: Receiving Water Quality	Physical Impact Mitigation: Downstream Impacts	Other Impacts
Stone Check Dams	• Reduces velocity of flow and prevents erosion. • Stabilizes channel slope on steep sections by stairstepping. • Can trap small percentages of sediment behind dam. • Used for short periods of time where channel lining is impractical. • Limited lab studies show high effectiveness, but very limited field studies show low trapping efficiency. Must be installed such that overtopping occurs over the rock fill and not around the perimeter. • Should not be used in continuously flowing streams. • Relatively expensive, if properly installed. • Procedures for predicting impact of properly installed stone check dams are available and incorporated into watershed computer models.	• No known information available.	• No known information available.
Lined Waterways	• Designed for stability and capacity. • Local rainfall-runoff conditions and linings will influence channel dimensions. • Require some maintenance during vegetative establishment. • Not designed as sediment removal device, but to prevent channel erosion.	• No known information available.	• No known information available.

Table 5-27. Summary of Information on Erosion Control and Prevention BMPs (Sub-section 5.1.5.3)

BMP Type	Physical Impact Mitigation		
	Receiving Water Quality	**Downstream Impacts**	**Other Impacts**
Silt Fence	• Most widely recognized sediment control BMP. • Frequently poorly installed with few design considerations. • Maintenance is frequently poor, resulting in frequent failure. Frequent maintenance is required for proper operation. • Laboratory studies show fair to good sediment trapping by filter fence, but limited field studies do not show the same results. • Evaluations of installations show that failure is frequent and results from undercutting of the fabric and subsequent gully erosion. • Should not be installed where rocks and other hard surfaces prevent anchoring. • No validated procedures are available to predict the effectiveness of the filter fence in trapping sediment, primarily because of the lack of validated relationships for predicting flow through the filter fence. • Procedures for evaluating the anchoring requirements and support post requirements have not adequately accounted for variable soil strength conditions, resulting in frequent failure of the fence under loading.	• Database is poor. • No validated urban runoff models available for theoretical analysis of downstream impacts. • Some potential exists to modify existing models to analyze downstream impacts on geomorphology.	• No good cause-effect relationships available. • Other impacts not evaluated.
Super Silt fence	• Modification of standard silt-fence to improve it structurally. • No validation information is available. • Recommended to be used where destruction of the silt fence will destroy critical areas. • More expensive than standard silt fence.	• Database is poor. • No validated urban runoff models available for theoretical analysis of downstream impacts. • Some potential exists to modify existing models to analyze downstream impacts on geomorphology.	• No good cause-effect relationships available. • Other impacts not evaluated.

Table 5-27. Summary of Information on Erosion Control and Prevention BMPs (Sub-section 5.1.5.3)

BMP Type	Physical Impact Mitigation		
	Receiving Water Quality	Downstream Impacts	Other Impacts
Straw Bale Dike	• Works by impounding water. • Primary trapping mechanism is by settling behind straw bale dike. • Information on performance is very limited with much variation in the limited data. • Should not be used in waterways or as a perimeter control due to biodegradation. • Idealized models of performance are available for systems that are properly installed.	• Database is poor. • No validated urban runoff models available for theoretical analysis of downstream impacts. • Some potential exists to modify existing models to analyze downstream impacts on geomorphology.	• No good cause-effect relationships available. • Other impacts not evaluated.
Sediment Traps	• Formed by excavation and/or embankment. • Can simplify storm water control by trapping sediment at specific spots. • Can be installed quickly and serve as a short-term solution to sediment trapping in small areas. • May require cleanout. • Detailed models as well as simplified design aids are available to predict performance in trapping sediment. • Data on performance are available from both laboratory studies and field studies. • Will likely control only the settleable solids unless enhanced settling with chemical flocculation is performed.	• Database is poor. • No validated urban runoff models available for theoretical analysis of downstream impacts. • Some potential exists to modify existing models to analyze downstream impacts on geomorphology.	• Data for trapping nutrients are available, but show wide variation. • General models of nutrient trapping are not available. • Other impacts not evaluated.

Table 5-27. Summary of Information on Erosion Control and Prevention BMPs (Sub-section 5.1.5.3)

BMP Type	Physical Impact Mitigation		
	Receiving Water Quality	**Downstream Impacts**	**Other Impacts**
Sediment Basins	• Normally formed by construction of a dam. • Storm water detention basin may serve as sediment basin during construction. • Can be used for any size watershed. • May require cleanout. • Data on performance are available both from laboratory studies and field studies. • Will likely control only the settleable solids unless enhanced settling is developed with chemical flocculation. • Most reliable and stable structure for obtaining high sediment trapping efficiency under widely varying conditions. • Must consider dam safety issues since dam failure is a reasonable possibility. • Structures are relatively large and can be expensive.	• Database is poor. • No validated urban runoff models available for theoretical analysis of downstream impacts. • Some potential exists to modify existing models to analyze downstream impacts on geomorphology.	• Data for trapping nutrients are available, but show wide variation. • General models of nutrient trapping are not available. • Other impacts not evaluated.

Table 5-28. Summary of Information on Erosion Control and Prevention BMPs (Sub-section 5.1.5.4)

BMP Type	Physical Impact Mitigation: Receiving Water Quality	Physical Impact Mitigation: Downstream Impacts	Other Impacts
Stone Outlet Structures	• Porous outlet structure constructed of dumped rock, used as the outlet for earth dikes. • Requires a stabilized outlet channel until the flow reaches a stable channel. • Effectiveness data are limited to visual observations of field installations where failure occurred due to poor installation. • Models are available to predict the performance of stone outlets, but field data have not been collected to evaluate the accuracy of the model.	• No validated urban runoff models available for theoretical analysis of downstream impacts. • Some potential exists to modify existing models to analyze downstream impacts on geomorphology.	• General models of nutrient trapping are not available. • Other impacts not evaluated.
Rock Outlet Protection	• Used to reduce velocity of flow in receiving channel and prevent scouring. • Very effective when properly installed. • Design procedures are well established. • Maintenance is low, if properly installed. • Should be inspected after high flows. • No data on impact.	• No data available.	• No data available.
Sump Pit	• Used to dewater during excavation. • Effectiveness not evaluated. • Potential exists to theoretically evaluate the BMP's effectiveness in trapping sediment. • Could be used at times other than storm flow, such as for removal of ground water flow.	• Database is poor. • No validated urban runoff models available for theoretical analysis of downstream impacts. • Some potential exists to modify existing models to analyze downstream impacts on geomorphology.	• No data available.

Table 5-28. Summary of Information on Erosion Control and Prevention BMPs (Sub-section 5.1.5.4)

BMP Type	Physical Impact Mitigation: Receiving Water Quality	Physical Impact Mitigation: Downstream Impacts	Other Impacts
Storm Drain Inlet Protection	• Used to trap sediment that would otherwise flow into storm drain inlet. • Should be installed prior to land disturbance. • Effectiveness in removing sediment has not been evaluated, but is thought to be low during construction. • Potential exists to use computer models to evaluate effectiveness. • Cost can be high for maintenance requirements. • Should not be used as stand-alone sediment control.	• Database is poor. • No validated urban runoff models available for theoretical analysis of downstream impacts. • Some potential exists to modify existing models to analyze downstream impacts on geomorphology.	• No data available.
Sediment Tank	• Portable sediment trap. • Flows are pumped in and out of the tank. • Used where spaced is limited. • No effectiveness data are available. • Expected to be relatively expensive.	• No data available.	• No data available.
Stabilized Construction Entrance	• Used to minimize mud and sediment attached to tires. • Consists of an area that is covered with rocks over which all vehicles must drive. • Can be combined with a wash station. • Effective only if all entrances are maintained. • Relatively expensive. • Will not remove highly cohesive clays.	• No data available.	• No data available.
Land Grading	• Stabilizes slopes and decreases runoff velocity. • Can be incorporated into low-impact development plans. • Not effective when drainage patterns are altered. • Not effective when vegetative areas on perimeter are destroyed. • Practiced at virtually all construction sites. • No data available on BMP effectiveness.	• No data available.	• No data available.

Table 5-28. Summary of Information on Erosion Control and Prevention BMPs (Sub-section 5.1.5.4)

BMP Type	Physical Impact Mitigation		Other Impacts
	Receiving Water Quality	Downstream Impacts	
Temp Access Waterways Crossing	• Reduces risk to damaging streambed from construction equipment. • Can be a bridge, culvert, or ford. • Bridges and culverts preferred, but more expensive. • Data on effectiveness in reducing sediment are not available.	• No data available.	• No data available.
Dust Control	• Important in arid and semi-arid regions. • Applicable to any construction site. • Construction sequencing and limiting exposure area can reduce problems. • Spray-on adhesives are recommended. • Water application may require near-constant attention. • Excess water may cause runoff or tracking of mud. • Very limited effectiveness information available. • Costs can vary widely, depending on local conditions.	• No data available.	• No data available.

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SECTION 6: REGULATORY DEVELOPMENT AND RATIONALE

In this section, the methodology used by EPA to develop regulatory options for the construction and land development industry is described. Following the June 2002 proposal, EPA held a public comment period that ended on December 23, 2002. A number of issues were raised through comments that prompted several changes in EPA's analyses as well as development of a revised regulatory option (Option 4). The complete comment response document can be found in the public docket. EPA also refined its costing, environmental assessment and economic analyses. Consideration of all of these references, as well as other information, led to EPA deciding not to promulgate final effluent limitations guidelines. The following section discusses the regulatory options evaluated for the final action. Costs of regulatory options are discussed in Section 7 of this document and a description of the environmental benefits estimation is presented in Section 8. Industry financial analyses can be found in the document "Economic Analysis for Final Action for Effluent Guidelines and Standards for the Construction and Development Category," EPA-821-B-04-002.

6.1 REGULATORY OPTIONS FOR FINAL ACTION

EPA considered a series of regulatory options. These options were designed to control the discharge of sediment, storm water and other pollutants from sites when construction is taking place. EPA considered a range of options that incorporate varying levels of management and various control strategies.

The following discussion presents various options that EPA considered.

6.1.1 OPTION 1 - INSPECTION AND CERTIFICATION

Option 1 would establish a series of site inspection and certification provisions as minimum requirements for all construction sites subject to the NPDES storm water regulations. The permittee is required to conduct periodic inspections and provide certifications as to certain activities (such as SWPPP preparation, BMP installation, periodic maintenance, etc.). These inspections and certifications are to be performed by a qualified professional, such as a registered professional engineer or person trained in erosion and sediment control. The permittee may provide self-certifications if qualified.

A summary of the inspection and certification provisions considered under this option are:

<u>Inspections</u>

A. Inspections must be conducted in accordance with one of the two schedules listed below. You must specify in your SWPPP which schedule you will be following.

    1. At least once every 7 calendar days, OR

2. At least once every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater.

B. Inspection frequency may be reduced to at least once every month if:

1. The entire site is temporarily stabilized,

2. Runoff is unlikely due to winter conditions (e.g., site is covered with snow, ice, or the ground is frozen), or

3. Construction is occurring during seasonal arid periods in arid areas and semi-arid areas.

C. A waiver of the inspection requirements is available until one month before thawing conditions are expected to result in a discharge if all of the following requirements are met:

1. The project is located in an area where frozen conditions are anticipated to continue for extended periods of time (i.e., more than one month);

2. Land disturbance activities have been suspended; and

3. The beginning and ending dates of the waiver period are documented in the SWPPP.

D. Inspections must be conducted by qualified personnel (provided by the operator or cooperatively by multiple operators). "Qualified personnel" means a person knowledgeable in the principles and practice of erosion and sediment controls who possesses the skills to assess conditions at the construction site that could impact storm water quality and to assess the effectiveness of any sediment and erosion control measures selected to control the quality of storm water discharges from the construction activity.

E. Inspections must include all areas of the site disturbed by construction activity and areas used for storage of materials that are exposed to precipitation. Inspectors must look for evidence of, or the potential for, pollutants entering the storm water conveyance system. Sedimentation and erosion control measures identified in the SWPPP must be observed to ensure proper operation. Discharge locations must be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to waters of the United States, where accessible. Where discharge locations are inaccessible, nearby downstream locations must be inspected to the extent that such inspections are practicable. Locations where vehicles enter or exit the site must be inspected for evidence of off-site sediment tracking.

F. Utility line installation, pipeline construction, and other examples of long, narrow, linear construction activities may limit the access of inspection personnel to the areas described in Subpart 3.10.E above. Inspection of these areas could require that vehicles compromise temporarily or even permanently stabilized areas, cause additional disturbance of soils, and increase the potential for erosion. In these circumstances, controls must be inspected on the same frequencies as other construction projects, but representative inspections may be performed. For representative inspections, personnel must inspect controls along the construction site for 0.25 mile above and below each access point where a roadway, undisturbed right-of-way, or other similar feature intersects the construction site and allows access to the areas described above. The conditions of the controls along each inspected 0.25 mile segment may be considered as representative of the condition of controls along that reach extending from the end of the 0.25 mile segment to either the end of the next 0.25 mile inspected segment, or to the end of the project, whichever occurs first.

G. For each inspection required above, you must complete an inspection report. At a minimum, the inspection report must include:

1. The inspection date;

2. Names, titles, and qualifications of personnel making the inspection;

3. Weather information for the period since the last inspection (or since commencement of construction activity if the first inspection) including a best estimate of the beginning of each storm event, duration of each storm event, approximate amount of rainfall for each storm event (in inches), and whether any discharges occurred;

4. Weather information and a description of any discharges occurring at the time of the inspection;

5. Location(s) of discharges of sediment or other pollutants from the site;

6. Location(s) of BMPs that need to be maintained;

7. Location(s) of BMPs that failed to operate as designed or proved inadequate for a particular location;

8. Location(s) where additional BMPs are needed that did not exist at the time of inspection; and

9. Corrective action required including any changes to the SWPPP necessary and implementation dates.

10. On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

11. Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

12. Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

13. Inspect all sediment control practices and note the approximate degree of sediment accumulation as a percentage of the sediment storage volume (for example 10 percent, 20 percent, 50 percent, etc.). Record all sediment control practices in the site log book that have sediment accumulation of 50 percent or more; and

14. Inspect all erosion and sediment control BMPs and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document in the site log book any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water.

H. Prior to filing of the Notice of Termination or the end of permit term, a final site erosion and sediment control inspection shall be conducted by the operator or designated agent. The inspector shall certify that the site has undergone final stabilization using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed.

A record of each inspection and of any actions taken in accordance with this Part must be retained as part of the SWPPP for at least three years from the date that permit coverage expires or is terminated. The inspection reports must identify any incidents of non-compliance with the permit conditions. Where a report does not identify any incidents of non-compliance, the report must contain a certification that the construction project or site is in compliance with the SWPPP and all applicable permit conditions.

<u>Site Log Book/Certification</u>

The operator shall maintain a record of site activities in a site log book, as part of the SWPPP. The site log book shall be maintained as follows:

A. A copy of the site log book shall be maintained on site and be made available to the permitting authority upon request. The operator shall make a copy of the site log book available to the public upon request within a reasonable period;

B. In the site log book, the operator shall certify, prior to the commencement of construction activities, that the SWPPP meets all Federal, State and local erosion and sediment control requirements and is available to the permitting authority;

C. The operator shall have a qualified professional conduct an assessment of the site prior to groundbreaking and certify that the appropriate BMPs and erosion and sediment controls described in the SWPPP have been adequately designed, sized and installed to ensure overall preparedness of the site for initiation of groundbreaking activities. The operator shall record the date of initial groundbreaking in the site log book. The operator shall also certify that the site inspections, soil stabilization activities, and maintenance activities required have been satisfied within 48 hours of actually meeting such requirements;

D. The operator shall post at the site, in a publicly-accessible location, a summary of the site inspection activities on a monthly basis, as well as contact information for obtaining a copy of the SWPPP and a copy of the site inspection log book;

6.1.2 OPTION 2 - CODIFY PROVISIONS OF THE EPA CONSTRUCTION GENERAL PERMIT WITH INSPECTION AND CERTIFICATION

Option 2 would require the permittee to prepare a storm water pollution prevention plan (SWPPP) and implement the erosion and sediment controls contained in the EPA Construction General Permit (CGP). In addition, the permittee would be required to conduct periodic site inspections and provide certifications in a site log book. This option would only apply to sites with 5 or more acres of disturbed land. The specific requirements considered under this option are:

<u>Storm Water Pollution Prevention Plans</u>

A. A SWPPP or equivalent document such as an erosion and sediment control plan or construction site storm water management plan must be prepared prior to submission of your Notice of Intent and prior to commencement of construction activities. At least one SWPPP must be developed for each construction project covered by your permit and each SWPPP must be prepared in accordance with good engineering practices.

B. The SWPPP must:

    A. Identify all potential sources of pollution which may reasonably be expected to affect the quality of stormwater discharges from the construction site;

    B. Describe practices to be used to reduce pollutants in storm water discharges from the construction site; and

C. Once a definable area has been finally stabilized, you may mark this on your SWPPP and no further SWPPP or inspection requirements apply to that portion of the site (e.g., earth-disturbing activities around one of three buildings in a complex are done and the area is finally stabilized, one mile of a roadway or pipeline project is done and finally stabilized, etc).

D. You must implement the SWPPP as written from commencement of construction activity until final stabilization is complete.

Pollution Prevention Plan Contents: Site and Activity Description

A. The SWPPP must identify all operators for the project site, and the areas of the site over which each operator has control.

B. The SWPPP must describe the nature of the construction activity, including:

1. The function of the project (e.g., low density residential, shopping mall, highway, etc.);

2. The intended sequence and timing of activities that disturb soils at the site;

3. Estimates of the total area expected to be disturbed by excavation, grading, or other construction activities, including dedicated off-site borrow and fill areas; and

4. A general location map (e.g., USGS quadrangle map, a portion of a city or county map, or other map) with enough detail to identify the location of the construction site and waters of the United States within one mile of the site.

C. The SWPPP must contain a legible site map, showing the entire site, identifying:

1. Direction(s) of storm water flow and approximate slopes anticipated after major grading activities;

2. Areas of soil disturbance and areas that will not be disturbed;

3. Locations of major structural and nonstructural BMPs identified in the SWPPP;

4. Locations where stabilization practices are expected to occur;

5. Locations of off-site material, waste, borrow or equipment storage areas;

6. Locations of all waters of the United States (including wetlands);

7. Locations where storm water discharges to a surface water; and

8. Areas where final stabilization has been accomplished and no further construction-phase permit requirements apply.

D. The SWPPP must describe and identify the location and description of any storm water discharge associated with industrial activity other than construction at the site. This includes storm water discharges from dedicated asphalt plants and dedicated concrete plants, that are covered by this permit.

Pollution Prevention Plan Contents: Controls to Reduce Pollutants

A. The SWPPP must include a description of all pollution control measures (i.e., BMPs) that will be implemented as part of the construction activity to control pollutants in storm water discharges. For each major activity identified in the project description the SWPPP must clearly describe appropriate control measures, the general sequence during the construction process in which the measures will be implemented, and which operator is responsible for the control measure's implementation.

B. The SWPPP must include a description of interim and permanent stabilization practices for the site, including a schedule of when the practices will be implemented. Site plans should ensure that existing vegetation is preserved where possible and that disturbed portions of the site are stabilized. Use of impervious surfaces for stabilization should be avoided.

C. The following records must be maintained as part of the SWPPP:

   1. Dates when major grading activities occur;

   2. Dates when construction activities temporarily or permanently cease on a portion of the site; and

   3. Dates when stabilization measures are initiated.

D. The SWPPP must include a description of structural practices to divert flows from exposed soils, retain/detain flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Placement of structural practices in floodplains must be avoided to the degree practicable.

E. The SWPPP must include a description of all post-construction storm water management measures that will be installed during the construction process to control pollutants in storm water discharges after construction operations have been completed. Structural measures should be placed on upland soils to the degree practicable. Such measures must be designed and installed in compliance with applicable federal, local, state or tribal requirements.

F. The SWPPP must describe measures to prevent the discharge of solid materials, including building materials, to waters of the United States, except as authorized by a permit issued under section 404 of the CWA.

G. The SWPPP must describe measures to minimize, to the extent practicable, off-site vehicle tracking of sediments onto paved surfaces and the generation of dust.

H. The SWPPP must include a description of construction and waste materials expected to be stored on-site with updates as appropriate. The SWPPP must also include a description of controls, including storage practices, to minimize exposure of the materials to storm water, and spill prevention and response practices.

I. The SWPPP must include a description of pollutant sources from areas other than construction (including storm water discharges from dedicated asphalt plants and dedicated concrete plants), and a description of controls and measures that will be implemented at those sites to minimize pollutant discharges.

Non-Storm Water Discharge Management

The SWPPP must identify all sources of non-storm water discharges allowable under your permit, except for flows from fire fighting activities, that are combined with storm water discharges associated with construction activity at the site. Non-storm water discharges should be eliminated or reduced to the extent feasible. The SWPPP must identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge. Examples of non-storm water discharges that may be allowable under your permit include:

A. Fire hydrant flushings;
B. Waters used to wash vehicles where detergents are not used;
C. Water used to control dust;
D. Potable water including uncontaminated water line flushings;
E. Routine external building wash down that does not use detergents;
F. Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used;
G. Uncontaminated air conditioning or compressor condensate;
H. Uncontaminated ground water or spring water;
I. Foundation or footing drains where flows are not contaminated with process materials such as solvents;
J. Uncontaminated excavation dewatering;
K. Landscape irrigation.

Maintenance of Controls

A. All erosion and sediment control measures and other protective measures identified in the SWPPP must be maintained in effective operating condition. If site inspections identify BMPs that are not operating effectively, maintenance must be performed as soon as possible and before the next storm event whenever practicable to maintain the continued effectiveness of storm water controls.
B. If existing BMPs need to be modified or if additional BMPs are necessary for any reason, implementation must be completed before the next storm event whenever practicable. If implementation before the next storm event is impracticable, the situation must be documented in the SWPPP and alternative BMPs must be implemented as soon as possible.

C. Sediment from sediment traps or sedimentation ponds must be removed when design capacity has been reduced by 50 percent.

Applicable State, Tribal, or Local Programs

The SWPPP must be consistent with all applicable federal, state, tribal, or local requirements for soil and erosion control and storm water management, including updates to the SWPPP as necessary to reflect any revisions to applicable federal, state, tribal, or local requirements for soil and erosion control.

Inspections

A. Inspections must be conducted in accordance with one of the two schedules listed below. You must specify in your SWPPP which schedule you will be following.

   1. At least once every 7 calendar days, OR

   2. At least once every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater.

B. Inspection frequency may be reduced to at least once every month if:

   1. The entire site is temporarily stabilized,

   2. Runoff is unlikely due to winter conditions (e.g., site is covered with snow, ice, or the ground is frozen), or

   3. Construction is occurring during seasonal arid periods in arid areas and semi-arid areas.

C. A waiver of the inspection requirements is available until one month before thawing conditions are expected to result in a discharge if all of the following requirements are met:

   1. The project is located in an area where frozen conditions are anticipated to continue for extended periods of time (i.e., more than one month);

   2. Land disturbance activities have been suspended; and

   3. The beginning and ending dates of the waiver period are documented in the SWPPP.

D. Inspections must be conducted by qualified personnel (provided by the operator or cooperatively by multiple operators). "Qualified personnel" means a person knowledgeable in the principles and practice of erosion and sediment controls who possesses the skills to assess conditions at the construction site that could impact storm water quality and to assess the effectiveness of any sediment and erosion control measures selected to control the quality of storm water discharges from the construction activity.

E. Inspections must include all areas of the site disturbed by construction activity and areas used for storage of materials that are exposed to precipitation. Inspectors must look for evidence of, or the potential for, pollutants entering the storm water conveyance system. Sedimentation and erosion control measures identified in the SWPPP must be observed to ensure proper operation. Discharge locations must be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to waters of the United States, where accessible. Where discharge locations are inaccessible, nearby downstream locations must be inspected to the extent that such inspections are practicable. Locations where vehicles enter or exit the site must be inspected for evidence of off-site sediment tracking.

F. Utility line installation, pipeline construction, and other examples of long, narrow, linear construction activities may limit the access of inspection personnel to the areas described in Subpart 3.10.E above. Inspection of these areas could require that vehicles compromise temporarily or even permanently stabilized areas, cause additional disturbance of soils, and increase the potential for erosion. In these circumstances, controls must be inspected on the same frequencies as other construction projects, but representative inspections may be performed. For representative inspections, personnel must inspect controls along the construction site for 0.25 mile above and below each access point where a roadway, undisturbed right-of-way, or other similar feature intersects the construction site and allows access to the areas described above. The conditions of the controls along each inspected 0.25 mile segment may be considered as representative of the condition of controls along that reach extending from the end of the 0.25 mile segment to either the end of the next 0.25 mile inspected segment, or to the end of the project, whichever occurs first.

G. For each inspection required above, you must complete an inspection report. At a minimum, the inspection report must include:

1. The inspection date;

2. Names, titles, and qualifications of personnel making the inspection;

3. Weather information for the period since the last inspection (or since commencement of construction activity if the first inspection) including a best estimate of the beginning of each storm event, duration of each storm event, approximate amount of rainfall for each storm event (in inches), and whether any discharges occurred;

4. Weather information and a description of any discharges occurring at the time of the inspection;

5. Location(s) of discharges of sediment or other pollutants from the site;

6. Location(s) of BMPs that need to be maintained;

7. Location(s) of BMPs that failed to operate as designed or proved inadequate for a particular location;

8. Location(s) where additional BMPs are needed that did not exist at the time of inspection; and

9. Corrective action required including any changes to the SWPPP necessary and implementation dates.

10. On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

11. Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

12. Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

13. Inspect all sediment control practices and note the approximate degree of sediment accumulation as a percentage of the sediment storage volume (for example 10 percent, 20 percent, 50 percent, etc.). Record all sediment control practices in the site log book that have sediment accumulation of 50 percent or more; and

14. Inspect all erosion and sediment control BMPs and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document in the site log book any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water.

H. Prior to filing of the Notice of Termination or the end of permit term, a final site erosion and sediment control inspection shall be conducted by the operator or designated agent. The inspector shall certify that the site has undergone final stabilization using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed.

A record of each inspection and of any actions taken in accordance with this Part must be retained as part of the SWPPP for at least three years from the date that permit coverage expires or is terminated. The inspection reports must identify any incidents of non-compliance with the permit conditions. Where a report does not identify any incidents of non-compliance, the report must contain a certification that the construction project or site is in compliance with the SWPPP and all applicable permit conditions.

Maintaining an Updated Plan

A. The SWPPP, including the site map, must be amended whenever there is a change in design, construction, operation, or maintenance at the construction site that has or could have a significant effect on the discharge of pollutants to the waters of the United States that has not been previously addressed in the SWPPP.

B. The SWPPP must be amended if during inspections or investigations by site staff, or by local, state, tribal or federal officials, it is determined that the SWPPP is ineffective in eliminating or significantly minimizing pollutants in storm water discharges from the construction site.

C. Based on the results of an inspection, the SWPPP must be modified as necessary to include additional or modified BMPs designed to correct problems identified. Revisions to the SWPPP must be completed within seven (7) calendar days following the inspection. If existing BMPs need to be modified or if additional BMPs are necessary for any reason, implementation must be completed before the next storm event whenever practicable. If implementation before the next storm event is impracticable, the situation must be documented in the SWPPP and alternative BMPs must be implemented as soon as possible.

Management Practices

A. All control measures must be properly selected, installed, and maintained in accordance with any relevant manufacturer specifications and good engineering practices. If periodic inspections or other information indicates a control has been used inappropriately, or incorrectly, the operator must replace or modify the control for site situations as soon as practicable.

B. If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize off-site impacts.

C. Litter, construction debris, and construction chemicals that could be exposed to storm water must be prevented from becoming a pollutant source in storm water discharges.

D. Except as provided below, stabilization measures must be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased.

    1. Where stabilization by the 14th day is precluded by snow cover or frozen ground conditions, stabilization measures must be initiated as soon as practicable.

2. Where construction activity on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within 14 days, temporary stabilization measures do not have to be initiated on that portion of the site.

3. In arid, semiarid, and drought-stricken areas where initiating perennial vegetative stabilization measures is not possible within 14 days after construction activity has temporarily or permanently ceased, final vegetative stabilization measures must be initiated as soon as practicable.

E. A combination of sediment and erosion control measures are required to achieve maximum pollutant removal.

1. Sediment Basins: For common drainage locations that serve an area with 10 or more acres disturbed at one time, a temporary (or permanent) sediment basin that provides storage for a calculated volume of runoff from the drainage area from a 2-year, 24-hour storm, or equivalent control measures, must be provided where attainable until final stabilization of the site. Where no such calculation has been performed, a temporary (or permanent) sediment basin providing 3,600 cubic feet of storage per acre drained, or equivalent control measures, must be provided where attainable until final stabilization of the site. When computing the number of acres draining into a common location, it is not necessary to include flows from offsite areas and flows from on-site areas that are either undisturbed or have undergone final stabilization where such flows are diverted around both the disturbed area and the sediment basin. In determining whether installing a sediment basin is attainable, the operator may consider factors such as site soils, slope, available area on-site, etc. In any event, the operator must consider public safety, especially as it relates to children, as a design factor for the sediment basin, and alternative sediment controls must be used where site limitations would preclude a safe design.

2. For drainage locations which serve 10 or more disturbed acres at one time and where a temporary sediment basin or equivalent controls is not attainable, smaller sediment basins and/or sediment traps should be used. At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries (and for those side slope boundaries deemed appropriate as dictated by individual site conditions).

3. For drainage locations serving less than 10 acres, smaller sediment basins and/or sediment traps should be used. At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries (and for those side slope boundaries deemed appropriate as dictated by individual site conditions) of the construction area unless a sediment basin providing storage for a calculated volume of runoff from a 2-year, 24-hour storm or 3,600 cubic feet of storage per acre drained is provided.

F. Velocity dissipation devices must be placed at discharge locations and along the length of any outfall channel to provide a non-erosive flow velocity from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected (e.g., no significant changes in the hydrological regime of the receiving water).

Site Log Book/Certification

The operator shall maintain a record of site activities in a site log book, as part of the SWPPP. The site log book shall be maintained as follows:

A. A copy of the site log book shall be maintained on site and be made available to the permitting authority upon request. The operator shall make a copy of the site log book available to the public upon request within a reasonable period;

B. In the site log book, the operator shall certify, prior to the commencement of construction activities, that the SWPPP meets all Federal, State and local erosion and sediment control requirements and is available to the permitting authority;

C. The operator shall have a qualified professional conduct an assessment of the site prior to groundbreaking and certify that the appropriate BMPs and erosion and sediment controls described in the SWPPP have been adequately designed, sized and installed to ensure overall preparedness of the site for initiation of groundbreaking activities. The operator shall record the date of initial groundbreaking in the site log book. The operator shall also certify that the site inspections, soil stabilization activities, and maintenance activities required have been satisfied within 48 hours of actually meeting such requirements;

D. The operator shall post at the site, in a publicly-accessible location, a summary of the site inspection activities on a monthly basis, as well as contact information for obtaining a copy of the SWPPP and a copy of the site inspection log book;

6.1.3 OPTION 3 - NO REGULATION

EPA also considered an option that would not establish effluent guidelines or any additional requirements for this industry. This was the option selected for this final action.

6.1.4 OPTION 4 - CODIFY PROVISIONS OF THE EPA CONSTRUCTION GENERAL PERMIT

EPA developed a revised regulatory option for consideration for the final action that consists solely of codifying certain provisions of the EPA construction general permit. This option would not contain the inspection and certification provisions of Option 2, but would rather incorporate the inspection provisions contained in the July 2003 EPA construction general permit. This option would only apply to sites with 5 or more acres of disturbed land. The specific requirements considered for this option are:

Storm Water Pollution Prevention Plans

A. A SWPPP or equivalent document such as an erosion and sediment control plan or construction site storm water management plan must be prepared prior to submission of your Notice of Intent and prior to commencement of construction activities. At least one SWPPP must be developed for each construction project covered by your permit and each SWPPP must be prepared in accordance with good engineering practices.

B. The SWPPP must:

   A. Identify all potential sources of pollution which may reasonably be expected to affect the quality of stormwater discharges from the construction site;

   B. Describe practices to be used to reduce pollutants in storm water discharges from the construction site.

C. Once a definable area has been finally stabilized, you may mark this on your SWPPP and no further SWPPP or inspection requirements apply to that portion of the site (e.g., earth-disturbing activities around one of three buildings in a complex are done and the area is finally stabilized, one mile of a roadway or pipeline project is done and finally stabilized, etc).

D. You must implement the SWPPP as written from commencement of construction activity until final stabilization is complete.

Pollution Prevention Plan Contents: Site and Activity Description

A. The SWPPP must identify all operators for the project site, and the areas of the site over which each operator has control.

B. The SWPPP must describe the nature of the construction activity, including:

   1. The function of the project (e.g., low density residential, shopping mall, highway, etc.);

   2. The intended sequence and timing of activities that disturb soils at the site;

   3. Estimates of the total area expected to be disturbed by excavation, grading, or other construction activities, including dedicated off-site borrow and fill areas; and

   4. A general location map (e.g., USGS quadrangle map, a portion of a city or county map, or other map) with enough detail to identify the location of the construction site and waters of the United States within one mile of the site.

C. The SWPPP must contain a legible site map, showing the entire site, identifying:

1. Direction(s) of storm water flow and approximate slopes anticipated after major grading activities;

2. Areas of soil disturbance and areas that will not be disturbed;

3. Locations of major structural and nonstructural BMPs identified in the SWPPP;

4. Locations where stabilization practices are expected to occur;

5. Locations of off-site material, waste, borrow or equipment storage areas;

6. Locations of all waters of the United States (including wetlands);

7. Locations where storm water discharges to a surface water; and

8. Areas where final stabilization has been accomplished and no further construction-phase permit requirements apply.

D. The SWPPP must describe and identify the location and description of any storm water discharge associated with industrial activity other than construction at the site. This includes storm water discharges from dedicated asphalt plants and dedicated concrete plants, that are covered by this permit.

Pollution Prevention Plan Contents: Controls to Reduce Pollutants

A. The SWPPP must include a description of all pollution control measures (i.e., BMPs) that will be implemented as part of the construction activity to control pollutants in storm water discharges. For each major activity identified in the project description the SWPPP must clearly describe appropriate control measures, the general sequence during the construction process in which the measures will be implemented, and which operator is responsible for the control measure's implementation.

B. The SWPPP must include a description of interim and permanent stabilization practices for the site, including a schedule of when the practices will be implemented. Site plans should ensure that existing vegetation is preserved where possible and that disturbed portions of the site are stabilized. Use of impervious surfaces for stabilization should be avoided.

C. The following records must be maintained as part of the SWPPP:

1. Dates when major grading activities occur;

2. Dates when construction activities temporarily or permanently cease on a portion of the site; and

3. Dates when stabilization measures are initiated.

D. The SWPPP must include a description of structural practices to divert flows from exposed soils, retain/detain flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Placement of structural practices in floodplains must be avoided to the degree practicable.

E. The SWPPP must include a description of all post-construction storm water management measures that will be installed during the construction process to control pollutants in storm water discharges after construction operations have been completed. Structural measures should be placed on upland soils to the degree practicable. Such measures must be designed and installed in compliance with applicable federal, local, state or tribal requirements.

F. The SWPPP must describe measures to prevent the discharge of solid materials, including building materials, to waters of the United States, except as authorized by a permit issued under section 404 of the CWA.

G. The SWPPP must describe measures to minimize, to the extent practicable, off-site vehicle tracking of sediments onto paved surfaces and the generation of dust.

H. The SWPPP must include a description of construction and waste materials expected to be stored on-site with updates as appropriate. The SWPPP must also include a description of controls, including storage practices, to minimize exposure of the materials to storm water, and spill prevention and response practices.

I. The SWPPP must include a description of pollutant sources from areas other than construction (including storm water discharges from dedicated asphalt plants and dedicated concrete plants), and a description of controls and measures that will be implemented at those sites to minimize pollutant discharges.

<u>Non-Storm Water Discharge Management</u>

The SWPPP must identify all sources of non-storm water discharges allowable under your permit, except for flows from fire fighting activities, that are combined with storm water discharges associated with construction activity at the site. Non-storm water discharges should be eliminated or reduced to the extent feasible. The SWPPP must identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge. Examples of non-storm water discharges that may be allowable under your permit include:

A. Fire hydrant flushings;
B. Waters used to wash vehicles where detergents are not used;
C. Water used to control dust;
D. Potable water including uncontaminated water line flushings;
E. Routine external building wash down that does not use detergents;

F. Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used;
G. Uncontaminated air conditioning or compressor condensate;
H. Uncontaminated ground water or spring water;
I. Foundation or footing drains where flows are not contaminated with process materials such as solvents;
J. Uncontaminated excavation dewatering;
K. Landscape irrigation.

Maintenance of Controls

A. All erosion and sediment control measures and other protective measures identified in the SWPPP must be maintained in effective operating condition. If site inspections identify BMPs that are not operating effectively, maintenance must be performed as soon as possible and before the next storm event whenever practicable to maintain the continued effectiveness of storm water controls.

B. If existing BMPs need to be modified or if additional BMPs are necessary for any reason, implementation must be completed before the next storm event whenever practicable. If implementation before the next storm event is impracticable, the situation must be documented in the SWPPP and alternative BMPs must be implemented as soon as possible.

C. Sediment from sediment traps or sedimentation ponds must be removed when design capacity has been reduced by 50 percent.

Applicable State, Tribal, or Local Programs

The SWPPP must be consistent with all applicable federal, state, tribal, or local requirements for soil and erosion control and storm water management, including updates to the SWPPP as necessary to reflect any revisions to applicable federal, state, tribal, or local requirements for soil and erosion control.

Inspections

A. Inspections must be conducted in accordance with one of the two schedules listed below. You must specify in your SWPPP which schedule you will be following.

    1. At least once every 7 calendar days, OR

    2. At least once every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater.

B. Inspection frequency may be reduced to at least once every month if:

1. The entire site is temporarily stabilized,

2. Runoff is unlikely due to winter conditions (e.g., site is covered with snow, ice, or the ground is frozen), or

3. Construction is occurring during seasonal arid periods in arid areas and semi-arid areas.

C. A waiver of the inspection requirements is available until one month before thawing conditions are expected to result in a discharge if all of the following requirements are met:

1. The project is located in an area where frozen conditions are anticipated to continue for extended periods of time (i.e., more than one month);

2. Land disturbance activities have been suspended; and

3. The beginning and ending dates of the waiver period are documented in the SWPPP.

D. Inspections must be conducted by qualified personnel (provided by the operator or cooperatively by multiple operators). “Qualified personnel” means a person knowledgeable in the principles and practice of erosion and sediment controls who possesses the skills to assess conditions at the construction site that could impact storm water quality and to assess the effectiveness of any sediment and erosion control measures selected to control the quality of storm water discharges from the construction activity.

E. Inspections must include all areas of the site disturbed by construction activity and areas used for storage of materials that are exposed to precipitation. Inspectors must look for evidence of, or the potential for, pollutants entering the storm water conveyance system. Sedimentation and erosion control measures identified in the SWPPP must be observed to ensure proper operation. Discharge locations must be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to waters of the United States, where accessible. Where discharge locations are inaccessible, nearby downstream locations must be inspected to the extent that such inspections are practicable. Locations where vehicles enter or exit the site must be inspected for evidence of off-site sediment tracking.

F. Utility line installation, pipeline construction, and other examples of long, narrow, linear construction activities may limit the access of inspection personnel to the areas described in Subpart 3.10.E above. Inspection of these areas could require that vehicles compromise temporarily or even permanently stabilized areas, cause additional disturbance of soils, and increase the potential for erosion. In these circumstances, controls must be inspected on the same frequencies as other construction projects, but representative inspections may be performed. For representative inspections, personnel must inspect controls along the construction site for 0.25 mile above and below each access point where a roadway, undisturbed right-of-way, or other similar feature intersects the construction site and allows access to the areas described above. The conditions of the controls along each inspected 0.25 mile segment may be considered as representative of the condition of controls along that reach extending from the end of the 0.25 mile segment to either the end of the next 0.25 mile inspected segment, or to the end of the project, whichever occurs first.

G. For each inspection required above, you must complete an inspection report. At a minimum, the inspection report must include:

1. The inspection date;

2. Names, titles, and qualifications of personnel making the inspection;

3. Weather information for the period since the last inspection (or since commencement of construction activity if the first inspection) including a best estimate of the beginning of each storm event, duration of each storm event, approximate amount of rainfall for each storm event (in inches), and whether any discharges occurred;

4. Weather information and a description of any discharges occurring at the time of the inspection;

5. Location(s) of discharges of sediment or other pollutants from the site;

6. Location(s) of BMPs that need to be maintained;

7. Location(s) of BMPs that failed to operate as designed or proved inadequate for a particular location;

8. Location(s) where additional BMPs are needed that did not exist at the time of inspection; and

9. Corrective action required including any changes to the SWPPP necessary and implementation dates.

A record of each inspection and of any actions taken in accordance with this Part must be retained as part of the SWPPP for at least three years from the date that permit coverage expires or is terminated. The inspection reports must identify any incidents of non-compliance with the permit conditions. Where a report does not identify any incidents of non-compliance, the report must contain a certification that the construction project or site is in compliance with the SWPPP and all applicable permit conditions.

<u>Maintaining an Updated Plan</u>

A. The SWPPP, including the site map, must be amended whenever there is a change in design, construction, operation, or maintenance at the construction site that has or could have a significant effect on the discharge of pollutants to the waters of the United States that has not been previously addressed in the SWPPP.

B. The SWPPP must be amended if during inspections or investigations by site staff, or by local, state, tribal or federal officials, it is determined that the SWPPP is ineffective in eliminating or significantly minimizing pollutants in storm water discharges from the construction site.

C. Based on the results of an inspection, the SWPPP must be modified as necessary to include additional or modified BMPs designed to correct problems identified. Revisions to the SWPPP must be completed within seven (7) calendar days following the inspection. If existing BMPs need to be modified or if additional BMPs are necessary for any reason, implementation must be completed before the next storm event whenever practicable. If implementation before the next storm event is impracticable, the situation must be documented in the SWPPP and alternative BMPs must be implemented as soon as possible.

Management Practices

A. All control measures must be properly selected, installed, and maintained in accordance with any relevant manufacturer specifications and good engineering practices. If periodic inspections or other information indicates a control has been used inappropriately, or incorrectly, the operator must replace or modify the control for site situations as soon as practicable.

B. If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize off-site impacts.

C. Litter, construction debris, and construction chemicals that could be exposed to storm water must be prevented from becoming a pollutant source in storm water discharges.

D. Except as provided below, stabilization measures must be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased.

   1. Where stabilization by the 14th day is precluded by snow cover or frozen ground conditions, stabilization measures must be initiated as soon as practicable.

   2. Where construction activity on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within 14 days, temporary stabilization measures do not have to be initiated on that portion of the site.

   3. In arid, semiarid, and drought-stricken areas where initiating perennial vegetative stabilization measures is not possible within 14 days after construction activity has temporarily or permanently ceased, final vegetative stabilization measures must be initiated as soon as practicable.

E. A combination of sediment and erosion control measures are required to achieve maximum pollutant removal.

1. Sediment Basins: For common drainage locations that serve an area with 10 or more acres disturbed at one time, a temporary (or permanent) sediment basin that provides storage for a calculated volume of runoff from the drainage area from a 2-year, 24-hour storm, or equivalent control measures, must be provided where attainable until final stabilization of the site. Where no such calculation has been performed, a temporary (or permanent) sediment basin providing 3,600 cubic feet of storage per acre drained, or equivalent control measures, must be provided where attainable until final stabilization of the site. When computing the number of acres draining into a common location, it is not necessary to include flows from offsite areas and flows from on-site areas that are either undisturbed or have undergone final stabilization where such flows are diverted around both the disturbed area and the sediment basin. In determining whether installing a sediment basin is attainable, the operator may consider factors such as site soils, slope, available area on-site, etc. In any event, the operator must consider public safety, especially as it relates to children, as a design factor for the sediment basin, and alternative sediment controls must be used where site limitations would preclude a safe design.

2. For drainage locations which serve 10 or more disturbed acres at one time and where a temporary sediment basin or equivalent controls is not attainable, smaller sediment basins and/or sediment traps should be used. At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries (and for those side slope boundaries deemed appropriate as dictated by individual site conditions).

3. For drainage locations serving less than 10 acres, smaller sediment basins and/or sediment traps should be used. At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries (and for those side slope boundaries deemed appropriate as dictated by individual site conditions) of the construction area unless a sediment basin providing storage for a calculated volume of runoff from a 2-year, 24-hour storm or 3,600 cubic feet of storage per acre drained is provided.

F. Velocity dissipation devices must be placed at discharge locations and along the length of any outfall channel to provide a non-erosive flow velocity from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected (e.g., no significant changes in the hydrological regime of the receiving water).

SECTION 7: APPROACH TO ESTIMATING COSTS

7.1 OVERVIEW

This section describes EPA's methodology for estimating costs associated with implementing the regulatory options considered for the final action on construction and development effluent guidelines. EPA estimated three distinct cost categories:

1. Erosion and sediment control (ESC) costs, including design, installation, operation, and maintenance;

2. Administrative costs to permittees for activities such as conducting site inspections and providing certifications;

3. Opportunity and interest costs to permittees.

The methodology for determining costs for categories 1 and 2 are described in this document. Costs for category 3 are described in the document "Economic Analysis for Final Action for Effluent Guidelines and Standards for the Construction and Development Category," EPA-821-B-04-002.

For each state, per site costs were evaluated individually for 24 combinations of site-size and land use types. EPA developed per-site costs based on model construction sites that reasonably represent common construction site features, and factors related to state regulations, topography, and hydrology. Using estimates of the population of new construction acreage developed annually in the U.S. obtained from the USDA's National Resources Inventory (NRI) and the U.S. Census Bureau (described in Section 4 of this document), EPA computed State total costs by multiplying modeled per-site costs by the population of construction sites in each land use/site-size combination for 48 states. Costs for Alaska and Hawaii, as well as the U.S. territories were not estimated because EPA lacked data on the annual amount of construction in these areas. However, due to the small amount of construction that occurs in these areas, EPA expects that these values would be low in comparison to the national costs. National level costs were calculated by summing the State costs. The total costs of the options considered are presented in Table 7-1.

Table 7-1. Total Costs of Options

Option	Annual Cost (millions 2002 dollars)
1 - Inspection and Certification for sites ≥1 acre	$280
2 - Codify EPA Construction General Permit (CGP) with Inspection and Certification for sites ≥5 acres	$585
3 - No Regulation	$0
4 - Codify EPA Construction General Permit (CGP) for sites ≥5 acres	$380

As detailed below, EPA employed a three-step process to compute the total national compliance cost:

1. Model site costs were estimated using national average unit costs;

2. Model site costs were computed using state-specific cost adjustment factors;

3. State totals were summed to produce the national compliance cost estimates; and

7.2 ANALYSIS OF STATE EQUIVALENCY

State construction general permits, erosion and sediment control regulations, and storm water management regulations were collected and compiled to determine if existing state programs were equivalent to requirements contained in the July 2003 EPA Construction General Permit (CGP). The data were collected by reviewing state web sites for general permits, erosion and sediment control regulations, storm water management regulations, and erosion and sediment control and storm water BMP design and guidance manuals. States without web-accessible information were contacted to obtain the appropriate information

For the analysis of equivalency with the construction general permit, EPA focused on six main areas:

1. Requirements for preparing a storm water pollution prevention plan (SWPPP) or equivalent document and for installing general erosion and sediment controls, such as silt fencing, inlet protection and soil stabilization;

2. The amount of time allowed for providing stabilization of exposed soil when construction activities have temporarily or permanently ceased;

3. Requirements for installing sediment traps for drainage areas of less than 10 acres;

4. Requirements for installing sediment basins for drainage areas of 10 or more acres;

5. Requirements for removing accumulated sediment from sediment controls when sediment storage capacity has been reduced by at least 50%; and

6. Requirements to conduct inspections at least every 7 days OR every 14 days and following rainfall of 0.5" or more.

This analysis indicates that many States have requirements similar to those contained in the EPA construction general permit, which is the basis for the requirements contained in Options 2 and 4. No states currently have requirements equivalent to the inspection and certification provisions of Option 1 and 2. For each State, EPA's review determined if certain key BMPs are required, and for what construction site size a particular BMP is required. This information was used to determine the baseline BMP sizes and quantities for each of the 24 model construction sites in each state across the U.S. By comparing these sizes and quantities with those required under each regulatory option, the incremental BMP quantities and size increases can be calculated. For sediment basins and sediment traps, the size of the BMP required by the state program was also noted. Where a state program did not note a sediment basin size, EPA assumed based on BPJ that the baseline size was 1,800 cubic feet per acre. A summary of the state equivalency analysis as of September 2003 is presented in Table 7-2 and detailed data sheets for each state are presented in Appendix D.

Table 7-2. State Equivalency with EPA CGP Requirements

State	Seeding Required 14 Days After Construction Activity Ends	Basic Sediment Controls Required	Sediment Trap for Drainage Areas < 10 acres	Sediment Basin for Drainage Areas ≥ 10 acres	Sediment Removal when Storage Capacity Reduced 50% or More	Inspections every 7 days OR Every 14 Days and Following Storms ≥ 0.5 inches	Sediment Trap Storage Volume (ft^3/ acre drained)	Sediment Basin Storage Volume (ft^3/ acre drained)
Alabama		Yes		Yes	Yes			3,600
Alaska	Yes	Yes	Yes	Yes	Yes	Yes	1,800	3,600
Arizona	Yes	Yes	Yes	Yes	Yes	Yes	1,800	3,600
Arkansas	Yes	Yes	Yes	Yes		Yes	1,800	3,600
California		Yes		Yes				3,600
Colorado		Yes				Yes		1,800
Connecticut		Yes				Yes		1,800
DC	Yes	Yes	Yes	Yes	Yes	Yes	1,800	3,600
Delaware	Yes	Yes		Yes				3,600
Florida	Yes	Yes	Yes	Yes	Yes	Yes	1,800	3,600
Georgia	Yes	Yes				Yes		1,800
Hawaii		Yes				Yes		1,800
Idaho	Yes	Yes	Yes	Yes	Yes	Yes	1,800	3,600
Illinois	Yes	Yes				Yes		1,800
Indiana	Yes	Yes						1,800
Iowa	Yes	Yes	Yes	Yes		Yes	1,800	3,600
Kansas		Yes		Yes		Yes		3,600
Kentucky	Yes	Yes		Yes	Yes	Yes		3,600
Louisiana		Yes	Yes	Yes	Yes	Yes	1,800	3,600
Maine	Yes	Yes	Yes	Yes	Yes	Yes	1,800	3,600
Maryland		Yes						1,800
Massachusetts	Yes	Yes	Yes	Yes	Yes	Yes	1,800	3,600
Michigan		Yes		Yes		Yes		3,600
Minnesota		Yes		Yes	Yes	Yes		3,600
Mississippi		Yes		Yes	Yes	Yes		3,600

Missouri		Yes						1,800
Montana		Yes				Yes		1,800
Nebraska		Yes	Yes			Yes	1,800	1,800
Nevada	Yes	Yes	Yes	Yes	Yes	Yes	1,800	3,600
New	Yes	Yes	Yes	Yes	Yes	Yes	1,800	3,600
New Jersey		Yes						1,800
New Mexico	Yes	Yes	Yes	Yes	Yes	Yes	1,800	3,600
New York	Yes	Yes	Yes	Yes		Yes	1,800	3,600
North Carolina				Yes	Yes	Yes		3,600
North Dakota		Yes				Yes		1,800
Ohio	Yes	Yes				Yes		1,800
Oklahoma	Yes	Yes	Yes	Yes	Yes	Yes	1,800	3,600
Oregon		Yes			Yes	Yes		1,800
Pennsylvania		Yes	Yes	Yes	Yes		1,800	3,600
Rhode Island		Yes				Yes		1,800
South Carolina	Yes	Yes	Yes	Yes	Yes	Yes	1,800	3,600
South Dakota	Yes	Yes		Yes	Yes	Yes		3,600
Tennessee	Yes	Yes	Yes	Yes	Yes	Yes	1,800	3,600
Texas	Yes	Yes	Yes	Yes	Yes	Yes	1,800	3,600
Utah	Yes	Yes	Yes	Yes	Yes	Yes	1,800	3,600
Virginia	Yes	Yes	Yes	Yes	Yes	Yes	1,800	3,600
Vermont		Yes				Yes		1,800
Washington		Yes				Yes		1,800
West Virginia	Yes	Yes	Yes	Yes			1,800	3,600
Wisconsin		Yes				Yes		1,800
Wyoming		Yes			Yes	Yes		1,800

Note: “Yes” indicates that the requirement for the particular element is equivalent to that contained in the EPA CGP.

7.3 DEVELOPMENT OF MODEL CONSTRUCTION SITES AND ESTIMATES OF BMP QUANTITIES

In order to determine BMP quantities for baseline conditions as well as for the regulatory options considered, EPA developed a series of model construction sites that contained representative BMPs for each of the 24 site size and land use combinations developed in Section 4 (see Table 4-9). This analysis used four land use types to account for variations in amounts of ESC BMPs expected to be used across the range of land uses resulting from construction, and six site-size classes to account for economies of scale that might occur with the design and installation costs for certain BMPs (i.e., some BMPs are employed only if the site size is greater than a threshold value).

As documented in detail within Appendix A, six-site geometries (one per construction site size category) were developed on which to base this analysis. Each model construction site was placed within a model watershed system where first order watersheds occupy 25 acres, in order to define topography and preexisting drainage pathways. The assessment of 19 ecoregions found first order streams can occupy between 22 and 57 acres, and a 25 acre watershed represents a reasonable lower end value. Next, for each site-size category, the area within each model construction site was apportioned to three surface flow pathways:

1. Disturbed areas that drain to a centralized point;

2. Undisturbed areas that drain to a centralized point; and

3. Perimeter drainage that discharges in diffuse fashion through the site perimeter.

This was necessary in order to account for the fact that construction sites typically contain multiple drainage pathways due to the topography of the site. Proper BMPs selection and sizing should account for these drainage patterns, and a single site will typically employ different BMPs to serve various portions of the site. A 25-foot width of perimeter drainage was assumed for portions of site border that would likely drain radially outward and away from the site through perimeter BMPs such as silt fencing. For the central drainage portion of each model site, a pattern of internal drainage features (pipes and swales) that are commonly employed were assumed, with these areas ultimately draining to a sediment control practice such as a sediment trap or basin. The division between disturbed and undisturbed acreage within this central drainage area was based on land use specific pervious/imperviousness ratios provided by CWP (2001) and shown in Table 7-3. This distinction was necessary in order to account for two factors. First, portions of each site will be maintained in a relatively undisturbed state as open space, and will contribute little or no sediment. EPA assumed that one half of the pervious footprint on each site would remain undisturbed.

Table 7-4 shows the resulting percentage of site area for each of the three pathways introduced above, for each of the four land uses evaluated to categorize the industry.

Table 7-3. Land Use-Specific Impervious Cover Factors

Land Use Category	Percentage Impervious Cover	Percent Used in EPA Modeled Land Use
Agriculture	2	Not modeled
Low Density Residential	11-14	Not modeled
Medium Density Residential	21-28	24.3 for Single Family Residential
High Density Residential	33-44	43.4 for Multi-Family Residential
Industrial	53	52.8 for Industrial
Commercial	72	72 for Commercial

Source: Adapted from Capiella and Brown, 2001

Table 7-4. Percentage of Construction Site in Each of Three Flow Pathways

Site Size (acres)	Centralized Drainage (Disturbed Acreage)				Centralized Drainage (Undisturbed Acreage) *				Perimeter Drainage **			
	SF	MF	Comm	Ind	SF	MF	Comm	Ind	SF	MF	Comm	Ind
0.5***	0%	0%	0%	0%	38%	28%	24%	14%	34%	34%	34%	34%
3	42%	51%	56%	66%	38%	28%	24%	14%	20%	20%	20%	20%
7.5	42%	51%	56%	66%	38%	28%	24%	14%	20%	20%	20%	20%
25	55%	64%	69%	78%	38%	28%	24%	14%	8%	8%	8%	8%
70	54%	64%	68%	78%	38%	28%	24%	14%	8%	8%	8%	8%
200	55%	64%	69%	79%	38%	28%	24%	14%	7%	7%	7%	7%

* Assumed to retain original topography and vegetative cover.
** The portion of the site that drains radially outward toward the site boundary.
*** Note, the half-acre site group percentages do not add up to 100 percent because they do not include the site fraction that is disturbed but unmanaged because the site falls below the CGP minium site size of 1 acre. These sites do not experience any incremental changes as a result of the options, but are carried through the analysis in order to have a complete accounting of baseline sediment loads for the loadings and benefits analysis presented in Section 8.
SF = single family
MF = multi-family
Comm = commercial
Ind = industrial

After defining the site geometries and drainage pathways for each of the six site size categories, the BMP quantities and sizes required by the EPA CGP (the technical basis for Options 2 and 4) were determined based on BPJ. Appendices A and B contain detailed descriptions of each of the model sites developed. The specific BMPs contained in the model site analyses include:

- Silt Fencing
- Runoff Diversions/Inlet Protection
- Seeding and Mulching
- Stabilized Construction Entrances
- Stone Check Dams
- Sediment Traps
- Sediment Basins

In addition, EPA estimated the number of certifications required to meet the provisions of Options 1 and 2, and the number of site inspections required to meet the inspection provisions of the CGP. The BMP quantities for each of the model site sized required by the EPA CGP are shown in Table 7-5. Next, the baseline BMP quantities and sizes were determined for each of the six site size categories for each state based on the equivalency analysis contained in Table 7-2. Tables B-10 and B-11 contain detailed BMP quantities for the six site size categories for all 48 states (excluding Alaska and Hawaii). One important assumption was made that the amount of acreage requiring seeding and mulching for erosion control does not change from baseline conditions. The assumption is that the EPA CGP requirement to provide stabilization of exposed soil areas within 14 days after construction activities have temporarily or permanently ceased does not actually change the quantity of acreage requiring stabilization, but that it merely changes the timing by which the stabilization must occur. As a result, there are no additional costs attributable to this requirement.

This data on BMP quantities, in combination with the state-level estimates of the number of construction sites contained in Appendix E, allowed for estimation of the total number and size of BMPs implemented for all construction sites nationally under baseline conditions as well as under the EPA CGP (see Tables B-10 and B-11 in Appendix B, and note than Baseline conditions are listed as Option 3 in these tables). For the inspection and certification provisions of Options 1 and 2, EPA estimated the total number of professional hours required to conduct these activities for each of the site sizes. Multiplying by the state-level estimates of the number of construction sites allowed for estimation of the total number of hours required to conduct these activities.

Table 7-5. BMP Quantities Required by EPA CGP for Model Construction Sites

Site Size (acres)	Silt Fencing (linear miles	Inlet Protection (Installations)	Seeding and Mulching (acres)[3]	Number of Stabilized Construction Entrances	Number of Stone Check Dams	Sediment Traps[2]		Sediment Basins[1]	
						Number	Size Each (cubic feet)	Number	Size Each (cubic feet)
0.5	0.09	2	0.31/0.43	1	0	0	0	0	0
3	0.20	3	1.9/2.6	1	3	0	0	0	0
7.5	0.50	6	4.7/6.5	1	6	2	4,725/5,400	0	0
25	0.63	10	13/21.5	1	11	0	0	2	31,500/36,000
70	1.36	20	36.4/60.2	2	20	0	0	3	58,800/67,200
200	7.73	60	124/172	4	62	0	0	10	50,400/57,600

[1] Range demonstrates variation with land use. Sediment basins designed to 3,600 cubic feet per acre in volume (1,800 cubic feet of which is for sediment storage) applicable to States equivalent to National Construction General Permit. Divide values in half to obtain values for non-equivalent States.
[2] Range demonstrates variation with land use. Sediment or silt traps are designed based on 1,800 cubic feet per acre served.
[3] Ranges between 62 and 86 percent of the site acreage depending on land use

7.4 ESTIMATION OF BMP COSTS

Estimated unit cost data for each BMP element was derived from literature sources including R.S. Means (2000), data from the article "The Economics of Stormwater Treatment: An Update" (Schueler, 2000), from the EPA Nonpoint Source Management Measures Guidance (EPA, 1993), and from evaluation of a variety of references that contain BMP unit cost data, primarily bids on highway construction projects and municipal bonding requirements (EPA, 2003). National average unit costs for the BMPs contained in the cost model are given in Table 7-6.

A single unit cost factor was used for sediment basins and silt traps. While basin costs are expected to be non-linear (i.e., the unit cost for large basins is less than for small basins), no single costing relationship was identified that satisfied the range of basin sizes encountered in the model site sizes. Hence a constant value of $13,068 per acre-foot (or $0.30 per cubic foot) was used to estimate costs for all site sizes and all options. This value was taken from the EPA Nonpoint Source Management Measures Guidance (EPA, 1993). Since this reference was somewhat dated, EPA evaluated a number of additional data sources (EPA, 2003) to determine if the cost factor of $0.30 per cubic foot was still valid. Based on a review of 32 recent references, it was determined that the value of $0.30 per cubic foot was still valid. As a result, this value was used to determine the unit costs of all sediment basins and sediment traps.

For site inspection costs, EPA estimated that the average construction site would require 16 hours to conduct an inspection, with an average labor costs of $28 per hour. For certification costs, EPA estimated that the average construction site would require $455 per certification, with an average labor costs of $57 per hour.

In order to account for state-level variation in supply, material and labor costs, EPA used the state-level cost adjustment factors shown in Table 7-7. All unit costs in Table 7-6 were multiplied by these cost adjustment factors to arrive at state-specific unit costs. In addition, EPA added costs to account for BMP design, operation and maintenance. Design costs only apply to certain BMPs that in general require customization for each construction site. In addition, only certain BMPs will incur O & M costs over the duration of the assumed construction period (estimated to be 1 year). The estimated design costs as a percentage of installation costs are presented in Table 7-8.

Using the state estimates of BMP quantities contained in Tables B-10 and B-11 in Appendix B along with the unit costs and cost adjustment factors contained in Tables 7-6 and 7-7, the total national installation costs were calculated for each option as well as under the baseline condition. Adding design and O&M costs contained in Table 7-8, the total national compliance costs (without opportunity and interest costs) were determined. Tables B-12 and B-13 in Appendix B contain national and state-level total costs by regulatory option (note than Baseline conditions are listed as Option 3 in these tables). Contingency costs were added according to the methodology contained in the Economic Analysis document. Please see the EA for an explanation of this methodology, as well as for information on calculating the total costs of the regulatory options.

Table 7-6. Unit Cost Factors For BMPs

BMP	National Unit Cost Value (no profit or overhead)	Unit Cost Units	Data Source
Silt Fence	$4,857.60	Per Mile	R.S. Means
Runoff Diversion	$2,904.00	Per Mile	R.S. Means
Mulching for Erosion Control	$1,113.20	Per Acre	R.S. Means
Construction Entrances	$692.00	Per installation	R.S. Means
Rock Check Dam	$45.53	Per installation	R.S. Means
Silt Trap	$13,068.00	Per acre foot of storage	EPA, 1993
Sediment Basins	$13,068.00	Per acre foot of storage	EPA, 1993
Inlet Protection	$100.00	Per installation	R.S. Means
Installation Certification	$455.00	Per Certification	BPJ
E&S Site Inspection	$113.48	Per inspection	BPJ

Table 7-7. State Cost Adjustment Factors

State	Unit Cost Adjustment Factor	State	Unit Cost Adjustment Factor
AL	0.80	NC	0.77
AR	0.80	ND	0.81
AZ	0.92	NE	0.84
CA	1.13	NH	0.90
CO	0.92	NJ	1.10
CT	1.07	NM	0.89
DC	0.95	NV	1.00
DE	0.99	NY	1.15
FL	0.86	OH	0.95
GA	0.78	OK	0.83
IA	0.87	OR	1.07
ID	0.92	PA	1.00
IL	1.00	RI	1.06
IN	0.92	SC	0.75
KS	0.88	SD	0.86
KY	0.88	TN	0.82
LA	0.86	TX	0.85
MA	1.10	UT	0.87
MD	0.90	VA	0.86
ME	0.84	VT	0.84
MI	0.98	WA	1.04
MN	1.00	WI	0.97
MO	0.92	WV	0.95
MS	0.78	WY	0.83
MT	0.95		

Reference: R.S. Means, 2000

Table 7-8. Design and O & M Costs as a Percentage of Installation Costs

Costed Items	Design as a Percent of Installation Cost*	Operation and Maintenance Costs as a Percent of Installation Cost**
Silt Fence	16	100
Runoff Diversion	16	10
Mulching for Erosion Control	16	2
Construction Entrances	16	5
Rock Check Dam	16	5
Silt Trap	16	20
Sediment Basin	16	25

* Source: focus groups conducted with NAHB
** Source: Best Professional Judgement

7.5 REFERENCES

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SECTION 8: APPROACH TO ESTIMATING POLLUTANT LOAD REDUCTIONS AND ENVIRONMENTAL BENEFITS

8.1 OVERVIEW

This section describes EPA's methodology for assessing the pollutant load reductions and environmental benefits of the regulatory options developed. EPA only estimated loading reductions for Option 2 and 4. We were not able to develop a methodology for estimating loading reductions attributable to the inspection and certification provisions of Options 1 and 2. As a result, no loading reductions or benefits estimates were made for Option 1, and the loading reductions and benefits estimates of Option 2 are the same as those for Option 4.

Adverse environmental impacts attributable to construction activities have been well documented and include (but are not limited to) alteration of stream flow patterns, change in river channels, and reduction in the water quality of receiving waters as a result of increased generation and transport of sediment and other pollutants. Aquatic habitats also can be damaged as a result of reduced water quality and altered hydrology. These environmental impacts can in turn cause additional environmental and economic damage by increasing the frequency and magnitude of flooding events in vulnerable areas.

Sediment from eroded soil was used as an indicator of the total pollutant load discharged from construction sites because the models available to simulate soil and sediment generation, transport and removal are widely available and recognized. Although EPA expects that there are significant loadings of other pollutants (such as phosphorus and certain metals) generated at construction sites, and therefore significant reductions attributable to the regulatory options, there was no nationally-applicable data source available to estimate these values. As a result, the benefits analysis estimates loading reductions and benefits only for sediment.

EPA used the suite of model construction sites discussed in Section 7 and documented in detail in Appendix A as the basis for calculating loads and removals. Per-state pollutant loadings were computed from a minimum of 24 construction site models (6 site size groups and 4 land uses). In most states, the variability of soils, slope, and climate resulted in 432 construction model sites that were individually defined for the state and evaluated to estimate per-site loadings and loading reductions. The computation of pollutant loadings and loading reductions accounted for the following:

- Current state erosion and sediment control and BMP requirements;
- Soil nature and the geographic distribution of soil types;
- Land slopes and flow paths on construction sites; and
- Climate and hydrology

The geographic basis for the analysis are areas created by overlapping state boundaries with the boundaries of 19 ecoregions (Omernik, 1987). Figure 8-1a and 8-1b illustrates these geographic areas for the western and eastern states, referred to as state-ecoregion areas. There are 146 state-ecoregion areas in the assessment of the 48-contiguous states. (Hawaii and Alaska are not included in the analysis because the methodology relies on data on development and soil types that were not readily available for these two states.) For each state-ecoregion area, estimates were made of the amount of annual construction acreage and the number of associated model construction sites based on NRI data (USDA, 2000). NRI data estimates developed acreage by Hydrologic Unit Code (or "HUC"). By summing the acres of developed land for all of the HUCs within a given state-ecoregion area, the total annual developed acreage within that area could be estimated. (Ecoregion boundaries used in this assessment are based on large watersheds, which are roughly equivalent to the boundaries formed by the combinations of various HUCs.)

For each model construction site within each state-ecoregion area, the sediment generation and removal was calculated under baseline conditions and under each regulatory option using the Revised Universal Soil Loss Equation (RUSLE) (USDA, 1997) and SEDCAD (Warner, 1998), reflecting existing state programs. By summing to the national level, the total sediment reduction of the regulatory options could be estimated.

Following estimation of sediment loads for each HUC under baseline and each regulatory option, sites were randomly placed within each HUC and linked to the nearest stream reach using GIS. Loads were routed to stream reaches and in-stream water quality changes from baseline were modeled using the National Water Pollution Control Assessment Model (NWPCAM). Monetized benefits were estimated using both the continuous Water Quality Index (McClelland, 1974) and water quality ladder and willingness to pay based on Carson/Mitchell (1993). The total load reductions and benefits of the regulatory options are presented in Table 8-1.

Table 8-1. Loading Reductions and Benefits of Regulatory Options

	Option 1	**Option 2**	**Option 4**
Sediment Reduction (tons/year)	0	979,896	979,896
Net Benefit Using Water Quality Ladder	0	$28,357,000	$28,357,000
Net Benefit Using Water Quality Index	0	$15,203,000	$15,203,000

Figure 8-1a. State-Ecoregions in the Western United States

Figure 8-1b. State-Ecoregions in the Eastern United States

8.2. CATEGORIES OF REPORTED IMPACTS AND POLLUTANTS

8.2.1 INTRODUCTION

Construction and land development activities can generate a broad range of environmental impacts by introducing new sources of contamination and by altering the physical characteristics of the affected land area. In particular, these activities can result in both short- and long-term adverse impacts on surface water quality in streams, rivers, and lakes in the affected watershed by increasing the loads of various pollutants in receiving water bodies, including sediments, metals, organic compounds, pathogens, and nutrients. Ground water also can be adversely affected through diminished recharge capacity. Other potential impacts include the physical alteration of existing streams and rivers due to the excessive flow and velocity of storm water runoff.

Construction activities typically involve excavating and clearing existing vegetation. During the construction period, the affected land is usually denuded and the soil compacted, leading to increased storm water runoff and high rates of erosion. If the denuded and exposed areas contain hazardous contaminants or pollutants (either naturally occurring or due to previous land uses), they can be carried at increased rates to surrounding water bodies by storm water runoff. Although the denuded construction site is only a temporary state (usually lasting less than 6 months), the landscape is permanently altered even after the land has been restored by replanting vegetation. For example, a completed construction site typically has a greater proportion of impervious surface than the predevelopment site, leading to changes in the volume and velocity of storm water runoff. Changes in land use might also lead to new sources of pollution, such as oils and metals from motor vehicles, nutrients and pesticides from landscape maintenance, and pathogens from improperly installed or failing septic tanks. Increased pollutant loads are particularly evident when land development takes place in previously undeveloped environments. Together the short-term impacts from construction activities and the long-term impacts of development can profoundly change the environment.

Pollutants associated with construction activities and land development storm water discharges can adversely affect the environment in a number of ways. Potential effects include impairment of water quality, destruction of aquatic life habitats, and enlargement of floodplains. To the extent possible, this discussion distinguishes between environmental impacts generated during active construction and environmental impacts attributable to the more broad change in land use from undeveloped land areas such as agriculture, forest or rural area to urban conditions (termed “postdevelopment” throughout the remainder of this section). Although in most cases the differences are in magnitude and duration (e.g., sediment runoff), environmental impairment from such contaminants as pathogens are more likely to be associated with the overall urbanization of a watershed than with the types of activities that take place during construction. The discussion of environmental impacts first evaluates the impacts of contaminated runoff and then focuses on the physical impacts of construction and land development.

8.2.2 POLLUTANTS ASSOCIATED WITH CONSTRUCTION AND LAND DEVELOPMENT STORM WATER RUNOFF

There are a number of pollutants associated with construction and land development storm water runoff. This description does not represent the complete suite of contaminants that can be found in the runoff, but focuses instead on those that are currently known to be the most prevalent and of greatest concern to the environment. These pollutants include sediment, metals, polycyclic aromatic hydrocarbons (PAHs), oil, grease, and pathogens.[5]

8.2.2.1 Sediment

Sediment is an important and ubiquitous constituent in urban storm water runoff. Surface runoff and raindrops detach soil from the land surface, resulting in sediment transport into streams. Sediment level measurement can be divided into three distinct subgroups:

- Total suspended solids (TSS) are a measure of the suspended material in water. The measurement of TSS in urban storm water allows for estimation of sediment transport, which can have significant effects locally and in downstream receiving waters.

- Turbidity is a function of the suspended solids and is a measure of the ability of light to penetrate the water. Turbidity can exhibit control over biological functions, such as the ability of submerged aquatic vegetation to receive light

- Total dissolved solids are a measure of the dissolved constituents in water and are a primary indication of the purity of drinking water.

Sources of Sediment

Construction Sites

Erosion from construction sites can be a significant source of sediment pollution to nearby streams. A number of studies have shown high concentrations of TSS in uncontrolled runoff from construction sites, and results from these studies are summarized in Table 8-2. One study,

[5] Much of the data cited in this document was collected before the NPDES Phase I and II storm water regulations generally required permits for all construction sites of one or more acres. As a result, much of this data may not accurately reflect current sediment discharge rates from construction sites. However, the data is important to reinforce the need for continued erosion and sediment control nationwide and to provide perspective on the sediment discharge rates that can occur from uncontrolled construction sites. Since even well managed construction sites continue to discharge sediment, much of the receiving water data and discussion is still likely applicable, however. This is especially true for sediment mobilized as a result of receiving channel instability following urban development, which is well documented and still largely unaddressed in many areas of the country.

conducted in 1986, calculated that construction sites are responsible for an estimated export of 80 million tons of sediment into receiving waters each year (Goldman, 1986, cited in CWP, 2000). On a unit area basis, construction sites can export sediment at 20 to 1,000 times the rate of other land uses (CWP, 2000).

Table 8-2. Studies of Uncontrolled Soil Erosion as TSS From Construction Sites

Site	Mean Inflow TSS Concentration (mg/L)	Source
Seattle, Washington	17,500	Horner, Guerdy, and Kortenhoff, 1990
SR 204	3,502	Horner, Guerdy, and Kortenhoff, 1990
Mercer Island	1,087	Horner, Guerdy, and Kortenhoff, 1990
RT1	359	Schueler and Lugbill, 1990
RT2	4,623	Schueler and Lugbill, 1990
SB1	625	Schueler and Lugbill, 1990
SB2	415	Schueler and Lugbill, 1990
SB4	2,670	Schueler and Lugbill, 1990
Pennsylvania Test Basin	9,700	Jarrett, 1996
Georgia Model	1,500 – 4,500	Sturm and Kirby, 1991
Maryland Model	1,000 – 5,000	Barfield and Clar, 1985
Uncontrolled Construction Site Runoff (MD)	4,200	York and Herb, 1978
Austin, Texas	600	Dartiguenave, ECLille, and Maidment, 1997
Hamilton County, Ohio	2,950	Islam, Taphorn, and Utrata-Halcomb, 1998
Mean TSS (mg/L)	3,681	NA

Postdevelopment Conditions

Sediment sources in urban environments include bank erosion, overland flow, runoff from exposed soils, atmospheric deposition, and dust (Table 8-3). Streets and parking lots accumulate dirt and grime from the wearing of the street surface, exhaust particulates, "blown-on" soil and organic matter, and atmospheric deposition. Lawn runoff primarily contains soil and organic matter. Source area monitoring data from Bannerman (1993), Waschbusch (2000), and Steuer (1997) are shown in Table 8-4. Hot spots (areas that are particularly high pollutant sources) were identified for the transport of sediment from the urban (developed) land surface, and they include streets, parking lots, and lawns.

Table 8-3. Sources of Sediment in Urban Areas

Source Area	Loading
Bank erosion	Up to 75 percent in California and Texas studies
Overland flow	Lawns - average value of geometric means from 4 studies: 201 mg/L
Runoff from areas with exposed soils	Average value: 3,640 mg/L
Blown-on material and organic matter	May account for as much as 35 to 50 percent in urban areas

Bannerman et al, 1993; Dartinguenave et al, 1997; Schueler, 1987; Steuer et al, 1997; Trimble, 1997; Waschbusch et al, 2000

Table 8-4. Source Area Concentrations for TSS in Urban Areas

Source Area	TSS (mg/L)[a]	TSS (mg/L)[b]	TSS (mg/L)[c]	
			Monroe Basin	Harper Basin
Commercial parking lot	110	58	51	
High-traffic street	226	232	65	
Medium-traffic street	305	326	51	
Low-traffic street	175	662	68	69
Commercial rooftop	24	15	18	
Residential rooftop	36	27	15	17
Residential driveway	157	173		34
Residential lawn	262	397	59	122

[a] Steuer et al, 1997.
[b] Bannerman et al, 1993.
[c] Waschbusch et al, 2000.

Parking lots and streets are responsible not only for high concentrations of sediment but also for high runoff volumes. Normally about 90 percent of the water that falls on pavement is converted to surface runoff, whereas roughly 5 to15 percent of the water that falls on lawns is converted to surface runoff (Schueler, 1987). The source load and management model (SLAMM; Pitt and Voorhes, 1989) evaluates runoff volume and concentrations of pollutants from different urban land uses and predicts loads to the stream. When used in the Wisconsin and Michigan subwatersheds, the model estimated that parking lots and streets were responsible for more than 70 percent of the TSS delivered to the stream (Steuer, 1997; Waschbusch et al, 2000). Because basin water quality measurements were taken at pipe outfalls, bank erosion was not accounted for in the studies.

Sediment load is due to erosion caused by an increased magnitude and frequency of flows brought on by urbanization (Allen and Narramore, 1985; Booth, 1990; Hammer, 1972; Leopold, 1968). Streambank studies by Dartinguenave et al (1997) and Trimble (1997) determined that streambanks are large contributors of sediment in urban streams. Trimble (1997) used direct measurements of stream cross sections, sediment aggradation, and suspended sediment to determine that roughly 66.7 percent of the sediment load in San Diego Creek was a result of bank erosion. Dartiguenave et al (1997) used a GIS- based model developed in Austin, Texas, to determine the effects of stream channel erosion on sediment loads. By effectively modeling the pollutant loads on the land surface and by monitoring the actual in-stream loads at U. S. Geological Survey (USGS) gauging stations, they were able to determine that over 75 percent of the sediment load came from the streambanks.

Receiving Water Impacts

Sediment transport and turbidity can affect habitat, water quality, temperature, and pollutant transport, and can cause sedimentation in downstream receiving waters (Table 8-5). A large body of scientific literature addresses the question of how the health of aquatic resources is impacted by excess sediment loading in waterbodies. At least partly on the basis of the findings of this research, some states across the country have already set sediment targets for receiving waters to protect aquatic resources, and are developing and refining targets for geographically specific watersheds. Demarcation by waterbody type provides context and is an important theme in the literature for purposes of setting sediment targets. Differences among receiving waters are evident not only in the aquatic species that inhabit them, but also in terms of behavior of sediment within the waterbody and threshold levels of impacts. The biota or aquatic species that are the focus of the literature include aquatic vegetation, macroinvertebrates, eggs, fry, juvenile, and adult fish, shellfish and corals. Identified waterbody types in the literature include:

- lakes, reservoirs, ponds, and impoundments
- rivers and streams
- wetlands
- oceans, estuaries, and other coastal water ecosystems, including coral reefs

The impacts of excess sediment in the water include direct physical effects such as reducing visibility and light in the water column, physical abrasion of plant surfaces, clogging gill openings, and entombing of eggs and fry in redds. Impacts may also be indirect, as in changes to the chemical composition of the water, light penetration or turbidity, and/or temperature profile, which in turn affect primary productivity with repercussions in terms of fish behavior, and overall community profiles and trophic structure. Thus the aquatic resources may be directly affected in terms of aesthetics, physiology, and mortality, or affected indirectly via changes in the habitat structure of the waterbody. Bedded sediments, though they directly affect the survival of fish eggs and fry and other organisms, do so because they alter the habitat structure and are dealt with in Section 8.2.3 under Physical Impacts of Construction and Land Development Activities.

Table 8-5. Sediment Impacts on Receiving Waters

Resource Affected	Impacts of Sediment	References
Streams	• Loss of sensitive species and a decrease in fish and macroinvertebrate communities • Clogging of gills and loss of habitat • Decreased flow capacity in streams • Interference with water quality processes • Affects transport of contaminants	Kundell and Rasmussen, 1995 Leopold, 1973 Barrett and Molina, 1998 MacRae and Marsalek, 1992
Wetlands	• Deposition of sediment • Loss of sensitive species–amphibians, plants	Horner et al, 1997 Hilgartner, 1986 Pasternack, 1998
Reservoirs	• Turbidity results in increased costs of treatment for drinking water • Sedimentation results in decreased storage	Holmes, 1998
Beaches	• Turbidity reduces aesthetic value • Sedimentation can result in increased accretion rates in wetlands and change plant community structure	Kundell and Rasmussen, 1995
Estuaries	• Sedimentation • Turbidity accentuates eutrophication • Loss of submerged aquatic vegetation (SAV) • Reduced light attenuation	Pasternack, 1998 Livingston, 1996 Schiff, 1996 Mackiernan et al, 1996 Short and Wyllie-Echeverria, 1996 Orth and Moore, 1983 Stevenson et al, 1993 Hilgartner, 1986

Storm water discharges generated during construction activities cause a wide variety of physical, chemical, and biological water quality impacts. The interconnected process of erosion, sediment transport, and delivery is the primary pathway for introducing pollutants such as excess sedimentation, total suspended solids, nutrients, metals, and organic compounds to aquatic systems (Novotny and Chesters 1989) in USEPA (1999). USDA (1989) estimated that 80 percent of the phosphorus and 73 percent of the Kjeldahl nitrogen are directly associated with eroded sediment (cited in Fennessey and Jarrett (1994), in USEPA 1999). The 2000 National Water Quality Inventory (USEPA) states that siltation is one of the top causes of impairment of waters across the United States. The report also states that pollution from urban and agricultural land transported by precipitation and runoff, and which includes pollutants from construction and land development activities, is the leading sources of impairment.

Large amounts of fine sediment, or the introduction of coarse sediment is a also concern because of the of filling lakes and reservoirs and clogging of stream channels (Paterson et al, 1993, in USEPA, 1999).

The literature reviewed for this document focuses on study methodologies that describe quantitative effects of sediment imbalance in aquatic systems in a basic dose-response relationship and where aquatic organisms are exposed to suspended and/or bedded sediments. The review considered literature on each type of aquatic resource: aquatic vegetation and primary production, invertebrates, juvenile fish, fry, and eggs, and adult fish. These aquatic biota are considered within their geographical setting and waterbody type: rivers/streams, ponds/lakes, estuaries/coastal environments. Areas that are covered more extensively in the literature than other topics are the impacts of suspended sediment on adult fish and impacts of deposited or substrate sediment on juvenile fish, fry, and eggs. Cold-water salmonid fish, predominantly in a stream setting, dominates the literature on this sediment dose-response relationship. The literature is not as extensive or as rich, on estuaries, lakes, and coastal areas nor on macroinvertebrates and aquatic plants, in comparison to fish. Additional summary of biological impacts of sediment on aquatic ecosystems is available as part of the materials created as part of EPA's work on developing water quality criteria for sediments (USEPA, 2003).

Measures of suspended sediment include turbidity and total suspended solids, already covered in Section 8.2.2.1. With respect to reviewing these dose-response studies authors typically consider how either turbidity or TSS affects biota. However, the relationship between the two measures is often unclear and not explicitly defined. Turbidity is a measure of light dispersion whereas TSS measures the mass of particles in the water column. Larger particles contribute mass to a TSS measurement, but do not scatter light as much as a similar weight of smaller particles. Usually when the sediment particles are smaller, turbidity levels are higher. Suspended sediment and its resulting turbidity can reduce light for submerged aquatic vegetation. In addition, deposited sediment can cover and suffocate benthic organisms like clams and mussels, cover habitat for substrate-oriented species in urban streams, and reduce storage in reservoirs. Pollutants such as hydrocarbons and metals tend to bind to sediment and are transported with storm flow (Crunkilton et al, 1996; Novotny and Chesters, 1989). Increased turbidity also can cause stream warming by reflecting radiant energy (Kundell and Rasmussen, 1995).

Studies involving an analysis of the relationship between the two measures of suspended sediment include Packman et al (1999) who showed that TSS and turbidity have a strong positive relationship in nine urban/suburban Puget lowland streams. New Mexico TMDLs (NMED, 2002) converted a turbidity standard to TSS by calibrating with local data, so that the TSS values in units of mg/L could be converted to sediment loads in lbs/day. Keyes and Radcliff (2002) calibrated turbidity units (NTU) to approximate TSS measures using 40 mg/L kaolin clay set to a standard of 40 NTU. However, in natural streams the composition of suspended particles is not uniformly like that of kaolin clay.

The impact of suspended sediment depends on the type of particle sizes to some extent, and therefore TSS and turbidity measures should be considered together where the information is available. For example, Servizi and Martens (1992) reported that salmonids were relatively tolerant of elevated TSS levels when the particle sizes were larger. When the particles are smaller, turbidity is higher, which appears to make conditions more difficult for salmonids.

The effects of sediment deposition from construction activities are known to affect streams far downstream of construction sites. For example, Fox (1974), in USEPA (1999), found that streams between 4.8 and 5.6 miles downstream of construction sites in the Patuxent River watershed were impacted by sediment inputs. Erosion from construction sites can also generate the transport of pollutants associated with onsite wastes. The Storm Water Quality Task Force (1993), in USEPA (1999), states that rain splash, rills, and sheetwash encourage the detachment and transport of pollutants (including both sediments and pollutants associated with sediments) to waterbodies. Erosion from construction sites and runoff in developed areas can elevate pollutant loads well above those in undisturbed watersheds. Novotny and Olem (1994), in USEPA (1999), state that erosion rates from construction sites are much greater than from any other land use. The results from field studies and erosion models conducted by USDA (1970), in USEPA (1999), found that erosion rates from construction sites are usually an order or magnitude higher than row crops and several orders of magnitude higher than rates from well-vegetated areas such as forests or pastures. A review of the efficiency of sediment basins conducted by Brown (1997), in USEPA (1999), found that inflows from 12 construction sites had a mean TSS concentration of about 4,500 mg/L. Kuo (1976), in USEPA (1999), found that suspended sediment concentrations from housing construction sites in Virginia were measured at 500-3,000 mg/L, or about 40 times larger than the concentrations in runoff from already-developed urban areas. In Wisconsin, Daniel et al (1979) (in USEPA 1999) monitored storm water runoff from three residential construction sites and found that annual sediment yields were more than 19 times the yields from agricultural areas. Daniel et al identified total storm water runoff followed by peak storm water runoff as the most influential factors controlling the sediment loadings from residential construction sites, and also found that suspended sediment concentrations were 15,000-20,000 mg/L in moderate storm events and up to 60,000 mg/L in larger events. Lastly, Wolman and Schick (1967), in USEPA (1999), studied impacts of development on fluvial systems in Maryland, and found that sediment yields in areas undergoing construction were 1.5 to as much as 75 times greater than detected in natural or agricultural catchments.

The effects of road construction on erosion rates and sediment yields were also examined. In West Virginia, a road construction project studied by Downs and Appel (1986) disturbed only 4.2 percent of a 4.72 square mile basin, but it resulted in a three fold increase in suspended sediment yields. During the largest storm event, it was estimated that 80 percent of the sediment in the stream was attributed to the construction site. Hainly (1980) evaluated the effect of 290 acres of highway construction on watersheds which ranged in size from 5 to 38 square miles. He found that even in the smallest watershed, the estimated sediment yield from the construction area was 37 tons per acre during a two-year period. In Hawaii, Hill (1996) found that highway construction increased suspended sediment loads by 56 to 76 percent in basins of 1 to 4 square miles. Yorke and Herb (1978), in a long term study of subbasins in Maryland portions of the Anacostia River, found that average annual suspended sediment yields for construction sites ranged from 7 to 100 tons per acre.

Studies have indicated that the water quality impact from small construction sites may be the same or greater than large construction sites on a per acre basis. The concentration of pollutants in runoff from small sites is similar to those in large sites. In urban areas the proportion of sediment that makes it to surface waters may be the same because the runoff is delivered directly to storm drain networks, with no opportunity for pollutants to be filtered out (USEPA, 1999). MacDonald (1997), in USEPA (1999), states that storm water regulations are more likely to require controls for large sites than smaller sites. The smaller sites that lack sediment and erosion controls would contribute a disproportionate amount of total sediment from construction activities.

To test the theory that small sites have sediment loads on a per acre basis similar to large sites, the EPA gave a grant to Dane County, Wisconsin Land Conservation Department, in cooperation with USGS, to evaluate sediment runoff. In this study by Owens et al (1999), in USEPA (1999), a 0.34 acre residential development and a 1.72 acre commercial office development were evaluated. At the residential site, total solids concentrations were 642 mg/L, 2,788 mg/L, and 132mg/L for preconstruction, active construction, and post-construction, respectively. This equaled 7.4 lbs preconstruction, 35 lbs during construction, and 0.6 lbs post-construction on a pollutant load basis. At the commercial site, Owens et al found that total solids during preconstruction were 138 mg/L and 200 mg/L during post-construction, but was 15,000 mg/l during the active construction period. This equaled 0.3 lbs preconstruction, 490 lbs during construction, and 13.4 lbs after construction on a pollutant load basis. The total solids from the commercial site were similar to those in a study by Downs and Appel (1986), who evaluated the effects of highway construction in West Virginia. They found that a small storm event yielded a sediment concentration of 7,520 mg/L.

Several studies have also evaluated the total amount of disturbed land for small and large construction sites. Brown and Caraco surveyed 219 jurisdictions to assess sediment and erosion control programs. They found that of the 70 respondents, in 27 cases more than three-fourths of the permits were for sites less than 5 acres, and in another 18 cases, more than half of the permits were for sites less than 5 acres. MacDonald (1997), in USEPA (1999), evaluated data on the 3,831 construction site permits for North Carolina from 1994 through 1996. He found that nearly 61 percent of the sites 1.0 acre or larger were between 1.0 and 4.9 acres in size. Given the high erosion rates, small construction sites can produce significant water quality impairment, particularly in small watersheds. Paterson (1994), in USEPA (1999), summarized that, given the critical importance of field implementation of erosion and sediment control programs, much more focus should be given to plan implementation.

8.2.2.2 Metals

Many toxic metals can be found in urban storm water, although only metals such as zinc, copper, lead, cadmium, and chromium have been indicated as being of primary concern because of their prevalence and potential for environmental harm. These metals are generated by motor vehicle exhaust, the weathering of buildings, the burning of fossil fuels, atmospheric deposition, and other common urban activities.

Metals can bioaccumulate in stream environments, resulting in plant growth inhibition and adverse health effects on bottom-dwelling organisms (Masterson and Bannerman, 1995). Generally the concentrations found in urban storm water are not high enough for acute toxicity (Field and Pitt, 1990). Rather, it is the cumulative effect of the concentration of these metals over time and the buildup in the sediment and animal tissue that are of greater concern.

Sources of Metal Runoff

Construction Sites

Construction sites are not thought to be important sources of metals contamination. Runoff from such sites could have high metals contents if the soil is already contaminated. Construction activities alone do not usually result in metals contamination, although there is little data available on this subject.

Postdevelopment Conditions

Postdevelopment conditions create significant sources of metal runoff in the urban environment, including streets, parking lots, and rooftops. Table 8-6 summarizes the major sources of metal runoff by metal type. Copper can be found in high concentrations on urban streets as a result of the wear of brake pads that contain copper. A study in Santa Clara, California, estimated that 50 percent of the copper released is from brake pads (Woodward-Clyde, 1992). Sources of lead include atmospheric deposition and diesel fuel, which are found consistently on streets and rooftops. Zinc in urban environments is a result of the wear of automobile tires (an estimated 60 percent of the total zinc in the Santa Clara study), paints, and the weathering of galvanized gutters and downspouts. Source area concentrations estimated by researchers in Wisconsin and Michigan are presented in Table 8-7. Actual concentrations vary considerably, and high-concentration source areas vary from study to study. A study using SLAMM for an urban watershed in Michigan estimated that most of the zinc, copper, and cadmium was a result of runoff from urban parking lots, driveways, and residential streets (Steuer, 1997).

Receiving Water Impacts of Metals

Downstream effects of metals transported to receiving waters, such as lakes and estuaries, have been studied extensively. Selected studies on metal impacts on receiving waters are summarized in Table 8-8. Although evidence exists for the buildup of metals in deposited sediments in receiving waters and for bioaccumulation in aquatic species (Bay et al, 2000; Livingston, 1996), specific effects of these concentrations on submerged aquatic vegetation and other biota are not well understood.

Table 8-6. Metal Sources and Hot Spots in Urban Areas

Metal	Sources	Hot Spots
Zinc	Tires, fuel combustion, galvanized pipes and gutters, road salts *Estimate of 60% from tires*[a]	Parking lots, rooftops, and streets
Copper	Auto brake linings, pipes and fittings, algacides, and electroplating *Estimate of 50% from brake pads*[a]	Parking lots, commercial roofs, and streets
Lead	Diesel fuel, paints, and stains	Parking lots, rooftops, and streets
Cadmium	Component of motor oil; corrodes from alloys and plated surfaces	Parking lots, rooftops, and streets
Chromium	Found in exterior paints; corrodes from alloys and plated surfaces	More frequently found in industrial and commercial runoff

[a] Woodward-Clyde, 1992 (Santa Clara, CA, study)
Sources: Barr, 1997; Bannerman, et al, 1993; Steuer, 1997

Table 8-7. Metal Source Area Concentrations in Urban Areas (in ug/L)

Source Area	**Diss. Zinc**	**Total Zinc**	**Diss. Copper**	**Diss. Copper**	**Total Copper**	**Diss. Lead**	**Diss. Lead**	**Total Lead**	**Total Lead**	**Total Lead**
Citation	(a)	(b)	(a)	(b)	(b)	(a)	(c)	(a)	(c)	(b)
Commercial parking lot	64	178	10.7	9	15			40		22
High-traffic street	73	508	11.2	18	46	2.1	1.7	37	25	50
Medium-traffic street	44	339	7.3	24	56	1.5	1.9	29	46	55
Low-traffic street	24	220	7.5	9	24	1.5	0.5	21	10	33
Commercial rooftop	263	330	17.8	6	9	20		48		9
Residential rooftop	188	149	6.6	10	15	4.4		25		21
Residential driveway	27	107	11.8	9	17	2.3		52		17
Residential lawn	na	59	na	13	13	na		na		na
Basin outlet	23	203	7.0	5	16	2.4		49		32

na : not available
Sources: (a) Steuer 1997; (b) Bannerman 1993; (c) Waschbusch, 1996, cited in Steuer, 1997

Table 8-8. Metals Impacts on Receiving Waters

Resource Affected	Impacts of Metals	Evidence and References
Streams	• Chronic toxicity due to in-stream concentrations and accumulation in sediment • Bioaccumulation in aquatic species • Acute toxicity at certain concentrations	• Chronic toxicity increased during longer-duration studies, i.e. 7/14/21-day studies (Crunkilton, 1996) • Delayed toxicity (Ellis, 1986/1987) • Baseflow toxicity (Mederios, 1983) • Resuspension of metals during storms accounting for some toxicological effects (Heaney and Huber, 1978) • Bioaccumulation in crayfish (Masterson & Bannerman, 1994)
Reservoirs/ Lakes	• Accumulation of metals in sediment	• Bioaccumulation levels in bottom-feeding fish were found to be influenced by the metal levels of the bottom sediments of storm water ponds (Campbell, 1995-CWP).
Estuaries	• Accumulation of metals in sediment • Loss of SAV	• Tampa Bay (Livingston, 1996) • San Diego (Schiff 1996) • SAV losses in northeast San Francisco Bay (Orth and Moore, 1983

8.2.2.3 PAHs, and Oil and Grease

Petroleum-based substances such as oil and grease and polycyclic aromatic hydrocarbons (PAHs) are found frequently in urban storm water. Many constituents of PAHs and oil and grease, such as pyrene and benzo[b]fluoranthene, are carcinogens and toxic to downstream biota (Menzie-Cura and Assoc., 1995). Oil and grease and PAHs normally travel attached to sediment and organic carbon. Downstream accumulation of these pollutants in the sediments of receiving waters such as streams, lakes, and estuaries is of concern.

Sources of PAHs, and Oil and Grease

Construction sites

Construction activities during site development are not believed to be major contributors of these contaminants to storm water runoff. Improper operation and maintenance of construction equipment at construction sites, as well as poor housekeeping practices (e.g., improper storage of oil and gasoline products), could lead to leakage or spillage of products that contain hydrocarbons, but these incidents would likely be small in magnitude and managed before off-site contamination could occur.

Postdevelopment Conditions

In most storm water runoff, concentrations of PAHs and oil and grease are typically below 5 mg/L, but concentrations tend to increase in commercial and industrial areas. Hot spots for these pollutants in the urban environment include gas stations, commuter parking lots, convenience stores, residential parking areas, and streets (Schueler, 1994). Schueler and Shepp (1993) found concentrations of pollutants in oil/grit separators in the Washington Metropolitan area and determined that gas stations had significantly higher concentrations of hydrocarbons and a greater presence of toxic compounds than streets and residential parking lots. A study of source areas in an urban watershed in Michigan (which excluded gas stations) showed that high concentrations from commercial parking lots contributed 64 percent of the estimated hydrocarbon loads (Steuer et al, 1997).

Receiving Waters Impacts

Toxicological effects from PAHs and oil and grease are assumed to be reduced by their attachment to sediment (lessened availability) and by photodegradation (Schueler, 1994). Evidence of possible impacts on the metabolic health of organisms exposed to PAHs and of bioaccumulation in streams and other receiving waters does not exist (Masterson and Bannerman, 1994; MacCoy and Black, 1998); however, crayfish from Lincoln Creek, analyzed in the Masterson and Bannerman study, had a PAH concentration of 360 micrograms per kilogram–much higher than the concentration known to be carcinogenic. The crayfish in the control stream did not have detectable levels of PAHs. Known effects of PAHs on receiving waters are summarized in Table 8-9. Long-term effects of PAHs in sediments of receiving waters require additional study.

Table 8-9. Effects of PAHs and Oil and Grease on Receiving Waters

Resource Affected	Impacts of PAHs and Oil and Grease	Citations
Streams	• Possible chronic toxicity due to in-stream concentrations and accumulation in sediment • Bioaccumulation in aquatic species • Acute toxicity at certain concentrations	• Bioaccumulation in crayfish tissue studies (Masterson and Bannerman, 1994) • Potential metabolic costs to organisms (Crunkilton et al, 1996) • Delayed toxicity (Ellis, 1986/1987) • Baseflow toxicity (Mederios, 1983)
Reservoirs	• Accumulation of PAHs in sediment	• Sediment contamination may result in a decrease in benthic diversity and transfer of PAHs to fish tissue (Schueler, 2000) • Elevated levels of PAHs found in pond muck layer (Gavens et al, 1982-CWP)
Estuaries	• Accumulation of PAHs in sediment • Potential loss of SAV • Accumulation of PAHs in fish and shellfish tissue	• Tampa Bay (Livingston, 1996) • San Francisco Bay (Schiff, 1996)

8.2.2.4 Pathogens

Microbes are commonly found in urban storm water. Although not all microbes are harmful, several species such as the pathogens *Cryptosporidium* and *Giardia* can directly cause diseases in humans. The presence of bacteria such as fecal coliform bacteria, fecal streptococci, and *Escherichia coli* indicates a potential health risk. High levels of these bacteria may result in beach closings, restrictions on shellfish harvest, and increased treatment for drinking water to decrease the risk of human health problems.

Sources of Pathogens

Construction sites

Construction site activities are not believed to be major contributors to pathogen contamination of surface waters. The only potential known source of pathogens from construction sites are portable septic tanks used by construction workers. These systems, however, are typically self-contained and are not connected to the land surface. Any leaks from them would likely be identified and addressed quickly.

Postdevelopment Conditions

Coliform sources include pets, humans, and wild animals. Source areas in the urban environment for direct runoff include lawns, driveways, and streets. Dogs have high concentrations of coliform bacteria in their feces and have a tendency to defecate in close proximity to impervious surfaces (Schueler, 1999). Many wildlife species also have been found to contribute to high fecal concentrations. Essentially, any species that is present in significant numbers in a watershed is a potential pathogen source. Source identification studies, using methods such as DNA fingerprinting, have attributed high coliform levels to such species as rats in urban areas, ducks and geese in storm water ponds, dogs, and even raccoons (Blankenship, 1996; Lim and Oliveri, 1982; Pitt et al, 1988; Samadapour and Checkowitz, 1998).

Indirect surface storm water runoff sources include leaking septic systems, illicit discharges, sanitary sewer overflows (SSOs), and combined sewer overflows (CSOs). These sources have the potential to deliver high concentrations of coliforms to receiving waters. Illicit connections from businesses and homes to the storm drainage system can discharge sewage or washwater into receiving waters. Leaking septic systems are estimated to constitute 10 to 40 percent of all systems. Inspection is the best way to determine whether a system is failing (Schueler, 1999).

There is also evidence that these bacteria can survive and reproduce in stream sediments and in storm sewers. During a storm event, they are resuspended and add to the in-stream bacteria load. Source area studies reported that end-of-pipe concentrations were an order of magnitude higher than any source area on the land surface; therefore, it is likely that the storm sewer system itself acts as a source (Bannerman, 1993; Steuer et al, 1997). Resuspension of fecal coliform bacteria from fine stream sediments during storm events has been reported in New Mexico (NMSWQB, 1999). The sediments in the storm sewer system and in streams may be significant contributors to the fecal coliform load. This area of research certainly warrants more attention to determine whether these sources can be quantified and remediated.

Giardia and *Cryptosporidium* in urban storm water are also a concern. There is evidence that urban watersheds and storm runoff might have higher concentrations of *Giardia* and *Cryptosporidium* than other surface waters (Stern, 1996). (See Table 8-10.) The primary sources of these pathogens are humans and wildlife. Although *Cryptosporidium* is found in less than 50 percent of storm water samples, data suggest that high *Cryptosporidium* values may be a concern for drinking water supplies. Both pathogens can cause serious gastrointestinal problems in humans (Bagley et al, 1998).

Table 8-10. Percentage Detection of *Giardia* Cysts and *Cryptosporidium* Oocysts in Subwatersheds and Wastewater Treatment Plant Effluent in the New York City Water Supply Watersheds

Source Water Sampled (No. of sources/ No. of samples)	Percent Detection			
	Total *Giardia*	Confirmed *Giardia*	Total *Cryptosporidium*	Confirmed *Cryptosporidium*
Wastewater effluent (8/147)	41.5	12.9	15.7	5.4
Urban subwatershed (5/78)	41.0	6.4	37.2	3.9
Agricultural subwatershed (5/56)	30.4	3.6	32.1	3.6
Undisturbed subwatershed (5/73)	26.0	0.0	9.6	1.4

Source: Stern et al, 1996.

Receiving Water Impacts

Fecal coliform bacteria, fecal streptococci, and *E. coli* are consistently found in urban storm water runoff. Their presence indicates that human or other animal waste is also present in the water and that other harmful bacteria, viruses, or protozoans might be present as well. Concentrations of these indicator organisms in urban storm water are highly variable even within a given monitoring site. Data for fecal coliform bacteria illustrate this variability: site concentrations range from 10 to 500,000 most probable number per 100 milliliters (MPN/100mL) (Schueler, 1999).

Concentrations in urban storm water typically far exceed the 200 MPN/100 mL threshold set for human contact recreation. The mean concentration of fecal coliform bacteria in urban storm water for 34 studies across the United States was 15,038 MPN/100mL (Schueler, 1999). Another national database of 1,600 samples (mostly Nationwide Urban Runoff Program data collected in the 1980s), estimates the mean concentration at 20,000 MPN/100 mL (Pitt, 1998). Fecal streptococci concentrations for 17 urban sites had a mean of 35,351 MPN/100 mL (Schueler, 1999). Transport occurs primarily as a result of direct surface runoff, failing septic systems, SSOs, CSOs, and illicit discharges.

Human health can be affected by bacterial impacts on receiving waters when bacteria standards for water contact recreation, shellfish consumption, or drinking water are violated. Epidemiological studies from Santa Monica Bay have documented frequent sickness in people who swim near outfalls (SMBRP, 1996). Documented illnesses include fever, ear infections, gastroenteritis, nausea, and flu-like symptoms. Table 8-11 describes the effects of bacteria and protozoan problems on different receiving waters.

Table 8-11. Effects of Bacteria on Receiving Waters

Resource Affected	Impacts and Citations
Streams	More than 80,000 miles of streams and rivers in non-attainment because of high fecal coliform levels (USEPA, 1998a)
Reservoirs	Increased treatment cost of drinking water due to bacteria contamination (USEPA, 1996)
Beaches	More than 4,000 beach closings or advisories (USEPA, 1998b)
Estuaries	Nearly 4% of all shellfish beds restricted or conditional harvest due to high bacteria levels (NOAA, 1992) and more than 4,000 beach closings or advisories (USEPA, 1998b)

8.2.3 PHYSICAL IMPACTS OF CONSTRUCTION AND LAND DEVELOPMENT ACTIVITIES

Construction and land development activities can have a number of impacts on stream systems, including impacts to stream hydrology, geomorphology, habitat structure, thermal regime, and direct channel impacts. These impacts are most visible on streams in urbanized areas. Construction and land development impacts on stream systems are described for each of these impact categories in Table 8-12. Because it is very difficult to differentiate between physical impacts that occur during construction and impacts that result from postdevelopment conditions, the discussion addresses physical impacts from a broader perspective. It does not differentiate between short-term effects arising and site construction activities from long-term impacts of postdevelopment conditions.

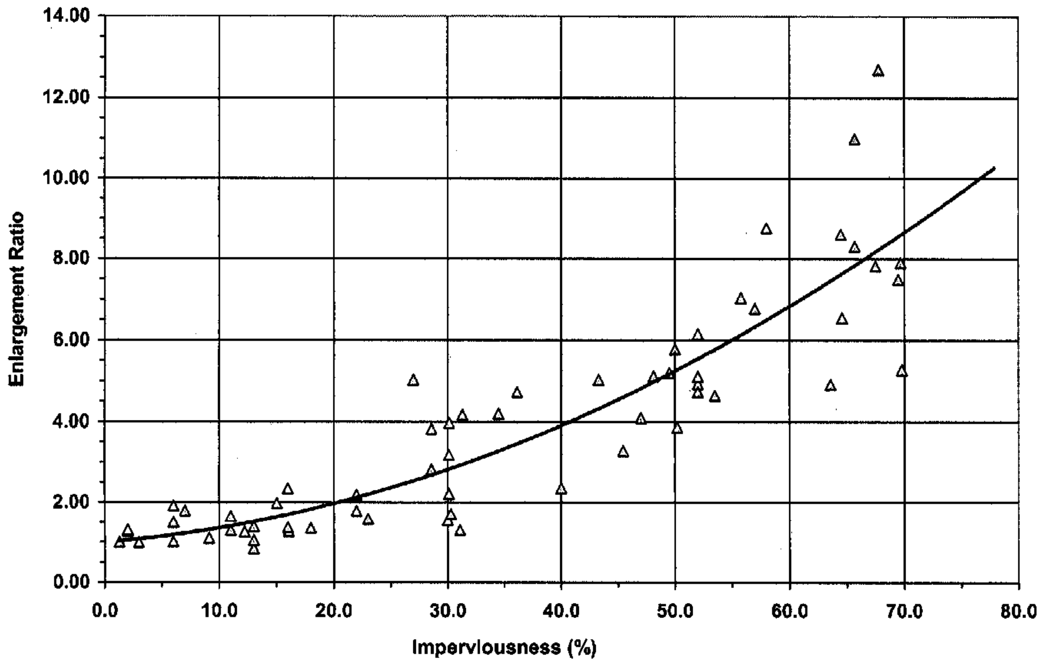
Physical changes are often precipitated by changes in hydrology that result when permeable rural and forest land is converted to impervious surfaces like pavement and rooftops and relatively impermeable urban soils. The conversion causes a fundamental change in the hydrologic cycle because a greater fraction of rainfall is converted to surface runoff. This change in the basic hydrologic cycle causes a series of other impacts (Table 8-12). The stream immediately begins to adjust its size, through channel erosion, to accommodate larger flows. Streams normally increase their cross-sectional area by incising, widening, or often both. This process of channel response to increases in impervious surfaces accelerates sediment transport and destroys habitat. In addition, urbanization frequently requires alteration of natural stream channels, such as straightening or lining with concrete or rock to transport water away from developed areas more quickly. Finally, impervious surfaces also absorb heat, thereby increasing stream temperatures during runoff events.

Table 8-12. Physical Impacts of Urbanization on Streams

Impact Class	Specific Impacts	Cause(s)
Hydrologic	• Increased runoff volume • Increased peak flood flow • Increased frequency of “bankfull” event • Decreased baseflow	• Paving over natural surfaces • Compaction of urban soils
Geomorphic	• Sediment transport modified • Channel area increase to accommodate larger flows	• Modified flows • Channel modification • Construction
Habitat structure	• Stream embeddedness • Loss of large woody debris • Changes in pool/riffle structure	• Modified flows • Stream channel erosion • Loss of riparian area
Thermal	• Increased summer temperatures	• Heated pavement • Storm water ponds • Loss of riparian area
Channel modification	• Channel hardening • Fish blockages • Loss of first and second order streams through storm drain enclosure	• Direct modifications to the stream system.

Figure 8-2 (Claytor and Brown, 2000; MacRae and De Andrea, 1999) depicts the impacts of land development on the stream channel. At low levels of imperviousness, the stream has a stable channel, contains large woody debris, and has a complex habitat structure. As urbanization increases, the stream becomes increasingly unstable, increases its cross-sectional area to accommodate increased flows, and loses habitat structure. In highly urbanized areas, stream channels are often modified through channelization or channel hardening. These physical changes are often accompanied by decreased water quality.

Figure 8-2. Stream Channel Enlargement as a Function of Watershed Imperviousness



8.2.3.1 Hydrologic Impacts of Construction and Land Development Activities

The increased runoff volume that results from land development alters the hydrograph from its predeveloped condition. The resulting hydrograph accommodates larger flows with higher peak-flow rates. Because storm drain conveyance systems (e.g., curbs, gutters) improve the efficiency with which water is delivered to the stream, the hydrograph is also characterized by a more rapid time of concentration and peak discharge. Finally, the flow in the stream between events can actually decrease because less rainfall percolates into the soil surface to feed the stream as baseflow. The resulting hydrologic impacts include increased runoff volume, increased flood peaks, increased frequency and magnitude of bankfull storms, and decreased baseflow volumes.

Increased Runoff Volume

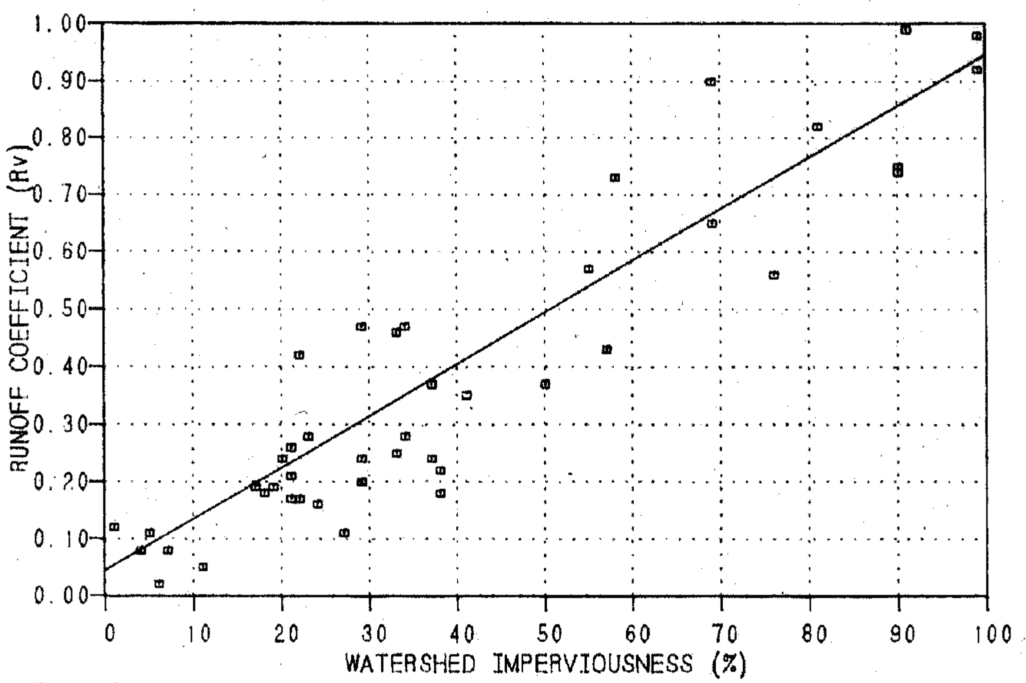
Impervious surfaces and urban land use changes alter infiltration rates and increase runoff volumes. Table 8-13 shows the difference in runoff volume between a meadow and a parking lot. The parking lot produces approximately 15 times more runoff than a meadow for the same storm event. Schueler (1987) demonstrated that runoff values increase significantly with the impervious surfaces in a watershed (Figure 8-3). The increased volume of water from urban areas is likely the greatest single cause of the negative impacts of urban storm water on receiving waters. The volume causes channel erosion and loss of habitat stability, as well as an increase in the total load of many pollutants such as sediment and nutrients.

Table 8-13. Hydrologic Differences Between a Parking Lot and a Meadow

Hydrologic or Water Quality Parameter	Parking Lot	Meadow
Runoff coefficient	0.95	0.06
Time of concentration (minutes)	4.8	14.4
Peak discharge, 2-yr, 24-h storm (ft^3/s)	4.3	0.4
Peak discharge rate, 100-yr storm (ft^3/s)	12.6	3.1
Runoff volume from 1-in. storm (ft^3)	3,450	218
Runoff velocity @ 2-yr storm (ft/sec)	8	1.8

Key Assumptions: 2-yr, 24-hr storm = 3.1 in.; 100-yr storm = 8.9 in.
Parking Lot: 100% imperviousness; 3% slope; 200-ft flow length; hydraulic radius = 0.03; concrete channel; suburban Washington 'C' values
Meadow: 1% impervious; 3% slope; 200-ft flow length; good vegetative condition; B soils; earthen channel
Source: Schueler, 1987.

Figure 8-3. Runoff Coefficient as a Function of Impervious Cover



NOTE: 44 small urban catchments monitored during the national NURP study.

Construction activities also cause fundamental modifications in native soils. The compaction of urban soils and the removal of topsoil during construction decreases the infiltration capacity of the soil, resulting in a corresponding increase in runoff (Schueler, 2000). The bulk density is a measure of soil compaction, and Table 8-14 shows the values for different aspects of urbanization.

Table 8-14. Comparison of Bulk Density for Undisturbed Soils and Common Urban Conditions

Undisturbed Soil Type or Urban Condition	Surface Bulk Density (grams/cubic centimeter)
Peat	0.2 to 0.3
Compost	1.0
Sandy Soils	1.1 to 1.3
Silty Sands	1.4
Silt	1.3 to 1.4
Silt Loams	1.2 to 1.5
Organic Silts/Clays	1.0 to 1.2
Glacial Till	1.6 to 2.0
Urban Lawns	1.5 to 1.9
Crushed Rock Parking Lot	1.5 to 1.9
Urban Fill Soils	1.8 to 2.0
Athletic Fields	1.8 to 2.0
Rights of Way and Building Pads (85%)	1.5 to 1.8
Rights of Way and Building Pads (95%)	1.6 to 2.1
Concrete Pavement	2.2

Note: Shading indicates "urban" conditions.
Source: Schueler, 2000.

Increased Flood Peaks

Increased surface runoff following urbanization increases peak flows. Data from Sauer et al (1983) suggest that peak flow from large flood events (10-year to 100-year storm events) increases substantially with urbanization. The paper presents results of a survey of urban watersheds throughout the United States and predicts flood peaks based on watershed impervious cover and a "basin development factor" that reflects watershed characteristics such as the amount of curb and gutter, and channel modification. These data suggest that at 50 percent impervious cover, the peak flow for the 100-year event can be as much as twice that in an equivalent rural watershed. Data from Seneca Creek in Montgomery County, Maryland, suggest a similar trend. The watershed experienced significant growth during the 1950s and 1960s. Comparison of gauge records from 1961 to 1990 to those from 1931 to 1960 suggests that the peak 10-year flow event increased from 7,300 to 16,000 cfs, an increase of more than 100 percent (Leopold, 1994).

Increased Frequency and Volume of Bankfull Flows

Stream channel morphology is more influenced by frequent (1- to 2-year) storm events, or “bankfull” flows, than by large flood events. Hollis (1975) demonstrated that urbanization increased the frequency and magnitude of these smaller-sized runoff events much more than the larger events. Data from this study suggest that streams increase their 2-year bankfull discharge by two to five times after development takes place. Many other studies have documented the increase in flow associated with impervious cover. A study by Guay (1995) compared the 2-year flow events before and after development in an urban watershed in Parris Valley, California, in the 1970s and in the 1990s. The impervious level of 9 percent in the 1970s increased to 22.5 percent by the 1990s. The 2-year discharge more than doubled from 646 cfs to 1,348 cfs. A 13 percent change in impervious cover resulted in a doubling of the 2-year peak flow.

A significant impact of land development is the frequency with which the bankfull event occurs. Leopold (1994) observed a dramatic increase in the frequency of the bankfull event in Watts Branch, an urban subwatershed in Rockville, Maryland. This watershed also experienced significant development between the 1950s and 1960s. A comparison of gauge records indicated that the bankfull storm event frequency increased from two to seven times per year from 1958 to 1987.

Changes in Baseflow

Land development results in a smaller recharge to groundwater and a corresponding decrease in stream flow during dry periods (baseflow). Only a small amount of evidence, however, documents this decrease in baseflow. Spinello and Simmons (1992) demonstrated that baseflow in two urban Long Island streams went dry seasonally as a result of urbanization. Another study in North Carolina could not conclusively determine that urbanization reduced baseflow in some streams in that area (Evett et al, 1994). It is important to note, however, that groundwater flow paths are often complex. Water supplying baseflow feeding the stream can be from deeper aquifers or can originate in areas outside the surface watershed boundary. In arid and semiarid areas, watershed managers have reported that baseflow actually increases in urban areas. Increased infiltration from people watering their lawns and return flow from sewage treatment plants are two possible sources (Caraco, 2000). Recharge of clean groundwater is important in these communities, and managers would rather see clean water infiltrated than transported as surface water during storm events.

8.2.3.2 Impacts on Geomorphology/Sediment Transport

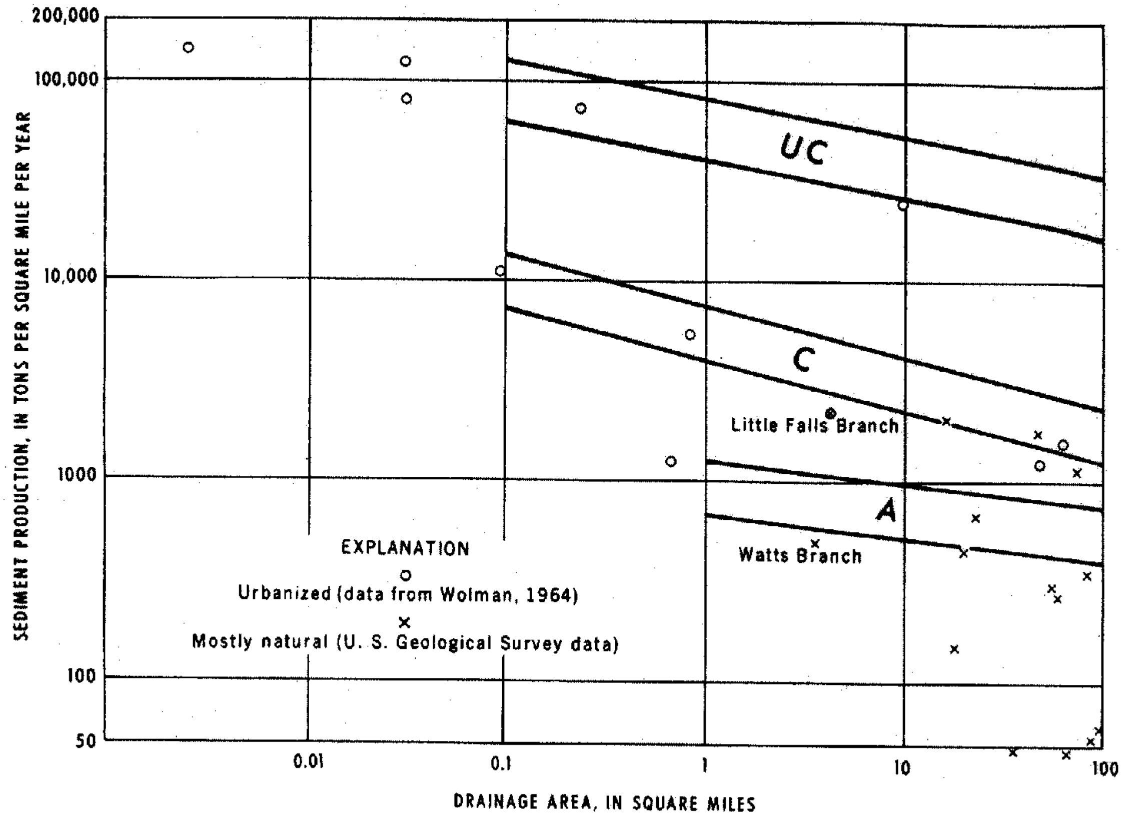
Changes in hydrology, combined with additional sediment sources from construction and modifications to the stream channel, result in changes to the geomorphology of stream systems. These impacts include increased, and sometimes decreased, sediment transport and channel enlargement to accommodate larger flows.

Increased Transport of Sediment

The increased frequency of bankfull (1- to 2-year) storms causes more "effective work" (as defined by Leopold), causing greater sediment transport and bank erosion to take place within the channel. For the same storm event, the increased volume results in a greater amount of total stress above the critical shear stress required to move bank sediment (Schueler, 1987). This effect is compounded by the fact that smaller, more frequent storm events also cause flows in excess of the stress required to move sediment.

The result of this change in effective work on streambanks is increased channel erosion. Studies in California (Trimble, 1997) and Austin, Texas (Dartinguenave et al, 1997) suggest that 60 to 75 percent of the sediment transport in urban watersheds is from channel erosion as compared to estimates of between 5 percent and 20 percent for rural streams (Collins et al, 1997; Walling and Woodward, 1995). If the sediment is not deposited in the channel at obstructions, it is transported downstream to receiving waters such as lakes, estuaries, or rivers. The result can be reduced storage and loss of habitat due to the filling of these water bodies. The clearing and grading of land for new construction at the outset of urbanization is another source of sediment in urban streams. Figure 8-4 (Leopold, 1968) illustrates the difference in sediment from uncontrolled and controlled construction sites.

Figure 8-4. Sediment Production from Construction Sites



Annual sediment production per square mile for urbanized and natural areas. Zones: *A*, agricultural; *C*, under construction; *UC*, under construction and undiluted.

Decreased Sediment Transport

Decreased sediment transport off the land surface itself can result after urbanization as natural drainage and first-order channels are replaced by storm drains and pipes (Dunne and Leopold, 1978). Channel erosion downstream might result when any export of sediment is not replaced by diminished upstream sediment supply. Ultimately, after significant erosion has taken place, the downstream channel will have adjusted to its postdevelopment flow regime and sediment transport will be reduced. Hence, the stability of the land surface and the piping of drainage channels limit storm water's exposure to sediment and reduce the sediment supply.

Increase in Size of Channel

Channels increase their cross-sectional area to respond to higher and more frequent urban flows. In postdevelopment urban watersheds, the increase in frequency of this channel-forming event normally causes sediment transport to be greater than sediment supply. The channel widens (and/or downcuts) in response to this change in sediment equilibrium (Allen and Narramore, 1985; Booth, 1990 Hammer, 1977; Morisawa and LaFlure, 1979;). Some research suggests that over time channels will reach an "ultimate enlargement," relative to a predeveloped condition, and that impervious cover can predict this enlargement ratio (MacRae and DeAndrea, 1999). This was shown in Figure 8-2, which depicted the relationship between ultimate stream channel enlargement and impervious cover for alluvial streams, based on data from Texas, Vermont, and Maryland.

Stream channels expand by incision, widening, or both. Incision occurs when the stream down-cuts and the channel expands in the vertical direction. Widening occurs when the sides of the channel erode and the channel expands horizontally. Either method results in increased transport of sediment downstream and degradation of habitat. Channel incision is often limited by grade control from bedrock, large substrate, bridges, or culverts. These structures impede the downward erosion of the stream channel and limit incision. In substrates such as sand, gravel, and clay, however, stream incision can be of greater concern (Booth, 1990).

Channel widening more frequently occurs when streams have grade control and the stream cuts into its banks to expand its cross-sectional area. Urban channels frequently have artificial grade control due to the frequent culverts and road crossings. These are often areas where sediment can accumulate as a result of undersized culverts and bridge crossings.

8.2.3.3 Changes in Habitat Structure

Land development results in many changes in habitat structure, including embeddedness, decreased riffle/pool quality, and loss of large woody debris (LWD). Increased sedimentation due to clearing and grading during construction as well as bank erosion can significantly reduce the amount of habitat for substrate-oriented species.

Increased sediment transport from construction and land development can fill the interstitial spaces between rocks and riffles, which are important habitat for macroinvertebrates and fish species, such as darters and sculpins. The stream bottom substratum is a critical habitat for trout and salmon egg incubation and embryo development (May et al, 1997).

The presence and stability of LWD is a fundamental habitat parameter. LWD can form dams and pools, trap sediment and detritus, provide stabilization to stream channels, dissipate flow energy, and promote habitat complexity (Booth et al, 1996). For example, depending on the size of the woody debris and the stream, the debris can create plunge, lateral, scour, and backwater pools, short riffles, undercut banks, side channels, and backwaters, and create different water depths (Spence et al, 1996). The runoff generated in urban watersheds from small storms can be enough to transport LWD. Maxted et al (1994) found that woody debris were typically buried under sand and silt in urban streams. In addition, the clearing of riparian vegetation limits an important source of large woody debris. Horner et al (1997) present evidence from the Pacific Northwest that illustrates LWD in urban streams decreases with increased imperviousness.

Habitat diversity is a key factor in maintaining a diverse and well-functioning aquatic community. The complexity of the habitat results in increased niches for aquatic species. Sediment and increases in flow can reduce the residual depths in pools and decrease the diversity of habitat features such as pools, riffles, and runs. Richey (1982) and Scott et al (1986) reported an increase in the prevalence of glides and a corresponding altered pool/riffle sequence due to urbanization.

8.2.3.4 Thermal Impacts

Summer in-stream temperatures have been shown to increase significantly (5 to 12 degrees) in urban streams because of direct solar radiation, runoff from heat-absorbing pavement, and discharges from storm water ponds (Galli, 1991). Increased water temperatures can prevent temperature-sensitive species from surviving in urban streams.

Water temperature in headwater streams is strongly influenced by local air temperatures. Galli (1991) reported that stream temperatures throughout the summer are higher in urban watersheds, and the degree of warming appears to be directly related to the imperviousness of the contributing watershed. Over a 6-month period, five headwater streams in the Maryland Piedmont that have different levels of impervious cover were monitored. Each urban stream had mean temperatures that were consistently warmer than that of a forested reference stream, and the size of the increase appeared to be a direct function of watershed imperviousness. Other factors, such as a lack of riparian cover and ponds, were also shown to amplify stream warming, but the primary contributing factor appeared to be watershed impervious cover.

8.2.3.5 Direct Channel Impacts

Channel Straightening and Hardening/Reduction in First-Order Streams

Channel straightening and hardening includes the addition of riprap or concrete to the channel, the straightening of natural channels, and the piping of first-order and ephemeral streams. Although this conversion process is often done to control runoff from urbanized areas, adverse impacts often occur downstream. In a national study of urban watersheds in 269 gauged basins, Sauer et al (1983) determined that channel straightening and channel lining (hardening)–along with the percentage of curbs and gutters, streets, and storm sewers–were the dominant land use variables affecting storm flow. These variables all affect the efficiency with which water is transported to the stream channel. Maintaining this efficiency increases the velocities needed for storm water to exceed critical shear stress velocities, eroding the channel. These factors also considerably degrade any natural habitat for stream biota.

Embedded Sediment

Sediment embeddedness measures the degree to which cobbles and large gravels are buried and their interstitial spaces filled because of fine sediment deposition. In a study of habitat restoration in a highly sedimented Idaho stream, Hillman et al (1987) found that interstitial spaces among cobbles may be essential winter habitat for juvenile chinook salmon. When large cobble was added to an otherwise embedded stream, juvenile populations increased. When that same cobble became embedded, the population decreased.

Embeddedness blocks passages and removes small cover spaces for eggs, fry and juvenile fish. USEPA (2003) summarized that sediment deposition has caused a 94% reduction in numbers and standing crop biomass in large game fish due to increased vulnerability of their eggs to predation in gravel and small rubble, reductions in oxygen supply to eggs, and increased embryo mortality.

Weaver and Fraley (1993) (in USEPA 2003) reported that emergence success of cutthroat trout was reduced from 76% to 4% when fine sediment was added to redds. NAHB (2000) reported that as fry grow into juvenile fish they seek out the slow moving water at the channel edges for cover. These areas also are favored for deposition of suspended sediment. When these areas are filled with excess sediment, sheltered space is lost and the juveniles are forced out into the channel to compete at a disadvantage with the adult fish. Waters (1995) also found that juveniles face habitat degradation from the sedimentation of the pools. Information quantitatively relating embeddedness levels to effects on aquatic fauna is limited.

NAHB (2000) found that invertebrate study results are often complicated by the fact that the various invertebrate species in a community responds very differently to increased sediments. Aquatic insect densities may decline at embeddedness levels of approximately two-thirds to three-quarters.

Surface Sediment

Surface sediment describes the percentage of streambed area with exposed fine sediments. Targets are developed to describe thresholds of suitability of stream substrates for invertebrate and salmonid habitation. Using the Wolman pebble count method, percent surface fines may be calculated. The same method is also used to determine the median substrates size (d50). This is used as a sediment target. The percentage of area is one measure, but particle size distribution, geometric mean particle size, median particle size, or other indices like fredle index may be used to describe the streambed's exposed fine sediment area.

Salmonids prefer mid-sized substrates with interstitial cover to either fine sediment or boulders and bedrock. Ephemeroptera, Plecoptera, and Trichoptera (important fish-food organisms) also respond positively to gravel and cobble substrates (Waters 1995). However, the percent coverage of fine sediments by area and the effects on salmonids and invertebrates have not been extensively investigated.

NAHB (2000) found a notable absence of data regarding effects of suspended sediments on warmwater fish. They also found evidence that some warmwater fish may be able to spawn on muddy substrate. Studies on the effects of surface sediment from construction activities are limited. However, one study by Reed (1977) in Wheeler et al (2003) did reveal that sediment from road construction in Northern Virginia reduced aquatic insect and fish communities by up to 85 percent and 40 percent, respectively.

Subsurface Sediment

Surface fines and embeddedness are apparent to the human observer, and are thus relatively easy to measure, but subsurface or depth fines also have a major effect on the suitability of spawning habitats. The amount of subsurface fine sediments as measured at the head of riffles in likely spawning areas can be an indication of redd site suitability, conditions for egg survival and alevin emergence in the constructed redd, as well as habitat quality for fry and prey.

Information on the biological effects of subsurface sediment varies according to the size of sediment and geographic area of concern. Some of the variability is reduced by standardizing the habitat and stream types (e.g., Rosgen [1996] level II) sampled. Subsurface sediment targets can serve as a measure of suitability for fish spawning grounds, and they are most applicable in riffles and spawning areas in streams with gravel/cobble/boulder streambeds. If there are excessive subsurface fines they can have detrimental effects on salmonid and invertebrate habitat suitability and redd conditions. In the western U.S. redd construction is often upstream from riffles or at the tail end of pools where there is a net flow of stream water downward into the substrate. Where upwelling groundwater rather than surface irrigates the substrate, the fines are no longer in the position to block the flow of water into the redd, and therefore are a less important threat (Waters, 1995).

Riffle Stability

The Riffle Stability Index (RSI) indicates the relative percentage of the streambed that is mobile during channel forming flows. Bed mobility is related to pool quality and abundance. With lower RSI values, there is overall greater residual pool volume, because less of the streambed is susceptible to moving. Pool habitat provides critical refuge for juvenile and adult salmonids. The RSI has been used as an indicator of beneficial use, especially as related to cold water biota. The RSI is measured as the percentage of the substrate particles (from a Wolman pebble count) that are smaller than the largest particles that are moved in channel forming flows. Particles on point bars are measured to determine the largest mobile particles.

Intergravel Dissolved Oxygen

One effect of the accumulation of fine sediment in the aquatic environment is reduced permeability of the substrate resulting in less oxygen exchange to support fish embryos and macroinvertebrates. Salmonids excavate streambed substrate to deposit eggs then backfill the “egg pocket” to protect the eggs during the incubation period. The eggs are dependent on the flow of oxygen-rich water through the substrate to survive. The accumulation of fines in the redd restricts water flow and reduces oxygen to the eggs which results in decreasing survival (Shapovalov and Berrian, 1939; Wickett, 1954; Shelton and Pollock, 1966).

Several studies have related intergravel dissolved oxygen to egg/fry survival. Survival of embryos has been positively correlated with intergravel dissolved oxygen in the redds for steelhead (Coble, 1961) and brown trout (Maret et al, 2003). Silver et al (1963) found that embryos incubated at low and intermediate DO concentrations produced smaller and weaker alevins than embryos incubated at higher concentrations. Weak sac fry cannot be expected to survive rigorous natural conditions. In a review of embryo development studies, Chapman (1988) noted several examples of developmental impairment at lower DO concentrations, but did not recommend a single threshold. Bjornn and Reiser (1991) recommended that intergravel DO concentrations should be at or near saturation, and that temporary reductions should drop to no lower that 5.0 mg/L.

Observations of the effects of intergravel flow on macroinvertebrates are much less extensive than those for fish. Excessive sediment affects macroinvertebrates by accumulating on the body surfaces and reducing the effective area of the respiratory structures (Lemly, 1982) or by covering pupae cases and reducing the flow of oxygenated water to the metamorphosing insect (Rutherford and Mackay, 1986).

Fish Blockages

Infrastructure associated with urbanization–such as bridges, dams, and culverts–can have a considerable effect on the ability of fish to move freely upstream and downstream in the watershed. This in turn can have localized effects on small streams, where nonmigratory fish species can be inhibited by the blockage from recolonizing areas after acutely toxic events. Anadromous fish species such as shad, herring, salmon, and steelhead also can be blocked from making the upstream passage that is critical for their reproduction.

8.2.3.6 Site Differences in Physical Impacts

Site differences that can affect physical impacts include location of the impervious surfaces, presence of vegetation, and soil type within the watershed. Location of the impervious development can be instrumental in the timing of runoff in a watershed. If the development is at the bottom of the watershed, peak flow from the urbanized area will likely have passed downstream before the flow peaks from the upper watersheds reach the urbanized area (Sauer et al, 1983). Vegetation can reduce channel erosion from storm flows. A study in British Columbia showed that meander bends with vegetation were five times less likely to experience significant erosion from a major flood than similar nonvegetated meander bends (Beeson and Doyle, 1995). The types and porosity of soils are also important in determining runoff characteristics from the land surface and erosion potential of the channels. Allen and Narramore (1985) showed that channel enlargement in chalk channels was from 12 to 67 percent greater than in shale channels near Dallas, Texas. They attributed the differences to greater velocities and shear stress in the chalk channels.

8.3 ANALYSIS OF SOIL TEXTURE BY REGION

EPA used surface soil texture as the primary indicator of soil nature for the 48 contiguous states. The USDA GIS coverage of surface soil texture (the top six inches of soil) was developed primarily to characterize agricultural areas. NRI (USDA, 2000) data indicates that agricultural land (crop land, pasture land and range land) makes up a large fraction of the land area converted to urbanized areas annually. The bulk of the remaining converted acreage is from areas characterized as forested. EPA used the agriculture-based USDA soil characterization data as a reasonable approximation of the soil texture that would be encountered on all new construction sites.

The USDA coverage also allowed for the identification of the three dominant soils for each ecoregion, listed in Table 8-15. Where more than three soils were present, only the top three textures were selected and the percentage of each prorated so that the total percentage equaled 100%. In each ecoregion the three dominant surface soil textures comprised at least 65 percent of the total surface area in each ecoregion when considering all soils present. This was judged to provide a reasonable approximation of the geographic distribution of construction site soils for each ecoregion. The per-ecoregion soil texture information was then subdivided into the state-ecoregion area basis for later use in computing erosion rates. In summary, the analysis identified seven different soil textures that dominate the surface soil coverage within the 48 contiguous states.

8.4 ESTIMATION OF SOIL EROSION RATES

The evaluation of soil erosion rates was based on previous procedures used by EPA to assess the environmental benefits of the Phase II Storm Water Rule (EPA, 1999), which utilized the Revised Universal Soil Loss Equation (RUSLE) (USDA, 1997). The pollutant of primary interest in storm water discharges from construction sites is sediment that results from eroded soil. This sediment is composed of both suspended solids (fine-grained material) and bedload (large-grained material). The analysis entailed evaluation of up to three dominant soils in each ecoregion (see Table 8-15), for three slopes (3, 7, and 12 percent). In this assessment, EPA assumed that construction sites were evenly divided among these three slopes. For all slope and soil combinations, the RUSLE equation was used to estimate the ambient annual erosion rate or yield (natural), and the erosion rate with construction activity occurring without any BMPs. These two erosion rates provide the basis for the estimate of loadings reductions related to implementation of construction site BMPs.

Table 8-15. Ecoregion Surface Soil Texture Characterization

Ecoregion	Soil #1 Texture	Percent Coverage	Soil #2 Texture	Percent Coverage	Soil #3 Texture	Percent Coverage
1	Sand	18.5%	Sandy Loam	34.2%	Loam	47.3%
2	Sand	11.3%	Sandy Loam	41.8%	Loam	46.9%
3	Sandy Loam	36.9%	Loam	63.1%		
4	Loamy Sand	29.0%	Sandy Loam	71.0%		
5	Sand	31.8%	Sandy Loam	51.2%	Loamy Sand	17.0%
6	Sand	78.2%	Loamy Sand	9.9%	Sandy Loam	11.8%
7	Sand	100.0%				
8	Sandy Loam	46.5%	Silt Loam	53.5%		
9	Silt Loam	62.6%	Sandy Loam	18.1%	Loam	19.4%
10	Silt Loam	54.0%	Sandy Loam	18.3%	Loam	27.7%
11	Silt Loam	59.7%	Sandy Loam	18.0%	Clay	22.3%
12	Silt Loam	54.0%	Sandy Loam	25.6%	Loam	20.4%
13	Silt Loam	31.5%	Loam	68.5%		
14	Sandy Loam	39.5%	Loam	60.5%		
15	Silt Loam	38.9%	Loam	61.1%		
16	Sandy Loam	52.4%	Loam	47.6%		
17	Silt Loam	37.5%	Loam	34.0%	Silty Clay	28.5%
18	Silt Loam	100.0%				
19	Sandy Loam	37.4%	Loam	43.2%	Loamy sand	19.4%

Within each of the 19 ecoregions, specific urban areas were selected as the areas where new construction is most likely to occur. Selecting specific urban areas was necessary in order to determine the appropriate rainfall characteristics and to set RUSLE equation parameters related to rainfall and soil cover. The erosion rates for these urban areas were assumed to be representative of the ecoregion as a whole. The specific urban areas analyzed within each ecoregion are presented in Table 8-16. This table also presents the range of sediment yields for the three slopes and dominant soils in each ecoregion. When computing the values in Table 8-16, the role of construction site BMPs were not considered–the estimates are solely ambient conditions and disturbed (denuded) conditions. BMP removal rates are discussed in Section 8.5.

As shown in Table 7-4, it was assumed that some portion of each construction site will remain undisturbed, depending on site size and ultimate land use. This is due to a certain percentage of each site comprising features such as open space, natural area set-asides, stream buffers, and forested buffers. For the estimated fraction of each construction site expected to be undisturbed, EPA set the rate of eroded material to ambient levels. For example, disturbed sand soils in ecoregion 1 produce a maximum construction site yield of 2.71 tons per acre, and undisturbed sand soils on construction sites will produce 0.69 tons per acre.

The duration of construction site activities and timing of these activities are variables that affect how much eroded soil is generated. Several factors are simplified in this assessment in order to avoid complexity and the use of excessive analytical resources. First, the assumed length of the construction period spans a calender year, regardless of construction site size, meaning there is no "wintering over" of partially constructed areas. Since the estimates of construction acreage are based on annual values obtained from NRI, this is a reasonable assumptions. Although large construction projects will likely span several years, the basis of the analysis is the amount of acreage actually being developed in any given year.

The timing of construction activities (e.g., clearing and grubbing) are assumed to occur in ways that minimize soil erosion. Instead of denuding an entire large site at a single time, construction operators are assumed to used a phased approach to land disturbance, where only portions of each construction site are cleared and graded before moving on to other portions. EPA acknowledges this assumption will likely result in underestimating the actual loadings, as it neglects the fact that large portions of the site may be disturbed for a considerable period of time.

Table 8-16. Range of Annual Erosion Estimates by Dominant Soil Type in Each Ecoregion (tons/acre/year)

Soil Type	Minimum Ambient Yield	Maximum Ambient Yield	Minimum Construction Site Yield	Maximum Construction Site Yield
Ecoregion 1, Indicator City Denver, Co				
Sand	0.19	0.69	0.73	2.71
Sandy Loam	1.01	3.73	3.96	14.63
Loam	1.42	5.25	5.58	20.59
Ecoregion 2, Indicator City Salt Lake, Ut				
Sand	0.07	0.26	0.36	1.33
Sandy Loam	0.38	1.39	1.95	7.20
Loam	0.53	1.96	2.74	10.13
Ecoregion 3, Indicator City Austin, Tx				
Sandy Loam	12.13	44.76	29.46	108.73
Loam	17.07	63.00	41.46	153.03
Ecoregion 4, Indicator City Atlanta, Ga				
Loamy Sand	5.26	19.41	13.87	51.20
Sandy Loam	11.83	43.67	31.21	115.20
Ecoregion 5, Indicator City Charleston, SC				
Sand	3.13	11.57	8.00	29.54
Sandy Loam	16.92	62.46	43.22	159.51
Loamy Sand	7.52	27.76	19.21	70.89
Ecoregion 6, Indicator City Jacksonville, Fl				
Sand	3.92	14.46	10.00	36.92
Loamy Sand	9.40	34.70	24.01	88.62
Sandy Loam	21.15	78.08	54.02	199.39
Ecoregion 7, Indicator City Miami, Fl				
Sand	5.22	19.28	13.34	49.23
Ecoregion 8, Indicator City Albany, NY				
Sandy Loam	3.33	12.30	10.35	38.21
Silt Loam	5.93	21.87	18.40	67.92
Ecoregion 9, Indicator City Pittsburgh, Pa				
Silt Loam	9.18	33.90	28.53	105.28
Sandy Loam	5.17	19.07	16.05	59.22
Loam	7.27	26.83	22.58	83.35

Soil Type	**Minimum Ambient Yield**	**Maximum Ambient Yield**	**Minimum Construction Site Yield**	**Maximum Construction Site Yield**
Ecoregion 10, Indicator City St. Paul/Minneapolis				
Silt Loam	5.4	20.01	21.03	77.62
Sandy Loam	3.05	11.25	11.83	43.66
Loam	4.29	15.84	16.65	61.45
Ecoregion 11, Indicator City Houston, Tx				
Silt Loam	35.94	132.63	87.29	322.17
Sandy Loam	20.21	74.61	49.10	181.22
Clay	9.73	35.92	23.64	87.25
Ecoregion 12, Indicator City Kansas City, Mo				
Silt Loam	12.61	46.55	36.15	133.40
Sandy Loam	7.09	26.18	20.33	75.04
Loam	9.98	36.85	28.62	105.61
Ecoregion 13, Indicator City Rapid City, SD				
Silt Loam	2.02	7.46	7.93	29.26
Loam	1.60	5.91	6.28	23.16
Ecoregion 14, Indicator City Boise, Id				
Sandy Loam	0.20	0.75	1.16	4.27
Loam	0.29	1.05	1.63	6.01
Ecoregion 15, Indicator City Eureka, Ca				
Silt Loam	4.55	16.78	17.20	63.49
Loam	3.60	13.28	13.62	50.27
Ecoregion 16, Indicator City San Francisco, Ca				
Sandy Loam	1.21	4.47	4.58	16.92
Loam	1.70	6.29	6.45	23.81
Ecoregion 17, Indicator City: Olympia/Seattle, Wa				
Silt Loam	3.35	12.36	12.68	46.78
Loam	2.65	9.79	10.04	37.04
Silty Clay Loam	2.58	9.53	9.77	36.06
Ecoregion 18, Indicator City: Spokane/Highland, Wa				
Silt Loam	0.30	1.11	1.71	6.32

Soil Type	Minimum Ambient Yield	Maximum Ambient Yield	Minimum Construction Site Yield	Maximum Construction Site Yield
Ecoregion 19, Indicator City: Stampede Pass/Mount Hood, Wa				
Sandy Loam	1.35	4.97	5.09	18.80
Loam	1.89	6.99	7.17	26.46
Loamy sand	0.60	2.21	2.26	8.35

Another assumption made in the analysis is that the size distribution of eroded material matches the native (dominant) soils. Table 8-17 indicates the grain size distribution of seven common soil textures believed to be present at a majority of construction sites.

Table 8-17. Estimated Soil Grain Size Distribution

Gross Soil Texture Classification	Clay Fraction, %	Fine Silt Fraction, %	Silt Fraction, %	Fine Sand Fraction, %	Sand Fraction, %
Clay	45	20	10	10	15
Loam	15	15	20	20	30
Loamy Sand	5.25	4.25	5	23.25	62.25
Sand	3.75	2.5	2.5	23.75	67.5
Sandy Loam	7.5	7.5	10	22.5	52.5
Silt Loam	11.25	18.75	30	21.25	18.75
Silty Clay Loam	18.75	22.5	32.5	18.75	7.5

Adapted from Foth, 1978

8.5 ESTIMATION OF BMP REMOVAL EFFICIENCIES

8.5.1 APPLICATION OF SEDCAD

BMP performance is dependent on many factors related to soil nature, hydrology, and engineering practice (see Section 5). A commercially available software package (SEDCAD) was used to model BMP removal efficiencies for a series of site conditions. These reference values were then used to estimate performance for each combination of soil, slope, location, and model construction site size, and reflecting the influence of the regulatory options considered on sediment discharges. Surface soil texture was the key feature used to adjust for the varying effects of soil nature on BMP removal efficiency.

BMPs were selected and sized for a subset of the model sites developed in Sections 4 and 7 reflecting the area draining to each BMP through the appropriate drainage pathway and following industry standard design practices. Table 8-18 provides an overview of the analysis performed, and detailed documentation of the specific design criteria and assumptions made can be found in the public record.

Table 8-18. Description of EPA Construction Site Analysis for BMP Removal Estimation

Item	BMP	Analysis Performed	Comments
Erosion Control	Seed and Mulch	No SEDCAD simulation	Estimation of removals was conducted in two phases. The first phase assumed that soils were exposed and unmanaged for varying periods of time to account for the active construction phase. In the second phase, soils were assumed to be stabilized with seed and mulch (see Table F-4). The total duration of each project was assumed to be 1 year.
Sediment Controls	Silt Fence	SEDCAD analysis generic to all model sites	
	Rock Check Dam	SEDCAD analysis generic to all model site sizes	
	Inlet Protection	SEDCAD analysis generic to all model site sizes	
	Sediment Trap	SEDCAD analysis of 3 acres of centralized drainage on a 7.5 acre model site	
	Sediment Basin	SEDCAD analysis of 10 acres of centralized drainage on a 25 acre model site	

For each BMP, performance was evaluated individually for 10 soil grain size groups under five different rainfall events ranging from 0.5 to 3.6 inches in depth. All NRCS or Soil Conservation Service (SCS) Type rainfall distributions (Type I, II, and III) were individually evaluated so that BMP performance would be customized to the climate on an ecoregion basis. For example, the estimated BMP performance within the relatively dry Ecoregion 1 is based on a range of rainfall events that are shaped according to the NRCS Type II distribution, or the rainfall distribution expected in the region.

The wide range in grain size groups was intended to improve the representativeness of the SEDCAD simulation of BMP performance to all of the likely conditions present across the country. This acknowledges that construction site BMPs have higher removal efficiencies for larger grained particles (such as sand) than for smaller grained particles (clays). By analyzing soil grain size groups individually, a reasonable basis for compositing an estimated removal rate was established for any of the common surface soil textures discussed in Section 8.3. BMPs are assumed to provide consistent performance for all sites that employ them in a single state-ecoregion area. For example, two sedimentation basins employed on a single 25 acre construction site were assumed to provide the same performance as four sedimentation basins employed on a 70 acre construction site. This simplification was necessary in order to limit the total analytical time and resources required to conduct the analysis.

8.5.2 CUSTOMIZING BMP REMOVALS FOR STATE-ECOREGIONS

The results of the basic SEDCAD analysis were used to develop BMP removal rates customized to each state-ecoregion area that reflect the role of:

- Dominant soils;
- Climate;
- Regulatory conditions (e.g,. baseline state regulations); and
- BMP combinations.

The suite of potential regulatory requirements includes stabilization of exposed soil areas within 14 days following the end of land disturbance. Because seeding (e.g., hydroseeding) and seeding with mulching for soil stabilization are common practices within the industry, it was assumed that this requirement would not increase the application rates of stabilization measures, but would rather only change the timing of stabilization. This was judged to be a reasonable assumption because existing state requirements include stabilization of exposed soils (although the time allotted may be 28 or 30 days instead or 14 days) or developers elect to stabilize exposed soils to prevent the need for subsequent re-grading.

EPA acknowledges there are difficulties involved in analyzing the effect of the shortened time period allowed for stabilization. Inherent to any analysis is uncertainty associated with the timing of land disturbing activities on various portions of a construction site, and further uncertainty related to seasonal variation in rainfall conditions across the country. So when developing its standardized approach within limits of its resources, EPA elected to focus on site physical features for a suite of model sites (e.g., site size, local soils texture) and the “typical” performance of seed/mulch as reported in the literature (derived from a range of soils and rainfall events).

To calculate the effects of seeding and mulching, EPA’s model assumed that well applied mulch provides the same sediment control effectiveness as grass. So, denuded construction surfaces are immediately stabilized as soon as the seed/mulch combination is applied. The idea behind this assumption is that as the mulch degrades, the grass germinates and grows, which then compensates for the loss of mulch. To estimate the sediments generated and released to the environment, the first step was to assign to each model site size category the period in the construction year that the site has bare soils or is covered by either mulch or grass (both for the baseline and regulatory conditions) (See Appendix F). For larger site sizes (larger than 1 acre), eroded site sediment generally goes through additional sediment control devices (e.g., sedimentation basins), whether site soils are bare or are stabilized with seed/mulch. So, for part of the construction year, seeding/mulching provides additional in-series control with downstream sediment controls within EPA’s suite of site models. The overall capture of eroded material for a construction year was set equal to the sum of the sediment captured in sediment control for the period without seed/mulch, plus the sediment captured by combined seed/mulch/sediment controls for the period following seed/mulch application. In this calculation, EPA's suite of site models estimates the generation of sediments on a per particle size basis (e.g., clay, silt, sand), based on local rainfall information and local (common) soils derived from national databases.

EPA acknowledges that this approach to estimating the influence of seeding and mulching on sediment discharges from construction sites likely underestimates the actual sediment discharges that will occur over the life of construction projects. Similarly, it also likely underestimates the reductions that will result from implementing soil stabilization within 14 days instead of 28 days since it ignores a number of important real-world factors. In addition, on residential projects individual lots are often sold off to a number of builders, and exposed soil areas are likely to persist for long periods of time in these areas. In addition, the analysis uses average or typical rainfall conditions. It ignores the influence of short-duration, high intensity storm events that could potentially occur throughout the construction project. However, despite its drawbacks, the analysis is reasonable given the analytical resources available in this case.

As shown in Table 8-17, each of the seven dominant surface soil textures can be characterized by the percent found in various grain size groups. The 10 soil grain size groups analyzed individually with SEDCAD provide key data for creating composited BMP removal rates for each dominant soil texture. Computing the amount of soil removed for a particular BMP is done by combining size-specific removals in proportion to the grain-size distribution of each soil. Step 1 in Table 8-19 presents the scale and purpose of the assessment of dominant soil grain size distributions.

The method for estimating construction site BMP removal rates in this analysis is probability-based, where the rainfall probability (i.e., the total rainfall depth occurring during an event) in each ecoregion is used to composite a probable annual performance for the model construction sites. Single-event BMP removal rates from SEDCAD were combined for each ecoregion to compute an "expected annual" removal rate. SEDCAD simulation of six individual rainfall events ranging from 0.5 to 5 inches in rainfall demonstrate how individual BMPs perform for various storm events. For each ecoregion, EPA analyzed ten years of precipitation records to categorize local rainfall patterns and estimate the probability that a storm of a given size will occur within a 1-year period (the assumed duration of construction projects). The expected annual removal value was then calculated for each BMP within each ecoregion from the cross-product of the BMP removal rate array with the ecoregion distribution of rainfall.

The expected value approach accounts for the fact that large but relatively infrequent events will have low removal rates (due to flows exceeding BMP design capacities and leading to bypasses, shorter detention times, or overtopping), while more frequent but smaller rainfall events will have higher removal rates. Step 2 in Table 8-19 indicates the scale and purpose of the probability-based assessment of ecoregion hydrologic characteristics. Table 8-20 indicates the range in soil-specific BMP removal rates for eroded construction site soils in the nineteen ecoregions.

The assessment of current state regulations (see Table 3-1) provides the basis for characterizing which of the seven model construction site sizes will employ a particular mix of BMPs under baseline conditions. The best example of this is a sediment trap for sites with between 5 and 10 acres of drainage area. Many states do not have this requirement as part of their existing program, but it is a requirement under Options 2 and 4. When calculating removal rates under baseline conditions for states without this requirement, removal rates were calculated for the 7.5 acre site group using BMP removal rates for rock check dams. For the analysis of BMP removals under Option 2 and 4, the removal rates were calculated using the more effective sediment trap.

Options 2 and 4 also affect construction site BMPs by way of setting minimum design requirements. The design basis for sediment basins under these options would increase from 1,800 to 3,600 cubic feet per acre of drainage for the 25 acre site size group in states that do not have this requirement under baseline conditions. The change in basin sizing would be reflected in the associated removal rate for those sites. Although many states do not specifically indicate minimum sediment basin requirements, EPA assumed that all construction sites of greater than 10 acres would implement sediment basins with at least 1,800 cubic feet per acre of storage, as basins are common practice in the industry. Step 3 in Table 8-19 indicates the scale and purpose of these considerations of current state regulations.

The combined performance of BMPs in series was assessed individually for each grain size group. An assumption was made that total BMP removal was equal to the removal from an erosion control BMP (i.e., seed and mulch), followed by the removal from a sediment control BMP (e.g, sediment trap). So, for 7.5 acre construction sites under Options 2 and 4, the total removal of clay-sized particles would be equal to the load of eroded clay-sized particles from the site, less the reduction of seed and mulch, and then less the estimated reduction of clay-sized particles provided by a silt trap. Step 4 in Table 8-19 indicates the scale and purpose of the BMP groupings used in this analysis.

Table 8-19. Methodology for Estimating BMP Removal Rates

SEDCAD Analysis	Other EPA Analysis	Examples
Step 1 - Soils Processing		
10 grain size groups covering from large sand to clay are individually analyzed, then combined to estimate individual removals for 3 major size groups; sand, silt, and clay	7 soil textures containing different amounts of sand, silt and clay were found to be common in the nation. SEDCAD output is used to estimate soil texture-specific removals, based on sand, silt, and clay fractions.	Loam texture soil contains 40, 40, and 20 percent sand, silt, and clay particles, respectively. SEDCAD lumped removals for these grain sizes in a sediment basin are 90, 40 and 10 percent, respectively, for a single rainfall event. The composited removal rate for the silt texture soils is calculated as 54 percent for the event.

SEDCAD Analysis	Other EPA Analysis	Examples
Step 2 - Precipitation Processing		
No direct role	For each size fraction, BMP removals are estimated for 6 rainfall events of increasing depth (0.5, 0.7, 1.2, 2.4, 3.6, and 5.0 inches of total precipitation) and then composited into a single expected removal rate.*	For the NRCS Type II rainfall distribution, SEDCAD sediment basin removal rates for the silt size fraction range from 100 (a 0.7-inch event) to 21 percent (a 5-inch event). The probability of the six rainfall events for Ecoregion 1 are used to composite an expected annual silt fraction removal rate of 98 percent for sediment basins. (Note, most rainfall events in the semi-arid Ecoregion I are small and fully retained within the wet storage portion of sediment basins with 3,600 cubic feet per acre of storage)
Step 3 - State Regulation Processing		
No direct role	For each area defined by the intersection of state and ecoregion boundaries, a decision is made on the presence or absence of BMPs under each option evaluated	A state found in Ecoregion 1 does not have a sediment basin requirement under baseline conditions. In this case, baseline reductions are based on removal rates of sediment basins with 1,800 cubic feet per acre of storage. Under Option 4, all sites would be required to install sediment basins with 3,600 cf/ac for large sites, so removal rates will range from 39% to 94% depending on the soils present.
Step 4 - BMP Combination		
No direct role	For centralized drainage and perimeter drainage (each), one erosion prevention BMP (e.g., seed/mulch) is followed by a single sediment control BMP (e.g,. sediment basin). The combined efficiency of the two BMPs is calculated individually for each land use and site size combination, which indicates the total removal.	For a loam soil, seed/mulch is 95 percent effective on all grain sizes. The remaining 5 percent enters a sediment basin where sand, silt, and clay size particles are individually assessed to determine the additional removal of each fraction. As a result, the combined removal of seed/mulch and sediment basins in a state in Ecoregion 1 is 98.5 percent (accounts for the probability of various rainfall events and the full capture with no discharge condition that occurs for frequent small events)

* Expected performance was based on all rainfall events encountered in 10 years of records for indicator cities selected for each ecoregion

Table 8-20. Range of BMP Percent Removals (Weighted by Grain Size Distribution)

Soil Texture					
	Silt Fence	Inlet Protection	Rock Check Dam	Silt Trap	Sediment Basin
Clay	34.5 / 40.4	17.3 / 20.8	17.3 / 20.8	30.9 / 39.8	38.8 / 62.2
Loam	67.4 / 73.3	34.2 / 39.4	34.2 / 39.4	59.9 / 70.8	64.2 / 79.7
Loamy Sand	89.9 / 91.5	67.1 / 72.2	67.1 / 72.2	88.0 / 90.9	89.3 / 93.8
Sand	93.5 / 94.3	72.4 / 77.5	72.4 / 77.5	92.5 / 94.1	93.4 / 96.1
Sandy Loam	83.7 / 86.6	57.2 / 62.4	57.2 / 62.4	80.0 / 85.4	82.1 / 89.8
Silt Loam	65.8 / 73.9	23.3 / 28.9	23.3 / 28.9	54.6 / 69.9	59.2 / 78.1
Silty Clay Loam	54.4 / 63.3	11.5 / 16.9	11.5 / 16.9	42.3 / 59.4	48.2 / 71.1
Range shows values across nineteen ecoregions					

8.6 CALCULATION OF NATIONAL LOADINGS AND REMOVALS BY REGULATORY OPTION

This assessment of model construction sites is intended to acknowledge major influences on national loadings, including site size, current state BMP requirements, soil nature, slopes and flow lengths of construction sites, and climate. Ultimately, the assessment resulted in 276 individual loadings estimates, which were combined with 9,000 individual estimates of BMP removal rates for various settings. For each state-ecoregion area, the analysis:

- Generated "whole site" estimates of the population of construction sites reflecting up to three dominant soils and three slopes (i.e, at no time were fractions of model construction sites analyzed);
- Estimated the amount of eroded soil produced due to construction activities on the basis of site size and land use type;
- Estimated BMP removal rates for the regulatory options;

Using the population of construction sites by land use and size (see Section 4.2.2), state-ecoregion area load totals based on the estimated load discharged from each model site were computed for baseline conditions and for each regulatory option. State-ecoregion area load totals were then summed to produce state and national total loads for each regulatory option (see Table 8-21). Tables F-1, F-2 and F-3 in Appendix F provide detailed information on loadings, including loadings to individual HUCs. Table 8-22 indicates estimated per-state loadings for each alternative. Note that the state-level loads in Table 8-22 do not sum to the national loads in Table 8-21 or 8-1 due to rounding.

Table 8-21. National Annual Construction Load Estimates

Site Size, acres	Single Family (tons)	Multi-family (tons)	Commercial (tons)	Industrial (tons)	Total (tons)
Baseline					
0.5	96,735	31,105	888,510	38,268	1,054,618
3	89,368	66,771	929,412	46,473	1,131,964
7.5	129,814	97,290	540,091	18,237	785,432
25	392,563	268,202	1,319,539	34,323	2,014,627
70	220,234	112,214	859,721	30,127	122,296
200	291,595	2,742	0	0	294,337
Total Load (tons)	1,220,308	578,325	4,537,274	167,428	6,503,334
Options 2 and 4					
0.5	96,735	31,105	888,510	38,268	1,054,618
3	89,368	66,771	929,412	46,473	1,132,024
7.5	73,781	55,356	306,504	10,608	446,249
25	315,661	215,635	1,061,546	28,068	1,620,910
70	183,283	94,895	716,892	26,102	1,021,172
200	246,314	2,151	0	0	248,465
Total Load (tons)	1,005,142	465,913	3,902,864	149,519	5,523,438
Option 2/4 Incremental Loading Reduction Estimate (tons)	215,166	112,412	634,410	17,909	979,896

Table 8-22. State Annual Construction Load Estimates (Tons)

State	Baseline	Options 2 and 4
AL	287,073	209,759
AR	170,647	170,647
AZ	31,901	31,901
CA	137,654	101,464
CO	10,713	6,882
CT	26,680	17,834
DE	13,992	12,789
FL	165,065	165,065
GA	402,299	346,641
IA	55,537	55,537
ID	4,988	4,988
IL	120,331	103,157
IN	109,407	93,942
KS	91,805	67,129
KY	164,311	152,279
LA	276,932	216,048
MA	58,414	58,414
MD	116,981	79,118
ME	34,821	34,821
MI	233,685	170,917
MN	157,401	115,099
MO	277,848	188,674
MS	295,241	216,221
MT	17,343	11,416
NC	358,486	263,116
ND	11,326	7,709
NE	38,323	28,211
NH	25,857	25,857
NJ	131,874	90,000
NM	32,418	32,418
NV	747	747
NY	118,749	118,749
OH	212,799	181,410
OK	134,039	134,039
OR	37,690	25,820
PA	346,182	273,585
RI	9,311	6,337
SC	146,239	146,239
SD	14,761	13,729
TN	323,505	323,505
TX	787,982	787,982
UT	4,258	4,258
VA	159,707	159,707
VT	8,113	5,561
WA	69,782	47,035
WI	158,684	106,885
WV	99,719	99,719
WY	3,251	2,338

8.7 INTEGRATION OF NATIONAL LOADINGS INTO NWPCAM

As described in Section 8.5, the analysis generated loadings for 146 state-ecoregion areas. State-ecoregion areas were created by overlaying state boundaries with the boundaries of the 19 EPA ecroegions. In order to determine HUC-level loadings, GIS processing was used to convert state-ecoregion loadings into loadings for the approximately 2,000 HUCs that span the 48 contiguous states. Individual HUCs were apportioned loads by overlaying state-ecoregion areas based on the development rate in the HUC obtained from NRI. For example, when two HUCs collectively cover a single state-ecoregion area the HUC with the highest rate of development is assumed to have a proportionately greater fraction of the state-ecoregion loadings than the neighboring lower-rate HUC.

Estimates of the number of construction sites within each HUC were based on the acreage developed within each HUC along with the distribution of construction sites by site size in Table 4-10. Numbers were rounded to whole numbers in order to prevent analytical problems associated with analyzing fractional sites. The per-site load within each HUC was calculated by dividing the total load for a site size group (i.e., 25 acres) by the number of sites in that site size category. The per-HUC construction site population and loadings were converted from GIS into a spreadsheet for subsequent analysis of benefits in NWPCAM. The HUC-level number of sites and associated loads are contained in Table F-3 of Appendix F. Note that due to rounding, the total number of sites and loads presented in Table F-3 do not match the national totals in Table F-1.

8.8 NWPCAM ASSESSMENT OF IN-STREAM SEDIMENT CONCENTRATIONS

8.8.1 NWPCAM SYSTEM OVERVIEW

The National Water Pollution Control Assessment Model (NWPCAM) is a national surface water quality model that simulates water quality improvements and economic benefits that result from water pollution control policies. NWPCAM is designed to characterize water quality for the nation's network of rivers, streams, and lakes. NWPCAM incorporates a water quality model into a system designed for conducting national policy simulations and benefits assessments. NWPCAM is able to translate spatially varying water quality changes into willingness-to-pay values that reflect the value that individuals place on water quality improvements. In this way, NWPCAM is capable of deriving economic benefits estimates for a wide variety of water pollution control policies.

NWPCAM's water quality modeling system is suitable for developing water quality estimates for virtually the entire inland portion of the country. Its national-scale framework allows hydraulic transport, routing, and connectivity of surface waters to be simulated in the 48 conterminous states. The model can be used to characterize source loadings (e.g., point sources) under a number of alternative policy scenarios (e.g., loadings with controls). These loadings are processed through the NWPCAM water quality modeling system to estimate in-stream pollutant concentrations on a detailed spatial scale and to provide estimates of policy-induced changes in water quality. The model incorporates routines to translate estimated concentrations into a six-parameter water quality index (WQI6) that provides a composite measure of overall water quality. The WQI6 allows for the calculation of economic benefits associated with the estimated water quality improvements. NWPCAM can be used to assess both the water quality impacts and the social welfare implications of alternative policy scenarios.

NWPCAM is an evolving system developed for EPA's Office of Water (OW) by RTI and has been used in several applications to estimate the benefits of pollution control policies. An adaptation of version 1.0 was used by OW's Office of Waste Management (OWM) to evaluate the potential benefits of the Stormwater Phase II rulemaking (Bondelid et al, 1999). Version 1.1 (RTI, 2000b), developed in response to external peer review on version 1.0, was oriented toward evaluating the effects of point source controls. NWPCAM version 1.1 was used in the proposed Meat Processing Effluent Guidelines rulemaking (EPA, 2003a). Version 1.5 was used in the proposed Animal Feed Operation/Confined Animal Feed Operation (AFO/CAFO) rulemaking (RTI, 2000a). Version 1.6 was used in developing the final AFO/CAFO rulemaking process (RTI, 2002). Version 2.1 with the Eutro-WASP kinetics model was used for analysis of the options for the construction and development final action. Complete documentation on NWPCAM and the modeling process used in this analysis can be found in RTI, 2004.

8.8.2 CONSTRUCTION AND LAND DEVELOPMENT MODELING PROCESS

8.8.2.1 Construction and Development Loads

The loads developed (see Tables 8-21, 8-22 and Tables F-1 and F-2 of Appendix F) for the options evaluated were distributed to the 8-digit hydrologic unit (HUC) level and broken out by site size. All loads were assumed to be TSS. These HUC-level loads are presented in Table F-3 in Appendix F. Loadings were developed for 1,717 HUCs for baseline conditions and the four regulatory options considered. Of the 1,717 HUCs, 57 (3%) were immediately excluded from the modeling analysis because they did not have an associated stream network in NWPCAM.

8.8.2.2 Distribution of Construction Sites and Loads

The methodology developed for distributing loads called for:

(1) Randomly distributing construction sites onto agricultural and forest land cover cells;

(2) Assigning loads to land cover cells based on the number and size of sites assigned to each land cover cell; and

(3) Removing background NPS TSS loads from land cover cells that were assigned construction sites based on the fraction of the cell that was covered by sites.

A total of 6,894,140 land cover cells were in the NWPCAM 2.1 database. Each land cover cell was assigned to one of eight general categories: agriculture, agriculture/herbaceous, agriculture/woodland, herbaceous, forest, water bodies/barren, tundra, and urban. Of the total land cover cells, 6,557,224 (95%) were assigned one of the first five land cover categories, and were classified as forest or agriculture. All of the forest and agricultural cells used during the site distribution process. Each agricultural and forest cell was assigned a random number.

An analysis was conducted to compare the construction site area against the available forest and agricultural land within each HUC. Of the 1,660 HUCs that had an associated stream network, 1,638 (95%) had at least as many agriculture/forested land cover cells as number of sites, indicating that no land cover cell would be assigned multiple construction sites. Six (<1%) had fewer agriculture/forest land cover cells than sites but had enough area to accommodate all sites. This indicated that some land cover cells were assigned multiple sites. Sixteen HUCs (1%) were excluded from the modeling analysis because they lacked land cover data.

Of the original 1,717 HUCs supplied in the loadings file, 1,644 HUCs were included in the final modeling analysis. Table 8-23 shows the total TSS loadings by loading option (i.e. mode run) for the 1,644 HUCs included in the modeling analysis. Of the 979,896 tons/year of loadings reductions estimated for Option 2/4, 941,108 tons/year, or 96%, were incorporated into the NWPCAM modeling.

Table 8-23. Summary of Construction and Development Loadings

Option	**TSS Loading (ton/yr)**
Baseline	6,288,751
Options 2 and 4	5,347,643

A computer module was used to distribute construction sites onto land cover cells. For each HUC, the module selected its associated land cover cells, ordered by the random identification numbers. Sites were distributed by assigning each land cover cell one site before moving on to the next land cover cell. When there were more sites than land cover cells, the code went back to the first land cover cell on the list and continued looping until all sites were distributed. The sites were distributed in order of decreasing size: 200 acres, 70 acres, 25 acres, 7.5 acres, 3 acres, and 0.5 acres. Since the land cover cells were randomly ordered, this did not introduce bias but had the advantage that each successive land cover cell had greater than or equal area available for sites.

Each agriculture and forest cell started with its total area available for construction sites. Each time a site was assigned to a land cover cell, the cells’s available area was reduced by the site are. In one HUC (4090001), a point was reached where no land cover cell had enough area to contain the entire construction site. In that case, the code distributed portions of the site onto two different land cover cells. After distributing the sites to land cover cells, quality assurance measures were taken to ensure that:

- The total number of sites distributed in each HUC was equal to the starting value.

- The number of sites in each size category that were distributed in each HUC was equal to the starting values.

- The total site area distributed was equal to the starting site area.
- No land cover cell was assigned more construction site area than was available in the land cover cell.
- The number of land cover cells with sites was close to (or equal, in most cases) to the number of sites in the HUC.

Once construction sites were distributed to the land cover cells, TSS loads were distributed using the HUC, site size, and fraction of site assigned to the land cover cells. The loading file contained total TSS loadings by HUC and site size category, so loadings for each site were calculated by dividing the total load in the size category by the number of sites in that size category. The TSS load distribution process involved several quality assurance measures to ensure that:

- Total TSS loads distributed matched the total loads shown in Table 8-23.
- Total TSS loads within each HUC were the same as in the load file.
- TSS loads by HUC, site size category, and regulatory option were the same as in the load file.

The output of the computer module was a table with the format shown in Table 8-24.

Table 8-24. Example of Output from Site and Load Distribution Process

HUC8	Cell ID	RF3RCHID	Site Size	Fraction of Site	Baseline Load	Opt 2/4 Load
3010102	1	3010102 1 0.00	200	1	30.2	28.7

8.8.2.3 Removal of Background NPS TSS Loads

For each land cover cell that was assigned a construction site, a portion of its background NPS TSS was removed to avoid double-counting. The NPS TSS load on each cell was reduced by the fraction of the land cover cell occupied by construction sites. For example, if a land cover cell was originally assigned 100 ton/yr of TSS, but was assigned a 200 acre (0.81 km^2) construction site, the new NPS TSS load for that cell was calculated as 100 ton/yr * (1-0.81) = 19 ton/yr. This removal process had a negligible impact on NPS TSS loads. Originally, total NPS TSS loads were 5.226×10^8 ton/yr. Approximately 7.126×10^5 ton/yr were removed through this process, leaving a total NPS TSS load of 5.218×10^8 ton/yr. The modified NPS loads underwent an overland transport module that delivered the loads to the RF3 network, and an in-stream delivery module that routed the loads down to the RF3Lite network. For both modeling components, TSS settling was modeled using a net settling velocity approach, as shown in Equation 1.

$$k_{sed} = \frac{v_{sed}}{depth}$$
$$C(x_2) = C(x_1)e^{-k_{sed}t} \qquad (1)$$

where

k_{sed}	=	First-order TSS settling rate (1/day)
v_{sed}	=	Net settling velocity (0.3 m/d; Chapra 1997)
depth	=	Channel depth (m)
$C(x_2)$	=	TSS concentration at x_2 (mg/L)
$C(x_1)$	=	TSS concentration at x_1 (mg/L)
t	=	Time-of-travel from x_1 to x_2 (d)

Table 8-25 presents a summary of these modified NPS TSS loads.

Table 8-25. NPS TSS Loads Modified for Construction and Development Analysis

Scale	**TSS Load (ton/yr)**	**Delivery Ratio**
Land Cover Cell	5.22×10^8	N/A
RF3 Network	3.24×10^8	0.62
RF3Lite Network	1.99×10^8	0.38

8.8.2.4 Routing Construction and Development Loads to the RF3Lite Network

The overland transport step was eliminated, which is the same as assuming that all loads from land cover cells entered the RF3 network. This assumption was made because the load development process accounted for the loss of large particles. Construction loads were routed from the RF3 network to the RF3Lite network using the first-order loss approach described in Equation 1. Table 8-26 summarizes the delivery of construction and development TSS loads to the RF3Lite network. TSS loads from construction sites accounted for approximately 1% of the total TSS loads entering the RF3Lite network.

Table 8-26. Summary of Construction and Development TSS Loads

Option	LCC Load (ton/yr)	RF3 Load (ton/yr)	RF3 Delivery Ratio	RF3Lite Load (ton/yr)	RF3Lite Delivery Ratio
Baseline	6,288,751	6,288,751	100%	3,806,800	61%
2/4	5,347,643	5,347,643	100%	3,238,926	61%

8.8.2.5 Water Quality Modeling and Economic Benefits Analysis

After the construction and development and modified background NPS loads were routed to the RF3Lite network, the next step in each model run consisted of water quality modeling in the RF3Lite network using Eutro-WASP and the mean annual flow condition. After in-stream modeling with Eutro-WASP, the WQI6 and WQL values were calculated in each RF3Lite reach. Economic benefits associated with the regulatory options were calculated for RF3Lite reaches that showed a change in WQI6 or WQL.

8.9 RESULTS OF CONSTRUCTION AND DEVELOPMENT MODELING ANALYSIS

Table 8-27 lists the number of improved reaches and the length of the improved reaches for Option 2/4 over baseline conditions. Option 2/4 loads also caused water quality degradation in a number of reaches. This degradation was likely due to effects of algal growth on modeled TSS concentrations.

Tables 8-28 and 8-29 list the economic benefits estimates using both the WQL approach and the WQI6 approach, respectively. The sum of local and nonlocal annual benefits for Option 2/4 ranged from $15,203,000 to $28,357,000 (year $2002). EPA was not able to ascribe any benefits to Option 1.

Table 8-27. Summary of Waters Affected (Option 2/4)

Method	Number of Improved Reaches	Improved Segment Length (miles)	Number of Degraded Reaches	Degraded Segment Length (miles)
WQI6	7,446	9,303	38	78
WQL	583	803.3	26	55.8

Table 8-28. Economic Benefits Using the WQL Approach (Option 2/4)

Use Support Category	WQL Benefit (2002$)*
Boat	$8,461,000
Fish	$15,580,000
Swim	$4,316,000
Total	**$28,357,000**

* Note: numbers may not add due to rounding

Table 8-29. Economic Benefits Using the WQI Approach (Option 2/4)

WQI Category	WQI6 Benefit (2002$)*
WQI<26	$27,000
26 < WQI < 70	$7,714,000
WQI > 70	$7,462,000
Total	**$15,203,000**

*Numbers may not add due to rounding

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Appendix A

Model Construction Site Geometry

Introduction

A suite of model construction site geometries were developed to represent the population of construction sites in order to estimate costs and pollutant load reductions for the regulatory options developed. A total of 24 model sites were developed consisting of a combination of six site sizes (0.5, 3, 7.5, 25, 70, and 200 acres) and four land uses (single family residential, multifamily residential, commercial, and industrial). These model sites were developed in order to take into consideration the following factors:

Drainage Pathways and Watershed Size. The national average watershed size was determined for different stream orders to delineate drainage pathways for different site sizes and to estimate the associated BMP sizes. These factors were needed in order to calculate the costs of BMPs and to model the pollutant removal efficiency of BMPs under the various regulatory options considered.

Site Imperviousness. Typical amounts of ultimate impervious and pervious areas for the land uses were determined in order to estimate the likely extent of disturbed acreage for each site size and land use.

Within each site model three flow paths were defined:

1. disturbed areas that drain to a centralized point;
2. undisturbed areas that drain to a centralized point; and
3. perimeter drainage (assumed to be disturbed).

Based on geometry, the model sites dictate the size, number, and type of BMPs employed, under baseline and regulatory options. Each potential regulatory change was evaluated to assess how the model site BMP configuration would change, so that pollutant loading reductions and costs could then be assessed.

Small Model Construction Sites (Less than 10 acres)

Three construction site models were created to represent small construction sites within the following size ranges:

1. 0 to 1 acre;
2. 1 to 5 acres; and
3. 5 to 10 acres.

These groups were each represented by single model site, which were 0.5, 3, and 7.5 acres, respectively. A site model was created for sites smaller than 1 acre in size, although none of the options affected sites of this size. These sites were included in the analyses in order to account for their pollutant loadings.

The first step of the analysis was to assume the placement of site models relative to first order watersheds. A low-end estimate of first order watershed size was based on EPA's review of topography found in approximately 2 million acres dispersed in the contiguous states. Using a low-end estimate tends to increase the number of erosion control BMPs installed (i.e., sediment traps and sediment basins), but does not increase the storage volume of these BMPs which originate solely from the acreage served (e.g., 3,600 cubic per acre). Note that the size of the first-order watershed has no influence on the number of other BMPs (e.g., inlet protection, rock check dams, seeding/mulch) within EPA's model sites.

Figure A-1 illustrates the assumed location of three small site models within first-order watersheds. Fitting the model site within a first order watershed is important because it helps set the presence of drainage features, such as first order streams. Table A-1 lists the assumed quantities of BMPs for the small construction site models. Figures A-2 through A-4 illustrate the geometry of these BMPs in relation to the small construction site models.

For the 0.5- and 3-acre models, sites were placed wholly within one first-order watershed. For the 7.5 acre model, sites were placed across two watersheds, reflecting that larger sites may cross major drainage divides. This means that approximately half the construction site runoff is assumed to flow to the left (on Figure A-4), and the other half flows to the right. As a result, this site size category would require two sediment controls (i.e., sediment traps) to serve the total central drainage acreage.

Figure A-3 illustrates EPA's approach to perimeter drainage, i.e., the area of the construction site that drains away from the site as sheet flow. For this site size model, EPA assumed that perimeter drainage controls would be required on three of the four sides of the rectangular site. The fourth side is on the uphill side of the site, and would drain centrally into natural and man-made swales/pipe systems.

Table A-2 indicates changes in BMPs expected for the small construction site models in response to the regulatory options.

Figure A-1. Placement of Small Construction Sites Within First-Order Watersheds

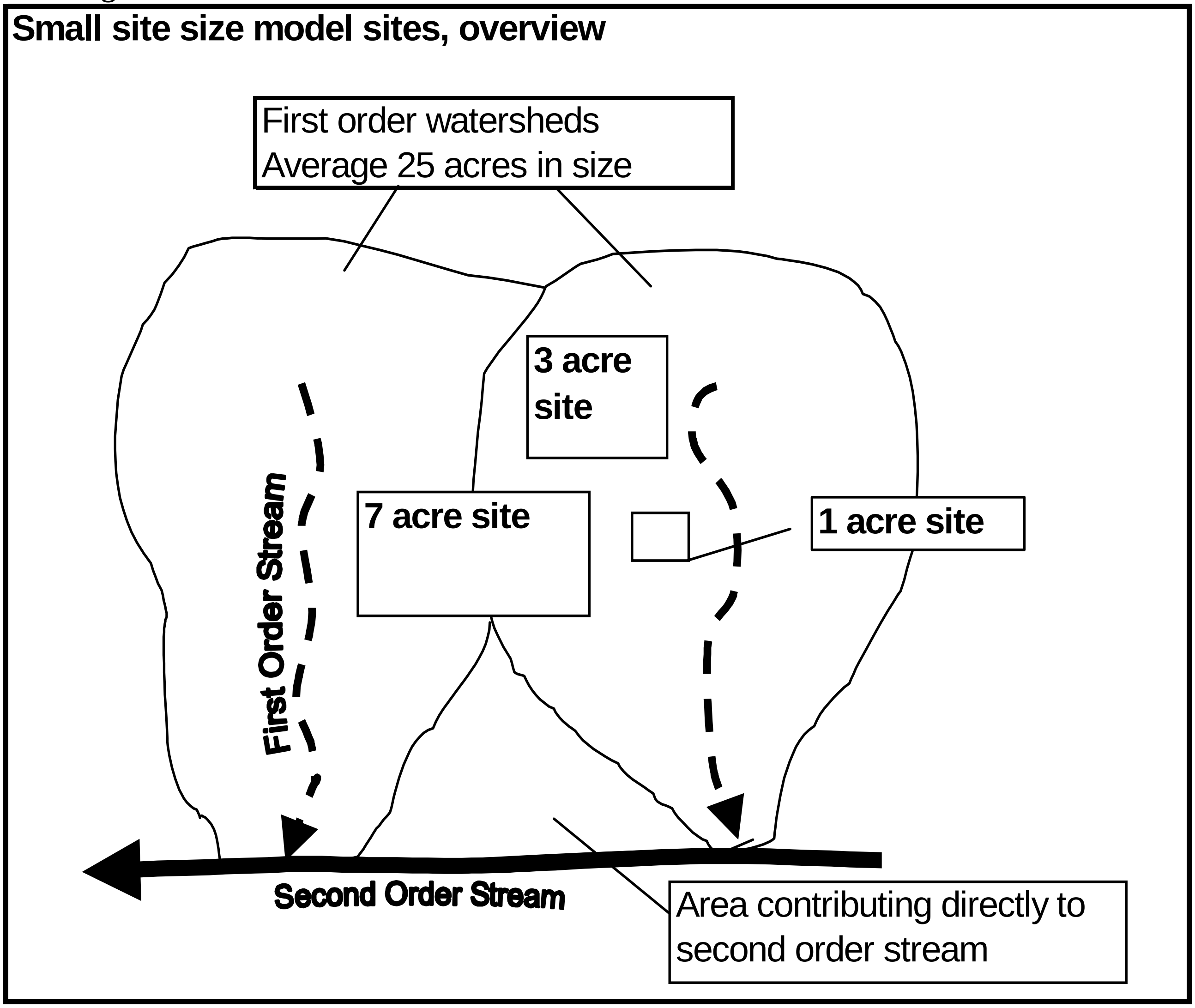

Table A-1. Small Construction Site Model BMP Parameters

BMP	0.5 Acre Model Sites	3 Acre Model Sites	7.5 Acre Model Sites
Silt Fence (miles)	0.09	0.20	0.50
Seeding and Mulching (acres)	Varies based on land use		
Rock Check Dams (number)	0	0	2
Sediment Traps (number)	0	0	2
Sediment Basins (number)	0	0	0
Inlet Protection (number)	2	3	6
Installation Certification (number)	0	1	2
E&S Site Inspection (number)	1	1	1

Figure A-2. 0.5 Acre Model Construction Site Geometry

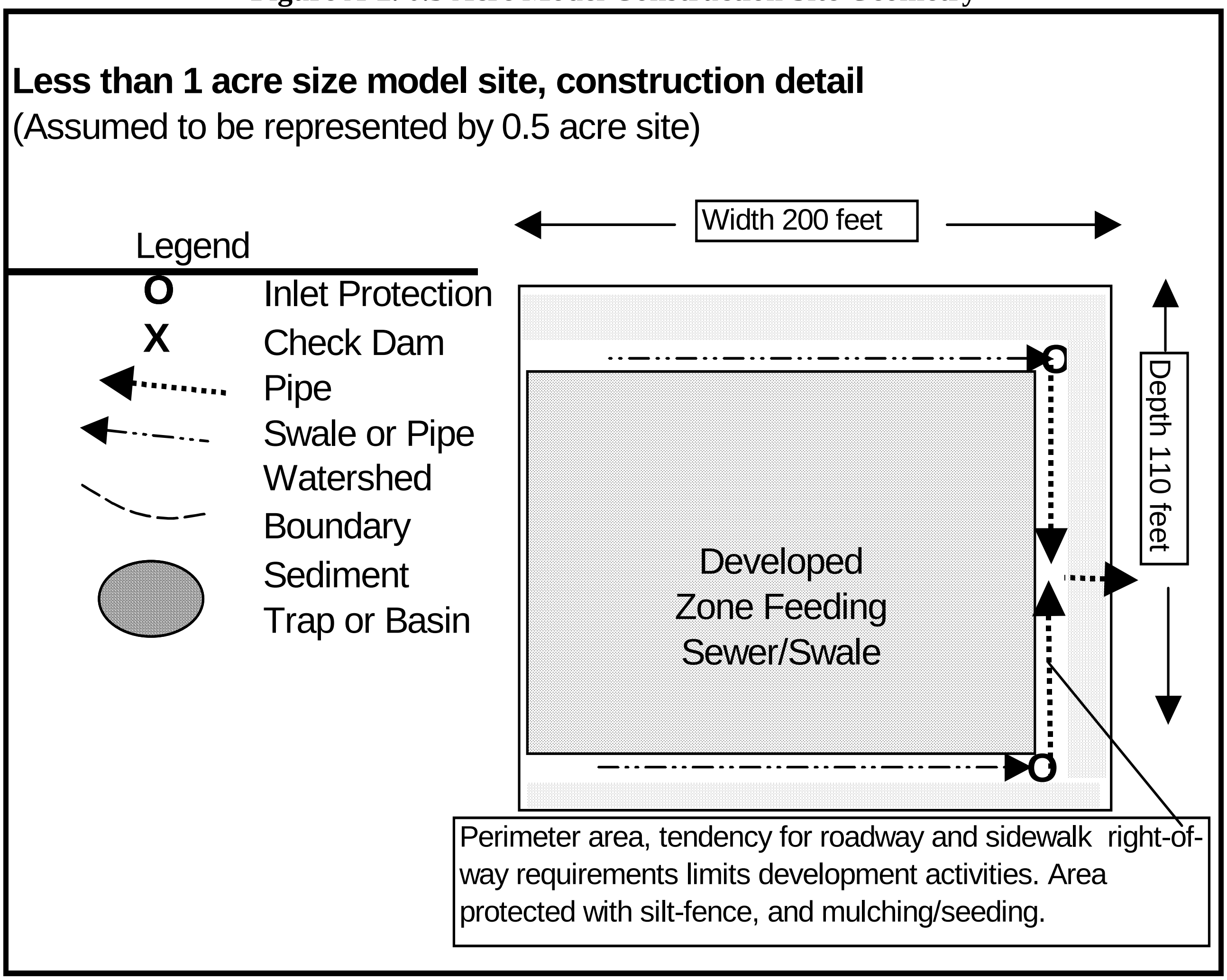

Figure A-3. 3 Acre Model Construction Site Geometry

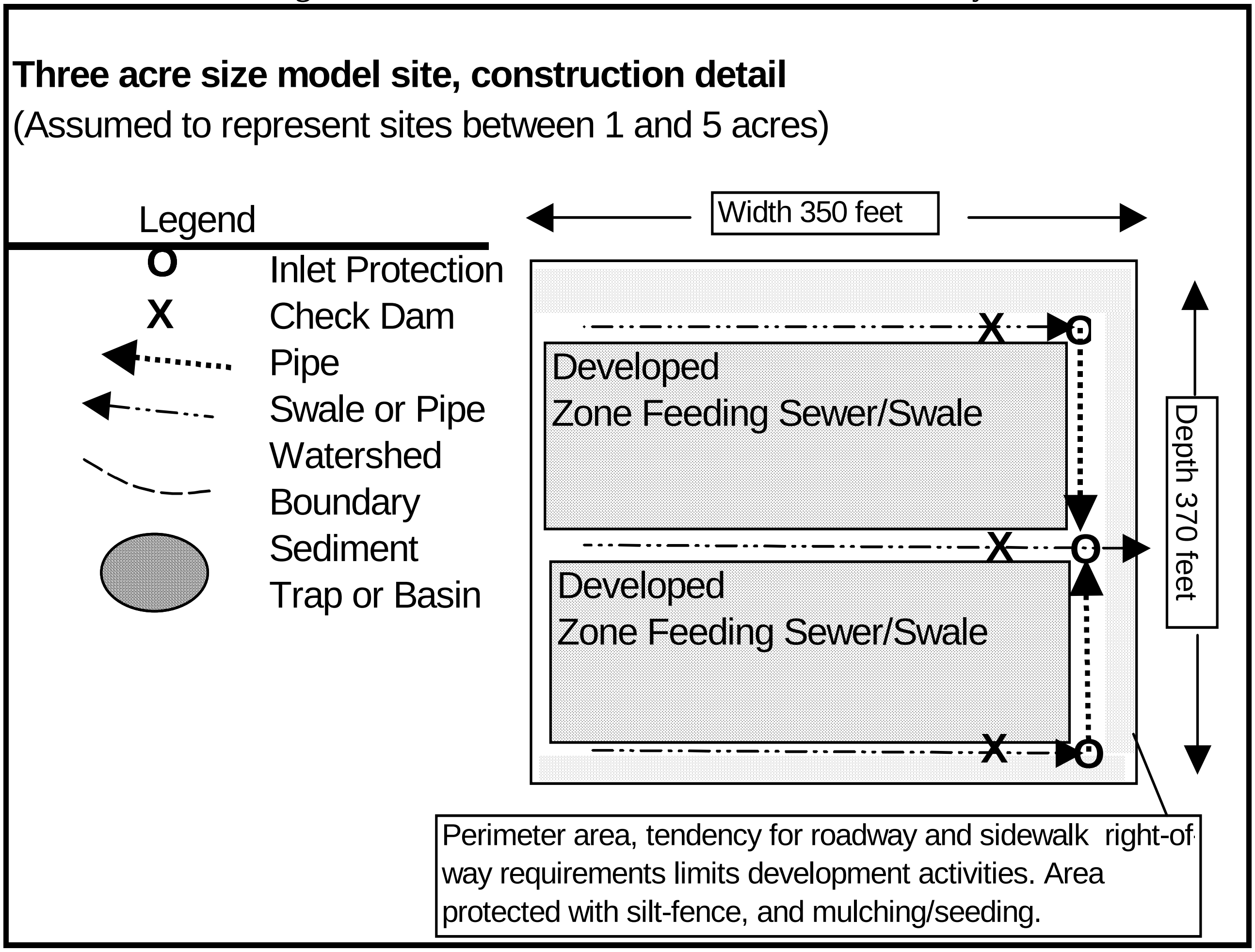

Figure A-4. 7.5 Acre Model Construction Site Geometry

7.5 acre size model site, construction detail
(Assumed to represent sites between 5 and 10 acres)

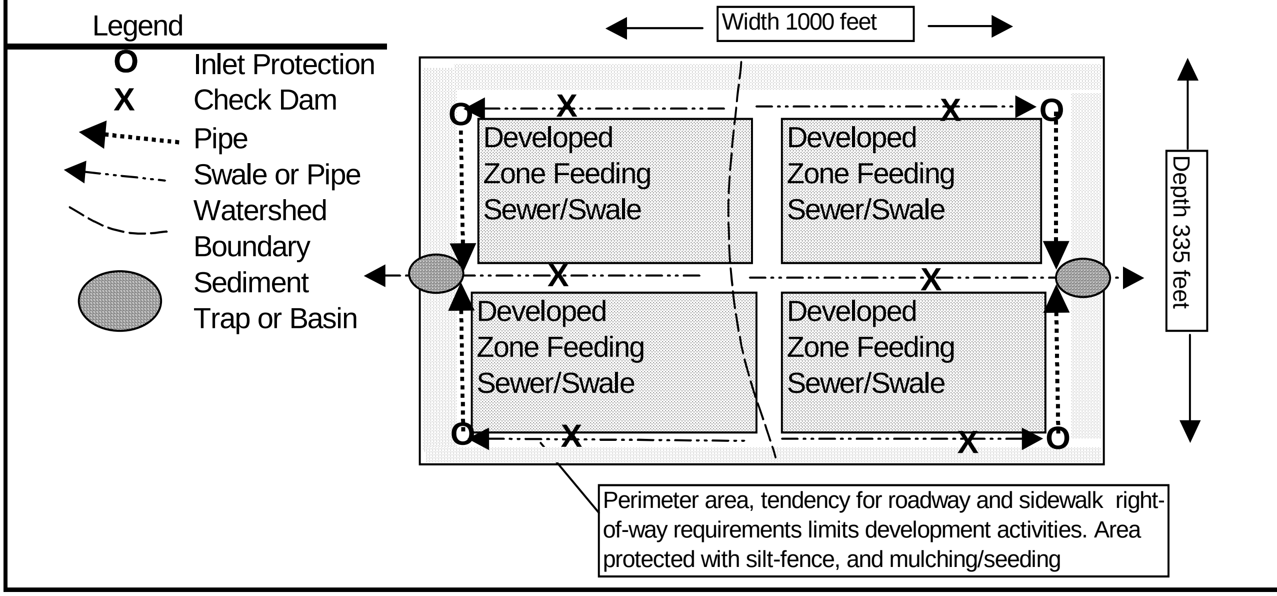

Table A-2. Small Model Construction Site Changes Due to Regulatory Options

Regulatory Option	BMP Changes over Baseline
0.5 Acre Model Sites	
Option 1	No change
Option 2	No change
Option 4	No change
3 Acre Model Sites	
Option 1	Certification of installation of BMPs required for all sites
Option 2	No change
Option 4	No change
7.5 Acre Model Sites	
Option 1	Certification of installation of BMPs required for all sites
Option 2	Sediment traps and installation certification would be required for all sites
Option 4	Sediment traps would be required for all sites.

Construction Site Models for 10 to 40 acres Sites

Sites within the range of 10 to 40 acres were represented by a model construction site of 25 acres. Figure A-5 illustrates placement of this model site within watersheds. The assumed rectangular site was placed overlapping the border between two first order watersheds. As detailed in Figure A-6, this means that site drainage goes in three possible directions, including a portion of the site that flows directly into a second order stream. As a result, this site size category would require two sediment basins to serve the two central drainage areas.

Table A-3 indicates the quantities and types of BMPs assumed for the 25 acre site model. Table A-4 indicates the changes in BMPs expected for this model site as a result of the regulatory options.

Figure A-5. Placement of 25 Acre Model Sites Within Watersheds

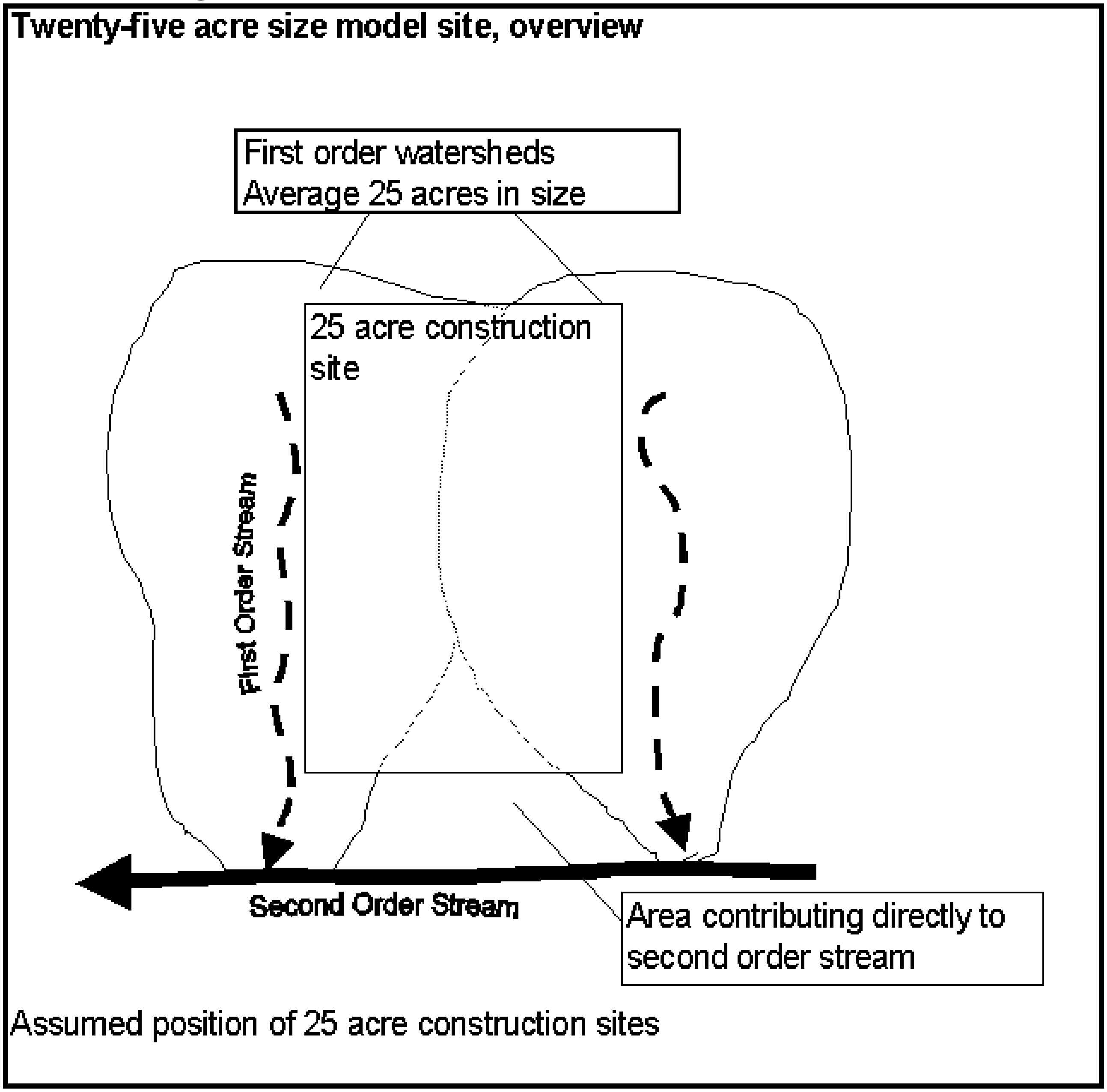

Figure A-6. 25 Acre Model Construction Site Geometry

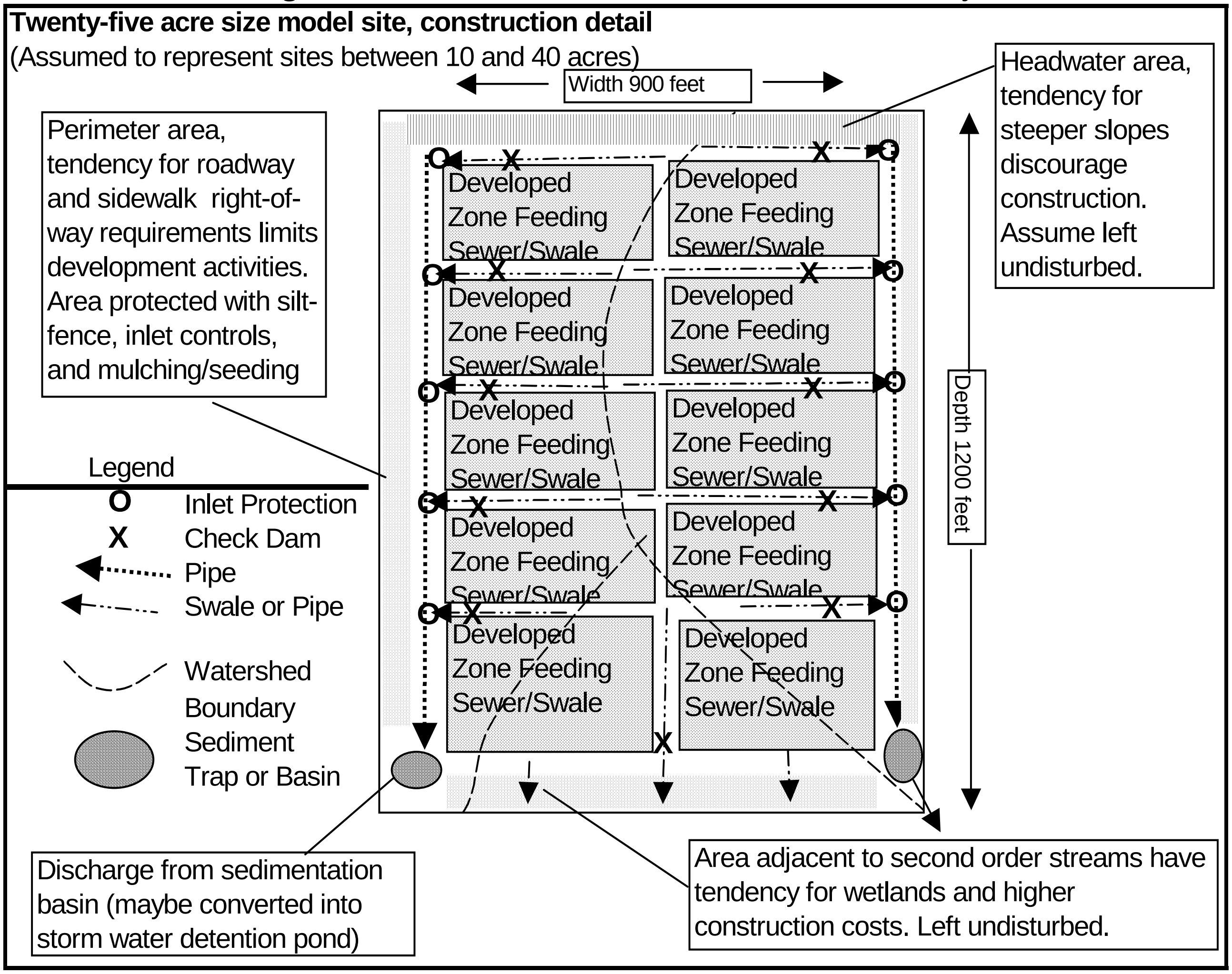

Table A-3. 25 Acre Construction Site Model BMP Parameters

BMP	Quantity
Silt Fence (miles)	0.63
Seed and Mulch (acres)	Varies between 62% to 84% of site area
Rock Check Dams (number)	11
Sediment Traps (number)	0
Sediment Basins (number)	2
Inlet Protection (number)	10
Installation Certification (number)	5
Site Inspection (number)	2

Table A-4. 25 Acre Model Construction Site Changes Due to Regulatory Options

Regulatory Option	BMP Changes over Baseline
Option 1	Certification of installation of BMPs required for all sites
Option 2	Larger sediment basins and installation certification would be required for all sites
Option 4	Larger sediment basins would be required

Construction Site Models for 40 to 100 acres Sites

Sites within the range of 40 to 100 acres were represented by a model construction site of 70 acres. Figure A-7 illustrates placement of this model site within watersheds. The assumed rectangular site overlaps three first order watersheds, dividing the site into areas with different discharge points. As detailed in Figure A-8, this means that site drainage goes in five possible directions, including two portions of the site that flow directly into a second order stream. As a result, this site size category would require three sediment basins to serve the three areas that drain centrally but independently. In addition, there are border areas that drain through perimeter controls and open (undisturbed) areas where development would likely be limited by floodplain issues.

Table A-5 indicates the quantities and types of BMPs assumed for the 70 acre site model. Table A-6 indicates the changes in BMPs expected for this model site as a result of the regulatory options.

Figure A-7. Placement of 70 Acre Model Sites Within Watersheds

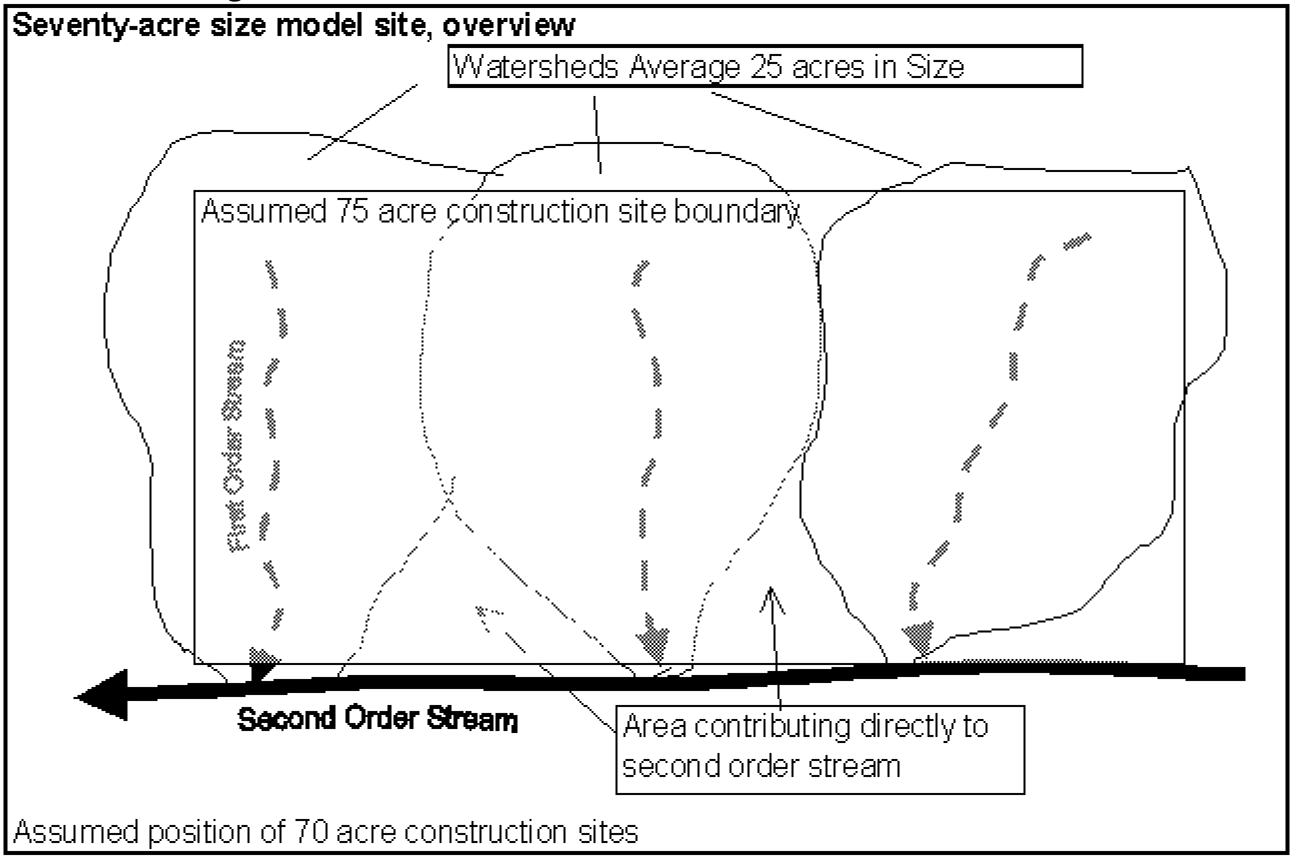

Figure A-8. 70 Acre Model Construction Site Geometry

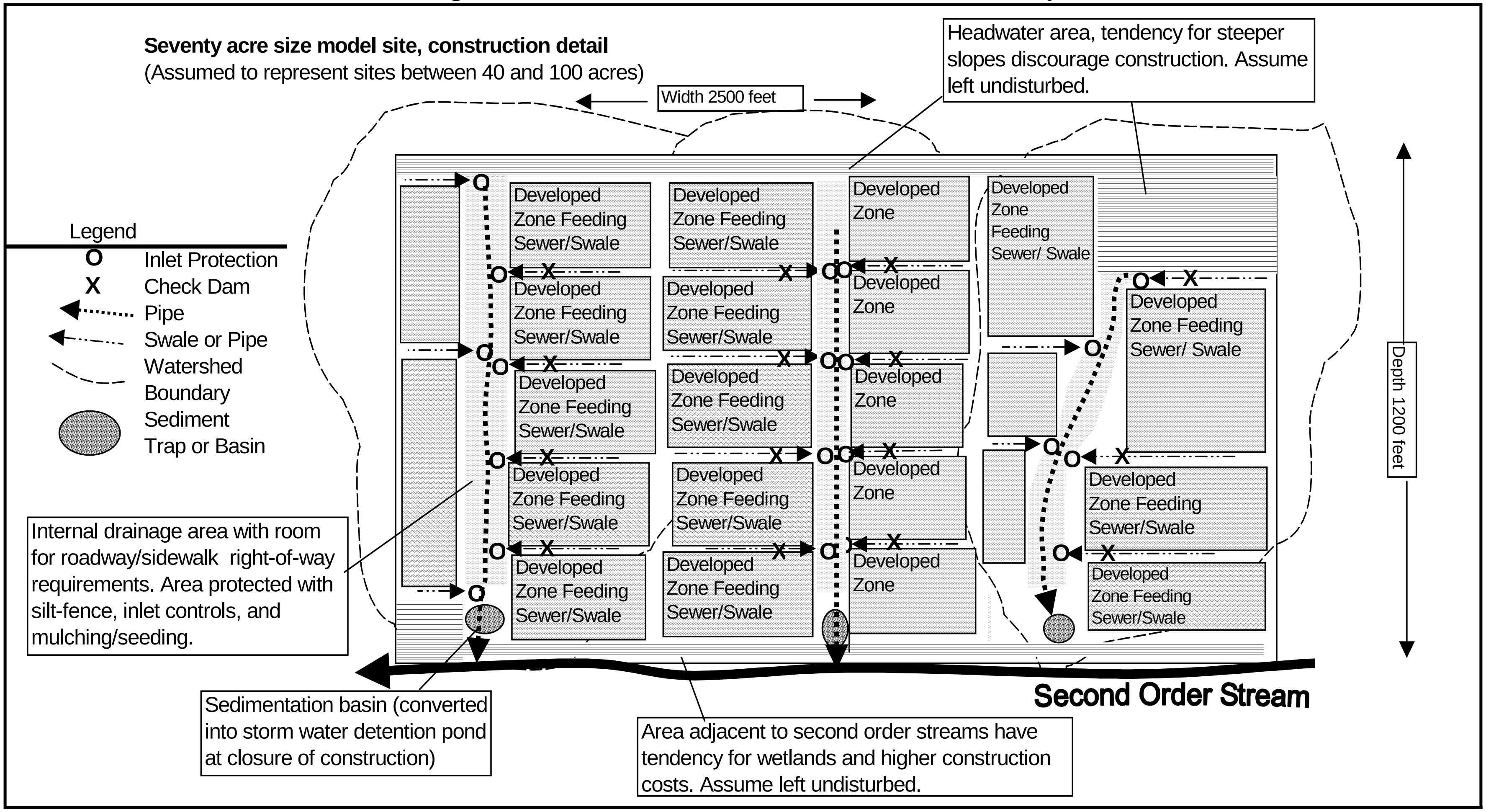

Table A-5. 70 Acre Construction Site Model BMP Parameters

BMP	Quantity
Silt Fence (miles)	1.36
Seeding and Mulching (acres)	Varies between 62% to 84% of site area
Rock Check Dams (number)	20
Sediment Traps (number)	0
Sediment Basins (number)	3
Inlet Protection (number)	20
Installation Certification (number)	10
E&S Site Inspection (number)	7

Table A-6. 70 Acre Model Construction Site Changes Due to Regulatory Options

Regulatory Option	BMP Changes over Baseline
Option 1	Certification of installation of BMPs required for all sites
Option 2	Larger sediment basins and installation certification would be required for all sites
Option 4	Larger sediment basins would be required

Construction Site Models for Sites Larger than 100 Acres

Sites larger than 100 acres were represented by a model construction site of 200 acres. The 200 acre site is assumed to be a composite of two 70-acre model sites, and two 25 acre model sites. While these components do not add up to the full 200 acres (equaling only 190 acres), this small discrepancy is not expected to greatly affect the cost analysis. BMP quantities were estimated by doubling the amounts reported in Tables A-3 and A-5, and then adding.

Table A-7 indicates the changes in BMPs expected for this model site as a result of the regulatory options.

Table A-7. 200 Acre Model Construction Site Changes Due to Regulatory Options

Regulatory Option	BMP Changes over Baseline
Option 1	Certification of installation of BMPs required for all sites
Option 2	Larger sediment basins and installation certification would be required for all sites
Option 4	Larger sediment basins would be required

Appendix B

Supporting Cost Data

APPENDIX B: SUPPORTING COST DATA

OVERVIEW

EPA used a series of model construction sites (detailed in Appendix A) to estimate BMP sizes and quantities representative of construction sites of varying sizes and land uses. Based on the requirements of the EPA CGP as well as the requirements in place in each state (excluding Alaska and Hawaii), EPA estimated a suite of standard BMPs for each of the model construction sites. Based on standard industry sizing requirements, the associated BMP quantities were estimated. These calculations were conducted for four different scenarios in order to evaluate the current national baseline reflecting existing regulations in place around the country, as well as three regulatory scenarios (Options 1, 2 and 4).

For the baseline as well as each of the three regulatory options, the quantities and sizes of the standard suite of BMPs were estimated. Using unit cost information for a variety of references, the BMP costs for each of the model construction sites were calculated under baseline conditions and each of the three regulatory scenarios. Scaling up to the national level based on the distribution of construction sites in the country, the total costs at the state and national level were calculated for baseline conditions as well as for each of the regulatory options.

A matrix was constructed (see Table B-1) indicating applicability of the various BMP under the scenarios evaluated. These “Level of Management”, or “LM” factors, indicate whether or not a specific BMP would be required under a particular scenario. A “1" indicates that a specific BMP would be required under that particular scenario, while a “0" indicates that it would not. After evaluating existing state programs as well as the EPA CGP, a number of BMPs were found to be required consistently by existing requirements, and as a result were applied to all model construction sites under baseline as well as each of the regulatory options evaluated. These BMPs include:

- silt fencing
- seeding and mulching
- stabilized construction entrances
- stone check dams

Two BMPs, sediment traps and sediment basins, were found to either not be required by all states, or were required but had smaller sizing requirements.

For sediment basins, the evaluation of existing state requirements found that basins were generally required for larger sites, however the size of the basins did vary by state. Many states had equivalent requirements to the EPA CGP which requires sediment basins that provide storage of 3,600 cubic feet per acre (or the 2-year, 24-hour storm) for drainage areas of 10 or more acres. However, a number of states only require sediment basins that provide 1,800 cubic feet per acre, or did not specify a specific sizing requirement. Based on BPJ, we estimated that in states that did not specify a specific sizing requirement the standard basin size would also be 1,800 cubic feet per acre for drainage areas of 10 or more acres. So, under Option 4 which requires sediment basins of 3,600 cubic feet per acre, a construction site in a non-equivalent state would be required to install larger sediment basins and would have incremental costs due to installing these basins. In a state that has an equivalent requirement to the EPA CGP, there would be no incremental costs for installing sediment basins.

For sediment traps, the evaluation of existing state requirements found that many states have an equivalent requirement to the EPA CGP that requires traps (or equivalent control measures) for smaller drainage areas, generally of between 3 and 10 acres. However, many states do not have this requirement. We assumed that under the EPA CGP and in equivalent states, sediment traps providing storage of 1,800 cubic feet per acre would be installed. In states without this requirement, we assumed that sediment traps would not be installed. So, under Option 4, a construction site in a state without an existing requirement to install sediment traps would have incremental costs to provide sediment traps that provide storage of 1,800 cubic feet per acre on all smaller sites. A site in a state that already has this requirement would not have any incremental costs for installing sediment traps.

The costing analysis also considered costs for conducting site inspections as well as conducting the certification requirements under Options 1 and 2. While site inspections were found to be required by all states, the frequency of these inspections varied. The EPA CGP requires inspections every 7 days, or every 14 days and following rainfall of 0.5" or more, and many states have a similar requirement. A number of states had inspection frequencies that were less frequent, and specified that inspections be conducted, for example, every 28 days or once a month. For calculating incremental inspection costs, we estimated that the inspection frequency for states without an equivalent requirement was once every 28 days. No states currently have a requirement for conducting the certification activities of Options 1 and 2, so all states would have costs for implementing these provisions.

In the final costing analysis, we only calculated incremental costs for the four items described above–sediment basins, sediment traps, inspections and certifications. Since the quantities and/or sizes of the other BMPs in the cost model under the regulatory options did not vary from baseline, we did not include the costs of these BMPs in this documentation (although their costs are included in the baseline). As a result, the following tables only present costs for these four elements.

Reference quantities of various ESCs are listed in Tables B-2 through B-8, along with unit costing and the assumptions used in EPA’s compliance cost assessment. Note that for some controls, reference quantities are given in terms of the number of units that will be constructed (i.e., the number of construction entrances anticipated for a certain size site), while others are given based on the number and size of the units (i.e., sediment basins).

National BMP costs were determined using the following three equations that relate site size class/land use type models to ESC capital, design, and operation and maintenance costs. Note that

Table B-9 contains the State adjustment factors (SAF) that customize cost estimates for each of the contiguous states analyzed by EPA. Table B-10 presents the national total BMP quantities by site size and land use. Table B-11 presents the state total BMP quantities by site size and land use. Table B-12 presents the national total BMP costs by site size and land use. Table B-13 presents the state total BMP costs by site size and land use. In tables B-10 through B-13, the baseline BMP quantities and costs can be found under the "Option 3" heading. In addition, in Tables B-12 and B-13, the national and state total costs include costs for several BMPs described above that did not vary from baseline. As a result, the sum of the costs for sediment traps, sediment basins, inspections and certifications do not match the total costs presented in Tables B-12 and B-13. The additional costs not shown, but contained in the total, are the baseline BMP costs for the remaining BMPs, which do not vary by option.

Figure B-1 presents a flowchart summarizing the overall costing methodology.

BMP Installation Computation

$$TSCC = SAF * \sum_{i=1}^{17} \left(LM * S * N_i * a \left(\frac{Q_i}{N_i} \right)^b \right)$$

TSCC = Total State Capital (Installation) Cost for a site size class/land use model
Q_i = Quantity of elements required per installation
N_i = Number of elements required for a single site size class/land use
S = Estimated number of sites in the site size class/land use
a = Multiplier for converting quantity to national average cost in 2000 dollars
b = Exponent for converting quantity to national average cost in 2000 dollars
SAF = State adjustment factor for converting national average costs to State-specific costs
LM = Level of State management; value is either 0 or 1 to indicate if State will require BMP.

BMP Design Computation

$$TSDC = SAF * \sum_{i=1}^{17} DF_i * \left(LM * S * N_i * a \left(\frac{Q_i}{N_i} \right)^b \right)$$

TSDC = Total State Design Costs
DF_i = Design factor, a multiplier which represents the design cost as a percent of capital costs
Q_i = Quantity of elements required per installation
N_i = Number of elements required for a single site size class/land use
S = Estimated number of sites in the site size class/land use
a = Multiplier for converting quantity to national average cost in 2000 dollars
b = Exponent for converting quantity to national average cost in 2000 dollars
SAF = State adjustment factor for converting national average costs to State-specific costs
LM = Level of State management; value is either 0 or 1 to indicate if State will require BMP.

BMP Operation and Maintenance Computation

$$TSOMC = SAF * \sum_{i=1}^{17} OM_i * \left(LM * S * N_i * a \left(\frac{Q_i}{N_i} \right)^b \right)$$

TSOMC = Total Regional Operation and Maintenance Costs
OM_i = Operation and Maintenance factor, a multiplier which represents the annual operation and maintenance cost of the element
Q_i = Quantity of elements required per installation
N_i = Number of elements required for a single site size class/land use
S = Estimated number of sites in the site size class/land use
a = Multiplier for converting quantity to national average cost in 2000 dollars
b = Exponent for converting quantity to national average cost in 2000 dollars
SAF = State adjustment factor for converting national average costs to State-specific costs
LM = Level of State management; value is either 0 or 1 to indicate if State will require BMP.

Table B-1. LM BMP Quantity Adjustment Factors

Costed Items	Baseline	Option 1	Option 2	Option 4
BMPs Common to All States				
Silt Fence	1	1	1	1
Runoff Diversion	1	1	1	1
Seed and Mulch	1	1	1	1
Construction Entrance	1	1	1	1
Stone Check Dam	1	1	1	1
States with E&S Requirements Not Equal to EPA CGP				
Sediment Trap	0	0	1	1
Sediment Basin (1,800 cf/acre)	1	1	1	1
E&S Certification	0	1	1	0
E&S Inspection	0	1	1	0
States with E&S Requirements Equal to EPA CGP				
Sediment Trap (1,800 cf/acre)	1	1	1	1
Sediment Basin (3,600 cf/ac)	1	1	1	1
E&S Installation Certification	0	1	1	0
E&S Inspection	1	1	1	0

Table B-2. Quantities of Silt Fence

Site Size (acres)	Single-family	Multi-family	Commercial	Industrial
1	0.09	0.09	0.09	0.09
3	0.20	0.20	0.20	0.20
7.5	0.50	0.50	0.50	0.50
25	0.63	0.63	0.63	0.63
70	1.36	1.36	1.36	1.36
200	7.73	7.73	7.73	7.73

Silt fencing lengths are based on model site assumptions detailed in Appendix A.

Costs for new installation of silt fence are based on $0.92/ft length, excluding profit and overhead (R.S. Means, 2000).

Table B-3. Quantities of Seeding and Mulching

Site Size (acres)	Single-family	Multi-family	Commercial	Industrial
1	62	72	76	86
3	62	72	76	86
7.5	62	72	76	86
25	62	72	76	86
70	62	72	76	86
200	62	72	76	86

For sites larger than 1acre, mulching is limited to the site acreage times half the percentage of ultimate impervious area as a temporary means to stabilize denuded surfaces. The maximum coverage is set to 25% of the total site acreage. Cost to mulch is set to $0.20 per square yard for materials/installation without overhead and profit (R.S. Means, 2000).

Table B-4. Quantities Check Dams and Sediment Traps

Site Size	Number of Stone Check Dams				Number of Sediment Traps			
Acres	Single-family	Multi-family	Comm.	Ind.	Single-family	Multi-family	Comm.	Ind.
1	0	0	0	0	0	0	0	0
3	3	3	3	3	0	0	0	0
7.5	6	6	6	6	2	2	2	2
25	11	11	11	11	0	0	0	0
70	20	20	20	20	0	0	0	0
200	62	62	62	62	0	0	0	0

For stone check dams, one unit per 5 acres for sites larger than 5 acres at a cost of $45.36 per installation, excluding overhead and profit (Phase II Economic Analysis for Phase II Storm Water Regulations).
Sediment trap of 1,800 cubic feet per acre served at a cost of $0.22 per cubic foot (excludes profit and overhead.
For 7.5 acre sites, each sediment trap serves 3.75 acres.

Table B-5. Quantities of Sediment Basins

Site Size (acres)	Single-family	Multi-family	Commercial	Industrial
1	0	0	0	0
3	0	0	0	0
7.5	0	0	0	0
25	2	2	2	2
70	3	3	3	3
200	10	10	10	10

For CGP equivalent States (under baseline), 3,600 cubic feet per acre served. For non-equivalent States, 1,800 cubic feet per acre served.

Table B-6. Quantities of Construction Entrances

Site Size (acres)	Single-family	Multi-family	Commercial	Industrial
1	1	1	1	1
3	1	1	1	1
7.5	1	1	1	1
25	1	1	1	1
70	2	2	2	2
200	4	4	4	4

Costs for construction entrance based on $6.92 per square yard (gravel installed) for a footprint covering 100 square yard, excluding profit and overhead (R.S. Means, 2000).

Table B-7. Quantities of Site Inspections

Site Size (acres)	Single-family	Multi-family	Commercial	Industrial
1	0	0	0	0
3	1	1	1	1
7.5	1	1	1	1
25	2	2	2	2
70	7	7	7	7
200	20	20	20	20

Values above are the number of half-day site inspections. Costs are based on 16 hours of inspection/documentation time per 10-acre unit of a site, at a rate of $28.44 per hour.

Table B-8. Quantities of Certifications

Site Size (acres)	Single-family	Multi-family	Commercial	Industrial
1	1	1	1	1
3	1	1	1	1
7.5	2	2	2	2
25	5	5	5	5
70	10	10	10	10
200	30	30	30	30

Certification includes multiple site visits by a certified inspector to verify the proper installation of key E&S controls. Costs based on 2 hours of inspection/documentation by a licensed engineer per 10-acre unit of a site, at a rate of $56.74 per hour.

Table B-9. Regional Compliance Cost Adjustment Factors

State	National Unit Cost Adjustment Factor	State	National Unit Cost Adjustment Factor
AL	0.8	NC	0.77
AR	0.8	ND	0.81
AZ	0.92	NE	0.84
CA	1.13	NH	0.9
CO	0.92	NJ	1.1
CT	1.07	NM	0.89
DC	0.95	NV	1
DE	0.99	NY	1.15
FL	0.86	OH	0.95
GA	0.78	OK	0.83
IA	0.87	OR	1.07
ID	0.92	PA	1
IL	1	RI	1.06
IN	0.92	SC	0.75
KS	0.88	SD	0.86
KY	0.88	TN	0.82
LA	0.86	TX	0.85
MA	1.1	UT	0.87
MD	0.9	VA	0.86
ME	0.84	VT	0.84
MI	0.98	WA	1.04
MN	1	WI	0.97
MO	0.92	WV	0.95
MS	0.78	WY	0.83
MT	0.95		

Multiplying national average unit costs by value in this table produce State-specific average unit costs
Reference: RSMeans, 2000

Figure B-1. Costing Methodology Flowchart

Table 1. Number of Sites By Type and Size for Each Geographic Zone

	Site Land Use Classification				Site Land Use Classification			
	Ecoregion 1				Ecoregion X			
Site Size	SF	MF	Comm.	Indust.	SF	MF	Comm.	Indust.
1 acre	23	4	. . .	0	12	. . .	. . .	2
. . .	44	8	. . .	1	22	. . .	. . .	6
200 acre	24	4	. . .	0	13	. . .	. . .	2

A distributions of new construction starts annually developed in 19 ecoregions covering the contiguous states

Table 2. Standards Material Quantity For Construction BMPs

Construction Element	Material Needs (provided for example)	
Silt Fence	1070	feet per 3 acre site
. . .	. . .	. . .
. . .	. . .	. . .
. . .	. . .	. . .
Stone Check Dam	1	number per 5 acre area
Sediment Trap	1	sized for 0.5 inch per disturbed acre
Sediment Pond	1	sized for 1 inch per disturbed acre

Quantities of materials were based on providing good management for typical site conditions, and vary based on site size and State regulations

Table 3. Number of Applications of Construction BMPs Per Site Size

Construction	Site Size Group in Acres			
Elements	1	5	. . .	200
Check Dams	0	1	. . .	10
. . .	.	.	. . .	.
Sediment Traps	.	1	. . .	20
Sediment Ponds	0	0	. . .	20

A value indicates number of applications per site size class, 0 indicates not applicable
Useful for estimating the per facility size (e.g., the size of the 20 sediment ponds on a single 200 acres site)

Table 4. Per-State Application of BMPs Per Option

Construction	Regulatory Options				
Elements	**1**	**2**	Baseline	**4**	**x**
Check Dams	1	1	1	1	1
. . .	. . .	. . .	. . .	. . .	. . .
Sediment Traps	. . .	1	. . .	1	. . .
Sediment Ponds	1	1	1	0	0

This array accounts for BMP requirements under current State regulations and under proposed effluent guidelines

Table 5. Lifecycle Installation Cost of Standard Size Construction BMPs for National Average Cost

Site Size	Cost Basis Per BMP Installed
Check Dams	x dollars per installation
. . .	. . .
Sediment Traps	x dollars per installation
Sediment Ponds	y dollars per cubic foot

* National average cost based on Year 2000 National Means Data, Data in EPA, 1999, best professional judgement, and other sources

Table 6. Adjustment Factors From National Average

State	Factor
Alabama	1.03
. . .	. . .
Wyoming	1.23

Per-State Cost Factors

Table 7. Total Estimated Lifecycle Installation Cost for Each Level of Management for Each State

State	Options for Environmental Management				
	1	**2**	Baseline	**4**	**x**
Alabama	$$	$$	$$	$$	$$
. . .	$$	$$	$$	$$	$$
Wyoming	$$	$$	$$	$$	$$

Table 9. Total Estimated Lifecycle Operation and Management Cost for Each State

State	Options for Environmental Management				
	1	**2**	Baseline	**4**	**x**
Alabama	$$	$$	$$	$$	$$
. . .	$$	$$	$$	$$	$$
Wyoming	$$	$$	$$	$$	$$

Table 10. Construction BMPs Design Costs as Fraction of Installation Costs

Stormwater Elements	Percent Addition for Design Costs
Check Dams	2 Percent
. . .	
Sediment Traps	30 Percent
Sediment Ponds	30 Percent

Table 8. Construction BMPs Operation and Maintenace Costs as Fraction of Installation Costs

Stormwater Elements	Percent Addition for Annual O&M Costs
Check Dams	2 Percent
. . .	5 Percent
Sediment Traps	. . .
Sediment Ponds	6 Percent

Table 11. Total Estimated Lifecycle Design Cost for Each Management Level for Each State

State	Options for Environmental Management				
	1	**2**	Baseline	**4**	**x**
Alabama	$$	$$	$$	$$	$$
. . .	$$	$$	$$	$$	$$
Wyoming	$$	$$	$$	$$	$$

Table B-10. National BMP Quantities Site Size, Land Use and Erosivity Risk

	National	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	1657	1132	5473	223	6971	3300	14834	542	6949	4450	34651	1680	6949	4450	34651	1680
	Moderate Erosive Risk	2366	1616	7823	318	10358	4914	22059	802	10330	6616	51535	2495	10330	6616	51535	2495
	High Erosive Risk	2394	1634	7906	322	10848	5148	23032	851	10793	6911	53797	2612	10793	6911	53797	2612
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	10932	7408	90458	4931	10932	7408	90458	4931
	7.5	6416	4382	21202	864	0	0	0	0	6611	4514	21845	888	6611	4514	21845	888
	25	0	0	0	0	16774	10516	46232	1420	8387	5258	23116	710	8387	5258	23116	710
	70	0	0	0	0	4293	2196	13692	774	1431	732	4564	258	1431	732	4564	258
	200	0	0	0	0	7110	650	0	0	711	65	0	0	711	65	0	0
	Total	6416	4382	21202	864	28177	13362	59924	2194	28072	17977	139983	6787	28072	17977	139983	6787
	Grand Total	32864				103657				192819				192819			
	OPTION 2																
	Low Erosive Risk	3273	2237	10815	441	6971	3300	14834	542	4242	2616	12259	459	6437	4103	30423	1450
	Moderate Erosive Risk	4865	3322	16083	652	10358	4914	22059	802	6306	3889	18232	680	9491	6048	44593	2116
	High Erosive Risk	5085	3469	16792	683	10848	5148	23032	851	6592	4064	19034	717	9755	6207	45205	2144
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	8543	5789	70697	3854
	7.5	13222	9028	43690	1776	0	0	0	0	6611	4514	21845	888	6611	4514	21845	888
	25	0	0	0	0	16774	10516	46232	1420	8387	5258	23116	710	8387	5258	23116	710
	70	0	0	0	0	4293	2196	13692	774	1431	732	4564	258	1431	732	4564	258
	200	0	0	0	0	7110	650	0	0	711	65	0	0	711	65	0	0
	Total	13222	9028	43690	1776	28177	13362	59924	2194	17140	10569	49525	1856	25683	16358	120222	5710
	Grand Total	67716				103657				79090				167974			
	OPTION 3																
	Low Erosive Risk	1657	1132	5473	223	6971	3300	14834	542	0	0	0	0	5636	3609	28109	1363
	Moderate Erosive Risk	2366	1616	7823	318	10358	4914	22059	802	0	0	0	0	8175	5236	40792	1974
	High Erosive Risk	2394	1634	7906	322	10848	5148	23032	851	0	0	0	0	8125	5203	40501	1967
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	8543	5789	70697	3854
	7.5	6416	4382	21202	864	0	0	0	0	0	0	0	0	5166	3527	17072	694
	25	0	0	0	0	16774	10516	46232	1420	0	0	0	0	6555	4109	18066	554
	70	0	0	0	0	4293	2196	13692	774	0	0	0	0	1118	572	3567	201
	200	0	0	0	0	7110	650	0	0	0	0	0	0	555	50	0	0
	Total	6416	4382	21202	864	28177	13362	59924	2194	0	0	0	0	21937	14048	109402	5303
	Grand Total	32864				103657				0				150690			
	OPTION 4																
	Low Erosive Risk	3273	2237	10815	441	6971	3300	14834	542	0	0	0	0	6437	4103	30423	1450
	Moderate Erosive Risk	4865	3322	16083	652	10358	4914	22059	802	0	0	0	0	9491	6048	44593	2116
	High Erosive Risk	5085	3469	16792	683	10848	5148	23032	851	0	0	0	0	9755	6207	45205	2144
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	8543	5789	70697	3854
	7.5	13222	9028	43690	1776	0	0	0	0	0	0	0	0	6611	4514	21845	888
	25	0	0	0	0	16774	10516	46232	1420	0	0	0	0	8387	5258	23116	710
	70	0	0	0	0	4293	2196	13692	774	0	0	0	0	1431	732	4564	258
	200	0	0	0	0	7110	650	0	0	0	0	0	0	711	65	0	0
	Total	13222	9028	43690	1776	28177	13362	59924	2194	0	0	0	0	25683	16358	120222	5710
	Grand Total	67716				103657				0				167974			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk

	AL	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	0	0	0	0	230	109	488	18	229	146	1139	55	229	146	1139	55
	Moderate Erosive Risk	0	0	0	0	268	127	568	21	266	170	1326	65	266	170	1326	65
	High Erosive Risk	0	0	0	0	306	145	648	24	304	195	1513	74	304	195	1513	74
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	311	211	2570	140	311	211	2570	140
	7.5	0	0	0	0	0	0	0	0	188	128	621	25	188	128	621	25
	25	0	0	0	0	477	299	1314	41	238	149	657	20	238	149	657	20
	70	0	0	0	0	122	63	389	23	41	21	130	8	41	21	130	8
	200	0	0	0	0	204	20	0	0	20	2	0	0	20	2	0	0
	Total	0	0	0	0	803	382	1703	63	798	511	3978	194	798	511	3978	194
	Grand Total	0				2952				5481				5481			
	OPTION 2																
	Low Erosive Risk	108	73	355	15	230	109	488	18	140	86	403	15	140	86	403	15
	Moderate Erosive Risk	125	86	414	17	268	127	568	21	163	100	469	18	163	100	469	18
	High Erosive Risk	143	98	472	19	306	145	648	24	186	114	535	20	186	114	535	20
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7.5	376	257	1242	51	0	0	0	0	188	128	621	25	188	128	621	25
	25	0	0	0	0	477	299	1314	41	238	149	657	20	238	149	657	20
	70	0	0	0	0	122	63	389	23	41	21	130	8	41	21	130	8
	200	0	0	0	0	204	20	0	0	20	2	0	0	20	2	0	0
	Total	376	257	1242	51	803	382	1703	63	488	301	1408	53	488	301	1408	53
	Grand Total	1925				2952				2249				2249			
	OPTION 3																
	Low Erosive Risk	0	0	0	0	230	109	488	18	0	0	0	0	0	0	0	0
	Moderate Erosive Risk	0	0	0	0	268	127	568	21	0	0	0	0	0	0	0	0
	High Erosive Risk	0	0	0	0	306	145	648	24	0	0	0	0	0	0	0	0
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	25	0	0	0	0	477	299	1314	41	0	0	0	0	0	0	0	0
	70	0	0	0	0	122	63	389	23	0	0	0	0	0	0	0	0
	200	0	0	0	0	204	20	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	803	382	1703	63	0	0	0	0	0	0	0	0
	Grand Total	0				2952				0				0			
	OPTION 4																
	Low Erosive Risk	108	73	355	15	230	109	488	18	0	0	0	0	140	86	403	15
	Moderate Erosive Risk	125	86	414	17	268	127	568	21	0	0	0	0	163	100	469	18
	High Erosive Risk	143	98	472	19	306	145	648	24	0	0	0	0	186	114	535	20
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7.5	376	257	1242	51	0	0	0	0	0	0	0	0	188	128	621	25
	25	0	0	0	0	477	299	1314	41	0	0	0	0	238	149	657	20
	70	0	0	0	0	122	63	389	23	0	0	0	0	41	21	130	8
	200	0	0	0	0	204	20	0	0	0	0	0	0	20	2	0	0
	Total	376	257	1242	51	803	382	1703	63	0	0	0	0	488	301	1408	53
	Grand Total	1925				2952				0				2249			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	AR	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	22	15	73	3	47	22	100	4	47	30	233	11	47	30	233	11
	Moderate Erosive Risk	67	46	222	9	143	68	304	11	143	91	710	34	143	91	710	34
	High Erosive Risk	112	77	371	15	240	114	508	19	238	153	1188	58	238	153	1188	58
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	166	113	1377	75	166	113	1377	75
	7.5	201	138	665	27	0	0	0	0	101	69	333	14	101	69	333	14
	25	0	0	0	0	256	160	704	22	128	80	352	11	128	80	352	11
	70	0	0	0	0	65	34	208	12	22	11	69	4	22	11	69	4
	200	0	0	0	0	109	11	0	0	11	1	0	0	11	1	0	0
	Total	201	138	665	27	430	205	912	33	428	274	2131	103	428	274	2131	103
	Grand Total	1031				1580				2936				2936			
	OPTION 2																
	Low Erosive Risk	22	15	73	3	47	22	100	4	29	18	82	3	47	30	233	11
	Moderate Erosive Risk	67	46	222	9	143	68	304	11	87	54	251	9	143	91	710	34
	High Erosive Risk	112	77	371	15	240	114	508	19	146	90	420	16	238	153	1188	58
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	166	113	1377	75
	7.5	201	138	665	27	0	0	0	0	101	69	333	14	101	69	333	14
	25	0	0	0	0	256	160	704	22	128	80	352	11	128	80	352	11
	70	0	0	0	0	65	34	208	12	22	11	69	4	22	11	69	4
	200	0	0	0	0	109	11	0	0	11	1	0	0	11	1	0	0
	Total	201	138	665	27	430	205	912	33	261	161	754	28	428	274	2131	103
	Grand Total	1031				1580				1204				2936			
	OPTION 3																
	Low Erosive Risk	22	15	73	3	47	22	100	4	0	0	0	0	47	30	233	11
	Moderate Erosive Risk	67	46	222	9	143	68	304	11	0	0	0	0	143	91	710	34
	High Erosive Risk	112	77	371	15	240	114	508	19	0	0	0	0	238	153	1188	58
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	166	113	1377	75
	7.5	201	138	665	27	0	0	0	0	0	0	0	0	101	69	333	14
	25	0	0	0	0	256	160	704	22	0	0	0	0	128	80	352	11
	70	0	0	0	0	65	34	208	12	0	0	0	0	22	11	69	4
	200	0	0	0	0	109	11	0	0	0	0	0	0	11	1	0	0
	Total	201	138	665	27	430	205	912	33	0	0	0	0	428	274	2131	103
	Grand Total	1031				1580				0				2936			
	OPTION 4																
	Low Erosive Risk	22	15	73	3	47	22	100	4	0	0	0	0	47	30	233	11
	Moderate Erosive Risk	67	46	222	9	143	68	304	11	0	0	0	0	143	91	710	34
	High Erosive Risk	112	77	371	15	240	114	508	19	0	0	0	0	238	153	1188	58
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	166	113	1377	75
	7.5	201	138	665	27	0	0	0	0	0	0	0	0	101	69	333	14
	25	0	0	0	0	256	160	704	22	0	0	0	0	128	80	352	11
	70	0	0	0	0	65	34	208	12	0	0	0	0	22	11	69	4
	200	0	0	0	0	109	11	0	0	0	0	0	0	11	1	0	0
	Total	201	138	665	27	430	205	912	33	0	0	0	0	428	274	2131	103
	Grand Total	1031				1580				0				2936			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

AZ	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
	Number				Number				Number				Number			
OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
Low Erosive Risk	48	33	159	6	103	47	218	8	102	65	510	25	102	65	510	25
Moderate Erosive Risk	76	52	252	10	162	77	345	12	161	104	807	39	161	104	807	39
High Erosive Risk	11	8	37	1	23	11	50	2	24	15	118	6	24	15	118	6
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	112	76	927	50	112	76	927	50
7.5	135	92	448	18	0	0	0	0	68	46	224	9	68	46	224	9
25	0	0	0	0	172	108	474	14	86	54	237	7	86	54	237	7
70	0	0	0	0	44	22	140	8	15	7	47	3	15	7	47	3
200	0	0	0	0	72	6	0	0	7	1	0	0	7	1	0	0
Total	135	92	448	18	288	136	614	22	287	184	1435	69	287	184	1435	69
Grand Total	693				1060				1975				1975			
OPTION 2																
Low Erosive Risk	48	33	159	6	103	47	218	8	62	38	180	7	102	65	510	25
Moderate Erosive Risk	76	52	252	10	162	77	345	12	99	61	285	11	161	104	807	39
High Erosive Risk	11	8	37	1	23	11	50	2	14	9	42	2	24	15	118	6
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	112	76	927	50
7.5	135	92	448	18	0	0	0	0	68	46	224	9	68	46	224	9
25	0	0	0	0	172	108	474	14	86	54	237	7	86	54	237	7
70	0	0	0	0	44	22	140	8	15	7	47	3	15	7	47	3
200	0	0	0	0	72	6	0	0	7	1	0	0	7	1	0	0
Total	135	92	448	18	288	136	614	22	175	108	508	19	287	184	1435	69
Grand Total	693				1060				810				1975			
OPTION 3																
Low Erosive Risk	48	33	159	6	103	47	218	8	0	0	0	0	102	65	510	25
Moderate Erosive Risk	76	52	252	10	162	77	345	12	0	0	0	0	161	104	807	39
High Erosive Risk	11	8	37	1	23	11	50	2	0	0	0	0	24	15	118	6
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	112	76	927	50
7.5	135	92	448	18	0	0	0	0	0	0	0	0	68	46	224	9
25	0	0	0	0	172	108	474	14	0	0	0	0	86	54	237	7
70	0	0	0	0	44	22	140	8	0	0	0	0	15	7	47	3
200	0	0	0	0	72	6	0	0	0	0	0	0	7	1	0	0
Total	135	92	448	18	288	136	614	22	0	0	0	0	287	184	1435	69
Grand Total	693				1060				0				1975			
OPTION 4																
Low Erosive Risk	48	33	159	6	103	47	218	8	0	0	0	0	102	65	510	25
Moderate Erosive Risk	76	52	252	10	162	77	345	12	0	0	0	0	161	104	807	39
High Erosive Risk	11	8	37	1	23	11	50	2	0	0	0	0	24	15	118	6
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	112	76	927	50
7.5	135	92	448	18	0	0	0	0	0	0	0	0	68	46	224	9
25	0	0	0	0	172	108	474	14	0	0	0	0	86	54	237	7
70	0	0	0	0	44	22	140	8	0	0	0	0	15	7	47	3
200	0	0	0	0	72	6	0	0	0	0	0	0	7	1	0	0
Total	135	92	448	18	288	136	614	22	0	0	0	0	287	184	1435	69
Grand Total	693				1060				0				1975			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	CA	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	0	0	0	0	472	221	1005	37	471	301	2350	113	471	301	2350	113
	Moderate Erosive Risk	0	0	0	0	577	273	1230	44	576	369	2875	139	576	369	2875	139
	High Erosive Risk	0	0	0	0	352	164	750	26	351	224	1752	85	351	224	1752	85
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	545	369	4510	245	545	369	4510	245
	7.5	0	0	0	0	0	0	0	0	329	225	1089	44	329	225	1089	44
	25	0	0	0	0	836	525	2304	70	418	262	1152	35	418	262	1152	35
	70	0	0	0	0	213	106	680	38	71	35	227	13	71	35	227	13
	200	0	0	0	0	351	27	0	0	35	3	0	0	35	3	0	0
	Total	0	0	0	0	1401	658	2984	108	1398	895	6978	337	1398	895	6978	337
	Grand Total	0				5152				9608				9608			
	OPTION 2																
	Low Erosive Risk	222	152	734	29	472	221	1005	37	288	177	831	31	288	177	831	31
	Moderate Erosive Risk	271	185	898	36	577	273	1230	44	352	217	1017	38	352	217	1017	38
	High Erosive Risk	166	113	547	22	352	164	750	26	215	132	620	23	215	132	620	23
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7.5	659	450	2179	88	0	0	0	0	329	225	1089	44	329	225	1089	44
	25	0	0	0	0	836	525	2304	70	418	262	1152	35	418	262	1152	35
	70	0	0	0	0	213	106	680	38	71	35	227	13	71	35	227	13
	200	0	0	0	0	351	27	0	0	35	3	0	0	35	3	0	0
	Total	659	450	2179	88	1401	658	2984	108	854	526	2468	92	854	526	2468	92
	Grand Total	3375				5152				3939				3939			
	OPTION 3																
	Low Erosive Risk	0	0	0	0	472	221	1005	37	0	0	0	0	0	0	0	0
	Moderate Erosive Risk	0	0	0	0	577	273	1230	44	0	0	0	0	0	0	0	0
	High Erosive Risk	0	0	0	0	352	164	750	26	0	0	0	0	0	0	0	0
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	25	0	0	0	0	836	525	2304	70	0	0	0	0	0	0	0	0
	70	0	0	0	0	213	106	680	38	0	0	0	0	0	0	0	0
	200	0	0	0	0	351	27	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	1401	658	2984	108	0	0	0	0	0	0	0	0
	Grand Total	0				5152				0				0			
	OPTION 4																
	Low Erosive Risk	222	152	734	29	472	221	1005	37	0	0	0	0	288	177	831	31
	Moderate Erosive Risk	271	185	898	36	577	273	1230	44	0	0	0	0	352	217	1017	38
	High Erosive Risk	166	113	547	22	352	164	750	26	0	0	0	0	215	132	620	23
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7.5	659	450	2179	88	0	0	0	0	0	0	0	0	329	225	1089	44
	25	0	0	0	0	836	525	2304	70	0	0	0	0	418	262	1152	35
	70	0	0	0	0	213	106	680	38	0	0	0	0	71	35	227	13
	200	0	0	0	0	351	27	0	0	0	0	0	0	35	3	0	0
	Total	659	450	2179	88	1401	658	2984	108	0	0	0	0	854	526	2468	92
	Grand Total	3375				5152				0				3939			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	CO	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	0	0	0	0	96	44	207	8	97	62	483	23	97	62	483	23
	Moderate Erosive Risk	0	0	0	0	144	70	312	10	145	94	728	35	145	94	728	35
	High Erosive Risk	0	0	0	0	41	20	89	3	41	27	207	10	41	27	207	10
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	111	75	917	50	111	75	917	50
	7.5	0	0	0	0	0	0	0	0	67	46	221	9	67	46	221	9
	25	0	0	0	0	170	106	469	14	85	53	234	7	85	53	234	7
	70	0	0	0	0	43	22	139	7	14	7	46	2	14	7	46	2
	200	0	0	0	0	69	6	0	0	7	1	0	0	7	1	0	0
	Total	0	0	0	0	281	134	607	21	283	182	1419	68	283	182	1419	68
	Grand Total	0				1044				1952				1952			
	OPTION 2																
	Low Erosive Risk	45	31	151	6	96	44	207	8	59	36	171	6	97	62	483	23
	Moderate Erosive Risk	68	47	227	9	144	70	312	10	88	55	258	9	145	94	728	35
	High Erosive Risk	20	13	65	3	41	20	89	3	25	16	73	3	41	27	207	10
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	111	75	917	50
	7.5	134	92	443	18	0	0	0	0	67	46	221	9	67	46	221	9
	25	0	0	0	0	170	106	469	14	85	53	234	7	85	53	234	7
	70	0	0	0	0	43	22	139	7	14	7	46	2	14	7	46	2
	200	0	0	0	0	69	6	0	0	7	1	0	0	7	1	0	0
	Total	134	92	443	18	281	134	607	21	173	107	502	18	283	182	1419	68
	Grand Total	686				1044				800				1952			
	OPTION 3																
	Low Erosive Risk	0	0	0	0	96	44	207	8	0	0	0	0	97	62	483	23
	Moderate Erosive Risk	0	0	0	0	144	70	312	10	0	0	0	0	145	94	728	35
	High Erosive Risk	0	0	0	0	41	20	89	3	0	0	0	0	41	27	207	10
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	111	75	917	50
	7.5	0	0	0	0	0	0	0	0	0	0	0	0	67	46	221	9
	25	0	0	0	0	170	106	469	14	0	0	0	0	85	53	234	7
	70	0	0	0	0	43	22	139	7	0	0	0	0	14	7	46	2
	200	0	0	0	0	69	6	0	0	0	0	0	0	7	1	0	0
	Total	0	0	0	0	281	134	607	21	0	0	0	0	283	182	1419	68
	Grand Total	0				1044				0				1952			
	OPTION 4																
	Low Erosive Risk	45	31	151	6	96	44	207	8	0	0	0	0	97	62	483	23
	Moderate Erosive Risk	68	47	227	9	144	70	312	10	0	0	0	0	145	94	728	35
	High Erosive Risk	20	13	65	3	41	20	89	3	0	0	0	0	41	27	207	10
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	111	75	917	50
	7.5	134	92	443	18	0	0	0	0	0	0	0	0	67	46	221	9
	25	0	0	0	0	170	106	469	14	0	0	0	0	85	53	234	7
	70	0	0	0	0	43	22	139	7	0	0	0	0	14	7	46	2
	200	0	0	0	0	69	6	0	0	0	0	0	0	7	1	0	0
	Total	134	92	443	18	281	134	607	21	0	0	0	0	283	182	1419	68
	Grand Total	686				1044				0				1952			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	CT	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	0	0	0	0	16	7	33	1	15	10	77	4	15	10	77	4
	Moderate Erosive Risk	0	0	0	0	33	16	71	3	33	21	166	8	33	21	166	8
	High Erosive Risk	0	0	0	0	51	24	109	4	51	33	254	12	51	33	254	12
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	39	26	321	18	39	26	321	18
	7.5	0	0	0	0	0	0	0	0	23	16	78	3	23	16	78	3
	25	0	0	0	0	60	37	164	5	30	19	82	3	30	19	82	3
	70	0	0	0	0	15	8	49	3	5	3	16	1	5	3	16	1
	200	0	0	0	0	26	3	0	0	3	0	0	0	3	0	0	0
	Total	0	0	0	0	100	48	213	8	100	64	497	24	100	64	497	24
	Grand Total	0				369				685				685			
	OPTION 2																
	Low Erosive Risk	7	5	24	1	16	7	33	1	9	6	27	1	15	10	77	4
	Moderate Erosive Risk	16	11	52	2	33	16	71	3	20	13	59	2	33	21	166	8
	High Erosive Risk	24	16	79	3	51	24	109	4	31	19	90	3	51	33	254	12
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	39	26	321	18
	7.5	47	32	155	6	0	0	0	0	23	16	78	3	23	16	78	3
	25	0	0	0	0	60	37	164	5	30	19	82	3	30	19	82	3
	70	0	0	0	0	15	8	49	3	5	3	16	1	5	3	16	1
	200	0	0	0	0	26	3	0	0	3	0	0	0	3	0	0	0
	Total	47	32	155	6	100	48	213	8	61	38	176	7	100	64	497	24
	Grand Total	240				369				281				685			
	OPTION 3																
	Low Erosive Risk	0	0	0	0	16	7	33	1	0	0	0	0	15	10	77	4
	Moderate Erosive Risk	0	0	0	0	33	16	71	3	0	0	0	0	33	21	166	8
	High Erosive Risk	0	0	0	0	51	24	109	4	0	0	0	0	51	33	254	12
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	39	26	321	18
	7.5	0	0	0	0	0	0	0	0	0	0	0	0	23	16	78	3
	25	0	0	0	0	60	37	164	5	0	0	0	0	30	19	82	3
	70	0	0	0	0	15	8	49	3	0	0	0	0	5	3	16	1
	200	0	0	0	0	26	3	0	0	0	0	0	0	3	0	0	0
	Total	0	0	0	0	100	48	213	8	0	0	0	0	100	64	497	24
	Grand Total	0				369				0				685			
	OPTION 4																
	Low Erosive Risk	7	5	24	1	16	7	33	1	0	0	0	0	15	10	77	4
	Moderate Erosive Risk	16	11	52	2	33	16	71	3	0	0	0	0	33	21	166	8
	High Erosive Risk	24	16	79	3	51	24	109	4	0	0	0	0	51	33	254	12
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	39	26	321	18
	7.5	47	32	155	6	0	0	0	0	0	0	0	0	23	16	78	3
	25	0	0	0	0	60	37	164	5	0	0	0	0	30	19	82	3
	70	0	0	0	0	15	8	49	3	0	0	0	0	5	3	16	1
	200	0	0	0	0	26	3	0	0	0	0	0	0	3	0	0	0
	Total	47	32	155	6	100	48	213	8	0	0	0	0	100	64	497	24
	Grand Total	240				369				0				685			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	DE	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	0	0	0	0	27	13	57	2	27	17	132	6	27	17	132	6
	Moderate Erosive Risk	0	0	0	0	20	9	42	2	19	12	97	5	19	12	97	5
	High Erosive Risk	0	0	0	0	12	6	27	1	12	8	62	3	12	8	62	3
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	23	15	188	10	23	15	188	10
	7.5	0	0	0	0	0	0	0	0	14	9	45	2	14	9	45	2
	25	0	0	0	0	35	22	96	3	17	11	48	1	17	11	48	1
	70	0	0	0	0	9	5	29	2	3	2	10	1	3	2	10	1
	200	0	0	0	0	15	1	0	0	1	0	0	0	1	0	0	0
	Total	0	0	0	0	59	28	125	5	58	37	291	14	58	37	291	14
	Grand Total	0				216				401				401			
	OPTION 2																
	Low Erosive Risk	12	9	41	2	27	13	57	2	16	10	47	2	16	10	47	2
	Moderate Erosive Risk	9	6	30	1	20	9	42	2	12	7	34	1	12	7	34	1
	High Erosive Risk	6	4	19	1	12	6	27	1	8	5	22	1	8	5	22	1
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7.5	28	19	91	4	0	0	0	0	14	9	45	2	14	9	45	2
	25	0	0	0	0	35	22	96	3	17	11	48	1	17	11	48	1
	70	0	0	0	0	9	5	29	2	3	2	10	1	3	2	10	1
	200	0	0	0	0	15	1	0	0	1	0	0	0	1	0	0	0
	Total	28	19	91	4	59	28	125	5	36	22	103	4	36	22	103	4
	Grand Total	141				216				165				165			
	OPTION 3																
	Low Erosive Risk	0	0	0	0	27	13	57	2	0	0	0	0	0	0	0	0
	Moderate Erosive Risk	0	0	0	0	20	9	42	2	0	0	0	0	0	0	0	0
	High Erosive Risk	0	0	0	0	12	6	27	1	0	0	0	0	0	0	0	0
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	25	0	0	0	0	35	22	96	3	0	0	0	0	0	0	0	0
	70	0	0	0	0	9	5	29	2	0	0	0	0	0	0	0	0
	200	0	0	0	0	15	1	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	59	28	125	5	0	0	0	0	0	0	0	0
	Grand Total	0				216				0				0			
	OPTION 4																
	Low Erosive Risk	12	9	41	2	27	13	57	2	0	0	0	0	16	10	47	2
	Moderate Erosive Risk	9	6	30	1	20	9	42	2	0	0	0	0	12	7	34	1
	High Erosive Risk	6	4	19	1	12	6	27	1	0	0	0	0	8	5	22	1
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7.5	28	19	91	4	0	0	0	0	0	0	0	0	14	9	45	2
	25	0	0	0	0	35	22	96	3	0	0	0	0	17	11	48	1
	70	0	0	0	0	9	5	29	2	0	0	0	0	3	2	10	1
	200	0	0	0	0	15	1	0	0	0	0	0	0	1	0	0	0
	Total	28	19	91	4	59	28	125	5	0	0	0	0	36	22	103	4
	Grand Total	141				216				0				165			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

FL	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
	Number				Number				Number				Number			
OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
Low Erosive Risk	610	417	2017	83	1298	616	2767	100	1296	830	6463	314	1296	830	6463	314
Moderate Erosive Risk	328	224	1082	44	696	330	1485	54	696	445	3469	168	696	445	3469	168
High Erosive Risk	45	31	148	6	95	45	203	7	95	61	476	23	95	61	476	23
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	813	551	6726	367	813	551	6726	367
7.5	983	671	3247	133	0	0	0	0	491	336	1624	67	491	336	1624	67
25	0	0	0	0	1248	781	3438	105	624	391	1719	52	624	391	1719	52
70	0	0	0	0	319	165	1018	57	106	55	339	19	106	55	339	19
200	0	0	0	0	523	45	0	0	52	5	0	0	52	5	0	0
Total	983	671	3247	133	2089	991	4456	161	2087	1336	10408	505	2087	1336	10408	505
Grand Total	5035				7697				14336				14336			
OPTION 2																
Low Erosive Risk	610	417	2017	83	1298	616	2767	100	791	488	2286	86	1296	830	6463	314
Moderate Erosive Risk	328	224	1082	44	696	330	1485	54	425	262	1227	46	696	445	3469	168
High Erosive Risk	45	31	148	6	95	45	203	7	58	36	168	6	95	61	476	23
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	813	551	6726	367
7.5	983	671	3247	133	0	0	0	0	491	336	1624	67	491	336	1624	67
25	0	0	0	0	1248	781	3438	105	624	391	1719	52	624	391	1719	52
70	0	0	0	0	319	165	1018	57	106	55	339	19	106	55	339	19
200	0	0	0	0	523	45	0	0	52	5	0	0	52	5	0	0
Total	983	671	3247	133	2089	991	4456	161	1274	786	3682	138	2087	1336	10408	505
Grand Total	5035				7697				5879				14336			
OPTION 3																
Low Erosive Risk	610	417	2017	83	1298	616	2767	100	0	0	0	0	1296	830	6463	314
Moderate Erosive Risk	328	224	1082	44	696	330	1485	54	0	0	0	0	696	445	3469	168
High Erosive Risk	45	31	148	6	95	45	203	7	0	0	0	0	95	61	476	23
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	813	551	6726	367
7.5	983	671	3247	133	0	0	0	0	0	0	0	0	491	336	1624	67
25	0	0	0	0	1248	781	3438	105	0	0	0	0	624	391	1719	52
70	0	0	0	0	319	165	1018	57	0	0	0	0	106	55	339	19
200	0	0	0	0	523	45	0	0	0	0	0	0	52	5	0	0
Total	983	671	3247	133	2089	991	4456	161	0	0	0	0	2087	1336	10408	505
Grand Total	5035				7697				0				14336			
OPTION 4																
Low Erosive Risk	610	417	2017	83	1298	616	2767	100	0	0	0	0	1296	830	6463	314
Moderate Erosive Risk	328	224	1082	44	696	330	1485	54	0	0	0	0	696	445	3469	168
High Erosive Risk	45	31	148	6	95	45	203	7	0	0	0	0	95	61	476	23
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	813	551	6726	367
7.5	983	671	3247	133	0	0	0	0	0	0	0	0	491	336	1624	67
25	0	0	0	0	1248	781	3438	105	0	0	0	0	624	391	1719	52
70	0	0	0	0	319	165	1018	57	0	0	0	0	106	55	339	19
200	0	0	0	0	523	45	0	0	0	0	0	0	52	5	0	0
Total	983	671	3247	133	2089	991	4456	161	0	0	0	0	2087	1336	10408	505
Grand Total	5035				7697				0				14336			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	GA	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	0	0	0	0	931	443	1978	73	927	594	4619	225	927	594	4619	225
	Moderate Erosive Risk	0	0	0	0	723	344	1534	57	719	461	3582	174	719	461	3582	174
	High Erosive Risk	0	0	0	0	514	244	1090	41	511	327	2545	124	511	327	2545	124
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	840	569	6944	379	840	569	6944	379
	7.5	0	0	0	0	0	0	0	0	508	347	1677	69	508	347	1677	69
	25	0	0	0	0	1288	808	3549	110	644	404	1775	55	644	404	1775	55
	70	0	0	0	0	330	170	1052	61	110	57	351	20	110	57	351	20
	200	0	0	0	0	549	54	0	0	55	5	0	0	55	5	0	0
	Total	0	0	0	0	2168	1031	4602	171	2157	1382	10747	523	2157	1382	10747	523
	Grand Total	0				7972				14808				14808			
	OPTION 2																
	Low Erosive Risk	436	298	1442	59	931	443	1978	73	566	349	1635	62	927	594	4619	225
	Moderate Erosive Risk	338	231	1118	46	723	344	1534	57	439	271	1268	48	719	461	3582	174
	High Erosive Risk	241	164	795	33	514	244	1090	41	312	193	901	34	511	327	2545	124
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	840	569	6944	379
	7.5	1015	694	3354	137	0	0	0	0	508	347	1677	69	508	347	1677	69
	25	0	0	0	0	1288	808	3549	110	644	404	1775	55	644	404	1775	55
	70	0	0	0	0	330	170	1052	61	110	57	351	20	110	57	351	20
	200	0	0	0	0	549	54	0	0	55	5	0	0	55	5	0	0
	Total	1015	694	3354	137	2168	1031	4602	171	1317	813	3803	144	2157	1382	10747	523
	Grand Total	5201				7972				6076				14808			
	OPTION 3																
	Low Erosive Risk	0	0	0	0	931	443	1978	73	0	0	0	0	927	594	4619	225
	Moderate Erosive Risk	0	0	0	0	723	344	1534	57	0	0	0	0	719	461	3582	174
	High Erosive Risk	0	0	0	0	514	244	1090	41	0	0	0	0	511	327	2545	124
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	840	569	6944	379
	7.5	0	0	0	0	0	0	0	0	0	0	0	0	508	347	1677	69
	25	0	0	0	0	1288	808	3549	110	0	0	0	0	644	404	1775	55
	70	0	0	0	0	330	170	1052	61	0	0	0	0	110	57	351	20
	200	0	0	0	0	549	54	0	0	0	0	0	0	55	5	0	0
	Total	0	0	0	0	2168	1031	4602	171	0	0	0	0	2157	1382	10747	523
	Grand Total	0				7972				0				14808			
	OPTION 4																
	Low Erosive Risk	436	298	1442	59	931	443	1978	73	0	0	0	0	927	594	4619	225
	Moderate Erosive Risk	338	231	1118	46	723	344	1534	57	0	0	0	0	719	461	3582	174
	High Erosive Risk	241	164	795	33	514	244	1090	41	0	0	0	0	511	327	2545	124
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	840	569	6944	379
	7.5	1015	694	3354	137	0	0	0	0	0	0	0	0	508	347	1677	69
	25	0	0	0	0	1288	808	3549	110	0	0	0	0	644	404	1775	55
	70	0	0	0	0	330	170	1052	61	0	0	0	0	110	57	351	20
	200	0	0	0	0	549	54	0	0	0	0	0	0	55	5	0	0
	Total	1015	694	3354	137	2168	1031	4602	171	0	0	0	0	2157	1382	10747	523
	Grand Total	5201				7972				0				14808			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	IA	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	7	5	24	1	15	7	33	1	15	10	76	4	15	10	76	4
	Moderate Erosive Risk	27	19	91	4	59	28	124	5	58	37	291	14	58	37	291	14
	High Erosive Risk	48	33	158	6	102	48	216	8	101	65	505	25	101	65	505	25
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	68	46	563	31	68	46	563	31
	7.5	82	56	272	11	0	0	0	0	41	28	136	6	41	28	136	6
	25	0	0	0	0	105	66	288	9	52	33	144	4	52	33	144	4
	70	0	0	0	0	27	14	85	5	9	5	28	2	9	5	28	2
	200	0	0	0	0	45	4	0	0	4	0	0	0	4	0	0	0
	Total	82	56	272	11	176	84	373	14	175	112	872	42	175	112	872	42
	Grand Total	422				646				1201				1201			
	OPTION 2																
	Low Erosive Risk	7	5	24	1	15	7	33	1	9	6	27	1	15	10	76	4
	Moderate Erosive Risk	27	19	91	4	59	28	124	5	36	22	103	4	58	37	291	14
	High Erosive Risk	48	33	158	6	102	48	216	8	62	38	179	7	101	65	505	25
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	68	46	563	31
	7.5	82	56	272	11	0	0	0	0	41	28	136	6	41	28	136	6
	25	0	0	0	0	105	66	288	9	52	33	144	4	52	33	144	4
	70	0	0	0	0	27	14	85	5	9	5	28	2	9	5	28	2
	200	0	0	0	0	45	4	0	0	4	0	0	0	4	0	0	0
	Total	82	56	272	11	176	84	373	14	107	66	308	12	175	112	872	42
	Grand Total	422				646				493				1201			
	OPTION 3																
	Low Erosive Risk	7	5	24	1	15	7	33	1	0	0	0	0	15	10	76	4
	Moderate Erosive Risk	27	19	91	4	59	28	124	5	0	0	0	0	58	37	291	14
	High Erosive Risk	48	33	158	6	102	48	216	8	0	0	0	0	101	65	505	25
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	68	46	563	31
	7.5	82	56	272	11	0	0	0	0	0	0	0	0	41	28	136	6
	25	0	0	0	0	105	66	288	9	0	0	0	0	52	33	144	4
	70	0	0	0	0	27	14	85	5	0	0	0	0	9	5	28	2
	200	0	0	0	0	45	4	0	0	0	0	0	0	4	0	0	0
	Total	82	56	272	11	176	84	373	14	0	0	0	0	175	112	872	42
	Grand Total	422				646				0				1201			
	OPTION 4																
	Low Erosive Risk	7	5	24	1	15	7	33	1	0	0	0	0	15	10	76	4
	Moderate Erosive Risk	27	19	91	4	59	28	124	5	0	0	0	0	58	37	291	14
	High Erosive Risk	48	33	158	6	102	48	216	8	0	0	0	0	101	65	505	25
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	68	46	563	31
	7.5	82	56	272	11	0	0	0	0	0	0	0	0	41	28	136	6
	25	0	0	0	0	105	66	288	9	0	0	0	0	52	33	144	4
	70	0	0	0	0	27	14	85	5	0	0	0	0	9	5	28	2
	200	0	0	0	0	45	4	0	0	0	0	0	0	4	0	0	0
	Total	82	56	272	11	176	84	373	14	0	0	0	0	175	112	872	42
	Grand Total	422				646				0				1201			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

ID	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
	Number				Number				Number				Number			
OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
Low Erosive Risk	18	12	60	2	39	18	83	3	39	25	194	9	39	25	194	9
Moderate Erosive Risk	90	62	300	12	190	89	411	14	192	123	962	46	192	123	962	46
High Erosive Risk	0	0	1	0	1	0	1	0	1	0	3	0	1	0	3	0
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	90	61	749	41	90	61	749	41
7.5	109	74	361	14	0	0	0	0	54	37	181	7	54	37	181	7
25	0	0	0	0	139	87	383	11	69	43	191	6	69	43	191	6
70	0	0	0	0	35	17	113	6	12	6	38	2	12	6	38	2
200	0	0	0	0	56	3	0	0	6	0	0	0	6	0	0	0
Total	109	74	361	14	229	107	496	17	231	148	1158	55	231	148	1158	55
Grand Total	559				849				1593				1593			
OPTION 2																
Low Erosive Risk	18	12	60	2	39	18	83	3	24	14	68	3	39	25	194	9
Moderate Erosive Risk	90	62	300	12	190	89	411	14	117	72	340	12	192	123	962	46
High Erosive Risk	0	0	1	0	1	0	1	0	0	0	1	0	1	0	3	0
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	90	61	749	41
7.5	109	74	361	14	0	0	0	0	54	37	181	7	54	37	181	7
25	0	0	0	0	139	87	383	11	69	43	191	6	69	43	191	6
70	0	0	0	0	35	17	113	6	12	6	38	2	12	6	38	2
200	0	0	0	0	56	3	0	0	6	0	0	0	6	0	0	0
Total	109	74	361	14	229	107	496	17	141	87	410	15	231	148	1158	55
Grand Total	559				849				652				1593			
OPTION 3																
Low Erosive Risk	18	12	60	2	39	18	83	3	0	0	0	0	39	25	194	9
Moderate Erosive Risk	90	62	300	12	190	89	411	14	0	0	0	0	192	123	962	46
High Erosive Risk	0	0	1	0	1	0	1	0	0	0	0	0	1	0	3	0
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	90	61	749	41
7.5	109	74	361	14	0	0	0	0	0	0	0	0	54	37	181	7
25	0	0	0	0	139	87	383	11	0	0	0	0	69	43	191	6
70	0	0	0	0	35	17	113	6	0	0	0	0	12	6	38	2
200	0	0	0	0	56	3	0	0	0	0	0	0	6	0	0	0
Total	109	74	361	14	229	107	496	17	0	0	0	0	231	148	1158	55
Grand Total	559				849				0				1593			
OPTION 4																
Low Erosive Risk	18	12	60	2	39	18	83	3	0	0	0	0	39	25	194	9
Moderate Erosive Risk	90	62	300	12	190	89	411	14	0	0	0	0	192	123	962	46
High Erosive Risk	0	0	1	0	1	0	1	0	0	0	0	0	1	0	3	0
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	90	61	749	41
7.5	109	74	361	14	0	0	0	0	0	0	0	0	54	37	181	7
25	0	0	0	0	139	87	383	11	0	0	0	0	69	43	191	6
70	0	0	0	0	35	17	113	6	0	0	0	0	12	6	38	2
200	0	0	0	0	56	3	0	0	0	0	0	0	6	0	0	0
Total	109	74	361	14	229	107	496	17	0	0	0	0	231	148	1158	55
Grand Total	559				849				0				1593			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	IL	**Sedimentation Traps**				**Sedimentation Basins**				**Installation Certification**				**E&S Site Inspection**			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	0	0	0	0	76	36	163	6	76	49	381	18	76	49	381	18
	Moderate Erosive Risk	0	0	0	0	209	99	444	16	208	133	1037	50	208	133	1037	50
	High Erosive Risk	0	0	0	0	342	163	725	27	340	218	1692	82	340	218	1692	82
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	243	165	2009	110	243	165	2009	110
	7.5	0	0	0	0	0	0	0	0	147	100	485	20	147	100	485	20
	25	0	0	0	0	373	234	1027	32	186	117	513	16	186	117	513	16
	70	0	0	0	0	96	49	305	18	32	16	102	6	32	16	102	6
	200	0	0	0	0	158	15	0	0	16	2	0	0	16	2	0	0
	Total	0	0	0	0	627	298	1332	49	624	400	3110	151	624	400	3110	151
	Grand Total	0				2306				4285				4285			
	OPTION 2																
	Low Erosive Risk	36	25	119	5	76	36	163	6	47	29	135	5	76	49	381	18
	Moderate Erosive Risk	98	67	324	13	209	99	444	16	127	78	367	14	208	133	1037	50
	High Erosive Risk	160	109	528	22	342	163	725	27	207	128	599	23	340	218	1692	82
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	243	165	2009	110
	7.5	294	201	971	40	0	0	0	0	147	100	485	20	147	100	485	20
	25	0	0	0	0	373	234	1027	32	186	117	513	16	186	117	513	16
	70	0	0	0	0	96	49	305	18	32	16	102	6	32	16	102	6
	200	0	0	0	0	158	15	0	0	16	2	0	0	16	2	0	0
	Total	294	201	971	40	627	298	1332	49	381	235	1100	42	624	400	3110	151
	Grand Total	1505				2306				1758				4285			
	OPTION 3																
	Low Erosive Risk	0	0	0	0	76	36	163	6	0	0	0	0	76	49	381	18
	Moderate Erosive Risk	0	0	0	0	209	99	444	16	0	0	0	0	208	133	1037	50
	High Erosive Risk	0	0	0	0	342	163	725	27	0	0	0	0	340	218	1692	82
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	243	165	2009	110
	7.5	0	0	0	0	0	0	0	0	0	0	0	0	147	100	485	20
	25	0	0	0	0	373	234	1027	32	0	0	0	0	186	117	513	16
	70	0	0	0	0	96	49	305	18	0	0	0	0	32	16	102	6
	200	0	0	0	0	158	15	0	0	0	0	0	0	16	2	0	0
	Total	0	0	0	0	627	298	1332	49	0	0	0	0	624	400	3110	151
	Grand Total	0				2306				0				4285			
	OPTION 4																
	Low Erosive Risk	36	25	119	5	76	36	163	6	0	0	0	0	76	49	381	18
	Moderate Erosive Risk	98	67	324	13	209	99	444	16	0	0	0	0	208	133	1037	50
	High Erosive Risk	160	109	528	22	342	163	725	27	0	0	0	0	340	218	1692	82
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	243	165	2009	110
	7.5	294	201	971	40	0	0	0	0	0	0	0	0	147	100	485	20
	25	0	0	0	0	373	234	1027	32	0	0	0	0	186	117	513	16
	70	0	0	0	0	96	49	305	18	0	0	0	0	32	16	102	6
	200	0	0	0	0	158	15	0	0	0	0	0	0	16	2	0	0
	Total	294	201	971	40	627	298	1332	49	0	0	0	0	624	400	3110	151
	Grand Total	1505				2306				0				4285			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	IN	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	0	0	0	0	52	24	111	4	52	33	258	13	52	33	258	13
	Moderate Erosive Risk	0	0	0	0	166	79	352	13	165	106	821	40	165	106	821	40
	High Erosive Risk	0	0	0	0	279	133	593	22	278	178	1384	67	278	178	1384	67
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	192	130	1592	87	192	130	1592	87
	7.5	0	0	0	0	0	0	0	0	116	80	385	16	116	80	385	16
	25	0	0	0	0	295	185	814	25	148	93	407	13	148	93	407	13
	70	0	0	0	0	76	39	241	14	25	13	80	5	25	13	80	5
	200	0	0	0	0	126	12	0	0	13	1	0	0	13	1	0	0
	Total	0	0	0	0	497	236	1055	39	494	317	2464	120	494	317	2464	120
	Grand Total	0				1827				3395				3395			
	OPTION 2																
	Low Erosive Risk	24	17	81	3	52	24	111	4	32	19	91	3	32	19	91	3
	Moderate Erosive Risk	78	53	256	10	166	79	352	13	101	62	291	11	101	62	291	11
	High Erosive Risk	131	89	432	18	279	133	593	22	170	105	490	19	170	105	490	19
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7.5	233	159	769	31	0	0	0	0	116	80	385	16	116	80	385	16
	25	0	0	0	0	295	185	814	25	148	93	407	13	148	93	407	13
	70	0	0	0	0	76	39	241	14	25	13	80	5	25	13	80	5
	200	0	0	0	0	126	12	0	0	13	1	0	0	13	1	0	0
	Total	233	159	769	31	497	236	1055	39	302	186	872	33	302	186	872	33
	Grand Total	1192				1827				1393				1393			
	OPTION 3																
	Low Erosive Risk	0	0	0	0	52	24	111	4	0	0	0	0	0	0	0	0
	Moderate Erosive Risk	0	0	0	0	166	79	352	13	0	0	0	0	0	0	0	0
	High Erosive Risk	0	0	0	0	279	133	593	22	0	0	0	0	0	0	0	0
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	25	0	0	0	0	295	185	814	25	0	0	0	0	0	0	0	0
	70	0	0	0	0	76	39	241	14	0	0	0	0	0	0	0	0
	200	0	0	0	0	126	12	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	497	236	1055	39	0	0	0	0	0	0	0	0
	Grand Total	0				1827				0				0			
	OPTION 4																
	Low Erosive Risk	24	17	81	3	52	24	111	4	0	0	0	0	32	19	91	3
	Moderate Erosive Risk	78	53	256	10	166	79	352	13	0	0	0	0	101	62	291	11
	High Erosive Risk	131	89	432	18	279	133	593	22	0	0	0	0	170	105	490	19
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7.5	233	159	769	31	0	0	0	0	0	0	0	0	116	80	385	16
	25	0	0	0	0	295	185	814	25	0	0	0	0	148	93	407	13
	70	0	0	0	0	76	39	241	14	0	0	0	0	25	13	80	5
	200	0	0	0	0	126	12	0	0	0	0	0	0	13	1	0	0
	Total	233	159	769	31	497	236	1055	39	0	0	0	0	302	186	872	33
	Grand Total	1192				1827				0				1393			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	KS	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	0	0	0	0	30	14	64	2	30	19	150	7	30	19	150	7
	Moderate Erosive Risk	0	0	0	0	81	39	172	6	81	52	402	20	81	52	402	20
	High Erosive Risk	0	0	0	0	134	64	285	11	133	85	665	32	133	85	665	32
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	95	64	787	43	95	64	787	43
	7.5	0	0	0	0	0	0	0	0	58	39	190	8	58	39	190	8
	25	0	0	0	0	146	91	402	12	73	46	201	6	73	46	201	6
	70	0	0	0	0	37	19	119	7	12	6	40	2	12	6	40	2
	200	0	0	0	0	62	6	0	0	6	1	0	0	6	1	0	0
	Total	0	0	0	0	245	117	521	19	244	156	1217	59	244	156	1217	59
	Grand Total	0				902				1677				1677			
	OPTION 2																
	Low Erosive Risk	14	10	47	2	30	14	64	2	18	11	53	2	30	19	150	7
	Moderate Erosive Risk	38	26	125	5	81	39	172	6	49	30	142	5	81	52	402	20
	High Erosive Risk	63	43	207	8	134	64	285	11	81	50	235	9	133	85	665	32
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	95	64	787	43
	7.5	115	79	380	15	0	0	0	0	58	39	190	8	58	39	190	8
	25	0	0	0	0	146	91	402	12	73	46	201	6	73	46	201	6
	70	0	0	0	0	37	19	119	7	12	6	40	2	12	6	40	2
	200	0	0	0	0	62	6	0	0	6	1	0	0	6	1	0	0
	Total	115	79	380	15	245	117	521	19	149	92	431	16	244	156	1217	59
	Grand Total	589				902				688				1677			
	OPTION 3																
	Low Erosive Risk	0	0	0	0	30	14	64	2	0	0	0	0	30	19	150	7
	Moderate Erosive Risk	0	0	0	0	81	39	172	6	0	0	0	0	81	52	402	20
	High Erosive Risk	0	0	0	0	134	64	285	11	0	0	0	0	133	85	665	32
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	95	64	787	43
	7.5	0	0	0	0	0	0	0	0	0	0	0	0	58	39	190	8
	25	0	0	0	0	146	91	402	12	0	0	0	0	73	46	201	6
	70	0	0	0	0	37	19	119	7	0	0	0	0	12	6	40	2
	200	0	0	0	0	62	6	0	0	0	0	0	0	6	1	0	0
	Total	0	0	0	0	245	117	521	19	0	0	0	0	244	156	1217	59
	Grand Total	0				902				0				1677			
	OPTION 4																
	Low Erosive Risk	14	10	47	2	30	14	64	2	0	0	0	0	30	19	150	7
	Moderate Erosive Risk	38	26	125	5	81	39	172	6	0	0	0	0	81	52	402	20
	High Erosive Risk	63	43	207	8	134	64	285	11	0	0	0	0	133	85	665	32
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	95	64	787	43
	7.5	115	79	380	15	0	0	0	0	0	0	0	0	58	39	190	8
	25	0	0	0	0	146	91	402	12	0	0	0	0	73	46	201	6
	70	0	0	0	0	37	19	119	7	0	0	0	0	12	6	40	2
	200	0	0	0	0	62	6	0	0	0	0	0	0	6	1	0	0
	Total	115	79	380	15	245	117	521	19	0	0	0	0	244	156	1217	59
	Grand Total	589				902				0				1677			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

KY	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
	Number				Number				Number				Number			
OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
Low Erosive Risk	0	0	0	0	39	19	83	3	39	25	195	9	39	25	195	9
Moderate Erosive Risk	0	0	0	0	201	96	427	16	200	128	997	48	200	128	997	48
High Erosive Risk	0	0	0	0	363	173	770	29	361	231	1799	87	361	231	1799	87
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	234	158	1933	105	234	158	1933	105
7.5	0	0	0	0	0	0	0	0	141	97	467	19	141	97	467	19
25	0	0	0	0	359	225	988	31	179	112	494	15	179	112	494	15
70	0	0	0	0	92	47	293	17	31	16	98	6	31	16	98	6
200	0	0	0	0	153	15	0	0	15	2	0	0	15	2	0	0
Total	0	0	0	0	604	287	1281	48	600	385	2991	145	600	385	2991	145
Grand Total	0				2219				4122				4122			
OPTION 2																
Low Erosive Risk	18	13	61	2	39	19	83	3	24	15	69	3	39	25	195	9
Moderate Erosive Risk	94	64	311	13	201	96	427	16	122	75	353	13	200	128	997	48
High Erosive Risk	170	116	562	23	363	173	770	29	221	136	637	24	361	231	1799	87
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	234	158	1933	105
7.5	283	193	934	38	0	0	0	0	141	97	467	19	141	97	467	19
25	0	0	0	0	359	225	988	31	179	112	494	15	179	112	494	15
70	0	0	0	0	92	47	293	17	31	16	98	6	31	16	98	6
200	0	0	0	0	153	15	0	0	15	2	0	0	15	2	0	0
Total	283	193	934	38	604	287	1281	48	367	226	1058	40	600	385	2991	145
Grand Total	1448				2219				1691				4122			
OPTION 3																
Low Erosive Risk	0	0	0	0	39	19	83	3	0	0	0	0	39	25	195	9
Moderate Erosive Risk	0	0	0	0	201	96	427	16	0	0	0	0	200	128	997	48
High Erosive Risk	0	0	0	0	363	173	770	29	0	0	0	0	361	231	1799	87
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	234	158	1933	105
7.5	0	0	0	0	0	0	0	0	0	0	0	0	141	97	467	19
25	0	0	0	0	359	225	988	31	0	0	0	0	179	112	494	15
70	0	0	0	0	92	47	293	17	0	0	0	0	31	16	98	6
200	0	0	0	0	153	15	0	0	0	0	0	0	15	2	0	0
Total	0	0	0	0	604	287	1281	48	0	0	0	0	600	385	2991	145
Grand Total	0				2219				0				4122			
OPTION 4																
Low Erosive Risk	18	13	61	2	39	19	83	3	0	0	0	0	39	25	195	9
Moderate Erosive Risk	94	64	311	13	201	96	427	16	0	0	0	0	200	128	997	48
High Erosive Risk	170	116	562	23	363	173	770	29	0	0	0	0	361	231	1799	87
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	234	158	1933	105
7.5	283	193	934	38	0	0	0	0	0	0	0	0	141	97	467	19
25	0	0	0	0	359	225	988	31	0	0	0	0	179	112	494	15
70	0	0	0	0	92	47	293	17	0	0	0	0	31	16	98	6
200	0	0	0	0	153	15	0	0	0	0	0	0	15	2	0	0
Total	283	193	934	38	604	287	1281	48	0	0	0	0	600	385	2991	145
Grand Total	1448				2219				0				4122			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	LA	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	24	17	81	3	52	25	110	4	52	33	258	12	52	33	258	12
	Moderate Erosive Risk	53	36	175	7	113	54	240	9	113	72	562	27	113	72	562	27
	High Erosive Risk	82	56	270	11	175	83	371	14	174	111	866	42	174	111	866	42
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	132	89	1089	59	132	89	1089	59
	7.5	159	109	526	21	0	0	0	0	80	54	263	11	80	54	263	11
	25	0	0	0	0	202	127	556	17	101	63	278	9	101	63	278	9
	70	0	0	0	0	52	27	165	9	17	9	55	3	17	9	55	3
	200	0	0	0	0	86	9	0	0	9	1	0	0	9	1	0	0
	Total	159	109	526	21	340	162	721	26	338	217	1685	82	338	217	1685	82
	Grand Total	816				1250				2322				2322			
	OPTION 2																
	Low Erosive Risk	24	17	81	3	52	25	110	4	32	20	91	3	52	33	258	12
	Moderate Erosive Risk	53	36	175	7	113	54	240	9	69	42	199	7	113	72	562	27
	High Erosive Risk	82	56	270	11	175	83	371	14	106	65	306	12	174	111	866	42
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	132	89	1089	59
	7.5	159	109	526	21	0	0	0	0	80	54	263	11	80	54	263	11
	25	0	0	0	0	202	127	556	17	101	63	278	9	101	63	278	9
	70	0	0	0	0	52	27	165	9	17	9	55	3	17	9	55	3
	200	0	0	0	0	86	9	0	0	9	1	0	0	9	1	0	0
	Total	159	109	526	21	340	162	721	26	207	127	596	22	338	217	1685	82
	Grand Total	816				1250				953				2322			
	OPTION 3																
	Low Erosive Risk	24	17	81	3	52	25	110	4	0	0	0	0	52	33	258	12
	Moderate Erosive Risk	53	36	175	7	113	54	240	9	0	0	0	0	113	72	562	27
	High Erosive Risk	82	56	270	11	175	83	371	14	0	0	0	0	174	111	866	42
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	132	89	1089	59
	7.5	159	109	526	21	0	0	0	0	0	0	0	0	80	54	263	11
	25	0	0	0	0	202	127	556	17	0	0	0	0	101	63	278	9
	70	0	0	0	0	52	27	165	9	0	0	0	0	17	9	55	3
	200	0	0	0	0	86	9	0	0	0	0	0	0	9	1	0	0
	Total	159	109	526	21	340	162	721	26	0	0	0	0	338	217	1685	82
	Grand Total	816				1250				0				2322			
	OPTION 4																
	Low Erosive Risk	24	17	81	3	52	25	110	4	0	0	0	0	52	33	258	12
	Moderate Erosive Risk	53	36	175	7	113	54	240	9	0	0	0	0	113	72	562	27
	High Erosive Risk	82	56	270	11	175	83	371	14	0	0	0	0	174	111	866	42
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	132	89	1089	59
	7.5	159	109	526	21	0	0	0	0	0	0	0	0	80	54	263	11
	25	0	0	0	0	202	127	556	17	0	0	0	0	101	63	278	9
	70	0	0	0	0	52	27	165	9	0	0	0	0	17	9	55	3
	200	0	0	0	0	86	9	0	0	0	0	0	0	9	1	0	0
	Total	159	109	526	21	340	162	721	26	0	0	0	0	338	217	1685	82
	Grand Total	816				1250				0				2322			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

MA	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
	Number				Number				Number				Number			
OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
Low Erosive Risk	39	27	129	5	84	40	178	7	83	53	415	20	83	53	415	20
Moderate Erosive Risk	84	57	278	11	180	86	381	14	179	115	891	43	179	115	891	43
High Erosive Risk	129	88	427	17	276	131	585	22	274	176	1366	66	274	176	1366	66
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	209	141	1726	94	209	141	1726	94
7.5	252	172	834	34	0	0	0	0	126	86	417	17	126	86	417	17
25	0	0	0	0	320	201	883	27	160	100	441	14	160	100	441	14
70	0	0	0	0	82	42	262	15	27	14	87	5	27	14	87	5
200	0	0	0	0	137	14	0	0	14	1	0	0	14	1	0	0
Total	252	172	834	34	540	257	1144	42	536	344	2672	130	536	344	2672	130
Grand Total	1293				1983				3682				3682			
OPTION 2																
Low Erosive Risk	39	27	129	5	84	40	178	7	51	31	147	6	83	53	415	20
Moderate Erosive Risk	84	57	278	11	180	86	381	14	109	67	315	12	179	115	891	43
High Erosive Risk	129	88	427	17	276	131	585	22	167	103	484	18	274	176	1366	66
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	209	141	1726	94
7.5	252	172	834	34	0	0	0	0	126	86	417	17	126	86	417	17
25	0	0	0	0	320	201	883	27	160	100	441	14	160	100	441	14
70	0	0	0	0	82	42	262	15	27	14	87	5	27	14	87	5
200	0	0	0	0	137	14	0	0	14	1	0	0	14	1	0	0
Total	252	172	834	34	540	257	1144	42	327	202	945	36	536	344	2672	130
Grand Total	1293				1983				1511				3682			
OPTION 3																
Low Erosive Risk	39	27	129	5	84	40	178	7	0	0	0	0	83	53	415	20
Moderate Erosive Risk	84	57	278	11	180	86	381	14	0	0	0	0	179	115	891	43
High Erosive Risk	129	88	427	17	276	131	585	22	0	0	0	0	274	176	1366	66
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	209	141	1726	94
7.5	252	172	834	34	0	0	0	0	0	0	0	0	126	86	417	17
25	0	0	0	0	320	201	883	27	0	0	0	0	160	100	441	14
70	0	0	0	0	82	42	262	15	0	0	0	0	27	14	87	5
200	0	0	0	0	137	14	0	0	0	0	0	0	14	1	0	0
Total	252	172	834	34	540	257	1144	42	0	0	0	0	536	344	2672	130
Grand Total	1293				1983				0				3682			
OPTION 4																
Low Erosive Risk	39	27	129	5	84	40	178	7	0	0	0	0	83	53	415	20
Moderate Erosive Risk	84	57	278	11	180	86	381	14	0	0	0	0	179	115	891	43
High Erosive Risk	129	88	427	17	276	131	585	22	0	0	0	0	274	176	1366	66
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	209	141	1726	94
7.5	252	172	834	34	0	0	0	0	0	0	0	0	126	86	417	17
25	0	0	0	0	320	201	883	27	0	0	0	0	160	100	441	14
70	0	0	0	0	82	42	262	15	0	0	0	0	27	14	87	5
200	0	0	0	0	137	14	0	0	0	0	0	0	14	1	0	0
Total	252	172	834	34	540	257	1144	42	0	0	0	0	536	344	2672	130
Grand Total	1293				1983				0				3682			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

MD	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
	Number				Number				Number				Number			
OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
Low Erosive Risk	0	0	0	0	127	61	269	10	126	81	629	30	126	81	629	30
Moderate Erosive Risk	0	0	0	0	151	72	320	12	150	96	747	36	150	96	747	36
High Erosive Risk	0	0	0	0	175	83	370	14	174	111	865	42	174	111	865	42
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	175	119	1448	79	175	119	1448	79
7.5	0	0	0	0	0	0	0	0	106	72	350	14	106	72	350	14
25	0	0	0	0	268	168	740	23	134	84	370	11	134	84	370	11
70	0	0	0	0	69	35	219	13	23	12	73	4	23	12	73	4
200	0	0	0	0	114	12	0	0	11	1	0	0	11	1	0	0
Total	0	0	0	0	452	215	959	35	449	288	2240	109	449	288	2240	109
Grand Total	0				1662				3087				3087			
OPTION 2																
Low Erosive Risk	59	41	196	8	127	61	269	10	77	48	222	8	77	48	222	8
Moderate Erosive Risk	71	48	233	9	151	72	320	12	91	56	264	10	91	56	264	10
High Erosive Risk	82	56	270	11	175	83	370	14	106	65	306	12	106	65	306	12
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7.5	212	145	699	28	0	0	0	0	106	72	350	14	106	72	350	14
25	0	0	0	0	268	168	740	23	134	84	370	11	134	84	370	11
70	0	0	0	0	69	35	219	13	23	12	73	4	23	12	73	4
200	0	0	0	0	114	12	0	0	11	1	0	0	11	1	0	0
Total	212	145	699	28	452	215	959	35	274	169	793	30	274	169	793	30
Grand Total	1084				1662				1266				1266			
OPTION 3																
Low Erosive Risk	0	0	0	0	127	61	269	10	0	0	0	0	0	0	0	0
Moderate Erosive Risk	0	0	0	0	151	72	320	12	0	0	0	0	0	0	0	0
High Erosive Risk	0	0	0	0	175	83	370	14	0	0	0	0	0	0	0	0
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	268	168	740	23	0	0	0	0	0	0	0	0
70	0	0	0	0	69	35	219	13	0	0	0	0	0	0	0	0
200	0	0	0	0	114	12	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	452	215	959	35	0	0	0	0	0	0	0	0
Grand Total	0				1662				0				0			
OPTION 4																
Low Erosive Risk	59	41	196	8	127	61	269	10	0	0	0	0	77	48	222	8
Moderate Erosive Risk	71	48	233	9	151	72	320	12	0	0	0	0	91	56	264	10
High Erosive Risk	82	56	270	11	175	83	370	14	0	0	0	0	106	65	306	12
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7.5	212	145	699	28	0	0	0	0	0	0	0	0	106	72	350	14
25	0	0	0	0	268	168	740	23	0	0	0	0	134	84	370	11
70	0	0	0	0	69	35	219	13	0	0	0	0	23	12	73	4
200	0	0	0	0	114	12	0	0	0	0	0	0	11	1	0	0
Total	212	145	699	28	452	215	959	35	0	0	0	0	274	169	793	30
Grand Total	1084				1662				0				1266			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	ME	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	21	14	68	3	44	21	93	3	44	28	218	11	44	28	218	11
	Moderate Erosive Risk	44	30	146	6	94	45	200	7	94	60	467	23	94	60	467	23
	High Erosive Risk	68	46	224	9	145	69	307	11	144	92	717	35	144	92	717	35
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	109	74	906	49	109	74	906	49
	7.5	132	90	437	18	0	0	0	0	66	45	219	9	66	45	219	9
	25	0	0	0	0	168	105	463	14	84	53	231	7	84	53	231	7
	70	0	0	0	0	43	22	137	8	14	7	46	3	14	7	46	3
	200	0	0	0	0	72	7	0	0	7	1	0	0	7	1	0	0
	Total	132	90	437	18	283	135	600	22	281	180	1402	68	281	180	1402	68
	Grand Total	678				1040				1931				1931			
	OPTION 2																
	Low Erosive Risk	21	14	68	3	44	21	93	3	27	16	77	3	44	28	218	11
	Moderate Erosive Risk	44	30	146	6	94	45	200	7	57	35	165	6	94	60	467	23
	High Erosive Risk	68	46	224	9	145	69	307	11	88	54	254	10	144	92	717	35
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	109	74	906	49
	7.5	132	90	437	18	0	0	0	0	66	45	219	9	66	45	219	9
	25	0	0	0	0	168	105	463	14	84	53	231	7	84	53	231	7
	70	0	0	0	0	43	22	137	8	14	7	46	3	14	7	46	3
	200	0	0	0	0	72	7	0	0	7	1	0	0	7	1	0	0
	Total	132	90	437	18	283	135	600	22	172	106	496	19	281	180	1402	68
	Grand Total	678				1040				792				1931			
	OPTION 3																
	Low Erosive Risk	21	14	68	3	44	21	93	3	0	0	0	0	44	28	218	11
	Moderate Erosive Risk	44	30	146	6	94	45	200	7	0	0	0	0	94	60	467	23
	High Erosive Risk	68	46	224	9	145	69	307	11	0	0	0	0	144	92	717	35
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	109	74	906	49
	7.5	132	90	437	18	0	0	0	0	0	0	0	0	66	45	219	9
	25	0	0	0	0	168	105	463	14	0	0	0	0	84	53	231	7
	70	0	0	0	0	43	22	137	8	0	0	0	0	14	7	46	3
	200	0	0	0	0	72	7	0	0	0	0	0	0	7	1	0	0
	Total	132	90	437	18	283	135	600	22	0	0	0	0	281	180	1402	68
	Grand Total	678				1040				0				1931			
	OPTION 4																
	Low Erosive Risk	21	14	68	3	44	21	93	3	0	0	0	0	44	28	218	11
	Moderate Erosive Risk	44	30	146	6	94	45	200	7	0	0	0	0	94	60	467	23
	High Erosive Risk	68	46	224	9	145	69	307	11	0	0	0	0	144	92	717	35
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	109	74	906	49
	7.5	132	90	437	18	0	0	0	0	0	0	0	0	66	45	219	9
	25	0	0	0	0	168	105	463	14	0	0	0	0	84	53	231	7
	70	0	0	0	0	43	22	137	8	0	0	0	0	14	7	46	3
	200	0	0	0	0	72	7	0	0	0	0	0	0	7	1	0	0
	Total	132	90	437	18	283	135	600	22	0	0	0	0	281	180	1402	68
	Grand Total	678				1040				0				1931			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	MI	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	0	0	0	0	113	53	241	9	113	72	563	27	113	72	563	27
	Moderate Erosive Risk	0	0	0	0	309	147	656	24	307	197	1531	74	307	197	1531	74
	High Erosive Risk	0	0	0	0	504	240	1070	40	501	321	2499	122	501	321	2499	122
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	359	243	2968	162	359	243	2968	162
	7.5	0	0	0	0	0	0	0	0	217	148	717	29	217	148	717	29
	25	0	0	0	0	551	345	1517	47	275	173	758	23	275	173	758	23
	70	0	0	0	0	141	72	450	26	47	24	150	9	47	24	150	9
	200	0	0	0	0	234	22	0	0	23	2	0	0	23	2	0	0
	Total	0	0	0	0	926	440	1967	73	922	590	4593	223	922	590	4593	223
	Grand Total	0				3406				6329				6329			
	OPTION 2																
	Low Erosive Risk	53	36	176	7	113	53	241	9	69	43	199	7	113	72	563	27
	Moderate Erosive Risk	145	99	478	20	309	147	656	24	188	116	542	20	307	197	1531	74
	High Erosive Risk	236	161	780	32	504	240	1070	40	306	189	884	34	501	321	2499	122
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	359	243	2968	162
	7.5	434	297	1434	59	0	0	0	0	217	148	717	29	217	148	717	29
	25	0	0	0	0	551	345	1517	47	275	173	758	23	275	173	758	23
	70	0	0	0	0	141	72	450	26	47	24	150	9	47	24	150	9
	200	0	0	0	0	234	22	0	0	23	2	0	0	23	2	0	0
	Total	434	297	1434	59	926	440	1967	73	563	347	1625	61	922	590	4593	223
	Grand Total	2223				3406				2597				6329			
	OPTION 3																
	Low Erosive Risk	0	0	0	0	113	53	241	9	0	0	0	0	113	72	563	27
	Moderate Erosive Risk	0	0	0	0	309	147	656	24	0	0	0	0	307	197	1531	74
	High Erosive Risk	0	0	0	0	504	240	1070	40	0	0	0	0	501	321	2499	122
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	359	243	2968	162
	7.5	0	0	0	0	0	0	0	0	0	0	0	0	217	148	717	29
	25	0	0	0	0	551	345	1517	47	0	0	0	0	275	173	758	23
	70	0	0	0	0	141	72	450	26	0	0	0	0	47	24	150	9
	200	0	0	0	0	234	22	0	0	0	0	0	0	23	2	0	0
	Total	0	0	0	0	926	440	1967	73	0	0	0	0	922	590	4593	223
	Grand Total	0				3406				0				6329			
	OPTION 4																
	Low Erosive Risk	53	36	176	7	113	53	241	9	0	0	0	0	113	72	563	27
	Moderate Erosive Risk	145	99	478	20	309	147	656	24	0	0	0	0	307	197	1531	74
	High Erosive Risk	236	161	780	32	504	240	1070	40	0	0	0	0	501	321	2499	122
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	359	243	2968	162
	7.5	434	297	1434	59	0	0	0	0	0	0	0	0	217	148	717	29
	25	0	0	0	0	551	345	1517	47	0	0	0	0	275	173	758	23
	70	0	0	0	0	141	72	450	26	0	0	0	0	47	24	150	9
	200	0	0	0	0	234	22	0	0	0	0	0	0	23	2	0	0
	Total	434	297	1434	59	926	440	1967	73	0	0	0	0	922	590	4593	223
	Grand Total	2223				3406				0				6329			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	MN	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	0	0	0	0	69	32	147	5	69	44	343	17	69	44	343	17
	Moderate Erosive Risk	0	0	0	0	197	93	417	15	196	125	975	47	196	125	975	47
	High Erosive Risk	0	0	0	0	324	154	688	26	322	207	1606	78	322	207	1606	78
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	228	155	1890	103	228	155	1890	103
	7.5	0	0	0	0	0	0	0	0	138	94	456	19	138	94	456	19
	25	0	0	0	0	351	220	966	30	175	110	483	15	175	110	483	15
	70	0	0	0	0	90	46	286	16	30	15	95	5	30	15	95	5
	200	0	0	0	0	149	14	0	0	15	1	0	0	15	1	0	0
	Total	0	0	0	0	590	280	1252	46	587	376	2924	142	587	376	2924	142
	Grand Total	0				2168				4029				4029			
	OPTION 2																
	Low Erosive Risk	32	22	107	4	69	32	147	5	42	26	121	5	69	44	343	17
	Moderate Erosive Risk	92	63	304	12	197	93	417	15	119	74	345	13	196	125	975	47
	High Erosive Risk	152	104	501	20	324	154	688	26	197	122	568	22	322	207	1606	78
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	228	155	1890	103
	7.5	276	189	913	37	0	0	0	0	138	94	456	19	138	94	456	19
	25	0	0	0	0	351	220	966	30	175	110	483	15	175	110	483	15
	70	0	0	0	0	90	46	286	16	30	15	95	5	30	15	95	5
	200	0	0	0	0	149	14	0	0	15	1	0	0	15	1	0	0
	Total	276	189	913	37	590	280	1252	46	358	221	1035	39	587	376	2924	142
	Grand Total	1415				2168				1653				4029			
	OPTION 3																
	Low Erosive Risk	0	0	0	0	69	32	147	5	0	0	0	0	69	44	343	17
	Moderate Erosive Risk	0	0	0	0	197	93	417	15	0	0	0	0	196	125	975	47
	High Erosive Risk	0	0	0	0	324	154	688	26	0	0	0	0	322	207	1606	78
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	228	155	1890	103
	7.5	0	0	0	0	0	0	0	0	0	0	0	0	138	94	456	19
	25	0	0	0	0	351	220	966	30	0	0	0	0	175	110	483	15
	70	0	0	0	0	90	46	286	16	0	0	0	0	30	15	95	5
	200	0	0	0	0	149	14	0	0	0	0	0	0	15	1	0	0
	Total	0	0	0	0	590	280	1252	46	0	0	0	0	587	376	2924	142
	Grand Total	0				2168				0				4029			
	OPTION 4																
	Low Erosive Risk	32	22	107	4	69	32	147	5	0	0	0	0	69	44	343	17
	Moderate Erosive Risk	92	63	304	12	197	93	417	15	0	0	0	0	196	125	975	47
	High Erosive Risk	152	104	501	20	324	154	688	26	0	0	0	0	322	207	1606	78
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	228	155	1890	103
	7.5	276	189	913	37	0	0	0	0	0	0	0	0	138	94	456	19
	25	0	0	0	0	351	220	966	30	0	0	0	0	175	110	483	15
	70	0	0	0	0	90	46	286	16	0	0	0	0	30	15	95	5
	200	0	0	0	0	149	14	0	0	0	0	0	0	15	1	0	0
	Total	276	189	913	37	590	280	1252	46	0	0	0	0	587	376	2924	142
	Grand Total	1415				2168				0				4029			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

MO	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
	Number				Number				Number				Number			
OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
Low Erosive Risk	0	0	0	0	55	26	116	4	55	35	272	13	55	35	272	13
Moderate Erosive Risk	0	0	0	0	190	90	404	15	189	121	943	46	189	121	943	46
High Erosive Risk	0	0	0	0	326	155	691	26	324	207	1614	78	324	207	1614	78
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	221	150	1828	100	221	150	1828	100
7.5	0	0	0	0	0	0	0	0	134	91	441	18	134	91	441	18
25	0	0	0	0	339	213	934	29	170	106	467	14	170	106	467	14
70	0	0	0	0	87	45	277	16	29	15	92	5	29	15	92	5
200	0	0	0	0	145	14	0	0	14	1	0	0	14	1	0	0
Total	0	0	0	0	571	271	1211	45	568	364	2828	137	568	364	2828	137
Grand Total	0				2097				3897				3897			
OPTION 2																
Low Erosive Risk	26	18	85	3	55	26	116	4	33	21	96	4	33	21	96	4
Moderate Erosive Risk	89	61	294	12	190	90	404	15	116	71	334	13	116	71	334	13
High Erosive Risk	153	104	504	21	326	155	691	26	198	122	571	22	198	122	571	22
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7.5	267	183	883	36	0	0	0	0	134	91	441	18	134	91	441	18
25	0	0	0	0	339	213	934	29	170	106	467	14	170	106	467	14
70	0	0	0	0	87	45	277	16	29	15	92	5	29	15	92	5
200	0	0	0	0	145	14	0	0	14	1	0	0	14	1	0	0
Total	267	183	883	36	571	271	1211	45	347	214	1001	38	347	214	1001	38
Grand Total	1369				2097				1599				1599			
OPTION 3																
Low Erosive Risk	0	0	0	0	55	26	116	4	0	0	0	0	0	0	0	0
Moderate Erosive Risk	0	0	0	0	190	90	404	15	0	0	0	0	0	0	0	0
High Erosive Risk	0	0	0	0	326	155	691	26	0	0	0	0	0	0	0	0
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	339	213	934	29	0	0	0	0	0	0	0	0
70	0	0	0	0	87	45	277	16	0	0	0	0	0	0	0	0
200	0	0	0	0	145	14	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	571	271	1211	45	0	0	0	0	0	0	0	0
Grand Total	0				2097				0				0			
OPTION 4																
Low Erosive Risk	26	18	85	3	55	26	116	4	0	0	0	0	33	21	96	4
Moderate Erosive Risk	89	61	294	12	190	90	404	15	0	0	0	0	116	71	334	13
High Erosive Risk	153	104	504	21	326	155	691	26	0	0	0	0	198	122	571	22
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7.5	267	183	883	36	0	0	0	0	0	0	0	0	134	91	441	18
25	0	0	0	0	339	213	934	29	0	0	0	0	170	106	467	14
70	0	0	0	0	87	45	277	16	0	0	0	0	29	15	92	5
200	0	0	0	0	145	14	0	0	0	0	0	0	14	1	0	0
Total	267	183	883	36	571	271	1211	45	0	0	0	0	347	214	1001	38
Grand Total	1369				2097				0				1599			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

MS	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
	Number				Number				Number				Number			
OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
Low Erosive Risk	0	0	0	0	188	89	399	15	187	120	931	45	187	120	931	45
Moderate Erosive Risk	0	0	0	0	175	83	372	14	174	112	868	42	174	112	868	42
High Erosive Risk	0	0	0	0	163	78	345	13	162	104	805	39	162	104	805	39
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	203	138	1682	92	203	138	1682	92
7.5	0	0	0	0	0	0	0	0	123	84	406	17	123	84	406	17
25	0	0	0	0	312	196	860	27	156	98	430	13	156	98	430	13
70	0	0	0	0	80	41	255	15	27	14	85	5	27	14	85	5
200	0	0	0	0	133	13	0	0	13	1	0	0	13	1	0	0
Total	0	0	0	0	526	250	1115	41	523	335	2604	127	523	335	2604	127
Grand Total	0				1932				3588				3588			
OPTION 2																
Low Erosive Risk	88	60	291	12	188	89	399	15	114	70	329	12	187	120	931	45
Moderate Erosive Risk	82	56	271	11	175	83	372	14	106	66	307	12	174	112	868	42
High Erosive Risk	76	52	251	10	163	78	345	13	99	61	285	11	162	104	805	39
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	203	138	1682	92
7.5	246	168	813	33	0	0	0	0	123	84	406	17	123	84	406	17
25	0	0	0	0	312	196	860	27	156	98	430	13	156	98	430	13
70	0	0	0	0	80	41	255	15	27	14	85	5	27	14	85	5
200	0	0	0	0	133	13	0	0	13	1	0	0	13	1	0	0
Total	246	168	813	33	526	250	1115	41	319	197	921	35	523	335	2604	127
Grand Total	1260				1932				1472				3588			
OPTION 3																
Low Erosive Risk	0	0	0	0	188	89	399	15	0	0	0	0	187	120	931	45
Moderate Erosive Risk	0	0	0	0	175	83	372	14	0	0	0	0	174	112	868	42
High Erosive Risk	0	0	0	0	163	78	345	13	0	0	0	0	162	104	805	39
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	203	138	1682	92
7.5	0	0	0	0	0	0	0	0	0	0	0	0	123	84	406	17
25	0	0	0	0	312	196	860	27	0	0	0	0	156	98	430	13
70	0	0	0	0	80	41	255	15	0	0	0	0	27	14	85	5
200	0	0	0	0	133	13	0	0	0	0	0	0	13	1	0	0
Total	0	0	0	0	526	250	1115	41	0	0	0	0	523	335	2604	127
Grand Total	0				1932				0				3588			
OPTION 4																
Low Erosive Risk	88	60	291	12	188	89	399	15	0	0	0	0	187	120	931	45
Moderate Erosive Risk	82	56	271	11	175	83	372	14	0	0	0	0	174	112	868	42
High Erosive Risk	76	52	251	10	163	78	345	13	0	0	0	0	162	104	805	39
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	203	138	1682	92
7.5	246	168	813	33	0	0	0	0	0	0	0	0	123	84	406	17
25	0	0	0	0	312	196	860	27	0	0	0	0	156	98	430	13
70	0	0	0	0	80	41	255	15	0	0	0	0	27	14	85	5
200	0	0	0	0	133	13	0	0	0	0	0	0	13	1	0	0
Total	246	168	813	33	526	250	1115	41	0	0	0	0	523	335	2604	127
Grand Total	1260				1932				0				3588			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

MT	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
	Number				Number				Number				Number			
OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
Low Erosive Risk	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Moderate Erosive Risk	0	0	0	0	191	86	411	14	192	122	960	46	192	122	960	46
High Erosive Risk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	75	51	622	34	75	51	622	34
7.5	0	0	0	0	0	0	0	0	45	31	150	6	45	31	150	6
25	0	0	0	0	115	72	318	10	58	36	159	5	58	36	159	5
70	0	0	0	0	29	14	94	5	10	5	31	2	10	5	31	2
200	0	0	0	0	48	0	0	0	5	0	0	0	5	0	0	0
Total	0	0	0	0	192	86	411	14	192	122	961	46	192	122	961	46
Grand Total	0				704				1322				1322			
OPTION 2																
Low Erosive Risk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Moderate Erosive Risk	90	61	299	12	191	86	411	14	117	71	340	12	192	122	960	46
High Erosive Risk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	75	51	622	34
7.5	90	61	300	12	0	0	0	0	45	31	150	6	45	31	150	6
25	0	0	0	0	115	72	318	10	58	36	159	5	58	36	159	5
70	0	0	0	0	29	14	94	5	10	5	31	2	10	5	31	2
200	0	0	0	0	48	0	0	0	5	0	0	0	5	0	0	0
Total	90	61	300	12	192	86	411	14	117	71	340	12	192	122	961	46
Grand Total	463				704				541				1322			
OPTION 3																
Low Erosive Risk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Moderate Erosive Risk	0	0	0	0	191	86	411	14	0	0	0	0	192	122	960	46
High Erosive Risk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	75	51	622	34
7.5	0	0	0	0	0	0	0	0	0	0	0	0	45	31	150	6
25	0	0	0	0	115	72	318	10	0	0	0	0	58	36	159	5
70	0	0	0	0	29	14	94	5	0	0	0	0	10	5	31	2
200	0	0	0	0	48	0	0	0	0	0	0	0	5	0	0	0
Total	0	0	0	0	192	86	411	14	0	0	0	0	192	122	961	46
Grand Total	0				704				0				1322			
OPTION 4																
Low Erosive Risk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Moderate Erosive Risk	90	61	299	12	191	86	411	14	0	0	0	0	192	122	960	46
High Erosive Risk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	75	51	622	34
7.5	90	61	300	12	0	0	0	0	0	0	0	0	45	31	150	6
25	0	0	0	0	115	72	318	10	0	0	0	0	58	36	159	5
70	0	0	0	0	29	14	94	5	0	0	0	0	10	5	31	2
200	0	0	0	0	48	0	0	0	0	0	0	0	5	0	0	0
Total	90	61	300	12	192	86	411	14	0	0	0	0	192	122	961	46
Grand Total	463				704				0				1322			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

NC	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
	Number				Number				Number				Number			
OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
Low Erosive Risk	0	0	0	0	495	236	1051	39	492	316	2454	119	492	316	2454	119
Moderate Erosive Risk	0	0	0	0	430	205	912	34	427	274	2130	104	427	274	2130	104
High Erosive Risk	0	0	0	0	365	173	773	29	363	232	1806	88	363	232	1806	88
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	499	338	4130	225	499	338	4130	225
7.5	0	0	0	0	0	0	0	0	302	206	997	41	302	206	997	41
25	0	0	0	0	766	480	2111	65	383	240	1055	33	383	240	1055	33
70	0	0	0	0	196	101	626	36	65	34	209	12	65	34	209	12
200	0	0	0	0	327	33	0	0	33	3	0	0	33	3	0	0
Total	0	0	0	0	1289	614	2736	102	1282	822	6391	311	1282	822	6391	311
Grand Total	0				4741				8805				8805			
OPTION 2																
Low Erosive Risk	232	158	766	31	495	236	1051	39	301	186	868	33	492	316	2454	119
Moderate Erosive Risk	201	138	665	27	430	205	912	34	261	161	754	28	427	274	2130	104
High Erosive Risk	171	117	564	23	365	173	773	29	221	136	639	24	363	232	1806	88
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	499	338	4130	225
7.5	604	413	1995	81	0	0	0	0	302	206	997	41	302	206	997	41
25	0	0	0	0	766	480	2111	65	383	240	1055	33	383	240	1055	33
70	0	0	0	0	196	101	626	36	65	34	209	12	65	34	209	12
200	0	0	0	0	327	33	0	0	33	3	0	0	33	3	0	0
Total	604	413	1995	81	1289	614	2736	102	783	483	2261	85	1282	822	6391	311
Grand Total	3092				4741				3613				8805			
OPTION 3																
Low Erosive Risk	0	0	0	0	495	236	1051	39	0	0	0	0	492	316	2454	119
Moderate Erosive Risk	0	0	0	0	430	205	912	34	0	0	0	0	427	274	2130	104
High Erosive Risk	0	0	0	0	365	173	773	29	0	0	0	0	363	232	1806	88
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	499	338	4130	225
7.5	0	0	0	0	0	0	0	0	0	0	0	0	302	206	997	41
25	0	0	0	0	766	480	2111	65	0	0	0	0	383	240	1055	33
70	0	0	0	0	196	101	626	36	0	0	0	0	65	34	209	12
200	0	0	0	0	327	33	0	0	0	0	0	0	33	3	0	0
Total	0	0	0	0	1289	614	2736	102	0	0	0	0	1282	822	6391	311
Grand Total	0				4741				0				8805			
OPTION 4																
Low Erosive Risk	232	158	766	31	495	236	1051	39	0	0	0	0	492	316	2454	119
Moderate Erosive Risk	201	138	665	27	430	205	912	34	0	0	0	0	427	274	2130	104
High Erosive Risk	171	117	564	23	365	173	773	29	0	0	0	0	363	232	1806	88
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	499	338	4130	225
7.5	604	413	1995	81	0	0	0	0	0	0	0	0	302	206	997	41
25	0	0	0	0	766	480	2111	65	0	0	0	0	383	240	1055	33
70	0	0	0	0	196	101	626	36	0	0	0	0	65	34	209	12
200	0	0	0	0	327	33	0	0	0	0	0	0	33	3	0	0
Total	604	413	1995	81	1289	614	2736	102	0	0	0	0	1282	822	6391	311
Grand Total	3092				4741				0				8805			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	ND	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	0	0	0	0	9	4	19	1	9	6	45	2	9	6	45	2
	Moderate Erosive Risk	0	0	0	0	34	16	72	3	34	22	169	8	34	22	169	8
	High Erosive Risk	0	0	0	0	40	19	86	3	40	26	200	10	40	26	200	10
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	32	22	267	15	32	22	267	15
	7.5	0	0	0	0	0	0	0	0	20	13	65	3	20	13	65	3
	25	0	0	0	0	50	31	137	4	25	16	68	2	25	16	68	2
	70	0	0	0	0	13	6	41	2	4	2	14	1	4	2	14	1
	200	0	0	0	0	21	2	0	0	2	0	0	0	2	0	0	0
	Total	0	0	0	0	83	39	177	7	83	53	414	20	83	53	414	20
	Grand Total	0				306				570				570			
	OPTION 2																
	Low Erosive Risk	4	3	14	1	9	4	19	1	6	3	16	1	9	6	45	2
	Moderate Erosive Risk	16	11	53	2	34	16	72	3	21	13	60	2	34	22	169	8
	High Erosive Risk	19	13	62	3	40	19	86	3	25	15	71	3	40	26	200	10
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	32	22	267	15
	7.5	39	27	129	5	0	0	0	0	20	13	65	3	20	13	65	3
	25	0	0	0	0	50	31	137	4	25	16	68	2	25	16	68	2
	70	0	0	0	0	13	6	41	2	4	2	14	1	4	2	14	1
	200	0	0	0	0	21	2	0	0	2	0	0	0	2	0	0	0
	Total	39	27	129	5	83	39	177	7	51	31	146	5	83	53	414	20
	Grand Total	200				306				234				570			
	OPTION 3																
	Low Erosive Risk	0	0	0	0	9	4	19	1	0	0	0	0	9	6	45	2
	Moderate Erosive Risk	0	0	0	0	34	16	72	3	0	0	0	0	34	22	169	8
	High Erosive Risk	0	0	0	0	40	19	86	3	0	0	0	0	40	26	200	10
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	32	22	267	15
	7.5	0	0	0	0	0	0	0	0	0	0	0	0	20	13	65	3
	25	0	0	0	0	50	31	137	4	0	0	0	0	25	16	68	2
	70	0	0	0	0	13	6	41	2	0	0	0	0	4	2	14	1
	200	0	0	0	0	21	2	0	0	0	0	0	0	2	0	0	0
	Total	0	0	0	0	83	39	177	7	0	0	0	0	83	53	414	20
	Grand Total	0				306				0				570			
	OPTION 4																
	Low Erosive Risk	4	3	14	1	9	4	19	1	0	0	0	0	9	6	45	2
	Moderate Erosive Risk	16	11	53	2	34	16	72	3	0	0	0	0	34	22	169	8
	High Erosive Risk	19	13	62	3	40	19	86	3	0	0	0	0	40	26	200	10
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	32	22	267	15
	7.5	39	27	129	5	0	0	0	0	0	0	0	0	20	13	65	3
	25	0	0	0	0	50	31	137	4	0	0	0	0	25	16	68	2
	70	0	0	0	0	13	6	41	2	0	0	0	0	4	2	14	1
	200	0	0	0	0	21	2	0	0	0	0	0	0	2	0	0	0
	Total	39	27	129	5	83	39	177	7	0	0	0	0	83	53	414	20
	Grand Total	200				306				0				570			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	NE	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	12	8	40	2	26	12	55	2	26	16	128	6	26	16	128	6
	Moderate Erosive Risk	25	17	81	3	52	25	111	4	52	33	260	13	52	33	260	13
	High Erosive Risk	29	20	96	4	62	29	132	5	62	40	308	15	62	40	308	15
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	54	37	449	24	54	37	449	24
	7.5	66	45	217	9	0	0	0	0	33	22	108	4	33	22	108	4
	25	0	0	0	0	83	52	230	7	42	26	115	4	42	26	115	4
	70	0	0	0	0	21	11	68	4	7	4	23	1	7	4	23	1
	200	0	0	0	0	35	3	0	0	4	0	0	0	4	0	0	0
	Total	66	45	217	9	140	66	298	11	139	89	695	34	139	89	695	34
	Grand Total	336				515				957				957			
	OPTION 2																
	Low Erosive Risk	12	8	40	2	26	12	55	2	16	10	45	2	26	16	128	6
	Moderate Erosive Risk	25	17	81	3	52	25	111	4	32	20	92	3	52	33	260	13
	High Erosive Risk	29	20	96	4	62	29	132	5	38	23	109	4	62	40	308	15
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	54	37	449	24
	7.5	66	45	217	9	0	0	0	0	33	22	108	4	33	22	108	4
	25	0	0	0	0	83	52	230	7	42	26	115	4	42	26	115	4
	70	0	0	0	0	21	11	68	4	7	4	23	1	7	4	23	1
	200	0	0	0	0	35	3	0	0	4	0	0	0	4	0	0	0
	Total	66	45	217	9	140	66	298	11	85	53	246	9	139	89	695	34
	Grand Total	336				515				393				957			
	OPTION 3																
	Low Erosive Risk	12	8	40	2	26	12	55	2	0	0	0	0	26	16	128	6
	Moderate Erosive Risk	25	17	81	3	52	25	111	4	0	0	0	0	52	33	260	13
	High Erosive Risk	29	20	96	4	62	29	132	5	0	0	0	0	62	40	308	15
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	54	37	449	24
	7.5	66	45	217	9	0	0	0	0	0	0	0	0	33	22	108	4
	25	0	0	0	0	83	52	230	7	0	0	0	0	42	26	115	4
	70	0	0	0	0	21	11	68	4	0	0	0	0	7	4	23	1
	200	0	0	0	0	35	3	0	0	0	0	0	0	4	0	0	0
	Total	66	45	217	9	140	66	298	11	0	0	0	0	139	89	695	34
	Grand Total	336				515				0				957			
	OPTION 4																
	Low Erosive Risk	12	8	40	2	26	12	55	2	0	0	0	0	26	16	128	6
	Moderate Erosive Risk	25	17	81	3	52	25	111	4	0	0	0	0	52	33	260	13
	High Erosive Risk	29	20	96	4	62	29	132	5	0	0	0	0	62	40	308	15
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	54	37	449	24
	7.5	66	45	217	9	0	0	0	0	0	0	0	0	33	22	108	4
	25	0	0	0	0	83	52	230	7	0	0	0	0	42	26	115	4
	70	0	0	0	0	21	11	68	4	0	0	0	0	7	4	23	1
	200	0	0	0	0	35	3	0	0	0	0	0	0	4	0	0	0
	Total	66	45	217	9	140	66	298	11	0	0	0	0	139	89	695	34
	Grand Total	336				515				0				957			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	NH	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	12	8	38	2	25	12	53	2	25	16	123	6	25	16	123	6
	Moderate Erosive Risk	25	17	82	3	53	25	113	4	53	34	263	13	53	34	263	13
	High Erosive Risk	38	26	126	5	82	39	173	6	81	52	404	20	81	52	404	20
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	62	42	510	28	62	42	510	28
	7.5	75	51	246	10	0	0	0	0	37	25	123	5	37	25	123	5
	25	0	0	0	0	95	59	261	8	47	30	130	4	47	30	130	4
	70	0	0	0	0	24	12	77	4	8	4	26	1	8	4	26	1
	200	0	0	0	0	41	4	0	0	4	0	0	0	4	0	0	0
	Total	75	51	246	10	160	76	338	12	158	102	790	38	158	102	790	38
	Grand Total	382				586				1088				1088			
	OPTION 2																
	Low Erosive Risk	12	8	38	2	25	12	53	2	15	9	43	2	25	16	123	6
	Moderate Erosive Risk	25	17	82	3	53	25	113	4	32	20	93	4	53	34	263	13
	High Erosive Risk	38	26	126	5	82	39	173	6	49	31	143	5	81	52	404	20
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	62	42	510	28
	7.5	75	51	246	10	0	0	0	0	37	25	123	5	37	25	123	5
	25	0	0	0	0	95	59	261	8	47	30	130	4	47	30	130	4
	70	0	0	0	0	24	12	77	4	8	4	26	1	8	4	26	1
	200	0	0	0	0	41	4	0	0	4	0	0	0	4	0	0	0
	Total	75	51	246	10	160	76	338	12	97	60	279	11	158	102	790	38
	Grand Total	382				586				447				1088			
	OPTION 3																
	Low Erosive Risk	12	8	38	2	25	12	53	2	0	0	0	0	25	16	123	6
	Moderate Erosive Risk	25	17	82	3	53	25	113	4	0	0	0	0	53	34	263	13
	High Erosive Risk	38	26	126	5	82	39	173	6	0	0	0	0	81	52	404	20
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	62	42	510	28
	7.5	75	51	246	10	0	0	0	0	0	0	0	0	37	25	123	5
	25	0	0	0	0	95	59	261	8	0	0	0	0	47	30	130	4
	70	0	0	0	0	24	12	77	4	0	0	0	0	8	4	26	1
	200	0	0	0	0	41	4	0	0	0	0	0	0	4	0	0	0
	Total	75	51	246	10	160	76	338	12	0	0	0	0	158	102	790	38
	Grand Total	382				586				0				1088			
	OPTION 4																
	Low Erosive Risk	12	8	38	2	25	12	53	2	0	0	0	0	25	16	123	6
	Moderate Erosive Risk	25	17	82	3	53	25	113	4	0	0	0	0	53	34	263	13
	High Erosive Risk	38	26	126	5	82	39	173	6	0	0	0	0	81	52	404	20
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	62	42	510	28
	7.5	75	51	246	10	0	0	0	0	0	0	0	0	37	25	123	5
	25	0	0	0	0	95	59	261	8	0	0	0	0	47	30	130	4
	70	0	0	0	0	24	12	77	4	0	0	0	0	8	4	26	1
	200	0	0	0	0	41	4	0	0	0	0	0	0	4	0	0	0
	Total	75	51	246	10	160	76	338	12	0	0	0	0	158	102	790	38
	Grand Total	382				586				0				1088			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	NJ	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	0	0	0	0	173	83	367	13	172	110	858	42	172	110	858	42
	Moderate Erosive Risk	0	0	0	0	181	86	385	14	180	115	898	44	180	115	898	44
	High Erosive Risk	0	0	0	0	189	90	402	15	188	120	938	46	188	120	938	46
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	211	143	1741	95	211	143	1741	95
	7.5	0	0	0	0	0	0	0	0	127	87	421	17	127	87	421	17
	25	0	0	0	0	323	202	890	27	161	101	445	14	161	101	445	14
	70	0	0	0	0	83	42	264	15	28	14	88	5	28	14	88	5
	200	0	0	0	0	138	14	0	0	14	1	0	0	14	1	0	0
	Total	0	0	0	0	543	259	1154	42	540	346	2695	131	540	346	2695	131
	Grand Total	0				1998				3712				3712			
	OPTION 2																
	Low Erosive Risk	81	55	268	11	173	83	367	13	105	65	304	11	105	65	304	11
	Moderate Erosive Risk	85	58	280	11	181	86	385	14	110	68	318	12	110	68	318	12
	High Erosive Risk	89	61	293	12	189	90	402	15	115	71	332	12	115	71	332	12
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7.5	254	174	841	34	0	0	0	0	127	87	421	17	127	87	421	17
	25	0	0	0	0	323	202	890	27	161	101	445	14	161	101	445	14
	70	0	0	0	0	83	42	264	15	28	14	88	5	28	14	88	5
	200	0	0	0	0	138	14	0	0	14	1	0	0	14	1	0	0
	Total	254	174	841	34	543	259	1154	42	330	204	953	36	330	204	953	36
	Grand Total	1304				1998				1523				1523			
	OPTION 3																
	Low Erosive Risk	0	0	0	0	173	83	367	13	0	0	0	0	0	0	0	0
	Moderate Erosive Risk	0	0	0	0	181	86	385	14	0	0	0	0	0	0	0	0
	High Erosive Risk	0	0	0	0	189	90	402	15	0	0	0	0	0	0	0	0
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	25	0	0	0	0	323	202	890	27	0	0	0	0	0	0	0	0
	70	0	0	0	0	83	42	264	15	0	0	0	0	0	0	0	0
	200	0	0	0	0	138	14	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	543	259	1154	42	0	0	0	0	0	0	0	0
	Grand Total	0				1998				0				0			
	OPTION 4																
	Low Erosive Risk	81	55	268	11	173	83	367	13	0	0	0	0	105	65	304	11
	Moderate Erosive Risk	85	58	280	11	181	86	385	14	0	0	0	0	110	68	318	12
	High Erosive Risk	89	61	293	12	189	90	402	15	0	0	0	0	115	71	332	12
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7.5	254	174	841	34	0	0	0	0	0	0	0	0	127	87	421	17
	25	0	0	0	0	323	202	890	27	0	0	0	0	161	101	445	14
	70	0	0	0	0	83	42	264	15	0	0	0	0	28	14	88	5
	200	0	0	0	0	138	14	0	0	0	0	0	0	14	1	0	0
	Total	254	174	841	34	543	259	1154	42	0	0	0	0	330	204	953	36
	Grand Total	1304				1998				0				1523			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	NM	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	92	63	306	12	197	91	419	15	196	125	980	47	196	125	980	47
	Moderate Erosive Risk	132	90	439	18	281	135	601	21	281	180	1405	68	281	180	1405	68
	High Erosive Risk	33	23	111	4	70	34	152	6	71	45	354	17	71	45	354	17
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	214	145	1770	96	214	145	1770	96
	7.5	258	176	855	34	0	0	0	0	129	88	427	17	129	88	427	17
	25	0	0	0	0	328	205	905	27	164	103	452	14	164	103	452	14
	70	0	0	0	0	83	42	267	14	28	14	89	5	28	14	89	5
	200	0	0	0	0	137	12	0	0	14	1	0	0	14	1	0	0
	Total	258	176	855	34	548	260	1172	42	548	351	2739	132	548	351	2739	132
	Grand Total	1324				2021				3770				3770			
	OPTION 2																
	Low Erosive Risk	92	63	306	12	197	91	419	15	120	74	347	13	196	125	980	47
	Moderate Erosive Risk	132	90	439	18	281	135	601	21	171	106	497	18	281	180	1405	68
	High Erosive Risk	33	23	111	4	70	34	152	6	43	27	125	5	71	45	354	17
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	214	145	1770	96
	7.5	258	176	855	34	0	0	0	0	129	88	427	17	129	88	427	17
	25	0	0	0	0	328	205	905	27	164	103	452	14	164	103	452	14
	70	0	0	0	0	83	42	267	14	28	14	89	5	28	14	89	5
	200	0	0	0	0	137	12	0	0	14	1	0	0	14	1	0	0
	Total	258	176	855	34	548	260	1172	42	334	206	969	36	548	351	2739	132
	Grand Total	1324				2021				1545				3770			
	OPTION 3																
	Low Erosive Risk	92	63	306	12	197	91	419	15	0	0	0	0	196	125	980	47
	Moderate Erosive Risk	132	90	439	18	281	135	601	21	0	0	0	0	281	180	1405	68
	High Erosive Risk	33	23	111	4	70	34	152	6	0	0	0	0	71	45	354	17
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	214	145	1770	96
	7.5	258	176	855	34	0	0	0	0	0	0	0	0	129	88	427	17
	25	0	0	0	0	328	205	905	27	0	0	0	0	164	103	452	14
	70	0	0	0	0	83	42	267	14	0	0	0	0	28	14	89	5
	200	0	0	0	0	137	12	0	0	0	0	0	0	14	1	0	0
	Total	258	176	855	34	548	260	1172	42	0	0	0	0	548	351	2739	132
	Grand Total	1324				2021				0				3770			
	OPTION 4																
	Low Erosive Risk	92	63	306	12	197	91	419	15	0	0	0	0	196	125	980	47
	Moderate Erosive Risk	132	90	439	18	281	135	601	21	0	0	0	0	281	180	1405	68
	High Erosive Risk	33	23	111	4	70	34	152	6	0	0	0	0	71	45	354	17
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	214	145	1770	96
	7.5	258	176	855	34	0	0	0	0	0	0	0	0	129	88	427	17
	25	0	0	0	0	328	205	905	27	0	0	0	0	164	103	452	14
	70	0	0	0	0	83	42	267	14	0	0	0	0	28	14	89	5
	200	0	0	0	0	137	12	0	0	0	0	0	0	14	1	0	0
	Total	258	176	855	34	548	260	1172	42	0	0	0	0	548	351	2739	132
	Grand Total	1324				2021				0				3770			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

NV	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
	Number				Number				Number				Number			
OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
Low Erosive Risk	13	8	41	2	27	12	57	2	27	17	133	6	27	17	133	6
Moderate Erosive Risk	19	13	63	3	41	19	87	3	41	26	203	10	41	26	203	10
High Erosive Risk	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	26	18	218	12	26	18	218	12
7.5	32	22	105	4	0	0	0	0	16	11	53	2	16	11	53	2
25	0	0	0	0	40	25	111	3	20	13	56	2	20	13	56	2
70	0	0	0	0	10	5	33	2	3	2	11	1	3	2	11	1
200	0	0	0	0	17	1	0	0	2	0	0	0	2	0	0	0
Total	32	22	105	4	68	32	144	5	67	43	337	16	67	43	337	16
Grand Total	163				249				464				464			
OPTION 2																
Low Erosive Risk	13	8	41	2	27	12	57	2	16	10	47	2	27	17	133	6
Moderate Erosive Risk	19	13	63	3	41	19	87	3	25	15	72	3	41	26	203	10
High Erosive Risk	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	26	18	218	12
7.5	32	22	105	4	0	0	0	0	16	11	53	2	16	11	53	2
25	0	0	0	0	40	25	111	3	20	13	56	2	20	13	56	2
70	0	0	0	0	10	5	33	2	3	2	11	1	3	2	11	1
200	0	0	0	0	17	1	0	0	2	0	0	0	2	0	0	0
Total	32	22	105	4	68	32	144	5	41	25	119	4	67	43	337	16
Grand Total	163				249				190				464			
OPTION 3																
Low Erosive Risk	13	8	41	2	27	12	57	2	0	0	0	0	27	17	133	6
Moderate Erosive Risk	19	13	63	3	41	19	87	3	0	0	0	0	41	26	203	10
High Erosive Risk	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	26	18	218	12
7.5	32	22	105	4	0	0	0	0	0	0	0	0	16	11	53	2
25	0	0	0	0	40	25	111	3	0	0	0	0	20	13	56	2
70	0	0	0	0	10	5	33	2	0	0	0	0	3	2	11	1
200	0	0	0	0	17	1	0	0	0	0	0	0	2	0	0	0
Total	32	22	105	4	68	32	144	5	0	0	0	0	67	43	337	16
Grand Total	163				249				0				464			
OPTION 4																
Low Erosive Risk	13	8	41	2	27	12	57	2	0	0	0	0	27	17	133	6
Moderate Erosive Risk	19	13	63	3	41	19	87	3	0	0	0	0	41	26	203	10
High Erosive Risk	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	26	18	218	12
7.5	32	22	105	4	0	0	0	0	0	0	0	0	16	11	53	2
25	0	0	0	0	40	25	111	3	0	0	0	0	20	13	56	2
70	0	0	0	0	10	5	33	2	0	0	0	0	3	2	11	1
200	0	0	0	0	17	1	0	0	0	0	0	0	2	0	0	0
Total	32	22	105	4	68	32	144	5	0	0	0	0	67	43	337	16
Grand Total	163				249				0				464			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	NY	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	57	39	188	8	122	58	258	10	121	77	602	29	121	77	602	29
	Moderate Erosive Risk	126	86	417	17	270	128	572	21	268	172	1336	65	268	172	1336	65
	High Erosive Risk	195	133	646	26	418	199	886	33	415	266	2069	101	415	266	2069	101
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	313	212	2589	141	313	212	2589	141
	7.5	378	259	1250	51	0	0	0	0	189	129	625	26	189	129	625	26
	25	0	0	0	0	480	301	1323	41	240	151	662	20	240	151	662	20
	70	0	0	0	0	123	63	393	23	41	21	131	8	41	21	131	8
	200	0	0	0	0	206	21	0	0	21	2	0	0	21	2	0	0
	Total	378	259	1250	51	809	385	1716	63	804	515	4007	195	804	515	4007	195
	Grand Total	1939				2974				5521				5521			
	OPTION 2																
	Low Erosive Risk	57	39	188	8	122	58	258	10	74	46	213	8	121	77	602	29
	Moderate Erosive Risk	126	86	417	17	270	128	572	21	164	101	473	18	268	172	1336	65
	High Erosive Risk	195	133	646	26	418	199	886	33	253	156	732	28	415	266	2069	101
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	313	212	2589	141
	7.5	378	259	1250	51	0	0	0	0	189	129	625	26	189	129	625	26
	25	0	0	0	0	480	301	1323	41	240	151	662	20	240	151	662	20
	70	0	0	0	0	123	63	393	23	41	21	131	8	41	21	131	8
	200	0	0	0	0	206	21	0	0	21	2	0	0	21	2	0	0
	Total	378	259	1250	51	809	385	1716	63	491	303	1418	53	804	515	4007	195
	Grand Total	1939				2974				2265				5521			
	OPTION 3																
	Low Erosive Risk	57	39	188	8	122	58	258	10	0	0	0	0	121	77	602	29
	Moderate Erosive Risk	126	86	417	17	270	128	572	21	0	0	0	0	268	172	1336	65
	High Erosive Risk	195	133	646	26	418	199	886	33	0	0	0	0	415	266	2069	101
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	313	212	2589	141
	7.5	378	259	1250	51	0	0	0	0	0	0	0	0	189	129	625	26
	25	0	0	0	0	480	301	1323	41	0	0	0	0	240	151	662	20
	70	0	0	0	0	123	63	393	23	0	0	0	0	41	21	131	8
	200	0	0	0	0	206	21	0	0	0	0	0	0	21	2	0	0
	Total	378	259	1250	51	809	385	1716	63	0	0	0	0	804	515	4007	195
	Grand Total	1939				2974				0				5521			
	OPTION 4																
	Low Erosive Risk	57	39	188	8	122	58	258	10	0	0	0	0	121	77	602	29
	Moderate Erosive Risk	126	86	417	17	270	128	572	21	0	0	0	0	268	172	1336	65
	High Erosive Risk	195	133	646	26	418	199	886	33	0	0	0	0	415	266	2069	101
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	313	212	2589	141
	7.5	378	259	1250	51	0	0	0	0	0	0	0	0	189	129	625	26
	25	0	0	0	0	480	301	1323	41	0	0	0	0	240	151	662	20
	70	0	0	0	0	123	63	393	23	0	0	0	0	41	21	131	8
	200	0	0	0	0	206	21	0	0	0	0	0	0	21	2	0	0
	Total	378	259	1250	51	809	385	1716	63	0	0	0	0	804	515	4007	195
	Grand Total	1939				2974				0				5521			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

OH	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
	Number				Number				Number				Number			
OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
Low Erosive Risk	0	0	0	0	84	39	178	6	83	53	416	20	83	53	416	20
Moderate Erosive Risk	0	0	0	0	309	147	657	24	308	197	1534	75	308	197	1534	75
High Erosive Risk	0	0	0	0	535	255	1136	42	532	341	2652	129	532	341	2652	129
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	359	244	2974	162	359	244	2974	162
7.5	0	0	0	0	0	0	0	0	218	149	718	29	218	149	718	29
25	0	0	0	0	552	346	1520	47	276	173	760	23	276	173	760	23
70	0	0	0	0	142	73	451	26	47	24	150	9	47	24	150	9
200	0	0	0	0	235	23	0	0	23	2	0	0	23	2	0	0
Total	0	0	0	0	928	441	1971	73	924	592	4602	224	924	592	4602	224
Grand Total	0				3414				6341				6341			
OPTION 2																
Low Erosive Risk	39	27	130	5	84	39	178	6	51	31	147	6	83	53	416	20
Moderate Erosive Risk	145	99	479	20	309	147	657	24	188	116	543	21	308	197	1534	75
High Erosive Risk	251	171	828	34	535	255	1136	42	325	201	939	36	532	341	2652	129
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	359	244	2974	162
7.5	435	297	1437	59	0	0	0	0	218	149	718	29	218	149	718	29
25	0	0	0	0	552	346	1520	47	276	173	760	23	276	173	760	23
70	0	0	0	0	142	73	451	26	47	24	150	9	47	24	150	9
200	0	0	0	0	235	23	0	0	23	2	0	0	23	2	0	0
Total	435	297	1437	59	928	441	1971	73	564	348	1629	62	924	592	4602	224
Grand Total	2227				3414				2602				6341			
OPTION 3																
Low Erosive Risk	0	0	0	0	84	39	178	6	0	0	0	0	83	53	416	20
Moderate Erosive Risk	0	0	0	0	309	147	657	24	0	0	0	0	308	197	1534	75
High Erosive Risk	0	0	0	0	535	255	1136	42	0	0	0	0	532	341	2652	129
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	359	244	2974	162
7.5	0	0	0	0	0	0	0	0	0	0	0	0	218	149	718	29
25	0	0	0	0	552	346	1520	47	0	0	0	0	276	173	760	23
70	0	0	0	0	142	73	451	26	0	0	0	0	47	24	150	9
200	0	0	0	0	235	23	0	0	0	0	0	0	23	2	0	0
Total	0	0	0	0	928	441	1971	73	0	0	0	0	924	592	4602	224
Grand Total	0				3414				0				6341			
OPTION 4																
Low Erosive Risk	39	27	130	5	84	39	178	6	0	0	0	0	83	53	416	20
Moderate Erosive Risk	145	99	479	20	309	147	657	24	0	0	0	0	308	197	1534	75
High Erosive Risk	251	171	828	34	535	255	1136	42	0	0	0	0	532	341	2652	129
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	359	244	2974	162
7.5	435	297	1437	59	0	0	0	0	0	0	0	0	218	149	718	29
25	0	0	0	0	552	346	1520	47	0	0	0	0	276	173	760	23
70	0	0	0	0	142	73	451	26	0	0	0	0	47	24	150	9
200	0	0	0	0	235	23	0	0	0	0	0	0	23	2	0	0
Total	435	297	1437	59	928	441	1971	73	0	0	0	0	924	592	4602	224
Grand Total	2227				3414				0				6341			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

OK	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
	Number				Number				Number				Number			
OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
Low Erosive Risk	21	15	70	3	45	21	96	4	45	29	224	11	45	29	224	11
Moderate Erosive Risk	71	49	236	10	152	72	323	12	152	97	755	37	152	97	755	37
High Erosive Risk	118	81	390	16	252	120	535	20	251	161	1249	61	251	161	1249	61
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	174	118	1440	79	174	118	1440	79
7.5	211	144	696	28	0	0	0	0	105	72	348	14	105	72	348	14
25	0	0	0	0	267	168	736	23	134	84	368	11	134	84	368	11
70	0	0	0	0	68	35	218	12	23	12	73	4	23	12	73	4
200	0	0	0	0	114	11	0	0	11	1	0	0	11	1	0	0
Total	211	144	696	28	450	213	954	35	447	287	2229	108	447	287	2229	108
Grand Total	1079				1653				3071				3071			
OPTION 2																
Low Erosive Risk	21	15	70	3	45	21	96	4	28	17	79	3	45	29	224	11
Moderate Erosive Risk	71	49	236	10	152	72	323	12	93	57	267	10	152	97	755	37
High Erosive Risk	118	81	390	16	252	120	535	20	153	94	442	17	251	161	1249	61
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	174	118	1440	79
7.5	211	144	696	28	0	0	0	0	105	72	348	14	105	72	348	14
25	0	0	0	0	267	168	736	23	134	84	368	11	134	84	368	11
70	0	0	0	0	68	35	218	12	23	12	73	4	23	12	73	4
200	0	0	0	0	114	11	0	0	11	1	0	0	11	1	0	0
Total	211	144	696	28	450	213	954	35	273	168	789	30	447	287	2229	108
Grand Total	1079				1653				1260				3071			
OPTION 3																
Low Erosive Risk	21	15	70	3	45	21	96	4	0	0	0	0	45	29	224	11
Moderate Erosive Risk	71	49	236	10	152	72	323	12	0	0	0	0	152	97	755	37
High Erosive Risk	118	81	390	16	252	120	535	20	0	0	0	0	251	161	1249	61
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	174	118	1440	79
7.5	211	144	696	28	0	0	0	0	0	0	0	0	105	72	348	14
25	0	0	0	0	267	168	736	23	0	0	0	0	134	84	368	11
70	0	0	0	0	68	35	218	12	0	0	0	0	23	12	73	4
200	0	0	0	0	114	11	0	0	0	0	0	0	11	1	0	0
Total	211	144	696	28	450	213	954	35	0	0	0	0	447	287	2229	108
Grand Total	1079				1653				0				3071			
OPTION 4																
Low Erosive Risk	21	15	70	3	45	21	96	4	0	0	0	0	45	29	224	11
Moderate Erosive Risk	71	49	236	10	152	72	323	12	0	0	0	0	152	97	755	37
High Erosive Risk	118	81	390	16	252	120	535	20	0	0	0	0	251	161	1249	61
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	174	118	1440	79
7.5	211	144	696	28	0	0	0	0	0	0	0	0	105	72	348	14
25	0	0	0	0	267	168	736	23	0	0	0	0	134	84	368	11
70	0	0	0	0	68	35	218	12	0	0	0	0	23	12	73	4
200	0	0	0	0	114	11	0	0	0	0	0	0	11	1	0	0
Total	211	144	696	28	450	213	954	35	0	0	0	0	447	287	2229	108
Grand Total	1079				1653				0				3071			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	OR	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	0	0	0	0	32	15	70	2	32	21	163	8	32	21	163	8
	Moderate Erosive Risk	0	0	0	0	126	58	272	9	127	81	637	30	127	81	637	30
	High Erosive Risk	0	0	0	0	101	46	217	7	102	65	509	24	102	65	509	24
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	102	69	847	46	102	69	847	46
	7.5	0	0	0	0	0	0	0	0	62	42	204	8	62	42	204	8
	25	0	0	0	0	156	98	432	13	78	49	216	6	78	49	216	6
	70	0	0	0	0	39	19	127	6	13	6	42	2	13	6	42	2
	200	0	0	0	0	63	1	0	0	6	0	0	0	6	0	0	0
	Total	0	0	0	0	259	118	559	19	261	166	1309	62	261	166	1309	62
	Grand Total	0				955				1799				1799			
	OPTION 2																
	Low Erosive Risk	15	11	51	2	32	15	70	2	20	12	58	2	32	21	163	8
	Moderate Erosive Risk	60	41	199	8	126	58	272	9	77	47	225	8	127	81	637	30
	High Erosive Risk	48	32	159	6	101	46	217	7	62	38	180	6	102	65	509	24
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	102	69	847	46
	7.5	124	84	408	16	0	0	0	0	62	42	204	8	62	42	204	8
	25	0	0	0	0	156	98	432	13	78	49	216	6	78	49	216	6
	70	0	0	0	0	39	19	127	6	13	6	42	2	13	6	42	2
	200	0	0	0	0	63	1	0	0	6	0	0	0	6	0	0	0
	Total	124	84	408	16	259	118	559	19	159	97	462	16	261	166	1309	62
	Grand Total	631				955				735				1799			
	OPTION 3																
	Low Erosive Risk	0	0	0	0	32	15	70	2	0	0	0	0	32	21	163	8
	Moderate Erosive Risk	0	0	0	0	126	58	272	9	0	0	0	0	127	81	637	30
	High Erosive Risk	0	0	0	0	101	46	217	7	0	0	0	0	102	65	509	24
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	102	69	847	46
	7.5	0	0	0	0	0	0	0	0	0	0	0	0	62	42	204	8
	25	0	0	0	0	156	98	432	13	0	0	0	0	78	49	216	6
	70	0	0	0	0	39	19	127	6	0	0	0	0	13	6	42	2
	200	0	0	0	0	63	1	0	0	0	0	0	0	6	0	0	0
	Total	0	0	0	0	259	118	559	19	0	0	0	0	261	166	1309	62
	Grand Total	0				955				0				1799			
	OPTION 4																
	Low Erosive Risk	15	11	51	2	32	15	70	2	0	0	0	0	32	21	163	8
	Moderate Erosive Risk	60	41	199	8	126	58	272	9	0	0	0	0	127	81	637	30
	High Erosive Risk	48	32	159	6	101	46	217	7	0	0	0	0	102	65	509	24
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	102	69	847	46
	7.5	124	84	408	16	0	0	0	0	0	0	0	0	62	42	204	8
	25	0	0	0	0	156	98	432	13	0	0	0	0	78	49	216	6
	70	0	0	0	0	39	19	127	6	0	0	0	0	13	6	42	2
	200	0	0	0	0	63	1	0	0	0	0	0	0	6	0	0	0
	Total	124	84	408	16	259	118	559	19	0	0	0	0	261	166	1309	62
	Grand Total	631				955				0				1799			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

PA	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
	Number				Number				Number				Number			
OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
Low Erosive Risk	73	50	240	10	156	74	329	12	154	99	769	37	154	99	769	37
Moderate Erosive Risk	217	148	715	29	463	220	982	36	460	295	2292	111	460	295	2292	111
High Erosive Risk	361	246	1191	49	770	366	1634	60	766	491	3815	185	766	491	3815	185
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	537	364	4443	242	537	364	4443	242
7.5	650	444	2146	88	0	0	0	0	325	222	1073	44	325	222	1073	44
25	0	0	0	0	824	517	2271	70	412	258	1136	35	412	258	1136	35
70	0	0	0	0	212	109	674	39	71	36	225	13	71	36	225	13
200	0	0	0	0	353	35	0	0	35	4	0	0	35	4	0	0
Total	650	444	2146	88	1389	661	2945	109	1380	884	6877	334	1380	884	6877	334
Grand Total	3328				5104				9475				9475			
OPTION 2																
Low Erosive Risk	73	50	240	10	156	74	329	12	94	58	272	10	94	58	272	10
Moderate Erosive Risk	217	148	715	29	463	220	982	36	281	173	811	31	281	173	811	31
High Erosive Risk	361	246	1191	49	770	366	1634	60	468	289	1350	51	468	289	1350	51
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7.5	650	444	2146	88	0	0	0	0	325	222	1073	44	325	222	1073	44
25	0	0	0	0	824	517	2271	70	412	258	1136	35	412	258	1136	35
70	0	0	0	0	212	109	674	39	71	36	225	13	71	36	225	13
200	0	0	0	0	353	35	0	0	35	4	0	0	35	4	0	0
Total	650	444	2146	88	1389	661	2945	109	843	520	2433	92	843	520	2433	92
Grand Total	3328				5104				3888				3888			
OPTION 3																
Low Erosive Risk	73	50	240	10	156	74	329	12	0	0	0	0	0	0	0	0
Moderate Erosive Risk	217	148	715	29	463	220	982	36	0	0	0	0	0	0	0	0
High Erosive Risk	361	246	1191	49	770	366	1634	60	0	0	0	0	0	0	0	0
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7.5	650	444	2146	88	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	824	517	2271	70	0	0	0	0	0	0	0	0
70	0	0	0	0	212	109	674	39	0	0	0	0	0	0	0	0
200	0	0	0	0	353	35	0	0	0	0	0	0	0	0	0	0
Total	650	444	2146	88	1389	661	2945	109	0	0	0	0	0	0	0	0
Grand Total	3328				5104				0				0			
OPTION 4																
Low Erosive Risk	73	50	240	10	156	74	329	12	0	0	0	0	94	58	272	10
Moderate Erosive Risk	217	148	715	29	463	220	982	36	0	0	0	0	281	173	811	31
High Erosive Risk	361	246	1191	49	770	366	1634	60	0	0	0	0	468	289	1350	51
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7.5	650	444	2146	88	0	0	0	0	0	0	0	0	325	222	1073	44
25	0	0	0	0	824	517	2271	70	0	0	0	0	412	258	1136	35
70	0	0	0	0	212	109	674	39	0	0	0	0	71	36	225	13
200	0	0	0	0	353	35	0	0	0	0	0	0	35	4	0	0
Total	650	444	2146	88	1389	661	2945	109	0	0	0	0	843	520	2433	92
Grand Total	3328				5104				0				3888			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

RI	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
	Number				Number				Number				Number			
OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
Low Erosive Risk	0	0	0	0	3	1	6	0	3	2	13	1	3	2	13	1
Moderate Erosive Risk	0	0	0	0	6	3	12	0	6	4	28	1	6	4	28	1
High Erosive Risk	0	0	0	0	9	4	18	1	9	5	43	2	9	5	43	2
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	7	4	54	3	7	4	54	3
7.5	0	0	0	0	0	0	0	0	4	3	13	1	4	3	13	1
25	0	0	0	0	10	6	28	1	5	3	14	0	5	3	14	0
70	0	0	0	0	3	1	8	0	1	0	3	0	1	0	3	0
200	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	17	8	36	1	17	11	83	4	17	11	83	4
Grand Total	0				62				115				115			
OPTION 2																
Low Erosive Risk	1	1	4	0	3	1	6	0	2	1	5	0	3	2	13	1
Moderate Erosive Risk	3	2	9	0	6	3	12	0	3	2	10	0	6	4	28	1
High Erosive Risk	4	3	13	1	9	4	18	1	5	3	15	1	9	5	43	2
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	7	4	54	3
7.5	8	5	26	1	0	0	0	0	4	3	13	1	4	3	13	1
25	0	0	0	0	10	6	28	1	5	3	14	0	5	3	14	0
70	0	0	0	0	3	1	8	0	1	0	3	0	1	0	3	0
200	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0
Total	8	5	26	1	17	8	36	1	10	6	29	1	17	11	83	4
Grand Total	40				62				47				115			
OPTION 3																
Low Erosive Risk	0	0	0	0	3	1	6	0	0	0	0	0	3	2	13	1
Moderate Erosive Risk	0	0	0	0	6	3	12	0	0	0	0	0	6	4	28	1
High Erosive Risk	0	0	0	0	9	4	18	1	0	0	0	0	9	5	43	2
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	7	4	54	3
7.5	0	0	0	0	0	0	0	0	0	0	0	0	4	3	13	1
25	0	0	0	0	10	6	28	1	0	0	0	0	5	3	14	0
70	0	0	0	0	3	1	8	0	0	0	0	0	1	0	3	0
200	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	17	8	36	1	0	0	0	0	17	11	83	4
Grand Total	0				62				0				115			
OPTION 4																
Low Erosive Risk	1	1	4	0	3	1	6	0	0	0	0	0	3	2	13	1
Moderate Erosive Risk	3	2	9	0	6	3	12	0	0	0	0	0	6	4	28	1
High Erosive Risk	4	3	13	1	9	4	18	1	0	0	0	0	9	5	43	2
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	7	4	54	3
7.5	8	5	26	1	0	0	0	0	0	0	0	0	4	3	13	1
25	0	0	0	0	10	6	28	1	0	0	0	0	5	3	14	0
70	0	0	0	0	3	1	8	0	0	0	0	0	1	0	3	0
200	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0
Total	8	5	26	1	17	8	36	1	0	0	0	0	17	11	83	4
Grand Total	40				62				0				115			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	SC	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	192	131	634	26	409	196	870	32	408	261	2032	99	408	261	2032	99
	Moderate Erosive Risk	144	98	475	19	307	146	652	24	305	196	1522	74	305	196	1522	74
	High Erosive Risk	96	65	316	13	205	97	433	16	203	130	1012	49	203	130	1012	49
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	357	242	2951	161	357	242	2951	161
	7.5	431	295	1426	58	0	0	0	0	216	147	713	29	216	147	713	29
	25	0	0	0	0	547	343	1508	47	274	172	754	23	274	172	754	23
	70	0	0	0	0	140	72	447	26	47	24	149	9	47	24	149	9
	200	0	0	0	0	234	23	0	0	23	2	0	0	23	2	0	0
	Total	431	295	1426	58	921	438	1955	73	916	587	4567	222	916	587	4567	222
	Grand Total	2210				3387				6292				6292			
	OPTION 2																
	Low Erosive Risk	192	131	634	26	409	196	870	32	249	154	719	27	408	261	2032	99
	Moderate Erosive Risk	144	98	475	19	307	146	652	24	186	115	539	20	305	196	1522	74
	High Erosive Risk	96	65	316	13	205	97	433	16	124	76	358	14	203	130	1012	49
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	357	242	2951	161
	7.5	431	295	1426	58	0	0	0	0	216	147	713	29	216	147	713	29
	25	0	0	0	0	547	343	1508	47	274	172	754	23	274	172	754	23
	70	0	0	0	0	140	72	447	26	47	24	149	9	47	24	149	9
	200	0	0	0	0	234	23	0	0	23	2	0	0	23	2	0	0
	Total	431	295	1426	58	921	438	1955	73	559	345	1616	61	916	587	4567	222
	Grand Total	2210				3387				2581				6292			
	OPTION 3																
	Low Erosive Risk	192	131	634	26	409	196	870	32	0	0	0	0	408	261	2032	99
	Moderate Erosive Risk	144	98	475	19	307	146	652	24	0	0	0	0	305	196	1522	74
	High Erosive Risk	96	65	316	13	205	97	433	16	0	0	0	0	203	130	1012	49
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	357	242	2951	161
	7.5	431	295	1426	58	0	0	0	0	0	0	0	0	216	147	713	29
	25	0	0	0	0	547	343	1508	47	0	0	0	0	274	172	754	23
	70	0	0	0	0	140	72	447	26	0	0	0	0	47	24	149	9
	200	0	0	0	0	234	23	0	0	0	0	0	0	23	2	0	0
	Total	431	295	1426	58	921	438	1955	73	0	0	0	0	916	587	4567	222
	Grand Total	2210				3387				0				6292			
	OPTION 4																
	Low Erosive Risk	192	131	634	26	409	196	870	32	0	0	0	0	408	261	2032	99
	Moderate Erosive Risk	144	98	475	19	307	146	652	24	0	0	0	0	305	196	1522	74
	High Erosive Risk	96	65	316	13	205	97	433	16	0	0	0	0	203	130	1012	49
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	357	242	2951	161
	7.5	431	295	1426	58	0	0	0	0	0	0	0	0	216	147	713	29
	25	0	0	0	0	547	343	1508	47	0	0	0	0	274	172	754	23
	70	0	0	0	0	140	72	447	26	0	0	0	0	47	24	149	9
	200	0	0	0	0	234	23	0	0	0	0	0	0	23	2	0	0
	Total	431	295	1426	58	921	438	1955	73	0	0	0	0	916	587	4567	222
	Grand Total	2210				3387				0				6292			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

SD	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
	Number				Number				Number				Number			
OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
Low Erosive Risk	0	0	0	0	16	8	35	1	16	11	82	4	16	11	82	4
Moderate Erosive Risk	0	0	0	0	59	27	125	5	58	37	292	14	58	37	292	14
High Erosive Risk	0	0	0	0	72	34	152	6	71	46	355	17	71	46	355	17
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	57	39	471	26	57	39	471	26
7.5	0	0	0	0	0	0	0	0	34	24	114	5	34	24	114	5
25	0	0	0	0	87	55	241	7	44	27	120	4	44	27	120	4
70	0	0	0	0	22	11	71	4	7	4	24	1	7	4	24	1
200	0	0	0	0	37	3	0	0	4	0	0	0	4	0	0	0
Total	0	0	0	0	147	69	312	11	146	94	729	35	146	94	729	35
Grand Total	0				540				1004				1004			
OPTION 2																
Low Erosive Risk	8	5	26	1	16	8	35	1	10	6	29	1	16	11	82	4
Moderate Erosive Risk	27	19	91	4	59	27	125	5	36	22	103	4	58	37	292	14
High Erosive Risk	34	23	111	5	72	34	152	6	44	27	126	5	71	46	355	17
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	57	39	471	26
7.5	69	47	228	9	0	0	0	0	34	24	114	5	34	24	114	5
25	0	0	0	0	87	55	241	7	44	27	120	4	44	27	120	4
70	0	0	0	0	22	11	71	4	7	4	24	1	7	4	24	1
200	0	0	0	0	37	3	0	0	4	0	0	0	4	0	0	0
Total	69	47	228	9	147	69	312	11	89	55	258	10	146	94	729	35
Grand Total	353				540				412				1004			
OPTION 3																
Low Erosive Risk	0	0	0	0	16	8	35	1	0	0	0	0	16	11	82	4
Moderate Erosive Risk	0	0	0	0	59	27	125	5	0	0	0	0	58	37	292	14
High Erosive Risk	0	0	0	0	72	34	152	6	0	0	0	0	71	46	355	17
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	57	39	471	26
7.5	0	0	0	0	0	0	0	0	0	0	0	0	34	24	114	5
25	0	0	0	0	87	55	241	7	0	0	0	0	44	27	120	4
70	0	0	0	0	22	11	71	4	0	0	0	0	7	4	24	1
200	0	0	0	0	37	3	0	0	0	0	0	0	4	0	0	0
Total	0	0	0	0	147	69	312	11	0	0	0	0	146	94	729	35
Grand Total	0				540				0				1004			
OPTION 4																
Low Erosive Risk	8	5	26	1	16	8	35	1	0	0	0	0	16	11	82	4
Moderate Erosive Risk	27	19	91	4	59	27	125	5	0	0	0	0	58	37	292	14
High Erosive Risk	34	23	111	5	72	34	152	6	0	0	0	0	71	46	355	17
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	57	39	471	26
7.5	69	47	228	9	0	0	0	0	0	0	0	0	34	24	114	5
25	0	0	0	0	87	55	241	7	0	0	0	0	44	27	120	4
70	0	0	0	0	22	11	71	4	0	0	0	0	7	4	24	1
200	0	0	0	0	37	3	0	0	0	0	0	0	4	0	0	0
Total	69	47	228	9	147	69	312	11	0	0	0	0	146	94	729	35
Grand Total	353				540				0				1004			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	TN	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	35	24	115	5	74	35	158	6	74	47	369	18	74	47	369	18
	Moderate Erosive Risk	160	109	528	22	341	162	724	27	339	217	1690	82	339	217	1690	82
	High Erosive Risk	285	194	940	38	608	289	1290	48	604	387	3011	146	604	387	3011	146
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	396	268	3276	179	396	268	3276	179
	7.5	479	327	1583	65	0	0	0	0	240	164	791	32	240	164	791	32
	25	0	0	0	0	608	381	1675	52	304	190	837	26	304	190	837	26
	70	0	0	0	0	156	80	496	29	52	27	165	10	52	27	165	10
	200	0	0	0	0	259	26	0	0	26	3	0	0	26	3	0	0
	Total	479	327	1583	65	1023	487	2171	81	1018	652	5070	247	1018	652	5070	247
	Grand Total	2454				3762				6986				6986			
	OPTION 2																
	Low Erosive Risk	35	24	115	5	74	35	158	6	45	28	131	5	74	47	369	18
	Moderate Erosive Risk	160	109	528	22	341	162	724	27	207	128	598	23	339	217	1690	82
	High Erosive Risk	285	194	940	38	608	289	1290	48	369	228	1066	40	604	387	3011	146
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	396	268	3276	179
	7.5	479	327	1583	65	0	0	0	0	240	164	791	32	240	164	791	32
	25	0	0	0	0	608	381	1675	52	304	190	837	26	304	190	837	26
	70	0	0	0	0	156	80	496	29	52	27	165	10	52	27	165	10
	200	0	0	0	0	259	26	0	0	26	3	0	0	26	3	0	0
	Total	479	327	1583	65	1023	487	2171	81	622	383	1794	68	1018	652	5070	247
	Grand Total	2454				3762				2867				6986			
	OPTION 3																
	Low Erosive Risk	35	24	115	5	74	35	158	6	0	0	0	0	74	47	369	18
	Moderate Erosive Risk	160	109	528	22	341	162	724	27	0	0	0	0	339	217	1690	82
	High Erosive Risk	285	194	940	38	608	289	1290	48	0	0	0	0	604	387	3011	146
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	396	268	3276	179
	7.5	479	327	1583	65	0	0	0	0	0	0	0	0	240	164	791	32
	25	0	0	0	0	608	381	1675	52	0	0	0	0	304	190	837	26
	70	0	0	0	0	156	80	496	29	0	0	0	0	52	27	165	10
	200	0	0	0	0	259	26	0	0	0	0	0	0	26	3	0	0
	Total	479	327	1583	65	1023	487	2171	81	0	0	0	0	1018	652	5070	247
	Grand Total	2454				3762				0				6986			
	OPTION 4																
	Low Erosive Risk	35	24	115	5	74	35	158	6	0	0	0	0	74	47	369	18
	Moderate Erosive Risk	160	109	528	22	341	162	724	27	0	0	0	0	339	217	1690	82
	High Erosive Risk	285	194	940	38	608	289	1290	48	0	0	0	0	604	387	3011	146
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	396	268	3276	179
	7.5	479	327	1583	65	0	0	0	0	0	0	0	0	240	164	791	32
	25	0	0	0	0	608	381	1675	52	0	0	0	0	304	190	837	26
	70	0	0	0	0	156	80	496	29	0	0	0	0	52	27	165	10
	200	0	0	0	0	259	26	0	0	0	0	0	0	26	3	0	0
	Total	479	327	1583	65	1023	487	2171	81	0	0	0	0	1018	652	5070	247
	Grand Total	2454				3762				0				6986			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	TX	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	201	137	664	27	427	200	909	32	426	272	2126	103	426	272	2126	103
	Moderate Erosive Risk	418	285	1382	56	890	424	1895	69	887	568	4427	214	887	568	4427	214
	High Erosive Risk	446	304	1472	60	951	452	2019	74	946	606	4716	229	946	606	4716	229
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	880	596	7283	397	880	596	7283	397
	7.5	1064	727	3518	143	0	0	0	0	532	363	1759	71	532	363	1759	71
	25	0	0	0	0	1351	847	3722	114	675	423	1861	57	675	423	1861	57
	70	0	0	0	0	345	177	1102	61	115	59	367	20	115	59	367	20
	200	0	0	0	0	572	53	0	0	57	5	0	0	57	5	0	0
	Total	1064	727	3518	143	2268	1077	4823	176	2260	1447	11270	546	2260	1447	11270	546
	Grand Total	5452				8344				15523				15523			
	OPTION 2																
	Low Erosive Risk	201	137	664	27	427	200	909	32	260	160	752	28	426	272	2126	103
	Moderate Erosive Risk	418	285	1382	56	890	424	1895	69	542	334	1566	58	887	568	4427	214
	High Erosive Risk	446	304	1472	60	951	452	2019	74	578	356	1669	63	946	606	4716	229
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	880	596	7283	397
	7.5	1064	727	3518	143	0	0	0	0	532	363	1759	71	532	363	1759	71
	25	0	0	0	0	1351	847	3722	114	675	423	1861	57	675	423	1861	57
	70	0	0	0	0	345	177	1102	61	115	59	367	20	115	59	367	20
	200	0	0	0	0	572	53	0	0	57	5	0	0	57	5	0	0
	Total	1064	727	3518	143	2268	1077	4823	176	1380	851	3987	149	2260	1447	11270	546
	Grand Total	5452				8344				6367				15523			
	OPTION 3																
	Low Erosive Risk	201	137	664	27	427	200	909	32	0	0	0	0	426	272	2126	103
	Moderate Erosive Risk	418	285	1382	56	890	424	1895	69	0	0	0	0	887	568	4427	214
	High Erosive Risk	446	304	1472	60	951	452	2019	74	0	0	0	0	946	606	4716	229
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	880	596	7283	397
	7.5	1064	727	3518	143	0	0	0	0	0	0	0	0	532	363	1759	71
	25	0	0	0	0	1351	847	3722	114	0	0	0	0	675	423	1861	57
	70	0	0	0	0	345	177	1102	61	0	0	0	0	115	59	367	20
	200	0	0	0	0	572	53	0	0	0	0	0	0	57	5	0	0
	Total	1064	727	3518	143	2268	1077	4823	176	0	0	0	0	2260	1447	11270	546
	Grand Total	5452				8344				0				15523			
	OPTION 4																
	Low Erosive Risk	201	137	664	27	427	200	909	32	0	0	0	0	426	272	2126	103
	Moderate Erosive Risk	418	285	1382	56	890	424	1895	69	0	0	0	0	887	568	4427	214
	High Erosive Risk	446	304	1472	60	951	452	2019	74	0	0	0	0	946	606	4716	229
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	880	596	7283	397
	7.5	1064	727	3518	143	0	0	0	0	0	0	0	0	532	363	1759	71
	25	0	0	0	0	1351	847	3722	114	0	0	0	0	675	423	1861	57
	70	0	0	0	0	345	177	1102	61	0	0	0	0	115	59	367	20
	200	0	0	0	0	572	53	0	0	0	0	0	0	57	5	0	0
	Total	1064	727	3518	143	2268	1077	4823	176	0	0	0	0	2260	1447	11270	546
	Grand Total	5452				8344				0				15523			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	UT	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	36	24	118	5	76	35	162	6	76	48	378	18	76	48	378	18
	Moderate Erosive Risk	53	37	177	7	113	54	243	8	113	73	567	27	113	73	567	27
	High Erosive Risk	8	5	25	1	16	8	35	1	16	10	81	4	16	10	81	4
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	80	54	663	36	80	54	663	36
	7.5	97	66	320	13	0	0	0	0	48	33	160	6	48	33	160	6
	25	0	0	0	0	123	77	339	10	61	38	169	5	61	38	169	5
	70	0	0	0	0	31	16	100	5	10	5	33	2	10	5	33	2
	200	0	0	0	0	51	4	0	0	5	0	0	0	5	0	0	0
	Total	97	66	320	13	204	97	439	16	205	131	1025	49	205	131	1025	49
	Grand Total	496				756				1411				1411			
	OPTION 2																
	Low Erosive Risk	36	24	118	5	76	35	162	6	46	28	134	5	76	48	378	18
	Moderate Erosive Risk	53	37	177	7	113	54	243	8	69	43	201	7	113	73	567	27
	High Erosive Risk	8	5	25	1	16	8	35	1	10	6	29	1	16	10	81	4
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	80	54	663	36
	7.5	97	66	320	13	0	0	0	0	48	33	160	6	48	33	160	6
	25	0	0	0	0	123	77	339	10	61	38	169	5	61	38	169	5
	70	0	0	0	0	31	16	100	5	10	5	33	2	10	5	33	2
	200	0	0	0	0	51	4	0	0	5	0	0	0	5	0	0	0
	Total	97	66	320	13	204	97	439	16	125	77	363	13	205	131	1025	49
	Grand Total	496				756				578				1411			
	OPTION 3																
	Low Erosive Risk	36	24	118	5	76	35	162	6	0	0	0	0	76	48	378	18
	Moderate Erosive Risk	53	37	177	7	113	54	243	8	0	0	0	0	113	73	567	27
	High Erosive Risk	8	5	25	1	16	8	35	1	0	0	0	0	16	10	81	4
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	80	54	663	36
	7.5	97	66	320	13	0	0	0	0	0	0	0	0	48	33	160	6
	25	0	0	0	0	123	77	339	10	0	0	0	0	61	38	169	5
	70	0	0	0	0	31	16	100	5	0	0	0	0	10	5	33	2
	200	0	0	0	0	51	4	0	0	0	0	0	0	5	0	0	0
	Total	97	66	320	13	204	97	439	16	0	0	0	0	205	131	1025	49
	Grand Total	496				756				0				1411			
	OPTION 4																
	Low Erosive Risk	36	24	118	5	76	35	162	6	0	0	0	0	76	48	378	18
	Moderate Erosive Risk	53	37	177	7	113	54	243	8	0	0	0	0	113	73	567	27
	High Erosive Risk	8	5	25	1	16	8	35	1	0	0	0	0	16	10	81	4
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	80	54	663	36
	7.5	97	66	320	13	0	0	0	0	0	0	0	0	48	33	160	6
	25	0	0	0	0	123	77	339	10	0	0	0	0	61	38	169	5
	70	0	0	0	0	31	16	100	5	0	0	0	0	10	5	33	2
	200	0	0	0	0	51	4	0	0	0	0	0	0	5	0	0	0
	Total	97	66	320	13	204	97	439	16	0	0	0	0	205	131	1025	49
	Grand Total	496				756				0				1411			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

VA	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
	Number				Number				Number				Number			
OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
Low Erosive Risk	111	76	366	15	237	113	502	19	235	151	1173	57	235	151	1173	57
Moderate Erosive Risk	137	93	451	18	292	139	619	23	290	186	1444	70	290	186	1444	70
High Erosive Risk	162	111	536	22	347	165	735	27	344	221	1716	84	344	221	1716	84
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	339	229	2800	153	339	229	2800	153
7.5	410	280	1353	55	0	0	0	0	205	140	676	28	205	140	676	28
25	0	0	0	0	519	326	1431	44	260	163	716	22	260	163	716	22
70	0	0	0	0	133	68	424	25	44	23	141	8	44	23	141	8
200	0	0	0	0	222	22	0	0	22	2	0	0	22	2	0	0
Total	410	280	1353	55	875	416	1856	69	870	557	4333	211	870	557	4333	211
Grand Total	2097				3216				5971				5971			
OPTION 2																
Low Erosive Risk	111	76	366	15	237	113	502	19	144	89	415	16	235	151	1173	57
Moderate Erosive Risk	137	93	451	18	292	139	619	23	177	109	511	19	290	186	1444	70
High Erosive Risk	162	111	536	22	347	165	735	27	210	130	607	23	344	221	1716	84
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	339	229	2800	153
7.5	410	280	1353	55	0	0	0	0	205	140	676	28	205	140	676	28
25	0	0	0	0	519	326	1431	44	260	163	716	22	260	163	716	22
70	0	0	0	0	133	68	424	25	44	23	141	8	44	23	141	8
200	0	0	0	0	222	22	0	0	22	2	0	0	22	2	0	0
Total	410	280	1353	55	875	416	1856	69	531	328	1533	58	870	557	4333	211
Grand Total	2097				3216				2450				5971			
OPTION 3																
Low Erosive Risk	111	76	366	15	237	113	502	19	0	0	0	0	235	151	1173	57
Moderate Erosive Risk	137	93	451	18	292	139	619	23	0	0	0	0	290	186	1444	70
High Erosive Risk	162	111	536	22	347	165	735	27	0	0	0	0	344	221	1716	84
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	339	229	2800	153
7.5	410	280	1353	55	0	0	0	0	0	0	0	0	205	140	676	28
25	0	0	0	0	519	326	1431	44	0	0	0	0	260	163	716	22
70	0	0	0	0	133	68	424	25	0	0	0	0	44	23	141	8
200	0	0	0	0	222	22	0	0	0	0	0	0	22	2	0	0
Total	410	280	1353	55	875	416	1856	69	0	0	0	0	870	557	4333	211
Grand Total	2097				3216				0				5971			
OPTION 4																
Low Erosive Risk	111	76	366	15	237	113	502	19	0	0	0	0	235	151	1173	57
Moderate Erosive Risk	137	93	451	18	292	139	619	23	0	0	0	0	290	186	1444	70
High Erosive Risk	162	111	536	22	347	165	735	27	0	0	0	0	344	221	1716	84
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	339	229	2800	153
7.5	410	280	1353	55	0	0	0	0	0	0	0	0	205	140	676	28
25	0	0	0	0	519	326	1431	44	0	0	0	0	260	163	716	22
70	0	0	0	0	133	68	424	25	0	0	0	0	44	23	141	8
200	0	0	0	0	222	22	0	0	0	0	0	0	22	2	0	0
Total	410	280	1353	55	875	416	1856	69	0	0	0	0	870	557	4333	211
Grand Total	2097				3216				0				5971			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	VT	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	0	0	0	0	5	2	10	0	5	3	23	1	5	3	23	1
	Moderate Erosive Risk	0	0	0	0	10	5	21	1	10	6	48	2	10	6	48	2
	High Erosive Risk	0	0	0	0	15	7	32	1	15	10	74	4	15	10	74	4
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	11	8	94	5	11	8	94	5
	7.5	0	0	0	0	0	0	0	0	7	5	23	1	7	5	23	1
	25	0	0	0	0	17	11	48	1	9	5	24	1	9	5	24	1
	70	0	0	0	0	4	2	14	1	1	1	5	0	1	1	5	0
	200	0	0	0	0	7	1	0	0	1	0	0	0	1	0	0	0
	Total	0	0	0	0	29	14	62	2	29	19	145	7	29	19	145	7
	Grand Total	0				108				200				200			
	OPTION 2																
	Low Erosive Risk	2	1	7	0	5	2	10	0	3	2	8	0	5	3	23	1
	Moderate Erosive Risk	5	3	15	1	10	5	21	1	6	4	17	1	10	6	48	2
	High Erosive Risk	7	5	23	1	15	7	32	1	9	6	26	1	15	10	74	4
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	11	8	94	5
	7.5	14	9	45	2	0	0	0	0	7	5	23	1	7	5	23	1
	25	0	0	0	0	17	11	48	1	9	5	24	1	9	5	24	1
	70	0	0	0	0	4	2	14	1	1	1	5	0	1	1	5	0
	200	0	0	0	0	7	1	0	0	1	0	0	0	1	0	0	0
	Total	14	9	45	2	29	14	62	2	18	11	51	2	29	19	145	7
	Grand Total	70				108				82				200			
	OPTION 3																
	Low Erosive Risk	0	0	0	0	5	2	10	0	0	0	0	0	5	3	23	1
	Moderate Erosive Risk	0	0	0	0	10	5	21	1	0	0	0	0	10	6	48	2
	High Erosive Risk	0	0	0	0	15	7	32	1	0	0	0	0	15	10	74	4
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	11	8	94	5
	7.5	0	0	0	0	0	0	0	0	0	0	0	0	7	5	23	1
	25	0	0	0	0	17	11	48	1	0	0	0	0	9	5	24	1
	70	0	0	0	0	4	2	14	1	0	0	0	0	1	1	5	0
	200	0	0	0	0	7	1	0	0	0	0	0	0	1	0	0	0
	Total	0	0	0	0	29	14	62	2	0	0	0	0	29	19	145	7
	Grand Total	0				108				0				200			
	OPTION 4																
	Low Erosive Risk	2	1	7	0	5	2	10	0	0	0	0	0	5	3	23	1
	Moderate Erosive Risk	5	3	15	1	10	5	21	1	0	0	0	0	10	6	48	2
	High Erosive Risk	7	5	23	1	15	7	32	1	0	0	0	0	15	10	74	4
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	11	8	94	5
	7.5	14	9	45	2	0	0	0	0	0	0	0	0	7	5	23	1
	25	0	0	0	0	17	11	48	1	0	0	0	0	9	5	24	1
	70	0	0	0	0	4	2	14	1	0	0	0	0	1	1	5	0
	200	0	0	0	0	7	1	0	0	0	0	0	0	1	0	0	0
	Total	14	9	45	2	29	14	62	2	0	0	0	0	29	19	145	7
	Grand Total	70				108				0				200			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

WA	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
	Number				Number				Number				Number			
OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
Low Erosive Risk	0	0	0	0	33	15	74	2	34	22	173	8	34	22	173	8
Moderate Erosive Risk	0	0	0	0	303	138	662	21	309	196	1551	73	309	196	1551	73
High Erosive Risk	0	0	0	0	260	117	558	19	262	166	1309	62	262	166	1309	62
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	236	160	1962	106	236	160	1962	106
7.5	0	0	0	0	0	0	0	0	143	97	473	18	143	97	473	18
25	0	0	0	0	361	226	1002	29	180	113	501	15	180	113	501	15
70	0	0	0	0	90	44	292	13	30	15	97	4	30	15	97	4
200	0	0	0	0	146	0	0	0	15	0	0	0	15	0	0	0
Total	0	0	0	0	597	270	1294	42	604	384	3033	143	604	384	3033	143
Grand Total	0				2203				4164				4164			
OPTION 2																
Low Erosive Risk	17	11	54	2	33	15	74	2	21	13	61	2	34	22	173	8
Moderate Erosive Risk	146	99	483	18	303	138	662	21	188	114	547	18	309	196	1551	73
High Erosive Risk	123	83	408	16	260	117	558	19	160	97	462	16	262	166	1309	62
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	236	160	1962	106
7.5	286	193	945	36	0	0	0	0	143	97	473	18	143	97	473	18
25	0	0	0	0	361	226	1002	29	180	113	501	15	180	113	501	15
70	0	0	0	0	90	44	292	13	30	15	97	4	30	15	97	4
200	0	0	0	0	146	0	0	0	15	0	0	0	15	0	0	0
Total	286	193	945	36	597	270	1294	42	368	224	1071	37	604	384	3033	143
Grand Total	1461				2203				1700				4164			
OPTION 3																
Low Erosive Risk	0	0	0	0	33	15	74	2	0	0	0	0	34	22	173	8
Moderate Erosive Risk	0	0	0	0	303	138	662	21	0	0	0	0	309	196	1551	73
High Erosive Risk	0	0	0	0	260	117	558	19	0	0	0	0	262	166	1309	62
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	236	160	1962	106
7.5	0	0	0	0	0	0	0	0	0	0	0	0	143	97	473	18
25	0	0	0	0	361	226	1002	29	0	0	0	0	180	113	501	15
70	0	0	0	0	90	44	292	13	0	0	0	0	30	15	97	4
200	0	0	0	0	146	0	0	0	0	0	0	0	15	0	0	0
Total	0	0	0	0	597	270	1294	42	0	0	0	0	604	384	3033	143
Grand Total	0				2203				0				4164			
OPTION 4																
Low Erosive Risk	17	11	54	2	33	15	74	2	0	0	0	0	34	22	173	8
Moderate Erosive Risk	146	99	483	18	303	138	662	21	0	0	0	0	309	196	1551	73
High Erosive Risk	123	83	408	16	260	117	558	19	0	0	0	0	262	166	1309	62
Site Sizes in Acres 0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	236	160	1962	106
7.5	286	193	945	36	0	0	0	0	0	0	0	0	143	97	473	18
25	0	0	0	0	361	226	1002	29	0	0	0	0	180	113	501	15
70	0	0	0	0	90	44	292	13	0	0	0	0	30	15	97	4
200	0	0	0	0	146	0	0	0	0	0	0	0	15	0	0	0
Total	286	193	945	36	597	270	1294	42	0	0	0	0	604	384	3033	143
Grand Total	1461				2203				0				4164			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

WI	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
	Number				Number				Number				Number			
OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
Low Erosive Risk	0	0	0	0	56	26	120	4	56	36	280	14	56	36	280	14
Moderate Erosive Risk	0	0	0	0	160	76	339	13	159	102	791	38	159	102	791	38
High Erosive Risk	0	0	0	0	263	125	558	21	261	168	1303	63	261	168	1303	63
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	185	126	1534	84	185	126	1534	84
7.5	0	0	0	0	0	0	0	0	112	77	371	15	112	77	371	15
25	0	0	0	0	285	179	784	24	142	89	392	12	142	89	392	12
70	0	0	0	0	73	37	233	13	24	12	78	4	24	12	78	4
200	0	0	0	0	121	11	0	0	12	1	0	0	12	1	0	0
Total	0	0	0	0	479	227	1017	38	476	305	2374	115	476	305	2374	115
Grand Total	0				1760				3271				3271			
OPTION 2																
Low Erosive Risk	26	18	87	4	56	26	120	4	34	21	99	4	56	36	280	14
Moderate Erosive Risk	75	51	247	10	160	76	339	13	97	60	280	11	159	102	791	38
High Erosive Risk	123	84	407	17	263	125	558	21	160	99	461	17	261	168	1303	63
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	185	126	1534	84
7.5	224	153	741	30	0	0	0	0	112	77	371	15	112	77	371	15
25	0	0	0	0	285	179	784	24	142	89	392	12	142	89	392	12
70	0	0	0	0	73	37	233	13	24	12	78	4	24	12	78	4
200	0	0	0	0	121	11	0	0	12	1	0	0	12	1	0	0
Total	224	153	741	30	479	227	1017	38	291	180	840	32	476	305	2374	115
Grand Total	1149				1760				1342				3271			
OPTION 3																
Low Erosive Risk	0	0	0	0	56	26	120	4	0	0	0	0	56	36	280	14
Moderate Erosive Risk	0	0	0	0	160	76	339	13	0	0	0	0	159	102	791	38
High Erosive Risk	0	0	0	0	263	125	558	21	0	0	0	0	261	168	1303	63
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	185	126	1534	84
7.5	0	0	0	0	0	0	0	0	0	0	0	0	112	77	371	15
25	0	0	0	0	285	179	784	24	0	0	0	0	142	89	392	12
70	0	0	0	0	73	37	233	13	0	0	0	0	24	12	78	4
200	0	0	0	0	121	11	0	0	0	0	0	0	12	1	0	0
Total	0	0	0	0	479	227	1017	38	0	0	0	0	476	305	2374	115
Grand Total	0				1760				0				3271			
OPTION 4																
Low Erosive Risk	26	18	87	4	56	26	120	4	0	0	0	0	56	36	280	14
Moderate Erosive Risk	75	51	247	10	160	76	339	13	0	0	0	0	159	102	791	38
High Erosive Risk	123	84	407	17	263	125	558	21	0	0	0	0	261	168	1303	63
Site Sizes in Acres																
0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	185	126	1534	84
7.5	224	153	741	30	0	0	0	0	0	0	0	0	112	77	371	15
25	0	0	0	0	285	179	784	24	0	0	0	0	142	89	392	12
70	0	0	0	0	73	37	233	13	0	0	0	0	24	12	78	4
200	0	0	0	0	121	11	0	0	0	0	0	0	12	1	0	0
Total	224	153	741	30	479	227	1017	38	0	0	0	0	476	305	2374	115
Grand Total	1149				1760				0				3271			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

WV		Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
OPTION 1		Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	13	9	42	2	27	13	58	2	27	17	135	7	27	17	135	7
	Moderate Erosive Risk	70	48	232	9	150	71	318	12	149	96	744	36	149	96	744	36
	High Erosive Risk	128	87	422	17	273	130	579	22	271	174	1352	66	271	174	1352	66
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	174	118	1441	79	174	118	1441	79
	7.5	211	144	696	28	0	0	0	0	105	72	348	14	105	72	348	14
	25	0	0	0	0	267	168	737	23	134	84	368	11	134	84	368	11
	70	0	0	0	0	69	35	218	13	23	12	73	4	23	12	73	4
	200	0	0	0	0	114	11	0	0	11	1	0	0	11	1	0	0
	Total	211	144	696	28	450	214	955	36	448	287	2231	108	448	287	2231	108
	Grand Total	1080				1655				3073				3073			
OPTION 2																	
	Low Erosive Risk	13	9	42	2	27	13	58	2	17	10	48	2	17	10	48	2
	Moderate Erosive Risk	70	48	232	9	150	71	318	12	91	56	263	10	91	56	263	10
	High Erosive Risk	128	87	422	17	273	130	579	22	166	102	479	18	166	102	479	18
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7.5	211	144	696	28	0	0	0	0	105	72	348	14	105	72	348	14
	25	0	0	0	0	267	168	737	23	134	84	368	11	134	84	368	11
	70	0	0	0	0	69	35	218	13	23	12	73	4	23	12	73	4
	200	0	0	0	0	114	11	0	0	11	1	0	0	11	1	0	0
	Total	211	144	696	28	450	214	955	36	273	169	789	30	273	169	789	30
	Grand Total	1080				1655				1261				1261			
OPTION 3																	
	Low Erosive Risk	13	9	42	2	27	13	58	2	0	0	0	0	0	0	0	0
	Moderate Erosive Risk	70	48	232	9	150	71	318	12	0	0	0	0	0	0	0	0
	High Erosive Risk	128	87	422	17	273	130	579	22	0	0	0	0	0	0	0	0
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7.5	211	144	696	28	0	0	0	0	0	0	0	0	0	0	0	0
	25	0	0	0	0	267	168	737	23	0	0	0	0	0	0	0	0
	70	0	0	0	0	69	35	218	13	0	0	0	0	0	0	0	0
	200	0	0	0	0	114	11	0	0	0	0	0	0	0	0	0	0
	Total	211	144	696	28	450	214	955	36	0	0	0	0	0	0	0	0
	Grand Total	1080				1655				0				0			
OPTION 4																	
	Low Erosive Risk	13	9	42	2	27	13	58	2	0	0	0	0	17	10	48	2
	Moderate Erosive Risk	70	48	232	9	150	71	318	12	0	0	0	0	91	56	263	10
	High Erosive Risk	128	87	422	17	273	130	579	22	0	0	0	0	166	102	479	18
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7.5	211	144	696	28	0	0	0	0	0	0	0	0	105	72	348	14
	25	0	0	0	0	267	168	737	23	0	0	0	0	134	84	368	11
	70	0	0	0	0	69	35	218	13	0	0	0	0	23	12	73	4
	200	0	0	0	0	114	11	0	0	0	0	0	0	11	1	0	0
	Total	211	144	696	28	450	214	955	36	0	0	0	0	273	169	789	30
	Grand Total	1080				1655				0				1261			

Table B-11. State BMP Quantities Site Size, Land Use and Erosivity Risk (continued)

	WY	Sedimentation Traps				Sedimentation Basins				Installation Certification				E&S Site Inspection			
		Number				Number				Number				Number			
	OPTION 1	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial	Single Family	Multi Family	Commercial	Industrial
	Low Erosive Risk	0	0	0	0	16	7	35	1	16	10	82	4	16	10	82	4
	Moderate Erosive Risk	0	0	0	0	66	31	143	5	67	43	335	16	67	43	335	16
	High Erosive Risk	0	0	0	0	3	2	7	0	3	2	17	1	3	2	17	1
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	34	23	280	15	34	23	280	15
	7.5	0	0	0	0	0	0	0	0	20	14	68	3	20	14	68	3
	25	0	0	0	0	52	32	143	4	26	16	72	2	26	16	72	2
	70	0	0	0	0	13	7	42	2	4	2	14	1	4	2	14	1
	200	0	0	0	0	21	1	0	0	2	0	0	0	2	0	0	0
	Total	0	0	0	0	86	40	186	6	87	55	434	21	87	55	434	21
	Grand Total	0				318				596				596			
	OPTION 2																
	Low Erosive Risk	8	5	26	1	16	7	35	1	10	6	29	1	16	10	82	4
	Moderate Erosive Risk	31	22	104	4	66	31	143	5	41	25	118	4	67	43	335	16
	High Erosive Risk	2	1	5	0	3	2	7	0	2	1	6	0	3	2	17	1
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	34	23	280	15
	7.5	41	28	135	5	0	0	0	0	20	14	68	3	20	14	68	3
	25	0	0	0	0	52	32	143	4	26	16	72	2	26	16	72	2
	70	0	0	0	0	13	7	42	2	4	2	14	1	4	2	14	1
	200	0	0	0	0	21	1	0	0	2	0	0	0	2	0	0	0
	Total	41	28	135	5	86	40	186	6	53	32	153	6	87	55	434	21
	Grand Total	209				318				244				596			
	OPTION 3																
	Low Erosive Risk	0	0	0	0	16	7	35	1	0	0	0	0	16	10	82	4
	Moderate Erosive Risk	0	0	0	0	66	31	143	5	0	0	0	0	67	43	335	16
	High Erosive Risk	0	0	0	0	3	2	7	0	0	0	0	0	3	2	17	1
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	34	23	280	15
	7.5	0	0	0	0	0	0	0	0	0	0	0	0	20	14	68	3
	25	0	0	0	0	52	32	143	4	0	0	0	0	26	16	72	2
	70	0	0	0	0	13	7	42	2	0	0	0	0	4	2	14	1
	200	0	0	0	0	21	1	0	0	0	0	0	0	2	0	0	0
	Total	0	0	0	0	86	40	186	6	0	0	0	0	87	55	434	21
	Grand Total	0				318				0				596			
	OPTION 4																
	Low Erosive Risk	8	5	26	1	16	7	35	1	0	0	0	0	16	10	82	4
	Moderate Erosive Risk	31	22	104	4	66	31	143	5	0	0	0	0	67	43	335	16
	High Erosive Risk	2	1	5	0	3	2	7	0	0	0	0	0	3	2	17	1
Site Sizes in Acres	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	34	23	280	15
	7.5	41	28	135	5	0	0	0	0	0	0	0	0	20	14	68	3
	25	0	0	0	0	52	32	143	4	0	0	0	0	26	16	72	2
	70	0	0	0	0	13	7	42	2	0	0	0	0	4	2	14	1
	200	0	0	0	0	21	1	0	0	0	0	0	0	2	0	0	0
	Total	41	28	135	5	86	40	186	6	0	0	0	0	87	55	434	21
	Grand Total	209				318				0				596			

B-12. National BMP Costs

National	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,642	$ 3,399	$ 72,304	$ 3,734
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,511	$ 3,057	$ 37,329	$ 2,035	$ 1,125	$ 762	$ 9,310	$ 507	$ 23,610	$ 15,999	$ 195,370	$ 10,649
7.5	$ 6,605	$ 5,542	$ 29,264	$ 1,396	$ -	$ -	$ -	$ -	$ 5,456	$ 3,725	$ 18,029	$ 733	$ 680	$ 465	$ 2,248	$ 91	$ 30,644	$ 21,955	$ 108,696	$ 4,623
25	$ -	$ -	$ -	$ -	$ 132,294	$ 97,491	$ 459,917	$ 16,092	$ 17,304	$ 10,849	$ 47,696	$ 1,464	$ 1,726	$ 1,082	$ 4,758	$ 146	$ 175,589	$ 124,635	$ 579,254	$ 19,755
70	$ -	$ -	$ -	$ -	$ 62,785	$ 37,778	$ 252,856	$ 16,308	$ 5,904	$ 3,018	$ 18,832	$ 1,063	$ 1,031	$ 527	$ 3,288	$ 186	$ 78,044	$ 45,578	$ 301,525	$ 19,057
200	$ -	$ -	$ -	$ -	$ 89,936	$ 9,718	$ -	$ -	$ 8,799	$ 799	$ -	$ -	$ 1,463	$ 133	$ -	$ -	$ 113,293	$ 11,838	$ -	$ -
Total	$ 6,605	$ 5,542	$ 29,264	$ 1,396	$ 285,014	$ 144,987	$ 712,773	$ 32,400	$ 41,975	$ 21,448	$ 121,887	$ 5,295	$ 6,026	$ 2,969	$ 19,605	$ 931	$ 434,822	$ 223,406	$ 1,257,149	$ 57,817
Grand Total	$42,807				$1,175,175				$190,606				$29,530				$1,973,195			
OPTION 2																				
Site Sizes in Acres																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,642	$ 3,399	$ 72,304	$ 3,734
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 857	$ 581	$ 7,096	$ 387	$ 18,831	$ 12,761	$ 155,826	$ 8,493
7.5	$ 13,823	$ 11,596	$ 61,238	$ 2,913	$ -	$ -	$ -	$ -	$ 5,456	$ 3,725	$ 18,029	$ 733	$ 680	$ 465	$ 2,248	$ 91	$ 37,862	$ 28,009	$ 140,671	$ 6,140
25	$ -	$ -	$ -	$ -	$ 157,989	$ 116,425	$ 549,281	$ 19,208	$ 17,304	$ 10,849	$ 47,696	$ 1,464	$ 1,726	$ 1,082	$ 4,758	$ 146	$ 201,285	$ 143,569	$ 668,617	$ 22,871
70	$ -	$ -	$ -	$ -	$ 74,948	$ 45,079	$ 301,967	$ 19,437	$ 5,904	$ 3,018	$ 18,832	$ 1,063	$ 1,031	$ 527	$ 3,288	$ 186	$ 90,207	$ 52,879	$ 350,636	$ 22,185
200	$ -	$ -	$ -	$ -	$ 107,339	$ 11,453	$ -	$ -	$ 8,799	$ 799	$ -	$ -	$ 1,463	$ 133	$ -	$ -	$ 130,696	$ 13,574	$ -	$ -
Total	$ 13,823	$ 11,596	$ 61,238	$ 2,913	$ 340,276	$ 172,956	$ 851,247	$ 38,645	$ 37,464	$ 18,391	$ 84,558	$ 3,260	$ 5,758	$ 2,788	$ 17,390	$ 810	$ 492,523	$ 254,191	$ 1,388,054	$ 63,424
Grand Total	$89,570				$1,403,125				$143,674				$26,746				$2,198,192			
OPTION 3																				
Site Sizes in Acres																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,642	$ 3,399	$ 72,304	$ 3,734
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 857	$ 581	$ 7,096	$ 387	$ 18,831	$ 12,761	$ 155,826	$ 8,493
7.5	$ 6,605	$ 5,542	$ 29,264	$ 1,396	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 519	$ 354	$ 1,713	$ 70	$ 25,026	$ 18,119	$ 90,132	$ 3,869
25	$ -	$ -	$ -	$ -	$ 132,294	$ 97,491	$ 459,917	$ 16,092	$ -	$ -	$ -	$ -	$ 1,316	$ 825	$ 3,626	$ 111	$ 157,874	$ 113,529	$ 530,426	$ 18,256
70	$ -	$ -	$ -	$ -	$ 62,785	$ 37,778	$ 252,856	$ 16,308	$ -	$ -	$ -	$ -	$ 785	$ 402	$ 2,506	$ 141	$ 71,894	$ 42,435	$ 281,911	$ 17,948
200	$ -	$ -	$ -	$ -	$ 89,936	$ 9,718	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,114	$ 100	$ -	$ -	$ 104,145	$ 11,007	$ -	$ -
Total	$ 6,605	$ 5,542	$ 29,264	$ 1,396	$ 285,014	$ 144,987	$ 712,773	$ 32,400	$ -	$ -	$ -	$ -	$ 4,591	$ 2,262	$ 14,941	$ 709	$ 391,412	$ 201,250	$ 1,130,598	$ 52,300
Grand Total	$42,807				$1,175,175				$0				$22,502				$1,775,561			
OPTION 4																				
Site Sizes in Acres																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,642	$ 3,399	$ 72,304	$ 3,734
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 857	$ 581	$ 7,096	$ 387	$ 18,831	$ 12,761	$ 155,826	$ 8,493
7.5	$ 13,823	$ 11,596	$ 61,238	$ 2,913	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 680	$ 465	$ 2,248	$ 91	$ 32,405	$ 24,283	$ 122,642	$ 5,408
25	$ -	$ -	$ -	$ -	$ 157,989	$ 116,425	$ 549,281	$ 19,208	$ -	$ -	$ -	$ -	$ 1,726	$ 1,082	$ 4,758	$ 146	$ 183,980	$ 132,720	$ 620,921	$ 21,407
70	$ -	$ -	$ -	$ -	$ 74,948	$ 45,079	$ 301,967	$ 19,437	$ -	$ -	$ -	$ -	$ 1,031	$ 527	$ 3,288	$ 186	$ 84,303	$ 49,861	$ 331,803	$ 21,122
200	$ -	$ -	$ -	$ -	$ 107,339	$ 11,453	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,463	$ 133	$ -	$ -	$ 121,897	$ 12,775	$ -	$ -
Total	$ 13,823	$ 11,596	$ 61,238	$ 2,913	$ 340,276	$ 172,956	$ 851,247	$ 38,645	$ -	$ -	$ -	$ -	$ 5,758	$ 2,788	$ 17,390	$ 810	$ 455,059	$ 235,799	$ 1,303,496	$ 60,164
Grand Total	$89,570				$1,403,125				$0				$26,746				$2,054,518			

B-13. State BMP Costs

AL	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 342	$ 85	$ 1,812	$ 94
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 113	$ 77	$ 936	$ 51	$ 28	$ 19	$ 233	$ 13	$ 592	$ 401	$ 4,896	$ 267
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 137	$ 93	$ 452	$ 18	$ 17	$ 12	$ 56	$ 2	$ 603	$ 412	$ 1,991	$ 81
25	$ -	$ -	$ -	$ -	$ 3,962	$ 2,919	$ 13,768	$ 486	$ 434	$ 272	$ 1,196	$ 37	$ 43	$ 27	$ 119	$ 4	$ 5,048	$ 3,600	$ 16,759	$ 579
70	$ -	$ -	$ -	$ -	$ 1,887	$ 1,138	$ 7,577	$ 502	$ 149	$ 76	$ 473	$ 27	$ 26	$ 13	$ 83	$ 5	$ 2,271	$ 1,335	$ 8,799	$ 573
200	$ -	$ -	$ -	$ -	$ 2,713	$ 316	$ -	$ -	$ 222	$ 22	$ -	$ -	$ 37	$ 4	$ -	$ -	$ 3,303	$ 374	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 8,561	$ 4,373	$ 21,345	$ 988	$ 1,055	$ 540	$ 3,056	$ 134	$ 151	$ 75	$ 491	$ 24	$ 12,159	$ 6,208	$ 34,257	$ 1,594
Grand Total	$ -				$ 35,268				$ 4,785				$ 741				$ 54,218			
OPTION 2																				
Site Sizes in Acres																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 342	$ 85	$ 1,812	$ 94
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 451	$ 305	$ 3,727	$ 203
7.5	$ 347	$ 291	$ 1,535	$ 73	$ -	$ -	$ -	$ -	$ 137	$ 93	$ 452	$ 18	$ 17	$ 12	$ 56	$ 2	$ 950	$ 703	$ 3,526	$ 155
25	$ -	$ -	$ -	$ -	$ 3,962	$ 2,919	$ 13,768	$ 486	$ 434	$ 272	$ 1,196	$ 37	$ 43	$ 27	$ 119	$ 4	$ 5,048	$ 3,600	$ 16,759	$ 579
70	$ -	$ -	$ -	$ -	$ 1,887	$ 1,138	$ 7,577	$ 502	$ 149	$ 76	$ 473	$ 27	$ 26	$ 13	$ 83	$ 5	$ 2,271	$ 1,335	$ 8,799	$ 573
200	$ -	$ -	$ -	$ -	$ 2,713	$ 316	$ -	$ -	$ 222	$ 22	$ -	$ -	$ 37	$ 4	$ -	$ -	$ 3,303	$ 374	$ -	$ -
Total	$ 347	$ 291	$ 1,535	$ 73	$ 8,561	$ 4,373	$ 21,345	$ 988	$ 942	$ 464	$ 2,120	$ 83	$ 123	$ 56	$ 258	$ 11	$ 12,364	$ 6,403	$ 34,624	$ 1,604
Grand Total	$ 2,246				$ 35,268				$ 3,609				$ 448				$ 54,994			
OPTION 3																				
Site Sizes in Acres																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 342	$ 85	$ 1,812	$ 94
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 451	$ 305	$ 3,727	$ 203
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 449	$ 307	$ 1,483	$ 61
25	$ -	$ -	$ -	$ -	$ 3,962	$ 2,919	$ 13,768	$ 486	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,571	$ 3,301	$ 15,444	$ 538
70	$ -	$ -	$ -	$ -	$ 1,887	$ 1,138	$ 7,577	$ 502	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,096	$ 1,246	$ 8,244	$ 541
200	$ -	$ -	$ -	$ -	$ 2,713	$ 316	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,044	$ 349	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 8,561	$ 4,373	$ 21,345	$ 988	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,952	$ 5,592	$ 30,710	$ 1,437
Grand Total	$ -				$ 35,268				$ -				$ -				$ 48,692			
OPTION 4																				
Site Sizes in Acres																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 342	$ 85	$ 1,812	$ 94
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 451	$ 305	$ 3,727	$ 203
7.5	$ 347	$ 291	$ 1,535	$ 73	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 17	$ 12	$ 56	$ 2	$ 813	$ 609	$ 3,074	$ 136
25	$ -	$ -	$ -	$ -	$ 3,962	$ 2,919	$ 13,768	$ 486	$ -	$ -	$ -	$ -	$ 43	$ 27	$ 119	$ 4	$ 4,614	$ 3,328	$ 15,564	$ 542
70	$ -	$ -	$ -	$ -	$ 1,887	$ 1,138	$ 7,577	$ 502	$ -	$ -	$ -	$ -	$ 26	$ 13	$ 83	$ 5	$ 2,122	$ 1,259	$ 8,326	$ 545
200	$ -	$ -	$ -	$ -	$ 2,713	$ 316	$ -	$ -	$ -	$ -	$ -	$ -	$ 37	$ 4	$ -	$ -	$ 3,081	$ 352	$ -	$ -
Total	$ 347	$ 291	$ 1,535	$ 73	$ 8,561	$ 4,373	$ 21,345	$ 988	$ -	$ -	$ -	$ -	$ 123	$ 56	$ 258	$ 11	$ 11,422	$ 5,939	$ 32,504	$ 1,521
Grand Total	$ 2,246				$ 35,268				$ -				$ 448				$ 51,386			

B-13. State BMP Costs (continued)

AR		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 183	$ 46	$ 971	$ 50
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 61	$ 41	$ 501	$ 27	$ 15	$ 10	$ 125	$ 7	$ 317	$ 215	$ 2,623	$ 143
	7.5	$ 186	$ 156	$ 822	$ 39	$ -	$ -	$ -	$ -	$ 73	$ 50	$ 242	$ 10	$ 9	$ 6	$ 30	$ 1	$ 509	$ 376	$ 1,889	$ 83
	25	$ -	$ -	$ -	$ -	$ 2,123	$ 1,564	$ 7,373	$ 260	$ 233	$ 146	$ 640	$ 20	$ 23	$ 15	$ 64	$ 2	$ 2,705	$ 1,929	$ 8,975	$ 310
	70	$ -	$ -	$ -	$ -	$ 1,008	$ 611	$ 4,056	$ 259	$ 79	$ 41	$ 253	$ 14	$ 14	$ 7	$ 44	$ 2	$ 1,213	$ 717	$ 4,710	$ 295
	200	$ -	$ -	$ -	$ -	$ 1,453	$ 168	$ -	$ -	$ 119	$ 12	$ -	$ -	$ 20	$ 2	$ -	$ -	$ 1,769	$ 199	$ -	$ -
Total		$ 186	$ 156	$ 822	$ 39	$ 4,584	$ 2,343	$ 11,429	$ 519	$ 565	$ 289	$ 1,636	$ 71	$ 81	$ 40	$ 263	$ 13	$ 6,696	$ 3,481	$ 19,167	$ 881
Grand Total		$ 1,203				$ 18,875				$ 2,562				$ 397				$ 30,225			
OPTION 2																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 183	$ 46	$ 971	$ 50
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15	$ 10	$ 125	$ 7	$ 256	$ 174	$ 2,122	$ 116
	7.5	$ 186	$ 156	$ 822	$ 39	$ -	$ -	$ -	$ -	$ 73	$ 50	$ 242	$ 10	$ 9	$ 6	$ 30	$ 1	$ 509	$ 376	$ 1,889	$ 83
	25	$ -	$ -	$ -	$ -	$ 2,123	$ 1,564	$ 7,373	$ 260	$ 233	$ 146	$ 640	$ 20	$ 23	$ 15	$ 64	$ 2	$ 2,705	$ 1,929	$ 8,975	$ 310
	70	$ -	$ -	$ -	$ -	$ 1,008	$ 611	$ 4,056	$ 259	$ 79	$ 41	$ 253	$ 14	$ 14	$ 7	$ 44	$ 2	$ 1,213	$ 717	$ 4,710	$ 295
	200	$ -	$ -	$ -	$ -	$ 1,453	$ 168	$ -	$ -	$ 119	$ 12	$ -	$ -	$ 20	$ 2	$ -	$ -	$ 1,769	$ 199	$ -	$ -
Total		$ 186	$ 156	$ 822	$ 39	$ 4,584	$ 2,343	$ 11,429	$ 519	$ 504	$ 248	$ 1,135	$ 44	$ 81	$ 40	$ 263	$ 13	$ 6,635	$ 3,440	$ 18,666	$ 854
Grand Total		$ 1,203				$ 18,875				$ 1,932				$ 397				$ 29,595			
OPTION 3																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 183	$ 46	$ 971	$ 50
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15	$ 10	$ 125	$ 7	$ 256	$ 174	$ 2,122	$ 116
	7.5	$ 186	$ 156	$ 822	$ 39	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9	$ 6	$ 30	$ 1	$ 436	$ 326	$ 1,647	$ 73
	25	$ -	$ -	$ -	$ -	$ 2,123	$ 1,564	$ 7,373	$ 260	$ -	$ -	$ -	$ -	$ 23	$ 15	$ 64	$ 2	$ 2,472	$ 1,783	$ 8,335	$ 290
	70	$ -	$ -	$ -	$ -	$ 1,008	$ 611	$ 4,056	$ 259	$ -	$ -	$ -	$ -	$ 14	$ 7	$ 44	$ 2	$ 1,134	$ 676	$ 4,457	$ 281
	200	$ -	$ -	$ -	$ -	$ 1,453	$ 168	$ -	$ -	$ -	$ -	$ -	$ -	$ 20	$ 2	$ -	$ -	$ 1,650	$ 187	$ -	$ -
Total		$ 186	$ 156	$ 822	$ 39	$ 4,584	$ 2,343	$ 11,429	$ 519	$ -	$ -	$ -	$ -	$ 81	$ 40	$ 263	$ 13	$ 6,131	$ 3,192	$ 17,530	$ 810
Grand Total		$ 1,203				$ 18,875				$ -				$ 397				$ 27,663			
OPTION 4																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 183	$ 46	$ 971	$ 50
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15	$ 10	$ 125	$ 7	$ 256	$ 174	$ 2,122	$ 116
	7.5	$ 186	$ 156	$ 822	$ 39	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9	$ 6	$ 30	$ 1	$ 436	$ 326	$ 1,647	$ 73
	25	$ -	$ -	$ -	$ -	$ 2,123	$ 1,564	$ 7,373	$ 260	$ -	$ -	$ -	$ -	$ 23	$ 15	$ 64	$ 2	$ 2,472	$ 1,783	$ 8,335	$ 290
	70	$ -	$ -	$ -	$ -	$ 1,008	$ 611	$ 4,056	$ 259	$ -	$ -	$ -	$ -	$ 14	$ 7	$ 44	$ 2	$ 1,134	$ 676	$ 4,457	$ 281
	200	$ -	$ -	$ -	$ -	$ 1,453	$ 168	$ -	$ -	$ -	$ -	$ -	$ -	$ 20	$ 2	$ -	$ -	$ 1,650	$ 187	$ -	$ -
Total		$ 186	$ 156	$ 822	$ 39	$ 4,584	$ 2,343	$ 11,429	$ 519	$ -	$ -	$ -	$ -	$ 81	$ 40	$ 263	$ 13	$ 6,131	$ 3,192	$ 17,530	$ 810
Grand Total		$ 1,203				$ 18,875				$ -				$ 397				$ 27,663			

B-13. State BMP Costs (continued)

AZ	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1 (Site Sizes in Acres)	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 142	$ 35	$ 752	$ 39
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 47	$ 32	$ 388	$ 21	$ 12	$ 8	$ 97	$ 5	$ 245	$ 166	$ 2,032	$ 111
7.5	$ 143	$ 120	$ 637	$ 30	$ -	$ -	$ -	$ -	$ 57	$ 39	$ 187	$ 8	$ 7	$ 5	$ 23	$ 1	$ 393	$ 291	$ 1,463	$ 63
25	$ -	$ -	$ -	$ -	$ 1,642	$ 1,210	$ 5,712	$ 198	$ 180	$ 113	$ 496	$ 15	$ 18	$ 11	$ 49	$ 2	$ 2,092	$ 1,492	$ 6,953	$ 236
70	$ -	$ -	$ -	$ -	$ 777	$ 464	$ 3,132	$ 192	$ 61	$ 31	$ 195	$ 11	$ 11	$ 5	$ 34	$ 2	$ 935	$ 544	$ 3,637	$ 220
200	$ -	$ -	$ -	$ -	$ 1,104	$ 108	$ -	$ -	$ 90	$ 8	$ -	$ -	$ 15	$ 1	$ -	$ -	$ 1,344	$ 128	$ -	$ -
Total	$ 143	$ 120	$ 637	$ 30	$ 3,522	$ 1,782	$ 8,845	$ 390	$ 435	$ 222	$ 1,267	$ 54	$ 62	$ 31	$ 204	$ 10	$ 5,150	$ 2,656	$ 14,837	$ 668
Grand Total	$ 930				$ 14,539				$ 1,978				$ 306				$ 23,311			
OPTION 2 (Site Sizes in Acres)																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 142	$ 35	$ 752	$ 39
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12	$ 8	$ 97	$ 5	$ 198	$ 134	$ 1,644	$ 89
7.5	$ 143	$ 120	$ 637	$ 30	$ -	$ -	$ -	$ -	$ 57	$ 39	$ 187	$ 8	$ 7	$ 5	$ 23	$ 1	$ 393	$ 291	$ 1,463	$ 63
25	$ -	$ -	$ -	$ -	$ 1,642	$ 1,210	$ 5,712	$ 198	$ 180	$ 113	$ 496	$ 15	$ 18	$ 11	$ 49	$ 2	$ 2,092	$ 1,492	$ 6,953	$ 236
70	$ -	$ -	$ -	$ -	$ 777	$ 464	$ 3,132	$ 192	$ 61	$ 31	$ 195	$ 11	$ 11	$ 5	$ 34	$ 2	$ 935	$ 544	$ 3,637	$ 220
200	$ -	$ -	$ -	$ -	$ 1,104	$ 108	$ -	$ -	$ 90	$ 8	$ -	$ -	$ 15	$ 1	$ -	$ -	$ 1,344	$ 128	$ -	$ -
Total	$ 143	$ 120	$ 637	$ 30	$ 3,522	$ 1,782	$ 8,845	$ 390	$ 388	$ 190	$ 879	$ 33	$ 62	$ 31	$ 204	$ 10	$ 5,103	$ 2,624	$ 14,449	$ 647
Grand Total	$ 930				$ 14,539				$ 1,490				$ 306				$ 22,823			
OPTION 3 (Site Sizes in Acres)																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 142	$ 35	$ 752	$ 39
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12	$ 8	$ 97	$ 5	$ 198	$ 134	$ 1,644	$ 89
7.5	$ 143	$ 120	$ 637	$ 30	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7	$ 5	$ 23	$ 1	$ 336	$ 252	$ 1,275	$ 56
25	$ -	$ -	$ -	$ -	$ 1,642	$ 1,210	$ 5,712	$ 198	$ -	$ -	$ -	$ -	$ 18	$ 11	$ 49	$ 2	$ 1,912	$ 1,379	$ 6,457	$ 220
70	$ -	$ -	$ -	$ -	$ 777	$ 464	$ 3,132	$ 192	$ -	$ -	$ -	$ -	$ 11	$ 5	$ 34	$ 2	$ 874	$ 513	$ 3,442	$ 209
200	$ -	$ -	$ -	$ -	$ 1,104	$ 108	$ -	$ -	$ -	$ -	$ -	$ -	$ 15	$ 1	$ -	$ -	$ 1,253	$ 120	$ -	$ -
Total	$ 143	$ 120	$ 637	$ 30	$ 3,522	$ 1,782	$ 8,845	$ 390	$ -	$ -	$ -	$ -	$ 62	$ 31	$ 204	$ 10	$ 4,715	$ 2,434	$ 13,570	$ 613
Grand Total	$ 930				$ 14,539				$ -				$ 306				$ 21,333			
OPTION 4 (Site Sizes in Acres)																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 142	$ 35	$ 752	$ 39
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12	$ 8	$ 97	$ 5	$ 198	$ 134	$ 1,644	$ 89
7.5	$ 143	$ 120	$ 637	$ 30	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7	$ 5	$ 23	$ 1	$ 336	$ 252	$ 1,275	$ 56
25	$ -	$ -	$ -	$ -	$ 1,642	$ 1,210	$ 5,712	$ 198	$ -	$ -	$ -	$ -	$ 18	$ 11	$ 49	$ 2	$ 1,912	$ 1,379	$ 6,457	$ 220
70	$ -	$ -	$ -	$ -	$ 777	$ 464	$ 3,132	$ 192	$ -	$ -	$ -	$ -	$ 11	$ 5	$ 34	$ 2	$ 874	$ 513	$ 3,442	$ 209
200	$ -	$ -	$ -	$ -	$ 1,104	$ 108	$ -	$ -	$ -	$ -	$ -	$ -	$ 15	$ 1	$ -	$ -	$ 1,253	$ 120	$ -	$ -
Total	$ 143	$ 120	$ 637	$ 30	$ 3,522	$ 1,782	$ 8,845	$ 390	$ -	$ -	$ -	$ -	$ 62	$ 31	$ 204	$ 10	$ 4,715	$ 2,434	$ 13,570	$ 613
Grand Total	$ 930				$ 14,539				$ -				$ 306				$ 21,333			

B-13. State BMP Costs (continued)

CA		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 847	$ 211	$ 4,492	$ 231
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 280	$ 190	$ 2,319	$ 126	$ 70	$ 47	$ 578	$ 31	$ 1,466	$ 993	$ 12,135	$ 660
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 339	$ 231	$ 1,120	$ 45	$ 42	$ 29	$ 140	$ 6	$ 1,492	$ 1,019	$ 4,935	$ 198
	25	$ -	$ -	$ -	$ -	$ 9,809	$ 7,238	$ 34,110	$ 1,185	$ 1,074	$ 674	$ 2,962	$ 90	$ 107	$ 67	$ 295	$ 9	$ 12,497	$ 8,926	$ 41,520	$ 1,411
	70	$ -	$ -	$ -	$ -	$ 4,642	$ 2,724	$ 18,691	$ 1,187	$ 366	$ 182	$ 1,166	$ 65	$ 64	$ 32	$ 204	$ 11	$ 5,587	$ 3,196	$ 21,703	$ 1,354
	200	$ -	$ -	$ -	$ -	$ 6,613	$ 599	$ -	$ -	$ 542	$ 42	$ -	$ -	$ 90	$ 7	$ -	$ -	$ 8,051	$ 710	$ -	$ -
Total		$ -	$ -	$ -	$ -	$ 21,064	$ 10,561	$ 52,800	$ 2,372	$ 2,601	$ 1,320	$ 7,566	$ 326	$ 373	$ 182	$ 1,217	$ 57	$ 29,941	$ 15,055	$ 84,785	$ 3,855
Grand Total		$ -				$ 86,797				$ 11,813				$ 1,830				$ 133,636			
OPTION 2																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 847	$ 211	$ 4,492	$ 231
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,116	$ 756	$ 9,238	$ 502
	7.5	$ 858	$ 720	$ 3,805	$ 179	$ -	$ -	$ -	$ -	$ 339	$ 231	$ 1,120	$ 45	$ 42	$ 29	$ 140	$ 6	$ 2,350	$ 1,739	$ 8,740	$ 378
	25	$ -	$ -	$ -	$ -	$ 9,809	$ 7,238	$ 34,110	$ 1,185	$ 1,074	$ 674	$ 2,962	$ 90	$ 107	$ 67	$ 295	$ 9	$ 12,497	$ 8,926	$ 41,520	$ 1,411
	70	$ -	$ -	$ -	$ -	$ 4,642	$ 2,724	$ 18,691	$ 1,187	$ 366	$ 182	$ 1,166	$ 65	$ 64	$ 32	$ 204	$ 11	$ 5,587	$ 3,196	$ 21,703	$ 1,354
	200	$ -	$ -	$ -	$ -	$ 6,613	$ 599	$ -	$ -	$ 542	$ 42	$ -	$ -	$ 90	$ 7	$ -	$ -	$ 8,051	$ 710	$ -	$ -
Total		$ 858	$ 720	$ 3,805	$ 179	$ 21,064	$ 10,561	$ 52,800	$ 2,372	$ 2,321	$ 1,130	$ 5,248	$ 200	$ 303	$ 135	$ 639	$ 26	$ 30,449	$ 15,538	$ 85,693	$ 3,876
Grand Total		$ 5,562				$ 86,797				$ 8,899				$ 1,103				$ 135,557			
OPTION 3																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 847	$ 211	$ 4,492	$ 231
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,116	$ 756	$ 9,238	$ 502
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,111	$ 759	$ 3,675	$ 148
	25	$ -	$ -	$ -	$ -	$ 9,809	$ 7,238	$ 34,110	$ 1,185	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,316	$ 8,184	$ 38,263	$ 1,312
	70	$ -	$ -	$ -	$ -	$ 4,642	$ 2,724	$ 18,691	$ 1,187	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,158	$ 2,981	$ 20,334	$ 1,278
	200	$ -	$ -	$ -	$ -	$ 6,613	$ 599	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,419	$ 661	$ -	$ -
Total		$ -	$ -	$ -	$ -	$ 21,064	$ 10,561	$ 52,800	$ 2,372	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 26,967	$ 13,553	$ 76,002	$ 3,471
Grand Total		$ -				$ 86,797				$ -				$ -				$ 119,993			
OPTION 4																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 847	$ 211	$ 4,492	$ 231
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,116	$ 756	$ 9,238	$ 502
	7.5	$ 858	$ 720	$ 3,805	$ 179	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 42	$ 29	$ 140	$ 6	$ 2,012	$ 1,508	$ 7,620	$ 333
	25	$ -	$ -	$ -	$ -	$ 9,809	$ 7,238	$ 34,110	$ 1,185	$ -	$ -	$ -	$ -	$ 107	$ 67	$ 295	$ 9	$ 11,423	$ 8,251	$ 38,558	$ 1,321
	70	$ -	$ -	$ -	$ -	$ 4,642	$ 2,724	$ 18,691	$ 1,187	$ -	$ -	$ -	$ -	$ 64	$ 32	$ 204	$ 11	$ 5,221	$ 3,013	$ 20,538	$ 1,289
	200	$ -	$ -	$ -	$ -	$ 6,613	$ 599	$ -	$ -	$ -	$ -	$ -	$ -	$ 90	$ 7	$ -	$ -	$ 7,509	$ 668	$ -	$ -
Total		$ 858	$ 720	$ 3,805	$ 179	$ 21,064	$ 10,561	$ 52,800	$ 2,372	$ -	$ -	$ -	$ -	$ 303	$ 135	$ 639	$ 26	$ 28,129	$ 14,408	$ 80,445	$ 3,676
Grand Total		$ 5,562				$ 86,797				$ -				$ 1,103				$ 126,658			

B-13. State BMP Costs (continued)

CO	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
OPTION 1																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 140	$ 35	$ 743	$ 38
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 46	$ 31	$ 384	$ 21	$ 12	$ 8	$ 96	$ 5	$ 243	$ 164	$ 2,009	$ 109
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 56	$ 38	$ 185	$ 8	$ 7	$ 5	$ 23	$ 1	$ 246	$ 169	$ 817	$ 33
25	$ -	$ -	$ -	$ -	$ 810	$ 596	$ 2,824	$ 95	$ 177	$ 111	$ 490	$ 14	$ 18	$ 11	$ 49	$ 1	$ 1,254	$ 874	$ 4,051	$ 131
70	$ -	$ -	$ -	$ -	$ 379	$ 230	$ 1,551	$ 92	$ 60	$ 31	$ 193	$ 10	$ 10	$ 5	$ 34	$ 2	$ 533	$ 309	$ 2,050	$ 118
200	$ -	$ -	$ -	$ -	$ 529	$ 54	$ -	$ -	$ 87	$ 8	$ -	$ -	$ 14	$ 1	$ -	$ -	$ 759	$ 74	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 1,717	$ 880	$ 4,374	$ 187	$ 426	$ 219	$ 1,253	$ 53	$ 61	$ 30	$ 202	$ 9	$ 3,174	$ 1,626	$ 9,670	$ 429
Grand Total	$ -				$ 7,158				$ 1,951				$ 302				$ 14,899			
OPTION 2																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 140	$ 35	$ 743	$ 38
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12	$ 8	$ 96	$ 5	$ 196	$ 133	$ 1,625	$ 88
7.5	$ 142	$ 119	$ 630	$ 30	$ -	$ -	$ -	$ -	$ 56	$ 38	$ 185	$ 8	$ 7	$ 5	$ 23	$ 1	$ 388	$ 288	$ 1,446	$ 63
25	$ -	$ -	$ -	$ -	$ 1,620	$ 1,193	$ 5,648	$ 189	$ 177	$ 111	$ 490	$ 14	$ 18	$ 11	$ 49	$ 1	$ 2,063	$ 1,471	$ 6,875	$ 226
70	$ -	$ -	$ -	$ -	$ 757	$ 460	$ 3,101	$ 184	$ 60	$ 31	$ 193	$ 10	$ 10	$ 5	$ 34	$ 2	$ 911	$ 539	$ 3,601	$ 210
200	$ -	$ -	$ -	$ -	$ 1,057	$ 108	$ -	$ -	$ 87	$ 8	$ -	$ -	$ 14	$ 1	$ -	$ -	$ 1,287	$ 128	$ -	$ -
Total	$ 142	$ 119	$ 630	$ 30	$ 3,434	$ 1,760	$ 8,749	$ 373	$ 380	$ 188	$ 869	$ 32	$ 61	$ 30	$ 202	$ 9	$ 4,986	$ 2,594	$ 14,290	$ 625
Grand Total	$ 920				$ 14,316				$ 1,469				$ 302				$ 22,495			
OPTION 3																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 140	$ 35	$ 743	$ 38
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12	$ 8	$ 96	$ 5	$ 196	$ 133	$ 1,625	$ 88
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7	$ 5	$ 23	$ 1	$ 190	$ 130	$ 631	$ 26
25	$ -	$ -	$ -	$ -	$ 810	$ 596	$ 2,824	$ 95	$ -	$ -	$ -	$ -	$ 18	$ 11	$ 49	$ 1	$ 1,076	$ 763	$ 3,560	$ 116
70	$ -	$ -	$ -	$ -	$ 379	$ 230	$ 1,551	$ 92	$ -	$ -	$ -	$ -	$ 10	$ 5	$ 34	$ 2	$ 473	$ 279	$ 1,857	$ 108
200	$ -	$ -	$ -	$ -	$ 529	$ 54	$ -	$ -	$ -	$ -	$ -	$ -	$ 14	$ 1	$ -	$ -	$ 672	$ 67	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 1,717	$ 880	$ 4,374	$ 187	$ -	$ -	$ -	$ -	$ 61	$ 30	$ 202	$ 9	$ 2,748	$ 1,407	$ 8,417	$ 376
Grand Total	$ -				$ 7,158				$ -				$ 302				$ 12,948			
OPTION 4																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 140	$ 35	$ 743	$ 38
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12	$ 8	$ 96	$ 5	$ 196	$ 133	$ 1,625	$ 88
7.5	$ 142	$ 119	$ 630	$ 30	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7	$ 5	$ 23	$ 1	$ 332	$ 250	$ 1,261	$ 56
25	$ -	$ -	$ -	$ -	$ 1,620	$ 1,193	$ 5,648	$ 189	$ -	$ -	$ -	$ -	$ 18	$ 11	$ 49	$ 1	$ 1,886	$ 1,360	$ 6,384	$ 211
70	$ -	$ -	$ -	$ -	$ 757	$ 460	$ 3,101	$ 184	$ -	$ -	$ -	$ -	$ 10	$ 5	$ 34	$ 2	$ 852	$ 508	$ 3,407	$ 200
200	$ -	$ -	$ -	$ -	$ 1,057	$ 108	$ -	$ -	$ -	$ -	$ -	$ -	$ 14	$ 1	$ -	$ -	$ 1,201	$ 121	$ -	$ -
Total	$ 142	$ 119	$ 630	$ 30	$ 3,434	$ 1,760	$ 8,749	$ 373	$ -	$ -	$ -	$ -	$ 61	$ 30	$ 202	$ 9	$ 4,607	$ 2,406	$ 13,421	$ 593
Grand Total	$ 920				$ 14,316				$ -				$ 302				$ 21,026			

B-13. State BMP Costs (continued)

CT		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 57	$ 14	$ 303	$ 16
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 19	$ 13	$ 156	$ 9	$ 5	$ 3	$ 39	$ 2	$ 99	$ 67	$ 818	$ 45
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 23	$ 16	$ 76	$ 3	$ 3	$ 2	$ 9	$ 0	$ 101	$ 69	$ 333	$ 14
	25	$ -	$ -	$ -	$ -	$ 331	$ 244	$ 1,151	$ 40	$ 72	$ 45	$ 200	$ 6	$ 7	$ 5	$ 20	$ 1	$ 512	$ 358	$ 1,651	$ 56
	70	$ -	$ -	$ -	$ -	$ 158	$ 95	$ 634	$ 42	$ 25	$ 13	$ 79	$ 5	$ 4	$ 2	$ 14	$ 1	$ 222	$ 128	$ 838	$ 54
	200	$ -	$ -	$ -	$ -	$ 228	$ 27	$ -	$ -	$ 37	$ 4	$ -	$ -	$ 6	$ 1	$ -	$ -	$ 327	$ 37	$ -	$ -
Total		$ -	$ -	$ -	$ -	$ 716	$ 366	$ 1,784	$ 82	$ 176	$ 90	$ 511	$ 22	$ 25	$ 13	$ 82	$ 4	$ 1,318	$ 673	$ 3,942	$ 183
Grand Total		$ -				$ 2,949				$ 800				$ 124				$ 6,116			
OPTION 2																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 57	$ 14	$ 303	$ 16
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5	$ 3	$ 39	$ 2	$ 80	$ 54	$ 662	$ 36
	7.5	$ 58	$ 49	$ 257	$ 12	$ -	$ -	$ -	$ -	$ 23	$ 16	$ 76	$ 3	$ 3	$ 2	$ 9	$ 0	$ 159	$ 117	$ 589	$ 26
	25	$ -	$ -	$ -	$ -	$ 662	$ 488	$ 2,301	$ 81	$ 72	$ 45	$ 200	$ 6	$ 7	$ 5	$ 20	$ 1	$ 843	$ 602	$ 2,801	$ 96
	70	$ -	$ -	$ -	$ -	$ 316	$ 190	$ 1,267	$ 83	$ 25	$ 13	$ 79	$ 5	$ 4	$ 2	$ 14	$ 1	$ 380	$ 223	$ 1,471	$ 95
	200	$ -	$ -	$ -	$ -	$ 455	$ 54	$ -	$ -	$ 37	$ 4	$ -	$ -	$ 6	$ 1	$ -	$ -	$ 554	$ 64	$ -	$ -
Total		$ 58	$ 49	$ 257	$ 12	$ 1,433	$ 733	$ 3,568	$ 164	$ 158	$ 78	$ 354	$ 14	$ 25	$ 13	$ 82	$ 4	$ 2,073	$ 1,075	$ 5,827	$ 269
Grand Total		$ 375				$ 5,898				$ 603				$ 124				$ 9,244			
OPTION 3																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 57	$ 14	$ 303	$ 16
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5	$ 3	$ 39	$ 2	$ 80	$ 54	$ 662	$ 36
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3	$ 2	$ 9	$ 0	$ 78	$ 53	$ 257	$ 11
	25	$ -	$ -	$ -	$ -	$ 331	$ 244	$ 1,151	$ 40	$ -	$ -	$ -	$ -	$ 7	$ 5	$ 20	$ 1	$ 440	$ 312	$ 1,451	$ 49
	70	$ -	$ -	$ -	$ -	$ 158	$ 95	$ 634	$ 42	$ -	$ -	$ -	$ -	$ 4	$ 2	$ 14	$ 1	$ 197	$ 115	$ 759	$ 49
	200	$ -	$ -	$ -	$ -	$ 228	$ 27	$ -	$ -	$ -	$ -	$ -	$ -	$ 6	$ 1	$ -	$ -	$ 289	$ 33	$ -	$ -
Total		$ -	$ -	$ -	$ -	$ 716	$ 366	$ 1,784	$ 82	$ -	$ -	$ -	$ -	$ 25	$ 13	$ 82	$ 4	$ 1,141	$ 583	$ 3,432	$ 161
Grand Total		$ -				$ 2,949				$ -				$ 124				$ 5,316			
OPTION 4																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 57	$ 14	$ 303	$ 16
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5	$ 3	$ 39	$ 2	$ 80	$ 54	$ 662	$ 36
	7.5	$ 58	$ 49	$ 257	$ 12	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3	$ 2	$ 9	$ 0	$ 136	$ 102	$ 514	$ 23
	25	$ -	$ -	$ -	$ -	$ 662	$ 488	$ 2,301	$ 81	$ -	$ -	$ -	$ -	$ 7	$ 5	$ 20	$ 1	$ 771	$ 557	$ 2,601	$ 90
	70	$ -	$ -	$ -	$ -	$ 316	$ 190	$ 1,267	$ 83	$ -	$ -	$ -	$ -	$ 4	$ 2	$ 14	$ 1	$ 355	$ 211	$ 1,392	$ 91
	200	$ -	$ -	$ -	$ -	$ 455	$ 54	$ -	$ -	$ -	$ -	$ -	$ -	$ 6	$ 1	$ -	$ -	$ 517	$ 60	$ -	$ -
Total		$ 58	$ 49	$ 257	$ 12	$ 1,433	$ 733	$ 3,568	$ 164	$ -	$ -	$ -	$ -	$ 25	$ 13	$ 82	$ 4	$ 1,916	$ 998	$ 5,472	$ 255
Grand Total		$ 375				$ 5,898				$ -				$ 124				$ 8,641			

B-13. State BMP Costs (continued)

DE	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
OPTION 1																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 31	$ 8	$ 164	$ 8
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10	$ 7	$ 85	$ 5	$ 3	$ 2	$ 21	$ 1	$ 54	$ 36	$ 444	$ 24
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12	$ 8	$ 41	$ 2	$ 2	$ 1	$ 5	$ 0	$ 55	$ 37	$ 181	$ 7
25	$ -	$ -	$ -	$ -	$ 359	$ 264	$ 1,248	$ 44	$ 39	$ 25	$ 108	$ 3	$ 4	$ 2	$ 11	$ 0	$ 457	$ 326	$ 1,519	$ 52
70	$ -	$ -	$ -	$ -	$ 169	$ 103	$ 687	$ 45	$ 13	$ 7	$ 43	$ 2	$ 2	$ 1	$ 7	$ 0	$ 204	$ 121	$ 798	$ 51
200	$ -	$ -	$ -	$ -	$ 244	$ 29	$ -	$ -	$ 20	$ 2	$ -	$ -	$ 3	$ 0	$ -	$ -	$ 297	$ 34	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 772	$ 396	$ 1,935	$ 88	$ 95	$ 49	$ 277	$ 12	$ 14	$ 7	$ 45	$ 2	$ 1,097	$ 562	$ 3,105	$ 143
Grand Total	$ -				$ 3,191				$ 433				$ 67				$ 4,908			
OPTION 2																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 31	$ 8	$ 164	$ 8
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 41	$ 28	$ 338	$ 18
7.5	$ 31	$ 26	$ 139	$ 7	$ -	$ -	$ -	$ -	$ 12	$ 8	$ 41	$ 2	$ 2	$ 1	$ 5	$ 0	$ 86	$ 64	$ 320	$ 14
25	$ -	$ -	$ -	$ -	$ 359	$ 264	$ 1,248	$ 44	$ 39	$ 25	$ 108	$ 3	$ 4	$ 2	$ 11	$ 0	$ 457	$ 326	$ 1,519	$ 52
70	$ -	$ -	$ -	$ -	$ 169	$ 103	$ 687	$ 45	$ 13	$ 7	$ 43	$ 2	$ 2	$ 1	$ 7	$ 0	$ 204	$ 121	$ 798	$ 51
200	$ -	$ -	$ -	$ -	$ 244	$ 29	$ -	$ -	$ 20	$ 2	$ -	$ -	$ 3	$ 0	$ -	$ -	$ 297	$ 34	$ -	$ -
Total	$ 31	$ 26	$ 139	$ 7	$ 772	$ 396	$ 1,935	$ 88	$ 85	$ 42	$ 192	$ 7	$ 11	$ 5	$ 23	$ 1	$ 1,116	$ 580	$ 3,138	$ 144
Grand Total	$ 204				$ 3,191				$ 327				$ 41				$ 4,978			
OPTION 3																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 31	$ 8	$ 164	$ 8
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 41	$ 28	$ 338	$ 18
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 41	$ 28	$ 134	$ 5
25	$ -	$ -	$ -	$ -	$ 359	$ 264	$ 1,248	$ 44	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 414	$ 299	$ 1,400	$ 48
70	$ -	$ -	$ -	$ -	$ 169	$ 103	$ 687	$ 45	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 188	$ 113	$ 747	$ 48
200	$ -	$ -	$ -	$ -	$ 244	$ 29	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 274	$ 32	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 772	$ 396	$ 1,935	$ 88	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 988	$ 507	$ 2,784	$ 129
Grand Total	$ -				$ 3,191				$ -				$ -				$ 4,407			
OPTION 4																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 31	$ 8	$ 164	$ 8
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 41	$ 28	$ 338	$ 18
7.5	$ 31	$ 26	$ 139	$ 7	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2	$ 1	$ 5	$ 0	$ 74	$ 55	$ 279	$ 12
25	$ -	$ -	$ -	$ -	$ 359	$ 264	$ 1,248	$ 44	$ -	$ -	$ -	$ -	$ 4	$ 2	$ 11	$ 0	$ 418	$ 301	$ 1,410	$ 49
70	$ -	$ -	$ -	$ -	$ 169	$ 103	$ 687	$ 45	$ -	$ -	$ -	$ -	$ 2	$ 1	$ 7	$ 0	$ 190	$ 114	$ 755	$ 49
200	$ -	$ -	$ -	$ -	$ 244	$ 29	$ -	$ -	$ -	$ -	$ -	$ -	$ 3	$ 0	$ -	$ -	$ 277	$ 32	$ -	$ -
Total	$ 31	$ 26	$ 139	$ 7	$ 772	$ 396	$ 1,935	$ 88	$ -	$ -	$ -	$ -	$ 11	$ 5	$ 23	$ 1	$ 1,031	$ 538	$ 2,946	$ 136
Grand Total	$ 204				$ 3,191				$ -				$ 41				$ 4,651			

B-13. State BMP Costs (continued)

FL		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 961	$ 239	$ 5,098	$ 263
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 318	$ 216	$ 2,632	$ 144	$ 79	$ 54	$ 656	$ 36	$ 1,664	$ 1,128	$ 13,775	$ 752
	7.5	$ 974	$ 818	$ 4,316	$ 207	$ -	$ -	$ -	$ -	$ 385	$ 263	$ 1,271	$ 52	$ 48	$ 33	$ 158	$ 6	$ 2,669	$ 1,975	$ 9,915	$ 437
	25	$ -	$ -	$ -	$ -	$ 11,143	$ 8,201	$ 38,733	$ 1,341	$ 1,220	$ 764	$ 3,363	$ 102	$ 122	$ 76	$ 336	$ 10	$ 14,196	$ 10,113	$ 47,148	$ 1,597
	70	$ -	$ -	$ -	$ -	$ 5,279	$ 3,209	$ 21,286	$ 1,354	$ 416	$ 215	$ 1,328	$ 74	$ 73	$ 38	$ 232	$ 13	$ 6,353	$ 3,764	$ 24,717	$ 1,546
	200	$ -	$ -	$ -	$ -	$ 7,482	$ 759	$ -	$ -	$ 613	$ 53	$ -	$ -	$ 102	$ 9	$ -	$ -	$ 9,111	$ 900	$ -	$ -
Total		$ 974	$ 818	$ 4,316	$ 207	$ 23,904	$ 12,169	$ 60,019	$ 2,695	$ 2,952	$ 1,510	$ 8,594	$ 372	$ 424	$ 209	$ 1,382	$ 65	$ 34,955	$ 18,119	$ 100,652	$ 4,594
Grand Total		$ 6,315				$ 98,787				$ 13,428				$ 2,080				$ 158,321			
OPTION 2																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 961	$ 239	$ 5,098	$ 263
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 79	$ 54	$ 656	$ 36	$ 1,346	$ 913	$ 11,143	$ 608
	7.5	$ 974	$ 818	$ 4,316	$ 207	$ -	$ -	$ -	$ -	$ 385	$ 263	$ 1,271	$ 52	$ 48	$ 33	$ 158	$ 6	$ 2,669	$ 1,975	$ 9,915	$ 437
	25	$ -	$ -	$ -	$ -	$ 11,143	$ 8,201	$ 38,733	$ 1,341	$ 1,220	$ 764	$ 3,363	$ 102	$ 122	$ 76	$ 336	$ 10	$ 14,196	$ 10,113	$ 47,148	$ 1,597
	70	$ -	$ -	$ -	$ -	$ 5,279	$ 3,209	$ 21,286	$ 1,354	$ 416	$ 215	$ 1,328	$ 74	$ 73	$ 38	$ 232	$ 13	$ 6,353	$ 3,764	$ 24,717	$ 1,546
	200	$ -	$ -	$ -	$ -	$ 7,482	$ 759	$ -	$ -	$ 613	$ 53	$ -	$ -	$ 102	$ 9	$ -	$ -	$ 9,111	$ 900	$ -	$ -
Total		$ 974	$ 818	$ 4,316	$ 207	$ 23,904	$ 12,169	$ 60,019	$ 2,695	$ 2,634	$ 1,295	$ 5,962	$ 228	$ 424	$ 209	$ 1,382	$ 65	$ 34,637	$ 17,904	$ 98,020	$ 4,450
Grand Total		$ 6,315				$ 98,787				$ 10,119				$ 2,080				$ 155,012			
OPTION 3																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 961	$ 239	$ 5,098	$ 263
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 79	$ 54	$ 656	$ 36	$ 1,346	$ 913	$ 11,143	$ 608
	7.5	$ 974	$ 818	$ 4,316	$ 207	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 48	$ 33	$ 158	$ 6	$ 2,284	$ 1,712	$ 8,644	$ 385
	25	$ -	$ -	$ -	$ -	$ 11,143	$ 8,201	$ 38,733	$ 1,341	$ -	$ -	$ -	$ -	$ 122	$ 76	$ 336	$ 10	$ 12,976	$ 9,349	$ 43,785	$ 1,495
	70	$ -	$ -	$ -	$ -	$ 5,279	$ 3,209	$ 21,286	$ 1,354	$ -	$ -	$ -	$ -	$ 73	$ 38	$ 232	$ 13	$ 5,937	$ 3,550	$ 23,389	$ 1,472
	200	$ -	$ -	$ -	$ -	$ 7,482	$ 759	$ -	$ -	$ -	$ -	$ -	$ -	$ 102	$ 9	$ -	$ -	$ 8,497	$ 847	$ -	$ -
Total		$ 974	$ 818	$ 4,316	$ 207	$ 23,904	$ 12,169	$ 60,019	$ 2,695	$ -	$ -	$ -	$ -	$ 424	$ 209	$ 1,382	$ 65	$ 32,003	$ 16,609	$ 92,059	$ 4,222
Grand Total		$ 6,315				$ 98,787				$ -				$ 2,080				$ 144,893			
OPTION 4																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 961	$ 239	$ 5,098	$ 263
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 79	$ 54	$ 656	$ 36	$ 1,346	$ 913	$ 11,143	$ 608
	7.5	$ 974	$ 818	$ 4,316	$ 207	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 48	$ 33	$ 158	$ 6	$ 2,284	$ 1,712	$ 8,644	$ 385
	25	$ -	$ -	$ -	$ -	$ 11,143	$ 8,201	$ 38,733	$ 1,341	$ -	$ -	$ -	$ -	$ 122	$ 76	$ 336	$ 10	$ 12,976	$ 9,349	$ 43,785	$ 1,495
	70	$ -	$ -	$ -	$ -	$ 5,279	$ 3,209	$ 21,286	$ 1,354	$ -	$ -	$ -	$ -	$ 73	$ 38	$ 232	$ 13	$ 5,937	$ 3,550	$ 23,389	$ 1,472
	200	$ -	$ -	$ -	$ -	$ 7,482	$ 759	$ -	$ -	$ -	$ -	$ -	$ -	$ 102	$ 9	$ -	$ -	$ 8,497	$ 847	$ -	$ -
Total		$ 974	$ 818	$ 4,316	$ 207	$ 23,904	$ 12,169	$ 60,019	$ 2,695	$ -	$ -	$ -	$ -	$ 424	$ 209	$ 1,382	$ 65	$ 32,003	$ 16,609	$ 92,059	$ 4,222
Grand Total		$ 6,315				$ 98,787				$ -				$ 2,080				$ 144,893			

B-13. State BMP Costs (continued)

GA		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 901	$ 225	$ 4,774	$ 247
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 298	$ 202	$ 2,464	$ 135	$ 74	$ 50	$ 615	$ 34	$ 1,560	$ 1,057	$ 12,898	$ 704
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 360	$ 246	$ 1,190	$ 49	$ 45	$ 31	$ 148	$ 6	$ 1,588	$ 1,085	$ 5,245	$ 214
	25	$ -	$ -	$ -	$ -	$ 5,219	$ 3,845	$ 18,134	$ 640	$ 1,143	$ 717	$ 3,149	$ 98	$ 114	$ 71	$ 314	$ 10	$ 8,079	$ 5,638	$ 26,013	$ 884
	70	$ -	$ -	$ -	$ -	$ 2,481	$ 1,500	$ 9,981	$ 657	$ 391	$ 201	$ 1,245	$ 72	$ 68	$ 35	$ 217	$ 13	$ 3,491	$ 2,019	$ 13,198	$ 843
	200	$ -	$ -	$ -	$ -	$ 3,568	$ 411	$ -	$ -	$ 585	$ 57	$ -	$ -	$ 97	$ 10	$ -	$ -	$ 5,121	$ 563	$ -	$ -
Total		$ -	$ -	$ -	$ -	$ 11,267	$ 5,756	$ 28,114	$ 1,297	$ 2,777	$ 1,423	$ 8,049	$ 353	$ 399	$ 197	$ 1,295	$ 62	$ 20,739	$ 10,587	$ 62,128	$ 2,892
Grand Total		$ -				$ 46,435				$ 12,602				$ 1,952				$ 96,345			
OPTION 2																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 901	$ 225	$ 4,774	$ 247
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 74	$ 50	$ 615	$ 34	$ 1,262	$ 855	$ 10,434	$ 569
	7.5	$ 913	$ 766	$ 4,044	$ 193	$ -	$ -	$ -	$ -	$ 360	$ 246	$ 1,190	$ 49	$ 45	$ 31	$ 148	$ 6	$ 2,501	$ 1,851	$ 9,289	$ 408
	25	$ -	$ -	$ -	$ -	$ 10,437	$ 7,691	$ 36,267	$ 1,279	$ 1,143	$ 717	$ 3,149	$ 98	$ 114	$ 71	$ 314	$ 10	$ 13,297	$ 9,484	$ 44,147	$ 1,523
	70	$ -	$ -	$ -	$ -	$ 4,961	$ 3,000	$ 19,961	$ 1,314	$ 391	$ 201	$ 1,245	$ 72	$ 68	$ 35	$ 217	$ 13	$ 5,971	$ 3,520	$ 23,178	$ 1,500
	200	$ -	$ -	$ -	$ -	$ 7,137	$ 822	$ -	$ -	$ 585	$ 57	$ -	$ -	$ 97	$ 10	$ -	$ -	$ 8,690	$ 974	$ -	$ -
Total		$ 913	$ 766	$ 4,044	$ 193	$ 22,535	$ 11,513	$ 56,228	$ 2,593	$ 2,479	$ 1,221	$ 5,585	$ 218	$ 399	$ 197	$ 1,295	$ 62	$ 32,621	$ 16,908	$ 91,821	$ 4,247
Grand Total		$ 5,916				$ 92,869				$ 9,503				$ 1,952				$ 145,597			
OPTION 3																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 901	$ 225	$ 4,774	$ 247
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 74	$ 50	$ 615	$ 34	$ 1,262	$ 855	$ 10,434	$ 569
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 45	$ 31	$ 148	$ 6	$ 1,227	$ 838	$ 4,054	$ 166
	25	$ -	$ -	$ -	$ -	$ 5,219	$ 3,845	$ 18,134	$ 640	$ -	$ -	$ -	$ -	$ 114	$ 71	$ 314	$ 10	$ 6,936	$ 4,922	$ 22,864	$ 786
	70	$ -	$ -	$ -	$ -	$ 2,481	$ 1,500	$ 9,981	$ 657	$ -	$ -	$ -	$ -	$ 68	$ 35	$ 217	$ 13	$ 3,100	$ 1,818	$ 11,953	$ 771
	200	$ -	$ -	$ -	$ -	$ 3,568	$ 411	$ -	$ -	$ -	$ -	$ -	$ -	$ 97	$ 10	$ -	$ -	$ 4,536	$ 506	$ -	$ -
Total		$ -	$ -	$ -	$ -	$ 11,267	$ 5,756	$ 28,114	$ 1,297	$ -	$ -	$ -	$ -	$ 399	$ 197	$ 1,295	$ 62	$ 17,961	$ 9,164	$ 54,079	$ 2,539
Grand Total		$ -				$ 46,435				$ -				$ 1,952				$ 83,743			
OPTION 4																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 901	$ 225	$ 4,774	$ 247
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 74	$ 50	$ 615	$ 34	$ 1,262	$ 855	$ 10,434	$ 569
	7.5	$ 913	$ 766	$ 4,044	$ 193	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 45	$ 31	$ 148	$ 6	$ 2,140	$ 1,605	$ 8,098	$ 359
	25	$ -	$ -	$ -	$ -	$ 10,437	$ 7,691	$ 36,267	$ 1,279	$ -	$ -	$ -	$ -	$ 114	$ 71	$ 314	$ 10	$ 12,154	$ 8,767	$ 40,998	$ 1,426
	70	$ -	$ -	$ -	$ -	$ 4,961	$ 3,000	$ 19,961	$ 1,314	$ -	$ -	$ -	$ -	$ 68	$ 35	$ 217	$ 13	$ 5,581	$ 3,319	$ 21,934	$ 1,428
	200	$ -	$ -	$ -	$ -	$ 7,137	$ 822	$ -	$ -	$ -	$ -	$ -	$ -	$ 97	$ 10	$ -	$ -	$ 8,104	$ 916	$ -	$ -
Total		$ 913	$ 766	$ 4,044	$ 193	$ 22,535	$ 11,513	$ 56,228	$ 2,593	$ -	$ -	$ -	$ -	$ 399	$ 197	$ 1,295	$ 62	$ 30,142	$ 15,687	$ 86,237	$ 4,029
Grand Total		$ 5,916				$ 92,869				$ -				$ 1,952				$ 136,094			

B-13. State BMP Costs (continued)

IA	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 81	$ 20	$ 432	$ 22
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 27	$ 18	$ 223	$ 12	$ 7	$ 5	$ 56	$ 3	$ 141	$ 96	$ 1,167	$ 64
7.5	$ 83	$ 69	$ 366	$ 17	$ -	$ -	$ -	$ -	$ 33	$ 22	$ 108	$ 4	$ 4	$ 3	$ 13	$ 1	$ 226	$ 167	$ 840	$ 37
25	$ -	$ -	$ -	$ -	$ 944	$ 696	$ 3,281	$ 116	$ 103	$ 65	$ 285	$ 9	$ 10	$ 6	$ 28	$ 1	$ 1,203	$ 858	$ 3,994	$ 138
70	$ -	$ -	$ -	$ -	$ 449	$ 271	$ 1,804	$ 118	$ 35	$ 18	$ 113	$ 6	$ 6	$ 3	$ 20	$ 1	$ 540	$ 318	$ 2,095	$ 135
200	$ -	$ -	$ -	$ -	$ 647	$ 72	$ -	$ -	$ 53	$ 5	$ -	$ -	$ 9	$ 1	$ -	$ -	$ 788	$ 85	$ -	$ -
Total	$ 83	$ 69	$ 366	$ 17	$ 2,040	$ 1,039	$ 5,085	$ 234	$ 251	$ 129	$ 728	$ 32	$ 36	$ 18	$ 117	$ 6	$ 2,980	$ 1,545	$ 8,528	$ 395
Grand Total	$ 535				$ 8,398				$ 1,140				$ 177				$ 13,448			
OPTION 2																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 81	$ 20	$ 432	$ 22
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7	$ 5	$ 56	$ 3	$ 114	$ 77	$ 944	$ 51
7.5	$ 83	$ 69	$ 366	$ 17	$ -	$ -	$ -	$ -	$ 33	$ 22	$ 108	$ 4	$ 4	$ 3	$ 13	$ 1	$ 226	$ 167	$ 840	$ 37
25	$ -	$ -	$ -	$ -	$ 944	$ 696	$ 3,281	$ 116	$ 103	$ 65	$ 285	$ 9	$ 10	$ 6	$ 28	$ 1	$ 1,203	$ 858	$ 3,994	$ 138
70	$ -	$ -	$ -	$ -	$ 449	$ 271	$ 1,804	$ 118	$ 35	$ 18	$ 113	$ 6	$ 6	$ 3	$ 20	$ 1	$ 540	$ 318	$ 2,095	$ 135
200	$ -	$ -	$ -	$ -	$ 647	$ 72	$ -	$ -	$ 53	$ 5	$ -	$ -	$ 9	$ 1	$ -	$ -	$ 788	$ 85	$ -	$ -
Total	$ 83	$ 69	$ 366	$ 17	$ 2,040	$ 1,039	$ 5,085	$ 234	$ 224	$ 110	$ 505	$ 20	$ 36	$ 18	$ 117	$ 6	$ 2,953	$ 1,527	$ 8,305	$ 383
Grand Total	$ 535				$ 8,398				$ 860				$ 177				$ 13,168			
OPTION 3																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 81	$ 20	$ 432	$ 22
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7	$ 5	$ 56	$ 3	$ 114	$ 77	$ 944	$ 51
7.5	$ 83	$ 69	$ 366	$ 17	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4	$ 3	$ 13	$ 1	$ 194	$ 145	$ 733	$ 32
25	$ -	$ -	$ -	$ -	$ 944	$ 696	$ 3,281	$ 116	$ -	$ -	$ -	$ -	$ 10	$ 6	$ 28	$ 1	$ 1,100	$ 793	$ 3,709	$ 129
70	$ -	$ -	$ -	$ -	$ 449	$ 271	$ 1,804	$ 118	$ -	$ -	$ -	$ -	$ 6	$ 3	$ 20	$ 1	$ 505	$ 300	$ 1,983	$ 128
200	$ -	$ -	$ -	$ -	$ 647	$ 72	$ -	$ -	$ -	$ -	$ -	$ -	$ 9	$ 1	$ -	$ -	$ 735	$ 80	$ -	$ -
Total	$ 83	$ 69	$ 366	$ 17	$ 2,040	$ 1,039	$ 5,085	$ 234	$ -	$ -	$ -	$ -	$ 36	$ 18	$ 117	$ 6	$ 2,729	$ 1,416	$ 7,800	$ 364
Grand Total	$ 535				$ 8,398				$ -				$ 177				$ 12,309			
OPTION 4																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 81	$ 20	$ 432	$ 22
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7	$ 5	$ 56	$ 3	$ 114	$ 77	$ 944	$ 51
7.5	$ 83	$ 69	$ 366	$ 17	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4	$ 3	$ 13	$ 1	$ 194	$ 145	$ 733	$ 32
25	$ -	$ -	$ -	$ -	$ 944	$ 696	$ 3,281	$ 116	$ -	$ -	$ -	$ -	$ 10	$ 6	$ 28	$ 1	$ 1,100	$ 793	$ 3,709	$ 129
70	$ -	$ -	$ -	$ -	$ 449	$ 271	$ 1,804	$ 118	$ -	$ -	$ -	$ -	$ 6	$ 3	$ 20	$ 1	$ 505	$ 300	$ 1,983	$ 128
200	$ -	$ -	$ -	$ -	$ 647	$ 72	$ -	$ -	$ -	$ -	$ -	$ -	$ 9	$ 1	$ -	$ -	$ 735	$ 80	$ -	$ -
Total	$ 83	$ 69	$ 366	$ 17	$ 2,040	$ 1,039	$ 5,085	$ 234	$ -	$ -	$ -	$ -	$ 36	$ 18	$ 117	$ 6	$ 2,729	$ 1,416	$ 7,800	$ 364
Grand Total	$ 535				$ 8,398				$ -				$ 177				$ 12,309			

B-13. State BMP Costs (continued)

ID	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 114	$ 28	$ 607	$ 31
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 38	$ 26	$ 313	$ 17	$ 9	$ 6	$ 78	$ 4	$ 198	$ 134	$ 1,640	$ 89
7.5	$ 115	$ 97	$ 514	$ 24	$ -	$ -	$ -	$ -	$ 46	$ 31	$ 151	$ 6	$ 6	$ 4	$ 19	$ 1	$ 316	$ 234	$ 1,180	$ 50
25	$ -	$ -	$ -	$ -	$ 1,324	$ 974	$ 4,612	$ 154	$ 145	$ 91	$ 400	$ 12	$ 14	$ 9	$ 40	$ 1	$ 1,686	$ 1,201	$ 5,614	$ 183
70	$ -	$ -	$ -	$ -	$ 614	$ 364	$ 2,526	$ 143	$ 48	$ 24	$ 158	$ 8	$ 8	$ 4	$ 28	$ 1	$ 739	$ 427	$ 2,933	$ 163
200	$ -	$ -	$ -	$ -	$ 860	$ 46	$ -	$ -	$ 70	$ 3	$ -	$ -	$ 12	$ 1	$ -	$ -	$ 1,047	$ 55	$ -	$ -
Total	$ 115	$ 97	$ 514	$ 24	$ 2,797	$ 1,384	$ 7,138	$ 297	$ 347	$ 175	$ 1,023	$ 43	$ 50	$ 24	$ 164	$ 8	$ 4,100	$ 2,079	$ 11,975	$ 517
Grand Total	$ 749				$ 11,617				$ 1,588				$ 246				$ 18,671			
OPTION 2																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 114	$ 28	$ 607	$ 31
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9	$ 6	$ 78	$ 4	$ 160	$ 109	$ 1,327	$ 72
7.5	$ 115	$ 97	$ 514	$ 24	$ -	$ -	$ -	$ -	$ 46	$ 31	$ 151	$ 6	$ 6	$ 4	$ 19	$ 1	$ 316	$ 234	$ 1,180	$ 50
25	$ -	$ -	$ -	$ -	$ 1,324	$ 974	$ 4,612	$ 154	$ 145	$ 91	$ 400	$ 12	$ 14	$ 9	$ 40	$ 1	$ 1,686	$ 1,201	$ 5,614	$ 183
70	$ -	$ -	$ -	$ -	$ 614	$ 364	$ 2,526	$ 143	$ 48	$ 24	$ 158	$ 8	$ 8	$ 4	$ 28	$ 1	$ 739	$ 427	$ 2,933	$ 163
200	$ -	$ -	$ -	$ -	$ 860	$ 46	$ -	$ -	$ 70	$ 3	$ -	$ -	$ 12	$ 1	$ -	$ -	$ 1,047	$ 55	$ -	$ -
Total	$ 115	$ 97	$ 514	$ 24	$ 2,797	$ 1,384	$ 7,138	$ 297	$ 309	$ 149	$ 709	$ 26	$ 50	$ 24	$ 164	$ 8	$ 4,062	$ 2,054	$ 11,661	$ 500
Grand Total	$ 749				$ 11,617				$ 1,194				$ 246				$ 18,278			
OPTION 3																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 114	$ 28	$ 607	$ 31
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9	$ 6	$ 78	$ 4	$ 160	$ 109	$ 1,327	$ 72
7.5	$ 115	$ 97	$ 514	$ 24	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6	$ 4	$ 19	$ 1	$ 270	$ 203	$ 1,028	$ 44
25	$ -	$ -	$ -	$ -	$ 1,324	$ 974	$ 4,612	$ 154	$ -	$ -	$ -	$ -	$ 14	$ 9	$ 40	$ 1	$ 1,541	$ 1,110	$ 5,214	$ 172
70	$ -	$ -	$ -	$ -	$ 614	$ 364	$ 2,526	$ 143	$ -	$ -	$ -	$ -	$ 8	$ 4	$ 28	$ 1	$ 690	$ 403	$ 2,776	$ 156
200	$ -	$ -	$ -	$ -	$ 860	$ 46	$ -	$ -	$ -	$ -	$ -	$ -	$ 12	$ 1	$ -	$ -	$ 976	$ 51	$ -	$ -
Total	$ 115	$ 97	$ 514	$ 24	$ 2,797	$ 1,384	$ 7,138	$ 297	$ -	$ -	$ -	$ -	$ 50	$ 24	$ 164	$ 8	$ 3,753	$ 1,904	$ 10,952	$ 475
Grand Total	$ 749				$ 11,617				$ -				$ 246				$ 17,084			
OPTION 4																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 114	$ 28	$ 607	$ 31
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9	$ 6	$ 78	$ 4	$ 160	$ 109	$ 1,327	$ 72
7.5	$ 115	$ 97	$ 514	$ 24	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6	$ 4	$ 19	$ 1	$ 270	$ 203	$ 1,028	$ 44
25	$ -	$ -	$ -	$ -	$ 1,324	$ 974	$ 4,612	$ 154	$ -	$ -	$ -	$ -	$ 14	$ 9	$ 40	$ 1	$ 1,541	$ 1,110	$ 5,214	$ 172
70	$ -	$ -	$ -	$ -	$ 614	$ 364	$ 2,526	$ 143	$ -	$ -	$ -	$ -	$ 8	$ 4	$ 28	$ 1	$ 690	$ 403	$ 2,776	$ 156
200	$ -	$ -	$ -	$ -	$ 860	$ 46	$ -	$ -	$ -	$ -	$ -	$ -	$ 12	$ 1	$ -	$ -	$ 976	$ 51	$ -	$ -
Total	$ 115	$ 97	$ 514	$ 24	$ 2,797	$ 1,384	$ 7,138	$ 297	$ -	$ -	$ -	$ -	$ 50	$ 24	$ 164	$ 8	$ 3,753	$ 1,904	$ 10,952	$ 475
Grand Total	$ 749				$ 11,617				$ -				$ 246				$ 17,084			

B-13. State BMP Costs (continued)

IL	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1 (Site Sizes in Acres)	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 334	$ 83	$ 1,771	$ 92
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 110	$ 75	$ 914	$ 50	$ 28	$ 19	$ 228	$ 12	$ 578	$ 392	$ 4,785	$ 261
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 134	$ 91	$ 442	$ 18	$ 17	$ 11	$ 55	$ 2	$ 589	$ 403	$ 1,946	$ 80
25	$ -	$ -	$ -	$ -	$ 1,936	$ 1,427	$ 6,727	$ 236	$ 424	$ 266	$ 1,168	$ 36	$ 42	$ 27	$ 117	$ 4	$ 2,998	$ 2,093	$ 9,649	$ 327
70	$ -	$ -	$ -	$ -	$ 920	$ 555	$ 3,705	$ 243	$ 145	$ 74	$ 462	$ 27	$ 25	$ 13	$ 81	$ 5	$ 1,294	$ 748	$ 4,899	$ 311
200	$ -	$ -	$ -	$ -	$ 1,319	$ 147	$ -	$ -	$ 216	$ 20	$ -	$ -	$ 36	$ 3	$ -	$ -	$ 1,893	$ 201	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 4,175	$ 2,129	$ 10,431	$ 479	$ 1,030	$ 527	$ 2,986	$ 131	$ 148	$ 73	$ 480	$ 23	$ 7,687	$ 3,919	$ 23,050	$ 1,070
Grand Total	$ -				$ 17,215				$ 4,673				$ 724				$ 35,726			
OPTION 2 (Site Sizes in Acres)																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 334	$ 83	$ 1,771	$ 92
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 28	$ 19	$ 228	$ 12	$ 468	$ 317	$ 3,871	$ 211
7.5	$ 339	$ 284	$ 1,500	$ 72	$ -	$ -	$ -	$ -	$ 134	$ 91	$ 442	$ 18	$ 17	$ 11	$ 55	$ 2	$ 928	$ 687	$ 3,446	$ 151
25	$ -	$ -	$ -	$ -	$ 3,873	$ 2,854	$ 13,453	$ 473	$ 424	$ 266	$ 1,168	$ 36	$ 42	$ 27	$ 117	$ 4	$ 4,934	$ 3,520	$ 16,376	$ 563
70	$ -	$ -	$ -	$ -	$ 1,840	$ 1,111	$ 7,410	$ 485	$ 145	$ 74	$ 462	$ 27	$ 25	$ 13	$ 81	$ 5	$ 2,214	$ 1,303	$ 8,604	$ 554
200	$ -	$ -	$ -	$ -	$ 2,638	$ 294	$ -	$ -	$ 216	$ 20	$ -	$ -	$ 36	$ 3	$ -	$ -	$ 3,212	$ 348	$ -	$ -
Total	$ 339	$ 284	$ 1,500	$ 72	$ 8,351	$ 4,259	$ 20,863	$ 958	$ 919	$ 452	$ 2,072	$ 81	$ 148	$ 73	$ 480	$ 23	$ 12,090	$ 6,258	$ 34,067	$ 1,571
Grand Total	$ 2,195				$ 34,430				$ 3,524				$ 724				$ 53,986			
OPTION 3 (Site Sizes in Acres)																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 334	$ 83	$ 1,771	$ 92
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 28	$ 19	$ 228	$ 12	$ 468	$ 317	$ 3,871	$ 211
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 17	$ 11	$ 55	$ 2	$ 455	$ 311	$ 1,504	$ 62
25	$ -	$ -	$ -	$ -	$ 1,936	$ 1,427	$ 6,727	$ 236	$ -	$ -	$ -	$ -	$ 42	$ 27	$ 117	$ 4	$ 2,573	$ 1,827	$ 8,481	$ 291
70	$ -	$ -	$ -	$ -	$ 920	$ 555	$ 3,705	$ 243	$ -	$ -	$ -	$ -	$ 25	$ 13	$ 81	$ 5	$ 1,149	$ 673	$ 4,437	$ 285
200	$ -	$ -	$ -	$ -	$ 1,319	$ 147	$ -	$ -	$ -	$ -	$ -	$ -	$ 36	$ 3	$ -	$ -	$ 1,677	$ 181	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 4,175	$ 2,129	$ 10,431	$ 479	$ -	$ -	$ -	$ -	$ 148	$ 73	$ 480	$ 23	$ 6,657	$ 3,392	$ 20,064	$ 940
Grand Total	$ -				$ 17,215				$ -				$ 724				$ 31,053			
OPTION 4 (Site Sizes in Acres)																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 334	$ 83	$ 1,771	$ 92
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 28	$ 19	$ 228	$ 12	$ 468	$ 317	$ 3,871	$ 211
7.5	$ 339	$ 284	$ 1,500	$ 72	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 17	$ 11	$ 55	$ 2	$ 794	$ 596	$ 3,004	$ 133
25	$ -	$ -	$ -	$ -	$ 3,873	$ 2,854	$ 13,453	$ 473	$ -	$ -	$ -	$ -	$ 42	$ 27	$ 117	$ 4	$ 4,510	$ 3,254	$ 15,208	$ 527
70	$ -	$ -	$ -	$ -	$ 1,840	$ 1,111	$ 7,410	$ 485	$ -	$ -	$ -	$ -	$ 25	$ 13	$ 81	$ 5	$ 2,069	$ 1,229	$ 8,142	$ 527
200	$ -	$ -	$ -	$ -	$ 2,638	$ 294	$ -	$ -	$ -	$ -	$ -	$ -	$ 36	$ 3	$ -	$ -	$ 2,996	$ 328	$ -	$ -
Total	$ 339	$ 284	$ 1,500	$ 72	$ 8,351	$ 4,259	$ 20,863	$ 958	$ -	$ -	$ -	$ -	$ 148	$ 73	$ 480	$ 23	$ 11,171	$ 5,806	$ 31,995	$ 1,490
Grand Total	$ 2,195				$ 34,430				$ -				$ 724				$ 50,463			

B-13. State BMP Costs (continued)

IN		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
	OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 244	$ 61	$ 1,291	$ 67
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 81	$ 55	$ 666	$ 36	$ 20	$ 14	$ 166	$ 9	$ 422	$ 286	$ 3,488	$ 190
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 97	$ 67	$ 322	$ 13	$ 12	$ 8	$ 40	$ 2	$ 429	$ 293	$ 1,418	$ 58
	25	$ -	$ -	$ -	$ -	$ 1,411	$ 1,040	$ 4,903	$ 173	$ 309	$ 194	$ 852	$ 26	$ 31	$ 19	$ 85	$ 3	$ 2,185	$ 1,525	$ 7,034	$ 238
	70	$ -	$ -	$ -	$ -	$ 671	$ 405	$ 2,700	$ 178	$ 106	$ 54	$ 337	$ 19	$ 18	$ 9	$ 59	$ 3	$ 944	$ 545	$ 3,570	$ 228
	200	$ -	$ -	$ -	$ -	$ 963	$ 109	$ -	$ -	$ 158	$ 15	$ -	$ -	$ 26	$ 3	$ -	$ -	$ 1,381	$ 149	$ -	$ -
	Total	$ -	$ -	$ -	$ -	$ 3,045	$ 1,554	$ 7,603	$ 350	$ 751	$ 384	$ 2,177	$ 95	$ 108	$ 53	$ 350	$ 17	$ 5,605	$ 2,859	$ 16,801	$ 781
	Grand Total	$ -				$ 12,552				$ 3,407				$ 528				$ 26,047			
	OPTION 2																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 244	$ 61	$ 1,291	$ 67
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 321	$ 218	$ 2,655	$ 145
	7.5	$ 247	$ 207	$ 1,093	$ 52	$ -	$ -	$ -	$ -	$ 97	$ 67	$ 322	$ 13	$ 12	$ 8	$ 40	$ 2	$ 676	$ 501	$ 2,512	$ 110
	25	$ -	$ -	$ -	$ -	$ 2,823	$ 2,080	$ 9,807	$ 345	$ 309	$ 194	$ 852	$ 26	$ 31	$ 19	$ 85	$ 3	$ 3,596	$ 2,565	$ 11,937	$ 411
	70	$ -	$ -	$ -	$ -	$ 1,342	$ 810	$ 5,400	$ 355	$ 106	$ 54	$ 337	$ 19	$ 18	$ 9	$ 59	$ 3	$ 1,615	$ 950	$ 6,270	$ 406
	200	$ -	$ -	$ -	$ -	$ 1,925	$ 218	$ -	$ -	$ 158	$ 15	$ -	$ -	$ 26	$ 3	$ -	$ -	$ 2,344	$ 258	$ -	$ -
	Total	$ 247	$ 207	$ 1,093	$ 52	$ 6,090	$ 3,107	$ 15,207	$ 700	$ 670	$ 330	$ 1,510	$ 59	$ 88	$ 40	$ 184	$ 8	$ 8,796	$ 4,552	$ 24,665	$ 1,138
	Grand Total	$ 1,600				$ 25,104				$ 2,569				$ 319				$ 39,152			
	OPTION 3																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 244	$ 61	$ 1,291	$ 67
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 321	$ 218	$ 2,655	$ 145
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 320	$ 218	$ 1,056	$ 43
	25	$ -	$ -	$ -	$ -	$ 1,411	$ 1,040	$ 4,903	$ 173	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,845	$ 1,312	$ 6,097	$ 209
	70	$ -	$ -	$ -	$ -	$ 671	$ 405	$ 2,700	$ 178	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 820	$ 481	$ 3,175	$ 205
	200	$ -	$ -	$ -	$ -	$ 963	$ 109	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,197	$ 131	$ -	$ -
	Total	$ -	$ -	$ -	$ -	$ 3,045	$ 1,554	$ 7,603	$ 350	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,747	$ 2,421	$ 14,274	$ 669
	Grand Total	$ -				$ 12,552				$ -				$ -				$ 22,112			
	OPTION 4																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 244	$ 61	$ 1,291	$ 67
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 321	$ 218	$ 2,655	$ 145
	7.5	$ 247	$ 207	$ 1,093	$ 52	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12	$ 8	$ 40	$ 2	$ 579	$ 434	$ 2,190	$ 97
	25	$ -	$ -	$ -	$ -	$ 2,823	$ 2,080	$ 9,807	$ 345	$ -	$ -	$ -	$ -	$ 31	$ 19	$ 85	$ 3	$ 3,287	$ 2,371	$ 11,086	$ 385
	70	$ -	$ -	$ -	$ -	$ 1,342	$ 810	$ 5,400	$ 355	$ -	$ -	$ -	$ -	$ 18	$ 9	$ 59	$ 3	$ 1,510	$ 895	$ 5,934	$ 386
	200	$ -	$ -	$ -	$ -	$ 1,925	$ 218	$ -	$ -	$ -	$ -	$ -	$ -	$ 26	$ 3	$ -	$ -	$ 2,186	$ 243	$ -	$ -
	Total	$ 247	$ 207	$ 1,093	$ 52	$ 6,090	$ 3,107	$ 15,207	$ 700	$ -	$ -	$ -	$ -	$ 88	$ 40	$ 184	$ 8	$ 8,126	$ 4,222	$ 23,155	$ 1,080
	Grand Total	$ 1,600				$ 25,104				$ -				$ 319				$ 36,583			

B-13. State BMP Costs (continued)

KS	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1 (Site Sizes in Acres)	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 115	$ 29	$ 610	$ 32
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 38	$ 26	$ 315	$ 17	$ 9	$ 6	$ 79	$ 4	$ 199	$ 135	$ 1,648	$ 90
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 46	$ 31	$ 152	$ 6	$ 6	$ 4	$ 19	$ 1	$ 203	$ 139	$ 670	$ 27
25	$ -	$ -	$ -	$ -	$ 1,334	$ 983	$ 4,634	$ 163	$ 146	$ 92	$ 402	$ 12	$ 15	$ 9	$ 40	$ 1	$ 1,699	$ 1,212	$ 5,641	$ 194
70	$ -	$ -	$ -	$ -	$ 633	$ 382	$ 2,548	$ 166	$ 50	$ 26	$ 159	$ 9	$ 9	$ 4	$ 28	$ 2	$ 762	$ 449	$ 2,958	$ 189
200	$ -	$ -	$ -	$ -	$ 910	$ 101	$ -	$ -	$ 75	$ 7	$ -	$ -	$ 12	$ 1	$ -	$ -	$ 1,108	$ 119	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 2,877	$ 1,466	$ 7,182	$ 329	$ 355	$ 181	$ 1,028	$ 45	$ 51	$ 25	$ 165	$ 8	$ 4,087	$ 2,082	$ 11,528	$ 532
Grand Total	$ -				$ 11,854				$ 1,609				$ 249				$ 18,229			
OPTION 2 (Site Sizes in Acres)																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 115	$ 29	$ 610	$ 32
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9	$ 6	$ 79	$ 4	$ 161	$ 109	$ 1,333	$ 73
7.5	$ 117	$ 98	$ 517	$ 25	$ -	$ -	$ -	$ -	$ 46	$ 31	$ 152	$ 6	$ 6	$ 4	$ 19	$ 1	$ 320	$ 236	$ 1,187	$ 52
25	$ -	$ -	$ -	$ -	$ 1,334	$ 983	$ 4,634	$ 163	$ 146	$ 92	$ 402	$ 12	$ 15	$ 9	$ 40	$ 1	$ 1,699	$ 1,212	$ 5,641	$ 194
70	$ -	$ -	$ -	$ -	$ 633	$ 382	$ 2,548	$ 166	$ 50	$ 26	$ 159	$ 9	$ 9	$ 4	$ 28	$ 2	$ 762	$ 449	$ 2,958	$ 189
200	$ -	$ -	$ -	$ -	$ 910	$ 101	$ -	$ -	$ 75	$ 7	$ -	$ -	$ 12	$ 1	$ -	$ -	$ 1,108	$ 119	$ -	$ -
Total	$ 117	$ 98	$ 517	$ 25	$ 2,877	$ 1,466	$ 7,182	$ 329	$ 317	$ 156	$ 713	$ 28	$ 51	$ 25	$ 165	$ 8	$ 4,166	$ 2,154	$ 11,730	$ 540
Grand Total	$ 756				$ 11,854				$ 1,213				$ 249				$ 18,589			
OPTION 3 (Site Sizes in Acres)																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 115	$ 29	$ 610	$ 32
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9	$ 6	$ 79	$ 4	$ 161	$ 109	$ 1,333	$ 73
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6	$ 4	$ 19	$ 1	$ 157	$ 107	$ 518	$ 21
25	$ -	$ -	$ -	$ -	$ 1,334	$ 983	$ 4,634	$ 163	$ -	$ -	$ -	$ -	$ 15	$ 9	$ 40	$ 1	$ 1,553	$ 1,120	$ 5,239	$ 182
70	$ -	$ -	$ -	$ -	$ 633	$ 382	$ 2,548	$ 166	$ -	$ -	$ -	$ -	$ 9	$ 4	$ 28	$ 2	$ 712	$ 423	$ 2,799	$ 180
200	$ -	$ -	$ -	$ -	$ 910	$ 101	$ -	$ -	$ -	$ -	$ -	$ -	$ 12	$ 1	$ -	$ -	$ 1,034	$ 112	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 2,877	$ 1,466	$ 7,182	$ 329	$ -	$ -	$ -	$ -	$ 51	$ 25	$ 165	$ 8	$ 3,732	$ 1,901	$ 10,500	$ 487
Grand Total	$ -				$ 11,854				$ -				$ 249				$ 16,620			
OPTION 4 (Site Sizes in Acres)																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 115	$ 29	$ 610	$ 32
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9	$ 6	$ 79	$ 4	$ 161	$ 109	$ 1,333	$ 73
7.5	$ 117	$ 98	$ 517	$ 25	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6	$ 4	$ 19	$ 1	$ 274	$ 205	$ 1,035	$ 46
25	$ -	$ -	$ -	$ -	$ 1,334	$ 983	$ 4,634	$ 163	$ -	$ -	$ -	$ -	$ 15	$ 9	$ 40	$ 1	$ 1,553	$ 1,120	$ 5,239	$ 182
70	$ -	$ -	$ -	$ -	$ 633	$ 382	$ 2,548	$ 166	$ -	$ -	$ -	$ -	$ 9	$ 4	$ 28	$ 2	$ 712	$ 423	$ 2,799	$ 180
200	$ -	$ -	$ -	$ -	$ 910	$ 101	$ -	$ -	$ -	$ -	$ -	$ -	$ 12	$ 1	$ -	$ -	$ 1,034	$ 112	$ -	$ -
Total	$ 117	$ 98	$ 517	$ 25	$ 2,877	$ 1,466	$ 7,182	$ 329	$ -	$ -	$ -	$ -	$ 51	$ 25	$ 165	$ 8	$ 3,849	$ 1,999	$ 11,017	$ 512
Grand Total	$ 756				$ 11,854				$ -				$ 249				$ 17,376			

B-13. State BMP Costs (continued)

KY		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
	OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 283	$ 71	$ 1,499	$ 78
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 94	$ 63	$ 774	$ 42	$ 23	$ 16	$ 193	$ 11	$ 490	$ 332	$ 4,050	$ 221
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 113	$ 77	$ 374	$ 15	$ 14	$ 10	$ 47	$ 2	$ 499	$ 341	$ 1,647	$ 67
	25	$ -	$ -	$ -	$ -	$ 3,277	$ 2,414	$ 11,389	$ 402	$ 359	$ 225	$ 989	$ 31	$ 36	$ 22	$ 99	$ 3	$ 4,175	$ 2,977	$ 13,864	$ 478
	70	$ -	$ -	$ -	$ -	$ 1,562	$ 940	$ 6,268	$ 416	$ 123	$ 63	$ 391	$ 23	$ 21	$ 11	$ 68	$ 4	$ 1,880	$ 1,103	$ 7,278	$ 475
	200	$ -	$ -	$ -	$ -	$ 2,241	$ 263	$ -	$ -	$ 184	$ 18	$ -	$ -	$ 31	$ 3	$ -	$ -	$ 2,729	$ 312	$ -	$ -
	Total	$ -	$ -	$ -	$ -	$ 7,080	$ 3,617	$ 17,657	$ 818	$ 872	$ 447	$ 2,528	$ 111	$ 125	$ 62	$ 407	$ 19	$ 10,055	$ 5,135	$ 28,338	$ 1,319
	Grand Total	$ -				$ 29,173				$ 3,958				$ 613				$ 44,848			
	OPTION 2																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 283	$ 71	$ 1,499	$ 78
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 23	$ 16	$ 193	$ 11	$ 396	$ 269	$ 3,276	$ 179
	7.5	$ 287	$ 241	$ 1,270	$ 61	$ -	$ -	$ -	$ -	$ 113	$ 77	$ 374	$ 15	$ 14	$ 10	$ 47	$ 2	$ 786	$ 581	$ 2,917	$ 128
	25	$ -	$ -	$ -	$ -	$ 3,277	$ 2,414	$ 11,389	$ 402	$ 359	$ 225	$ 989	$ 31	$ 36	$ 22	$ 99	$ 3	$ 4,175	$ 2,977	$ 13,864	$ 478
	70	$ -	$ -	$ -	$ -	$ 1,562	$ 940	$ 6,268	$ 416	$ 123	$ 63	$ 391	$ 23	$ 21	$ 11	$ 68	$ 4	$ 1,880	$ 1,103	$ 7,278	$ 475
	200	$ -	$ -	$ -	$ -	$ 2,241	$ 263	$ -	$ -	$ 184	$ 18	$ -	$ -	$ 31	$ 3	$ -	$ -	$ 2,729	$ 312	$ -	$ -
	Total	$ 287	$ 241	$ 1,270	$ 61	$ 7,080	$ 3,617	$ 17,657	$ 818	$ 779	$ 384	$ 1,754	$ 69	$ 125	$ 62	$ 407	$ 19	$ 10,249	$ 5,312	$ 28,834	$ 1,338
	Grand Total	$ 1,858				$ 29,173				$ 2,985				$ 613				$ 45,733			
	OPTION 3																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 283	$ 71	$ 1,499	$ 78
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 23	$ 16	$ 193	$ 11	$ 396	$ 269	$ 3,276	$ 179
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 14	$ 10	$ 47	$ 2	$ 386	$ 263	$ 1,273	$ 52
	25	$ -	$ -	$ -	$ -	$ 3,277	$ 2,414	$ 11,389	$ 402	$ -	$ -	$ -	$ -	$ 36	$ 22	$ 99	$ 3	$ 3,816	$ 2,752	$ 12,875	$ 448
	70	$ -	$ -	$ -	$ -	$ 1,562	$ 940	$ 6,268	$ 416	$ -	$ -	$ -	$ -	$ 21	$ 11	$ 68	$ 4	$ 1,757	$ 1,040	$ 6,888	$ 452
	200	$ -	$ -	$ -	$ -	$ 2,241	$ 263	$ -	$ -	$ -	$ -	$ -	$ -	$ 31	$ 3	$ -	$ -	$ 2,545	$ 293	$ -	$ -
	Total	$ -	$ -	$ -	$ -	$ 7,080	$ 3,617	$ 17,657	$ 818	$ -	$ -	$ -	$ -	$ 125	$ 62	$ 407	$ 19	$ 9,183	$ 4,688	$ 25,811	$ 1,208
	Grand Total	$ -				$ 29,173				$ -				$ 613				$ 40,890			
	OPTION 4																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 283	$ 71	$ 1,499	$ 78
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 23	$ 16	$ 193	$ 11	$ 396	$ 269	$ 3,276	$ 179
	7.5	$ 287	$ 241	$ 1,270	$ 61	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 14	$ 10	$ 47	$ 2	$ 673	$ 504	$ 2,543	$ 113
	25	$ -	$ -	$ -	$ -	$ 3,277	$ 2,414	$ 11,389	$ 402	$ -	$ -	$ -	$ -	$ 36	$ 22	$ 99	$ 3	$ 3,816	$ 2,752	$ 12,875	$ 448
	70	$ -	$ -	$ -	$ -	$ 1,562	$ 940	$ 6,268	$ 416	$ -	$ -	$ -	$ -	$ 21	$ 11	$ 68	$ 4	$ 1,757	$ 1,040	$ 6,888	$ 452
	200	$ -	$ -	$ -	$ -	$ 2,241	$ 263	$ -	$ -	$ -	$ -	$ -	$ -	$ 31	$ 3	$ -	$ -	$ 2,545	$ 293	$ -	$ -
	Total	$ 287	$ 241	$ 1,270	$ 61	$ 7,080	$ 3,617	$ 17,657	$ 818	$ -	$ -	$ -	$ -	$ 125	$ 62	$ 407	$ 19	$ 9,470	$ 4,928	$ 27,081	$ 1,269
	Grand Total	$ 1,858				$ 29,173				$ -				$ 613				$ 42,748			

B-13. State BMP Costs (continued)

LA	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1 (Site Sizes in Acres)	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 156	$ 39	$ 825	$ 43
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 52	$ 35	$ 426	$ 23	$ 13	$ 9	$ 106	$ 6	$ 270	$ 183	$ 2,230	$ 122
7.5	$ 158	$ 132	$ 699	$ 33	$ -	$ -	$ -	$ -	$ 62	$ 43	$ 206	$ 8	$ 8	$ 5	$ 26	$ 1	$ 433	$ 320	$ 1,606	$ 70
25	$ -	$ -	$ -	$ -	$ 1,805	$ 1,330	$ 6,269	$ 221	$ 198	$ 124	$ 544	$ 17	$ 20	$ 12	$ 54	$ 2	$ 2,300	$ 1,639	$ 7,631	$ 264
70	$ -	$ -	$ -	$ -	$ 857	$ 520	$ 3,450	$ 217	$ 67	$ 35	$ 215	$ 12	$ 12	$ 6	$ 38	$ 2	$ 1,031	$ 610	$ 4,006	$ 247
200	$ -	$ -	$ -	$ -	$ 1,235	$ 147	$ -	$ -	$ 101	$ 10	$ -	$ -	$ 17	$ 2	$ -	$ -	$ 1,504	$ 174	$ -	$ -
Total	$ 158	$ 132	$ 699	$ 33	$ 3,897	$ 1,997	$ 9,719	$ 438	$ 480	$ 246	$ 1,391	$ 60	$ 69	$ 34	$ 224	$ 11	$ 5,692	$ 2,965	$ 16,298	$ 745
Grand Total	$ 1,023				$ 16,050				$ 2,179				$ 338				$ 25,701			
OPTION 2 (Site Sizes in Acres)																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 156	$ 39	$ 825	$ 43
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13	$ 9	$ 106	$ 6	$ 218	$ 148	$ 1,804	$ 98
7.5	$ 158	$ 132	$ 699	$ 33	$ -	$ -	$ -	$ -	$ 62	$ 43	$ 206	$ 8	$ 8	$ 5	$ 26	$ 1	$ 433	$ 320	$ 1,606	$ 70
25	$ -	$ -	$ -	$ -	$ 1,805	$ 1,330	$ 6,269	$ 221	$ 198	$ 124	$ 544	$ 17	$ 20	$ 12	$ 54	$ 2	$ 2,300	$ 1,639	$ 7,631	$ 264
70	$ -	$ -	$ -	$ -	$ 857	$ 520	$ 3,450	$ 217	$ 67	$ 35	$ 215	$ 12	$ 12	$ 6	$ 38	$ 2	$ 1,031	$ 610	$ 4,006	$ 247
200	$ -	$ -	$ -	$ -	$ 1,235	$ 147	$ -	$ -	$ 101	$ 10	$ -	$ -	$ 17	$ 2	$ -	$ -	$ 1,504	$ 174	$ -	$ -
Total	$ 158	$ 132	$ 699	$ 33	$ 3,897	$ 1,997	$ 9,719	$ 438	$ 429	$ 212	$ 965	$ 37	$ 69	$ 34	$ 224	$ 11	$ 5,641	$ 2,930	$ 15,872	$ 722
Grand Total	$ 1,023				$ 16,050				$ 1,643				$ 338				$ 25,165			
OPTION 3 (Site Sizes in Acres)																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 156	$ 39	$ 825	$ 43
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13	$ 9	$ 106	$ 6	$ 218	$ 148	$ 1,804	$ 98
7.5	$ 158	$ 132	$ 699	$ 33	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8	$ 5	$ 26	$ 1	$ 370	$ 277	$ 1,400	$ 62
25	$ -	$ -	$ -	$ -	$ 1,805	$ 1,330	$ 6,269	$ 221	$ -	$ -	$ -	$ -	$ 20	$ 12	$ 54	$ 2	$ 2,102	$ 1,516	$ 7,087	$ 247
70	$ -	$ -	$ -	$ -	$ 857	$ 520	$ 3,450	$ 217	$ -	$ -	$ -	$ -	$ 12	$ 6	$ 38	$ 2	$ 964	$ 576	$ 3,791	$ 235
200	$ -	$ -	$ -	$ -	$ 1,235	$ 147	$ -	$ -	$ -	$ -	$ -	$ -	$ 17	$ 2	$ -	$ -	$ 1,402	$ 164	$ -	$ -
Total	$ 158	$ 132	$ 699	$ 33	$ 3,897	$ 1,997	$ 9,719	$ 438	$ -	$ -	$ -	$ -	$ 69	$ 34	$ 224	$ 11	$ 5,212	$ 2,719	$ 14,907	$ 685
Grand Total	$ 1,023				$ 16,050				$ -				$ 338				$ 23,522			
OPTION 4 (Site Sizes in Acres)																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 156	$ 39	$ 825	$ 43
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13	$ 9	$ 106	$ 6	$ 218	$ 148	$ 1,804	$ 98
7.5	$ 158	$ 132	$ 699	$ 33	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8	$ 5	$ 26	$ 1	$ 370	$ 277	$ 1,400	$ 62
25	$ -	$ -	$ -	$ -	$ 1,805	$ 1,330	$ 6,269	$ 221	$ -	$ -	$ -	$ -	$ 20	$ 12	$ 54	$ 2	$ 2,102	$ 1,516	$ 7,087	$ 247
70	$ -	$ -	$ -	$ -	$ 857	$ 520	$ 3,450	$ 217	$ -	$ -	$ -	$ -	$ 12	$ 6	$ 38	$ 2	$ 964	$ 576	$ 3,791	$ 235
200	$ -	$ -	$ -	$ -	$ 1,235	$ 147	$ -	$ -	$ -	$ -	$ -	$ -	$ 17	$ 2	$ -	$ -	$ 1,402	$ 164	$ -	$ -
Total	$ 158	$ 132	$ 699	$ 33	$ 3,897	$ 1,997	$ 9,719	$ 438	$ -	$ -	$ -	$ -	$ 69	$ 34	$ 224	$ 11	$ 5,212	$ 2,719	$ 14,907	$ 685
Grand Total	$ 1,023				$ 16,050				$ -				$ 338				$ 23,522			

B-13. State BMP Costs (continued)

MA		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 316	$ 79	$ 1,674	$ 87
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 104	$ 71	$ 864	$ 47	$ 26	$ 18	$ 216	$ 12	$ 547	$ 371	$ 4,522	$ 247
	7.5	$ 320	$ 269	$ 1,418	$ 68	$ -	$ -	$ -	$ -	$ 126	$ 86	$ 417	$ 17	$ 16	$ 11	$ 52	$ 2	$ 876	$ 649	$ 3,257	$ 143
	25	$ -	$ -	$ -	$ -	$ 3,657	$ 2,698	$ 12,718	$ 445	$ 401	$ 251	$ 1,104	$ 34	$ 40	$ 25	$ 110	$ 3	$ 4,660	$ 3,327	$ 15,481	$ 530
	70	$ -	$ -	$ -	$ -	$ 1,745	$ 1,052	$ 7,002	$ 461	$ 137	$ 70	$ 437	$ 25	$ 24	$ 12	$ 76	$ 4	$ 2,100	$ 1,234	$ 8,131	$ 526
	200	$ -	$ -	$ -	$ -	$ 2,515	$ 299	$ -	$ -	$ 206	$ 21	$ -	$ -	$ 34	$ 3	$ -	$ -	$ 3,062	$ 355	$ -	$ -
Total		$ 320	$ 269	$ 1,418	$ 68	$ 7,917	$ 4,050	$ 19,720	$ 906	$ 975	$ 500	$ 2,822	$ 123	$ 140	$ 69	$ 454	$ 22	$ 11,561	$ 6,014	$ 33,064	$ 1,532
Grand Total		$ 2,074				$ 32,592				$ 4,421				$ 685				$ 52,172			
OPTION 2																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 316	$ 79	$ 1,674	$ 87
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 26	$ 18	$ 216	$ 12	$ 442	$ 300	$ 3,658	$ 200
	7.5	$ 320	$ 269	$ 1,418	$ 68	$ -	$ -	$ -	$ -	$ 126	$ 86	$ 417	$ 17	$ 16	$ 11	$ 52	$ 2	$ 876	$ 649	$ 3,257	$ 143
	25	$ -	$ -	$ -	$ -	$ 3,657	$ 2,698	$ 12,718	$ 445	$ 401	$ 251	$ 1,104	$ 34	$ 40	$ 25	$ 110	$ 3	$ 4,660	$ 3,327	$ 15,481	$ 530
	70	$ -	$ -	$ -	$ -	$ 1,745	$ 1,052	$ 7,002	$ 461	$ 137	$ 70	$ 437	$ 25	$ 24	$ 12	$ 76	$ 4	$ 2,100	$ 1,234	$ 8,131	$ 526
	200	$ -	$ -	$ -	$ -	$ 2,515	$ 299	$ -	$ -	$ 206	$ 21	$ -	$ -	$ 34	$ 3	$ -	$ -	$ 3,062	$ 355	$ -	$ -
Total		$ 320	$ 269	$ 1,418	$ 68	$ 7,917	$ 4,050	$ 19,720	$ 906	$ 871	$ 429	$ 1,958	$ 76	$ 140	$ 69	$ 454	$ 22	$ 11,456	$ 5,944	$ 32,200	$ 1,485
Grand Total		$ 2,074				$ 32,592				$ 3,334				$ 685				$ 51,085			
OPTION 3																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 316	$ 79	$ 1,674	$ 87
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 26	$ 18	$ 216	$ 12	$ 442	$ 300	$ 3,658	$ 200
	7.5	$ 320	$ 269	$ 1,418	$ 68	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 16	$ 11	$ 52	$ 2	$ 750	$ 563	$ 2,839	$ 126
	25	$ -	$ -	$ -	$ -	$ 3,657	$ 2,698	$ 12,718	$ 445	$ -	$ -	$ -	$ -	$ 40	$ 25	$ 110	$ 3	$ 4,259	$ 3,075	$ 14,376	$ 496
	70	$ -	$ -	$ -	$ -	$ 1,745	$ 1,052	$ 7,002	$ 461	$ -	$ -	$ -	$ -	$ 24	$ 12	$ 76	$ 4	$ 1,962	$ 1,164	$ 7,694	$ 501
	200	$ -	$ -	$ -	$ -	$ 2,515	$ 299	$ -	$ -	$ -	$ -	$ -	$ -	$ 34	$ 3	$ -	$ -	$ 2,856	$ 334	$ -	$ -
Total		$ 320	$ 269	$ 1,418	$ 68	$ 7,917	$ 4,050	$ 19,720	$ 906	$ -	$ -	$ -	$ -	$ 140	$ 69	$ 454	$ 22	$ 10,586	$ 5,515	$ 30,241	$ 1,409
Grand Total		$ 2,074				$ 32,592				$ -				$ 685				$ 47,751			
OPTION 4																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 316	$ 79	$ 1,674	$ 87
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 26	$ 18	$ 216	$ 12	$ 442	$ 300	$ 3,658	$ 200
	7.5	$ 320	$ 269	$ 1,418	$ 68	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 16	$ 11	$ 52	$ 2	$ 750	$ 563	$ 2,839	$ 126
	25	$ -	$ -	$ -	$ -	$ 3,657	$ 2,698	$ 12,718	$ 445	$ -	$ -	$ -	$ -	$ 40	$ 25	$ 110	$ 3	$ 4,259	$ 3,075	$ 14,376	$ 496
	70	$ -	$ -	$ -	$ -	$ 1,745	$ 1,052	$ 7,002	$ 461	$ -	$ -	$ -	$ -	$ 24	$ 12	$ 76	$ 4	$ 1,962	$ 1,164	$ 7,694	$ 501
	200	$ -	$ -	$ -	$ -	$ 2,515	$ 299	$ -	$ -	$ -	$ -	$ -	$ -	$ 34	$ 3	$ -	$ -	$ 2,856	$ 334	$ -	$ -
Total		$ 320	$ 269	$ 1,418	$ 68	$ 7,917	$ 4,050	$ 19,720	$ 906	$ -	$ -	$ -	$ -	$ 140	$ 69	$ 454	$ 22	$ 10,586	$ 5,515	$ 30,241	$ 1,409
Grand Total		$ 2,074				$ 32,592				$ -				$ 685				$ 47,751			

B-13. State BMP Costs (continued)

MD		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
	OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 217	$ 54	$ 1,148	$ 59
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 72	$ 49	$ 593	$ 32	$ 18	$ 12	$ 148	$ 8	$ 375	$ 254	$ 3,103	$ 169
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 87	$ 59	$ 286	$ 12	$ 11	$ 7	$ 36	$ 1	$ 382	$ 261	$ 1,262	$ 51
	25	$ -	$ -	$ -	$ -	$ 1,254	$ 925	$ 4,361	$ 153	$ 275	$ 172	$ 757	$ 23	$ 27	$ 17	$ 76	$ 2	$ 1,942	$ 1,356	$ 6,257	$ 211
	70	$ -	$ -	$ -	$ -	$ 596	$ 360	$ 2,401	$ 158	$ 94	$ 48	$ 300	$ 17	$ 16	$ 8	$ 52	$ 3	$ 838	$ 485	$ 3,175	$ 202
	200	$ -	$ -	$ -	$ -	$ 858	$ 101	$ -	$ -	$ 141	$ 14	$ -	$ -	$ 23	$ 2	$ -	$ -	$ 1,231	$ 139	$ -	$ -
	Total	$ -	$ -	$ -	$ -	$ 2,708	$ 1,386	$ 6,763	$ 311	$ 668	$ 343	$ 1,936	$ 84	$ 96	$ 47	$ 311	$ 15	$ 4,985	$ 2,549	$ 14,945	$ 693
	Grand Total	$ -				$ 11,167				$ 3,031				$ 470				$ 23,171			
	OPTION 2																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 217	$ 54	$ 1,148	$ 59
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 286	$ 194	$ 2,362	$ 129
	7.5	$ 220	$ 184	$ 973	$ 46	$ -	$ -	$ -	$ -	$ 87	$ 59	$ 286	$ 12	$ 11	$ 7	$ 36	$ 1	$ 601	$ 445	$ 2,234	$ 97
	25	$ -	$ -	$ -	$ -	$ 2,509	$ 1,850	$ 8,723	$ 306	$ 275	$ 172	$ 757	$ 23	$ 27	$ 17	$ 76	$ 2	$ 3,196	$ 2,281	$ 10,618	$ 364
	70	$ -	$ -	$ -	$ -	$ 1,191	$ 720	$ 4,803	$ 315	$ 94	$ 48	$ 300	$ 17	$ 16	$ 8	$ 52	$ 3	$ 1,434	$ 845	$ 5,577	$ 360
	200	$ -	$ -	$ -	$ -	$ 1,716	$ 203	$ -	$ -	$ 141	$ 14	$ -	$ -	$ 23	$ 2	$ -	$ -	$ 2,089	$ 240	$ -	$ -
	Total	$ 220	$ 184	$ 973	$ 46	$ 5,416	$ 2,773	$ 13,526	$ 621	$ 596	$ 294	$ 1,343	$ 52	$ 78	$ 35	$ 164	$ 7	$ 7,822	$ 4,059	$ 21,939	$ 1,009
	Grand Total	$ 1,423				$ 22,335				$ 2,285				$ 284				$ 34,830			
	OPTION 3																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 217	$ 54	$ 1,148	$ 59
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 286	$ 194	$ 2,362	$ 129
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 284	$ 194	$ 940	$ 38
	25	$ -	$ -	$ -	$ -	$ 1,254	$ 925	$ 4,361	$ 153	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,640	$ 1,167	$ 5,424	$ 186
	70	$ -	$ -	$ -	$ -	$ 596	$ 360	$ 2,401	$ 158	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 728	$ 428	$ 2,823	$ 182
	200	$ -	$ -	$ -	$ -	$ 858	$ 101	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,067	$ 122	$ -	$ -
	Total	$ -	$ -	$ -	$ -	$ 2,708	$ 1,386	$ 6,763	$ 311	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,221	$ 2,159	$ 12,697	$ 594
	Grand Total	$ -				$ 11,167				$ -				$ -				$ 19,671			
	OPTION 4																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 217	$ 54	$ 1,148	$ 59
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 286	$ 194	$ 2,362	$ 129
	7.5	$ 220	$ 184	$ 973	$ 46	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11	$ 7	$ 36	$ 1	$ 515	$ 386	$ 1,948	$ 86
	25	$ -	$ -	$ -	$ -	$ 2,509	$ 1,850	$ 8,723	$ 306	$ -	$ -	$ -	$ -	$ 27	$ 17	$ 76	$ 2	$ 2,921	$ 2,109	$ 9,861	$ 341
	70	$ -	$ -	$ -	$ -	$ 1,191	$ 720	$ 4,803	$ 315	$ -	$ -	$ -	$ -	$ 16	$ 8	$ 52	$ 3	$ 1,340	$ 797	$ 5,277	$ 343
	200	$ -	$ -	$ -	$ -	$ 1,716	$ 203	$ -	$ -	$ -	$ -	$ -	$ -	$ 23	$ 2	$ -	$ -	$ 1,948	$ 226	$ -	$ -
	Total	$ 220	$ 184	$ 973	$ 46	$ 5,416	$ 2,773	$ 13,526	$ 621	$ -	$ -	$ -	$ -	$ 78	$ 35	$ 164	$ 7	$ 7,227	$ 3,765	$ 20,596	$ 957
	Grand Total	$ 1,423				$ 22,335				$ -				$ 284				$ 32,545			

B-13. State BMP Costs (continued)

ME		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 127	$ 32	$ 670	$ 35
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 42	$ 28	$ 346	$ 19	$ 10	$ 7	$ 86	$ 5	$ 219	$ 148	$ 1,811	$ 99
	7.5	$ 128	$ 108	$ 568	$ 27	$ -	$ -	$ -	$ -	$ 51	$ 35	$ 167	$ 7	$ 6	$ 4	$ 21	$ 1	$ 351	$ 260	$ 1,304	$ 57
	25	$ -	$ -	$ -	$ -	$ 1,465	$ 1,081	$ 5,094	$ 178	$ 160	$ 101	$ 442	$ 14	$ 16	$ 10	$ 44	$ 1	$ 1,866	$ 1,333	$ 6,201	$ 212
	70	$ -	$ -	$ -	$ -	$ 699	$ 422	$ 2,805	$ 185	$ 55	$ 28	$ 175	$ 10	$ 10	$ 5	$ 31	$ 2	$ 841	$ 494	$ 3,257	$ 211
	200	$ -	$ -	$ -	$ -	$ 1,007	$ 120	$ -	$ -	$ 83	$ 8	$ -	$ -	$ 14	$ 1	$ -	$ -	$ 1,227	$ 142	$ -	$ -
Total		$ 128	$ 108	$ 568	$ 27	$ 3,171	$ 1,622	$ 7,899	$ 363	$ 391	$ 200	$ 1,131	$ 49	$ 56	$ 28	$ 182	$ 9	$ 4,631	$ 2,409	$ 13,244	$ 614
Grand Total		$ 831				$ 13,055				$ 1,771				$ 274				$ 20,898			
OPTION 2																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 127	$ 32	$ 670	$ 35
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10	$ 7	$ 86	$ 5	$ 177	$ 120	$ 1,465	$ 80
	7.5	$ 128	$ 108	$ 568	$ 27	$ -	$ -	$ -	$ -	$ 51	$ 35	$ 167	$ 7	$ 6	$ 4	$ 21	$ 1	$ 351	$ 260	$ 1,304	$ 57
	25	$ -	$ -	$ -	$ -	$ 1,465	$ 1,081	$ 5,094	$ 178	$ 160	$ 101	$ 442	$ 14	$ 16	$ 10	$ 44	$ 1	$ 1,866	$ 1,333	$ 6,201	$ 212
	70	$ -	$ -	$ -	$ -	$ 699	$ 422	$ 2,805	$ 185	$ 55	$ 28	$ 175	$ 10	$ 10	$ 5	$ 31	$ 2	$ 841	$ 494	$ 3,257	$ 211
	200	$ -	$ -	$ -	$ -	$ 1,007	$ 120	$ -	$ -	$ 83	$ 8	$ -	$ -	$ 14	$ 1	$ -	$ -	$ 1,227	$ 142	$ -	$ -
Total		$ 128	$ 108	$ 568	$ 27	$ 3,171	$ 1,622	$ 7,899	$ 363	$ 349	$ 172	$ 784	$ 31	$ 56	$ 28	$ 182	$ 9	$ 4,589	$ 2,381	$ 12,898	$ 595
Grand Total		$ 831				$ 13,055				$ 1,336				$ 274				$ 20,463			
OPTION 3																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 127	$ 32	$ 670	$ 35
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10	$ 7	$ 86	$ 5	$ 177	$ 120	$ 1,465	$ 80
	7.5	$ 128	$ 108	$ 568	$ 27	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6	$ 4	$ 21	$ 1	$ 300	$ 225	$ 1,137	$ 50
	25	$ -	$ -	$ -	$ -	$ 1,465	$ 1,081	$ 5,094	$ 178	$ -	$ -	$ -	$ -	$ 16	$ 10	$ 44	$ 1	$ 1,706	$ 1,232	$ 5,759	$ 199
	70	$ -	$ -	$ -	$ -	$ 699	$ 422	$ 2,805	$ 185	$ -	$ -	$ -	$ -	$ 10	$ 5	$ 31	$ 2	$ 786	$ 466	$ 3,082	$ 201
	200	$ -	$ -	$ -	$ -	$ 1,007	$ 120	$ -	$ -	$ -	$ -	$ -	$ -	$ 14	$ 1	$ -	$ -	$ 1,144	$ 134	$ -	$ -
Total		$ 128	$ 108	$ 568	$ 27	$ 3,171	$ 1,622	$ 7,899	$ 363	$ -	$ -	$ -	$ -	$ 56	$ 28	$ 182	$ 9	$ 4,240	$ 2,209	$ 12,114	$ 564
Grand Total		$ 831				$ 13,055				$ -				$ 274				$ 19,127			
OPTION 4																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 127	$ 32	$ 670	$ 35
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10	$ 7	$ 86	$ 5	$ 177	$ 120	$ 1,465	$ 80
	7.5	$ 128	$ 108	$ 568	$ 27	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6	$ 4	$ 21	$ 1	$ 300	$ 225	$ 1,137	$ 50
	25	$ -	$ -	$ -	$ -	$ 1,465	$ 1,081	$ 5,094	$ 178	$ -	$ -	$ -	$ -	$ 16	$ 10	$ 44	$ 1	$ 1,706	$ 1,232	$ 5,759	$ 199
	70	$ -	$ -	$ -	$ -	$ 699	$ 422	$ 2,805	$ 185	$ -	$ -	$ -	$ -	$ 10	$ 5	$ 31	$ 2	$ 786	$ 466	$ 3,082	$ 201
	200	$ -	$ -	$ -	$ -	$ 1,007	$ 120	$ -	$ -	$ -	$ -	$ -	$ -	$ 14	$ 1	$ -	$ -	$ 1,144	$ 134	$ -	$ -
Total		$ 128	$ 108	$ 568	$ 27	$ 3,171	$ 1,622	$ 7,899	$ 363	$ -	$ -	$ -	$ -	$ 56	$ 28	$ 182	$ 9	$ 4,240	$ 2,209	$ 12,114	$ 564
Grand Total		$ 831				$ 13,055				$ -				$ 274				$ 19,127			

B-13. State BMP Costs (continued)

MI		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 484	$ 121	$ 2,563	$ 133
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 160	$ 108	$ 1,323	$ 72	$ 40	$ 27	$ 330	$ 18	$ 837	$ 567	$ 6,927	$ 378
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 194	$ 132	$ 639	$ 26	$ 24	$ 16	$ 80	$ 3	$ 853	$ 583	$ 2,816	$ 115
	25	$ -	$ -	$ -	$ -	$ 2,803	$ 2,066	$ 9,737	$ 342	$ 614	$ 385	$ 1,691	$ 52	$ 61	$ 38	$ 169	$ 5	$ 4,339	$ 3,029	$ 13,968	$ 473
	70	$ -	$ -	$ -	$ -	$ 1,332	$ 804	$ 5,363	$ 351	$ 210	$ 108	$ 669	$ 38	$ 37	$ 19	$ 117	$ 7	$ 1,874	$ 1,082	$ 7,092	$ 451
	200	$ -	$ -	$ -	$ -	$ 1,909	$ 213	$ -	$ -	$ 313	$ 30	$ -	$ -	$ 52	$ 5	$ -	$ -	$ 2,740	$ 291	$ -	$ -
Total		$ -	$ -	$ -	$ -	$ 6,044	$ 3,082	$ 15,100	$ 694	$ 1,490	$ 763	$ 4,323	$ 189	$ 214	$ 106	$ 695	$ 33	$ 11,127	$ 5,673	$ 33,366	$ 1,549
Grand Total		$ -				$ 24,919				$ 6,765				$ 1,048				$ 51,715			
OPTION 2																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 484	$ 121	$ 2,563	$ 133
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 40	$ 27	$ 330	$ 18	$ 677	$ 459	$ 5,603	$ 306
	7.5	$ 490	$ 412	$ 2,171	$ 104	$ -	$ -	$ -	$ -	$ 194	$ 132	$ 639	$ 26	$ 24	$ 16	$ 80	$ 3	$ 1,343	$ 994	$ 4,988	$ 219
	25	$ -	$ -	$ -	$ -	$ 5,606	$ 4,131	$ 19,474	$ 684	$ 614	$ 385	$ 1,691	$ 52	$ 61	$ 38	$ 169	$ 5	$ 7,142	$ 5,095	$ 23,705	$ 815
	70	$ -	$ -	$ -	$ -	$ 2,663	$ 1,608	$ 10,726	$ 703	$ 210	$ 108	$ 669	$ 38	$ 37	$ 19	$ 117	$ 7	$ 3,205	$ 1,886	$ 12,455	$ 802
	200	$ -	$ -	$ -	$ -	$ 3,819	$ 425	$ -	$ -	$ 313	$ 30	$ -	$ -	$ 52	$ 5	$ -	$ -	$ 4,650	$ 504	$ -	$ -
Total		$ 490	$ 412	$ 2,171	$ 104	$ 12,088	$ 6,164	$ 30,200	$ 1,387	$ 1,330	$ 655	$ 2,999	$ 117	$ 214	$ 106	$ 695	$ 33	$ 17,501	$ 9,058	$ 49,314	$ 2,274
Grand Total		$ 3,177				$ 49,839				$ 5,101				$ 1,048				$ 78,147			
OPTION 3																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 484	$ 121	$ 2,563	$ 133
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 40	$ 27	$ 330	$ 18	$ 677	$ 459	$ 5,603	$ 306
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 24	$ 16	$ 80	$ 3	$ 659	$ 450	$ 2,177	$ 89
	25	$ -	$ -	$ -	$ -	$ 2,803	$ 2,066	$ 9,737	$ 342	$ -	$ -	$ -	$ -	$ 61	$ 38	$ 169	$ 5	$ 3,725	$ 2,644	$ 12,277	$ 421
	70	$ -	$ -	$ -	$ -	$ 1,332	$ 804	$ 5,363	$ 351	$ -	$ -	$ -	$ -	$ 37	$ 19	$ 117	$ 7	$ 1,664	$ 974	$ 6,423	$ 412
	200	$ -	$ -	$ -	$ -	$ 1,909	$ 213	$ -	$ -	$ -	$ -	$ -	$ -	$ 52	$ 5	$ -	$ -	$ 2,427	$ 262	$ -	$ -
Total		$ -	$ -	$ -	$ -	$ 6,044	$ 3,082	$ 15,100	$ 694	$ -	$ -	$ -	$ -	$ 214	$ 106	$ 695	$ 33	$ 9,636	$ 4,910	$ 29,043	$ 1,360
Grand Total		$ -				$ 24,919				$ -				$ 1,048				$ 44,950			
OPTION 4																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 484	$ 121	$ 2,563	$ 133
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 40	$ 27	$ 330	$ 18	$ 677	$ 459	$ 5,603	$ 306
	7.5	$ 490	$ 412	$ 2,171	$ 104	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 24	$ 16	$ 80	$ 3	$ 1,149	$ 862	$ 4,349	$ 193
	25	$ -	$ -	$ -	$ -	$ 5,606	$ 4,131	$ 19,474	$ 684	$ -	$ -	$ -	$ -	$ 61	$ 38	$ 169	$ 5	$ 6,528	$ 4,710	$ 22,014	$ 763
	70	$ -	$ -	$ -	$ -	$ 2,663	$ 1,608	$ 10,726	$ 703	$ -	$ -	$ -	$ -	$ 37	$ 19	$ 117	$ 7	$ 2,995	$ 1,778	$ 11,786	$ 764
	200	$ -	$ -	$ -	$ -	$ 3,819	$ 425	$ -	$ -	$ -	$ -	$ -	$ -	$ 52	$ 5	$ -	$ -	$ 4,337	$ 474	$ -	$ -
Total		$ 490	$ 412	$ 2,171	$ 104	$ 12,088	$ 6,164	$ 30,200	$ 1,387	$ -	$ -	$ -	$ -	$ 214	$ 106	$ 695	$ 33	$ 16,171	$ 8,404	$ 46,314	$ 2,158
Grand Total		$ 3,177				$ 49,839				$ -				$ 1,048				$ 73,047			

B-13. State BMP Costs (continued)

MN		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 314	$ 78	$ 1,665	$ 86
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 104	$ 70	$ 860	$ 47	$ 26	$ 18	$ 214	$ 12	$ 544	$ 369	$ 4,500	$ 245
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 126	$ 86	$ 415	$ 17	$ 16	$ 11	$ 52	$ 2	$ 554	$ 378	$ 1,830	$ 75
	25	$ -	$ -	$ -	$ -	$ 3,642	$ 2,684	$ 12,651	$ 445	$ 399	$ 250	$ 1,099	$ 34	$ 40	$ 25	$ 110	$ 3	$ 4,640	$ 3,310	$ 15,399	$ 530
	70	$ -	$ -	$ -	$ -	$ 1,730	$ 1,045	$ 6,966	$ 456	$ 136	$ 70	$ 434	$ 25	$ 24	$ 12	$ 76	$ 4	$ 2,082	$ 1,225	$ 8,089	$ 521
	200	$ -	$ -	$ -	$ -	$ 2,483	$ 276	$ -	$ -	$ 204	$ 19	$ -	$ -	$ 34	$ 3	$ -	$ -	$ 3,023	$ 327	$ -	$ -
Total		$ -	$ -	$ -	$ -	$ 7,855	$ 4,005	$ 19,617	$ 901	$ 968	$ 496	$ 2,808	$ 123	$ 139	$ 69	$ 452	$ 22	$ 11,157	$ 5,688	$ 31,483	$ 1,457
Grand Total		$ -				$ 32,378				$ 4,395				$ 681				$ 49,785			
OPTION 2																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 314	$ 78	$ 1,665	$ 86
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 26	$ 18	$ 214	$ 12	$ 440	$ 298	$ 3,640	$ 198
	7.5	$ 319	$ 267	$ 1,411	$ 68	$ -	$ -	$ -	$ -	$ 126	$ 86	$ 415	$ 17	$ 16	$ 11	$ 52	$ 2	$ 873	$ 646	$ 3,240	$ 142
	25	$ -	$ -	$ -	$ -	$ 3,642	$ 2,684	$ 12,651	$ 445	$ 399	$ 250	$ 1,099	$ 34	$ 40	$ 25	$ 110	$ 3	$ 4,640	$ 3,310	$ 15,399	$ 530
	70	$ -	$ -	$ -	$ -	$ 1,730	$ 1,045	$ 6,966	$ 456	$ 136	$ 70	$ 434	$ 25	$ 24	$ 12	$ 76	$ 4	$ 2,082	$ 1,225	$ 8,089	$ 521
	200	$ -	$ -	$ -	$ -	$ 2,483	$ 276	$ -	$ -	$ 204	$ 19	$ -	$ -	$ 34	$ 3	$ -	$ -	$ 3,023	$ 327	$ -	$ -
Total		$ 319	$ 267	$ 1,411	$ 68	$ 7,855	$ 4,005	$ 19,617	$ 901	$ 864	$ 425	$ 1,948	$ 76	$ 139	$ 69	$ 452	$ 22	$ 11,372	$ 5,885	$ 32,034	$ 1,478
Grand Total		$ 2,064				$ 32,378				$ 3,314				$ 681				$ 50,768			
OPTION 3																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 314	$ 78	$ 1,665	$ 86
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 26	$ 18	$ 214	$ 12	$ 440	$ 298	$ 3,640	$ 198
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 16	$ 11	$ 52	$ 2	$ 428	$ 293	$ 1,414	$ 58
	25	$ -	$ -	$ -	$ -	$ 3,642	$ 2,684	$ 12,651	$ 445	$ -	$ -	$ -	$ -	$ 40	$ 25	$ 110	$ 3	$ 4,241	$ 3,060	$ 14,301	$ 496
	70	$ -	$ -	$ -	$ -	$ 1,730	$ 1,045	$ 6,966	$ 456	$ -	$ -	$ -	$ -	$ 24	$ 12	$ 76	$ 4	$ 1,946	$ 1,155	$ 7,655	$ 496
	200	$ -	$ -	$ -	$ -	$ 2,483	$ 276	$ -	$ -	$ -	$ -	$ -	$ -	$ 34	$ 3	$ -	$ -	$ 2,820	$ 308	$ -	$ -
Total		$ -	$ -	$ -	$ -	$ 7,855	$ 4,005	$ 19,617	$ 901	$ -	$ -	$ -	$ -	$ 139	$ 69	$ 452	$ 22	$ 10,189	$ 5,192	$ 28,675	$ 1,334
Grand Total		$ -				$ 32,378				$ -				$ 681				$ 45,390			
OPTION 4																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 314	$ 78	$ 1,665	$ 86
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 26	$ 18	$ 214	$ 12	$ 440	$ 298	$ 3,640	$ 198
	7.5	$ 319	$ 267	$ 1,411	$ 68	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 16	$ 11	$ 52	$ 2	$ 747	$ 560	$ 2,825	$ 125
	25	$ -	$ -	$ -	$ -	$ 3,642	$ 2,684	$ 12,651	$ 445	$ -	$ -	$ -	$ -	$ 40	$ 25	$ 110	$ 3	$ 4,241	$ 3,060	$ 14,301	$ 496
	70	$ -	$ -	$ -	$ -	$ 1,730	$ 1,045	$ 6,966	$ 456	$ -	$ -	$ -	$ -	$ 24	$ 12	$ 76	$ 4	$ 1,946	$ 1,155	$ 7,655	$ 496
	200	$ -	$ -	$ -	$ -	$ 2,483	$ 276	$ -	$ -	$ -	$ -	$ -	$ -	$ 34	$ 3	$ -	$ -	$ 2,820	$ 308	$ -	$ -
Total		$ 319	$ 267	$ 1,411	$ 68	$ 7,855	$ 4,005	$ 19,617	$ 901	$ -	$ -	$ -	$ -	$ 139	$ 69	$ 452	$ 22	$ 10,507	$ 5,460	$ 30,085	$ 1,402
Grand Total		$ 2,064				$ 32,378				$ -				$ 681				$ 47,454			

B-13. State BMP Costs (continued)

MO	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 280	$ 70	$ 1,482	$ 77
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 92	$ 63	$ 765	$ 42	$ 23	$ 16	$ 191	$ 10	$ 484	$ 328	$ 4,004	$ 218
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 112	$ 76	$ 370	$ 15	$ 14	$ 10	$ 46	$ 2	$ 493	$ 337	$ 1,628	$ 66
25	$ -	$ -	$ -	$ -	$ 1,620	$ 1,194	$ 5,628	$ 199	$ 355	$ 223	$ 977	$ 30	$ 35	$ 22	$ 98	$ 3	$ 2,508	$ 1,751	$ 8,074	$ 275
70	$ -	$ -	$ -	$ -	$ 770	$ 465	$ 3,096	$ 201	$ 121	$ 62	$ 386	$ 22	$ 21	$ 11	$ 67	$ 4	$ 1,083	$ 626	$ 4,094	$ 258
200	$ -	$ -	$ -	$ -	$ 1,109	$ 124	$ -	$ -	$ 182	$ 17	$ -	$ -	$ 30	$ 3	$ -	$ -	$ 1,592	$ 171	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 3,499	$ 1,784	$ 8,724	$ 400	$ 862	$ 441	$ 2,498	$ 109	$ 124	$ 61	$ 402	$ 19	$ 6,440	$ 3,282	$ 19,281	$ 894
Grand Total	$ -				$ 14,407				$ 3,911				$ 606				$ 29,897			
OPTION 2																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 280	$ 70	$ 1,482	$ 77
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 368	$ 250	$ 3,048	$ 166
7.5	$ 284	$ 238	$ 1,255	$ 60	$ -	$ -	$ -	$ -	$ 112	$ 76	$ 370	$ 15	$ 14	$ 10	$ 46	$ 2	$ 777	$ 574	$ 2,883	$ 126
25	$ -	$ -	$ -	$ -	$ 3,240	$ 2,388	$ 11,256	$ 398	$ 355	$ 223	$ 977	$ 30	$ 35	$ 22	$ 98	$ 3	$ 4,128	$ 2,945	$ 13,702	$ 473
70	$ -	$ -	$ -	$ -	$ 1,540	$ 931	$ 6,192	$ 402	$ 121	$ 62	$ 386	$ 22	$ 21	$ 11	$ 67	$ 4	$ 1,853	$ 1,092	$ 7,190	$ 459
200	$ -	$ -	$ -	$ -	$ 2,218	$ 249	$ -	$ -	$ 182	$ 17	$ -	$ -	$ 30	$ 3	$ -	$ -	$ 2,701	$ 295	$ -	$ -
Total	$ 284	$ 238	$ 1,255	$ 60	$ 6,998	$ 3,568	$ 17,448	$ 800	$ 770	$ 379	$ 1,733	$ 67	$ 101	$ 45	$ 211	$ 9	$ 10,107	$ 5,226	$ 28,305	$ 1,302
Grand Total	$ 1,837				$ 28,814				$ 2,949				$ 366				$ 44,939			
OPTION 3																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 280	$ 70	$ 1,482	$ 77
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 368	$ 250	$ 3,048	$ 166
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 367	$ 251	$ 1,212	$ 49
25	$ -	$ -	$ -	$ -	$ 1,620	$ 1,194	$ 5,628	$ 199	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,118	$ 1,506	$ 6,999	$ 241
70	$ -	$ -	$ -	$ -	$ 770	$ 465	$ 3,096	$ 201	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 941	$ 553	$ 3,640	$ 232
200	$ -	$ -	$ -	$ -	$ 1,109	$ 124	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,380	$ 150	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 3,499	$ 1,784	$ 8,724	$ 400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,454	$ 2,780	$ 16,381	$ 766
Grand Total	$ -				$ 14,407				$ -				$ -				$ 25,380			
OPTION 4																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 280	$ 70	$ 1,482	$ 77
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 368	$ 250	$ 3,048	$ 166
7.5	$ 284	$ 238	$ 1,255	$ 60	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 14	$ 10	$ 46	$ 2	$ 665	$ 498	$ 2,514	$ 111
25	$ -	$ -	$ -	$ -	$ 3,240	$ 2,388	$ 11,256	$ 398	$ -	$ -	$ -	$ -	$ 35	$ 22	$ 98	$ 3	$ 3,774	$ 2,722	$ 12,725	$ 443
70	$ -	$ -	$ -	$ -	$ 1,540	$ 931	$ 6,192	$ 402	$ -	$ -	$ -	$ -	$ 21	$ 11	$ 67	$ 4	$ 1,732	$ 1,030	$ 6,804	$ 437
200	$ -	$ -	$ -	$ -	$ 2,218	$ 249	$ -	$ -	$ -	$ -	$ -	$ -	$ 30	$ 3	$ -	$ -	$ 2,519	$ 278	$ -	$ -
Total	$ 284	$ 238	$ 1,255	$ 60	$ 6,998	$ 3,568	$ 17,448	$ 800	$ -	$ -	$ -	$ -	$ 101	$ 45	$ 211	$ 9	$ 9,337	$ 4,847	$ 26,572	$ 1,235
Grand Total	$ 1,837				$ 28,814				$ -				$ 366				$ 41,990			

B-13. State BMP Costs (continued)

MS		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
	OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 218	$ 54	$ 1,156	$ 60
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 72	$ 49	$ 597	$ 33	$ 18	$ 12	$ 149	$ 8	$ 378	$ 256	$ 3,125	$ 171
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 87	$ 60	$ 288	$ 12	$ 11	$ 7	$ 36	$ 1	$ 385	$ 263	$ 1,271	$ 52
	25	$ -	$ -	$ -	$ -	$ 2,529	$ 1,863	$ 8,786	$ 311	$ 277	$ 174	$ 763	$ 24	$ 28	$ 17	$ 76	$ 2	$ 3,222	$ 2,298	$ 10,695	$ 370
	70	$ -	$ -	$ -	$ -	$ 1,202	$ 728	$ 4,836	$ 314	$ 95	$ 49	$ 302	$ 17	$ 17	$ 9	$ 53	$ 3	$ 1,447	$ 854	$ 5,615	$ 358
	200	$ -	$ -	$ -	$ -	$ 1,732	$ 203	$ -	$ -	$ 142	$ 14	$ -	$ -	$ 24	$ 2	$ -	$ -	$ 2,109	$ 241	$ -	$ -
	Total	$ -	$ -	$ -	$ -	$ 5,464	$ 2,795	$ 13,621	$ 624	$ 673	$ 345	$ 1,950	$ 85	$ 97	$ 48	$ 314	$ 15	$ 7,760	$ 3,966	$ 21,862	$ 1,010
	Grand Total	$ -				$ 22,505				$ 3,054				$ 473				$ 34,598			
	OPTION 2																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 218	$ 54	$ 1,156	$ 60
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 18	$ 12	$ 149	$ 8	$ 306	$ 207	$ 2,528	$ 138
	7.5	$ 221	$ 186	$ 980	$ 47	$ -	$ -	$ -	$ -	$ 87	$ 60	$ 288	$ 12	$ 11	$ 7	$ 36	$ 1	$ 606	$ 448	$ 2,251	$ 99
	25	$ -	$ -	$ -	$ -	$ 2,529	$ 1,863	$ 8,786	$ 311	$ 277	$ 174	$ 763	$ 24	$ 28	$ 17	$ 76	$ 2	$ 3,222	$ 2,298	$ 10,695	$ 370
	70	$ -	$ -	$ -	$ -	$ 1,202	$ 728	$ 4,836	$ 314	$ 95	$ 49	$ 302	$ 17	$ 17	$ 9	$ 53	$ 3	$ 1,447	$ 854	$ 5,615	$ 358
	200	$ -	$ -	$ -	$ -	$ 1,732	$ 203	$ -	$ -	$ 142	$ 14	$ -	$ -	$ 24	$ 2	$ -	$ -	$ 2,109	$ 241	$ -	$ -
	Total	$ 221	$ 186	$ 980	$ 47	$ 5,464	$ 2,795	$ 13,621	$ 624	$ 601	$ 296	$ 1,353	$ 53	$ 97	$ 48	$ 314	$ 15	$ 7,909	$ 4,103	$ 22,244	$ 1,024
	Grand Total	$ 1,433				$ 22,505				$ 2,303				$ 473				$ 35,280			
	OPTION 3																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 218	$ 54	$ 1,156	$ 60
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 18	$ 12	$ 149	$ 8	$ 306	$ 207	$ 2,528	$ 138
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11	$ 7	$ 36	$ 1	$ 297	$ 203	$ 982	$ 40
	25	$ -	$ -	$ -	$ -	$ 2,529	$ 1,863	$ 8,786	$ 311	$ -	$ -	$ -	$ -	$ 28	$ 17	$ 76	$ 2	$ 2,945	$ 2,124	$ 9,932	$ 346
	70	$ -	$ -	$ -	$ -	$ 1,202	$ 728	$ 4,836	$ 314	$ -	$ -	$ -	$ -	$ 17	$ 9	$ 53	$ 3	$ 1,352	$ 805	$ 5,313	$ 341
	200	$ -	$ -	$ -	$ -	$ 1,732	$ 203	$ -	$ -	$ -	$ -	$ -	$ -	$ 24	$ 2	$ -	$ -	$ 1,967	$ 227	$ -	$ -
	Total	$ -	$ -	$ -	$ -	$ 5,464	$ 2,795	$ 13,621	$ 624	$ -	$ -	$ -	$ -	$ 97	$ 48	$ 314	$ 15	$ 7,087	$ 3,621	$ 19,912	$ 925
	Grand Total	$ -				$ 22,505				$ -				$ 473				$ 31,544			
	OPTION 4																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 218	$ 54	$ 1,156	$ 60
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 18	$ 12	$ 149	$ 8	$ 306	$ 207	$ 2,528	$ 138
	7.5	$ 221	$ 186	$ 980	$ 47	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11	$ 7	$ 36	$ 1	$ 519	$ 389	$ 1,962	$ 87
	25	$ -	$ -	$ -	$ -	$ 2,529	$ 1,863	$ 8,786	$ 311	$ -	$ -	$ -	$ -	$ 28	$ 17	$ 76	$ 2	$ 2,945	$ 2,124	$ 9,932	$ 346
	70	$ -	$ -	$ -	$ -	$ 1,202	$ 728	$ 4,836	$ 314	$ -	$ -	$ -	$ -	$ 17	$ 9	$ 53	$ 3	$ 1,352	$ 805	$ 5,313	$ 341
	200	$ -	$ -	$ -	$ -	$ 1,732	$ 203	$ -	$ -	$ -	$ -	$ -	$ -	$ 24	$ 2	$ -	$ -	$ 1,967	$ 227	$ -	$ -
	Total	$ 221	$ 186	$ 980	$ 47	$ 5,464	$ 2,795	$ 13,621	$ 624	$ -	$ -	$ -	$ -	$ 97	$ 48	$ 314	$ 15	$ 7,308	$ 3,807	$ 20,892	$ 972
	Grand Total	$ 1,433				$ 22,505				$ -				$ 473				$ 32,978			

B-13. State BMP Costs (continued)

MT	Sediment Trap Total Cost ($ 1,000)				Sediment Basins Total Cost ($ 1,000)				Installation Certification Total Cost ($ 1,000)				E&S Site Inspection Total Cost ($ 1,000)				Total Cost Total Cost ($ 1,000)			
OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 98	$ 24	$ 520	$ 27
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 32	$ 22	$ 269	$ 15	$ 8	$ 5	$ 67	$ 4	$ 170	$ 115	$ 1,406	$ 77
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 39	$ 27	$ 130	$ 5	$ 5	$ 3	$ 16	$ 1	$ 171	$ 117	$ 571	$ 22
25	$ -	$ -	$ -	$ -	$ 569	$ 417	$ 1,976	$ 68	$ 125	$ 78	$ 343	$ 10	$ 12	$ 8	$ 34	$ 1	$ 881	$ 612	$ 2,835	$ 93
70	$ -	$ -	$ -	$ -	$ 261	$ 154	$ 1,082	$ 63	$ 41	$ 21	$ 135	$ 7	$ 7	$ 4	$ 24	$ 1	$ 368	$ 207	$ 1,431	$ 80
200	$ -	$ -	$ -	$ -	$ 377	$ 0	$ -	$ -	$ 62	$ 0	$ -	$ -	$ 10	$ 0	$ -	$ -	$ 541	$ 0	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 1,208	$ 571	$ 3,059	$ 130	$ 299	$ 147	$ 876	$ 37	$ 43	$ 20	$ 141	$ 7	$ 2,229	$ 1,076	$ 6,763	$ 299
Grand Total	$ -				$ 4,968				$ 1,359				$ 210				$ 10,368			
OPTION 2																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 98	$ 24	$ 520	$ 27
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8	$ 5	$ 67	$ 4	$ 138	$ 93	$ 1,137	$ 62
7.5	$ 99	$ 83	$ 440	$ 20	$ -	$ -	$ -	$ -	$ 39	$ 27	$ 130	$ 5	$ 5	$ 3	$ 16	$ 1	$ 270	$ 200	$ 1,011	$ 42
25	$ -	$ -	$ -	$ -	$ 1,139	$ 835	$ 3,953	$ 135	$ 125	$ 78	$ 343	$ 10	$ 12	$ 8	$ 34	$ 1	$ 1,451	$ 1,030	$ 4,812	$ 161
70	$ -	$ -	$ -	$ -	$ 523	$ 308	$ 2,165	$ 125	$ 41	$ 21	$ 135	$ 7	$ 7	$ 4	$ 24	$ 1	$ 629	$ 361	$ 2,514	$ 143
200	$ -	$ -	$ -	$ -	$ 754	$ 0	$ -	$ -	$ 62	$ 0	$ -	$ -	$ 10	$ 0	$ -	$ -	$ 918	$ 0	$ -	$ -
Total	$ 99	$ 83	$ 440	$ 20	$ 2,415	$ 1,143	$ 6,118	$ 261	$ 267	$ 125	$ 608	$ 22	$ 43	$ 20	$ 141	$ 7	$ 3,503	$ 1,708	$ 9,994	$ 435
Grand Total	$ 641				$ 9,936				$ 1,022				$ 210				$ 15,639			
OPTION 3																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 98	$ 24	$ 520	$ 27
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8	$ 5	$ 67	$ 4	$ 138	$ 93	$ 1,137	$ 62
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5	$ 3	$ 16	$ 1	$ 132	$ 90	$ 441	$ 17
25	$ -	$ -	$ -	$ -	$ 569	$ 417	$ 1,976	$ 68	$ -	$ -	$ -	$ -	$ 12	$ 8	$ 34	$ 1	$ 757	$ 534	$ 2,492	$ 83
70	$ -	$ -	$ -	$ -	$ 261	$ 154	$ 1,082	$ 63	$ -	$ -	$ -	$ -	$ 7	$ 4	$ 24	$ 1	$ 327	$ 186	$ 1,296	$ 74
200	$ -	$ -	$ -	$ -	$ 377	$ 0	$ -	$ -	$ -	$ -	$ -	$ -	$ 10	$ 0	$ -	$ -	$ 479	$ 0	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 1,208	$ 571	$ 3,059	$ 130	$ -	$ -	$ -	$ -	$ 43	$ 20	$ 141	$ 7	$ 1,930	$ 929	$ 5,887	$ 262
Grand Total	$ -				$ 4,968				$ -				$ 210				$ 9,008			
OPTION 4																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 98	$ 24	$ 520	$ 27
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8	$ 5	$ 67	$ 4	$ 138	$ 93	$ 1,137	$ 62
7.5	$ 99	$ 83	$ 440	$ 20	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5	$ 3	$ 16	$ 1	$ 231	$ 173	$ 881	$ 37
25	$ -	$ -	$ -	$ -	$ 1,139	$ 835	$ 3,953	$ 135	$ -	$ -	$ -	$ -	$ 12	$ 8	$ 34	$ 1	$ 1,326	$ 952	$ 4,468	$ 151
70	$ -	$ -	$ -	$ -	$ 523	$ 308	$ 2,165	$ 125	$ -	$ -	$ -	$ -	$ 7	$ 4	$ 24	$ 1	$ 588	$ 340	$ 2,379	$ 136
200	$ -	$ -	$ -	$ -	$ 754	$ 0	$ -	$ -	$ -	$ -	$ -	$ -	$ 10	$ 0	$ -	$ -	$ 856	$ 0	$ -	$ -
Total	$ 99	$ 83	$ 440	$ 20	$ 2,415	$ 1,143	$ 6,118	$ 261	$ -	$ -	$ -	$ -	$ 43	$ 20	$ 141	$ 7	$ 3,236	$ 1,583	$ 9,386	$ 413
Grand Total	$ 641				$ 9,936				$ -				$ 210				$ 14,618			

B-13. State BMP Costs (continued)

NC	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 529	$ 132	$ 2,802	$ 145
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 175	$ 119	$ 1,447	$ 79	$ 44	$ 30	$ 361	$ 20	$ 916	$ 620	$ 7,572	$ 413
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 212	$ 145	$ 699	$ 28	$ 26	$ 18	$ 87	$ 4	$ 932	$ 637	$ 3,079	$ 125
25	$ -	$ -	$ -	$ -	$ 6,126	$ 4,514	$ 21,288	$ 751	$ 671	$ 421	$ 1,849	$ 57	$ 67	$ 42	$ 184	$ 6	$ 7,805	$ 5,567	$ 25,913	$ 895
70	$ -	$ -	$ -	$ -	$ 2,911	$ 1,760	$ 11,718	$ 773	$ 229	$ 118	$ 731	$ 42	$ 40	$ 21	$ 128	$ 7	$ 3,503	$ 2,064	$ 13,606	$ 883
200	$ -	$ -	$ -	$ -	$ 4,192	$ 490	$ -	$ -	$ 344	$ 34	$ -	$ -	$ 57	$ 6	$ -	$ -	$ 5,105	$ 581	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 13,229	$ 6,764	$ 33,006	$ 1,525	$ 1,630	$ 836	$ 4,725	$ 207	$ 234	$ 116	$ 760	$ 36	$ 18,789	$ 9,600	$ 52,974	$ 2,461
Grand Total	$ -				$ 54,524				$ 7,398				$ 1,146				$ 83,824			
OPTION 2																				
Site Sizes in Acres																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 529	$ 132	$ 2,802	$ 145
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 44	$ 30	$ 361	$ 20	$ 741	$ 502	$ 6,125	$ 334
7.5	$ 536	$ 450	$ 2,374	$ 113	$ -	$ -	$ -	$ -	$ 212	$ 145	$ 699	$ 28	$ 26	$ 18	$ 87	$ 4	$ 1,468	$ 1,087	$ 5,453	$ 238
25	$ -	$ -	$ -	$ -	$ 6,126	$ 4,514	$ 21,288	$ 751	$ 671	$ 421	$ 1,849	$ 57	$ 67	$ 42	$ 184	$ 6	$ 7,805	$ 5,567	$ 25,913	$ 895
70	$ -	$ -	$ -	$ -	$ 2,911	$ 1,760	$ 11,718	$ 773	$ 229	$ 118	$ 731	$ 42	$ 40	$ 21	$ 128	$ 7	$ 3,503	$ 2,064	$ 13,606	$ 883
200	$ -	$ -	$ -	$ -	$ 4,192	$ 490	$ -	$ -	$ 344	$ 34	$ -	$ -	$ 57	$ 6	$ -	$ -	$ 5,105	$ 581	$ -	$ -
Total	$ 536	$ 450	$ 2,374	$ 113	$ 13,229	$ 6,764	$ 33,006	$ 1,525	$ 1,456	$ 717	$ 3,278	$ 128	$ 234	$ 116	$ 760	$ 36	$ 19,150	$ 9,932	$ 53,901	$ 2,495
Grand Total	$ 3,473				$ 54,524				$ 5,579				$ 1,146				$ 85,478			
OPTION 3																				
Site Sizes in Acres																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 529	$ 132	$ 2,802	$ 145
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 44	$ 30	$ 361	$ 20	$ 741	$ 502	$ 6,125	$ 334
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 26	$ 18	$ 87	$ 4	$ 720	$ 492	$ 2,380	$ 97
25	$ -	$ -	$ -	$ -	$ 6,126	$ 4,514	$ 21,288	$ 751	$ -	$ -	$ -	$ -	$ 67	$ 42	$ 184	$ 6	$ 7,134	$ 5,146	$ 24,065	$ 837
70	$ -	$ -	$ -	$ -	$ 2,911	$ 1,760	$ 11,718	$ 773	$ -	$ -	$ -	$ -	$ 40	$ 21	$ 128	$ 7	$ 3,274	$ 1,946	$ 12,876	$ 840
200	$ -	$ -	$ -	$ -	$ 4,192	$ 490	$ -	$ -	$ -	$ -	$ -	$ -	$ 57	$ 6	$ -	$ -	$ 4,761	$ 546	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 13,229	$ 6,764	$ 33,006	$ 1,525	$ -	$ -	$ -	$ -	$ 234	$ 116	$ 760	$ 36	$ 17,159	$ 8,764	$ 48,249	$ 2,254
Grand Total	$ -				$ 54,524				$ -				$ 1,146				$ 76,426			
OPTION 4																				
Site Sizes in Acres																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 529	$ 132	$ 2,802	$ 145
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 44	$ 30	$ 361	$ 20	$ 741	$ 502	$ 6,125	$ 334
7.5	$ 536	$ 450	$ 2,374	$ 113	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 26	$ 18	$ 87	$ 4	$ 1,256	$ 942	$ 4,754	$ 210
25	$ -	$ -	$ -	$ -	$ 6,126	$ 4,514	$ 21,288	$ 751	$ -	$ -	$ -	$ -	$ 67	$ 42	$ 184	$ 6	$ 7,134	$ 5,146	$ 24,065	$ 837
70	$ -	$ -	$ -	$ -	$ 2,911	$ 1,760	$ 11,718	$ 773	$ -	$ -	$ -	$ -	$ 40	$ 21	$ 128	$ 7	$ 3,274	$ 1,946	$ 12,876	$ 840
200	$ -	$ -	$ -	$ -	$ 4,192	$ 490	$ -	$ -	$ -	$ -	$ -	$ -	$ 57	$ 6	$ -	$ -	$ 4,761	$ 546	$ -	$ -
Total	$ 536	$ 450	$ 2,374	$ 113	$ 13,229	$ 6,764	$ 33,006	$ 1,525	$ -	$ -	$ -	$ -	$ 234	$ 116	$ 760	$ 36	$ 17,695	$ 9,214	$ 50,623	$ 2,367
Grand Total	$ 3,473				$ 54,524				$ -				$ 1,146				$ 79,899			

B-13. State BMP Costs (continued)

ND	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 36	$ 9	$ 191	$ 10
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12	$ 8	$ 99	$ 5	$ 3	$ 2	$ 25	$ 1	$ 62	$ 42	$ 516	$ 28
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 14	$ 10	$ 48	$ 2	$ 2	$ 1	$ 6	$ 0	$ 63	$ 43	$ 210	$ 9
25	$ -	$ -	$ -	$ -	$ 209	$ 154	$ 725	$ 25	$ 46	$ 29	$ 126	$ 4	$ 5	$ 3	$ 13	$ 0	$ 323	$ 225	$ 1,040	$ 35
70	$ -	$ -	$ -	$ -	$ 99	$ 59	$ 399	$ 26	$ 16	$ 8	$ 50	$ 3	$ 3	$ 1	$ 9	$ 0	$ 139	$ 80	$ 528	$ 33
200	$ -	$ -	$ -	$ -	$ 142	$ 14	$ -	$ -	$ 23	$ 2	$ -	$ -	$ 4	$ 0	$ -	$ -	$ 203	$ 19	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 449	$ 227	$ 1,124	$ 51	$ 111	$ 56	$ 322	$ 14	$ 16	$ 8	$ 52	$ 2	$ 827	$ 419	$ 2,484	$ 115
Grand Total	$ -				$ 1,852				$ 503				$ 78				$ 3,845			
OPTION 2																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 36	$ 9	$ 191	$ 10
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3	$ 2	$ 25	$ 1	$ 50	$ 34	$ 417	$ 23
7.5	$ 36	$ 31	$ 162	$ 8	$ -	$ -	$ -	$ -	$ 14	$ 10	$ 48	$ 2	$ 2	$ 1	$ 6	$ 0	$ 100	$ 74	$ 371	$ 16
25	$ -	$ -	$ -	$ -	$ 417	$ 307	$ 1,450	$ 51	$ 46	$ 29	$ 126	$ 4	$ 5	$ 3	$ 13	$ 0	$ 532	$ 379	$ 1,765	$ 60
70	$ -	$ -	$ -	$ -	$ 198	$ 119	$ 798	$ 52	$ 16	$ 8	$ 50	$ 3	$ 3	$ 1	$ 9	$ 0	$ 238	$ 140	$ 927	$ 59
200	$ -	$ -	$ -	$ -	$ 283	$ 28	$ -	$ -	$ 23	$ 2	$ -	$ -	$ 4	$ 0	$ -	$ -	$ 345	$ 33	$ -	$ -
Total	$ 36	$ 31	$ 162	$ 8	$ 898	$ 454	$ 2,248	$ 102	$ 99	$ 48	$ 223	$ 9	$ 16	$ 8	$ 52	$ 2	$ 1,301	$ 669	$ 3,671	$ 168
Grand Total	$ 236				$ 3,703				$ 379				$ 78				$ 5,809			
OPTION 3																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 36	$ 9	$ 191	$ 10
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3	$ 2	$ 25	$ 1	$ 50	$ 34	$ 417	$ 23
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2	$ 1	$ 6	$ 0	$ 49	$ 33	$ 162	$ 7
25	$ -	$ -	$ -	$ -	$ 209	$ 154	$ 725	$ 25	$ -	$ -	$ -	$ -	$ 5	$ 3	$ 13	$ 0	$ 277	$ 197	$ 914	$ 31
70	$ -	$ -	$ -	$ -	$ 99	$ 59	$ 399	$ 26	$ -	$ -	$ -	$ -	$ 3	$ 1	$ 9	$ 0	$ 123	$ 72	$ 478	$ 30
200	$ -	$ -	$ -	$ -	$ 142	$ 14	$ -	$ -	$ -	$ -	$ -	$ -	$ 4	$ 0	$ -	$ -	$ 180	$ 17	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 449	$ 227	$ 1,124	$ 51	$ -	$ -	$ -	$ -	$ 16	$ 8	$ 52	$ 2	$ 716	$ 363	$ 2,162	$ 101
Grand Total	$ -				$ 1,852				$ -				$ 78				$ 3,342			
OPTION 4																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 36	$ 9	$ 191	$ 10
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3	$ 2	$ 25	$ 1	$ 50	$ 34	$ 417	$ 23
7.5	$ 36	$ 31	$ 162	$ 8	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2	$ 1	$ 6	$ 0	$ 85	$ 64	$ 324	$ 14
25	$ -	$ -	$ -	$ -	$ 417	$ 307	$ 1,450	$ 51	$ -	$ -	$ -	$ -	$ 5	$ 3	$ 13	$ 0	$ 486	$ 350	$ 1,639	$ 57
70	$ -	$ -	$ -	$ -	$ 198	$ 119	$ 798	$ 52	$ -	$ -	$ -	$ -	$ 3	$ 1	$ 9	$ 0	$ 222	$ 132	$ 877	$ 56
200	$ -	$ -	$ -	$ -	$ 283	$ 28	$ -	$ -	$ -	$ -	$ -	$ -	$ 4	$ 0	$ -	$ -	$ 322	$ 31	$ -	$ -
Total	$ 36	$ 31	$ 162	$ 8	$ 898	$ 454	$ 2,248	$ 102	$ -	$ -	$ -	$ -	$ 16	$ 8	$ 52	$ 2	$ 1,202	$ 621	$ 3,448	$ 160
Grand Total	$ 236				$ 3,703				$ -				$ 78				$ 5,430			

B-13. State BMP Costs (continued)

NE		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
	OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 63	$ 16	$ 332	$ 17
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 21	$ 14	$ 172	$ 9	$ 5	$ 4	$ 43	$ 2	$ 109	$ 74	$ 898	$ 49
	7.5	$ 64	$ 53	$ 282	$ 13	$ -	$ -	$ -	$ -	$ 25	$ 17	$ 83	$ 3	$ 3	$ 2	$ 10	$ 0	$ 174	$ 129	$ 647	$ 28
	25	$ -	$ -	$ -	$ -	$ 363	$ 268	$ 1,263	$ 44	$ 80	$ 50	$ 219	$ 7	$ 8	$ 5	$ 22	$ 1	$ 563	$ 393	$ 1,812	$ 61
	70	$ -	$ -	$ -	$ -	$ 173	$ 104	$ 694	$ 45	$ 27	$ 14	$ 87	$ 5	$ 5	$ 2	$ 15	$ 1	$ 243	$ 140	$ 918	$ 58
	200	$ -	$ -	$ -	$ -	$ 247	$ 27	$ -	$ -	$ 40	$ 4	$ -	$ -	$ 7	$ 1	$ -	$ -	$ 354	$ 37	$ -	$ -
	Total	$ 64	$ 53	$ 282	$ 13	$ 783	$ 399	$ 1,957	$ 90	$ 193	$ 99	$ 561	$ 24	$ 28	$ 14	$ 90	$ 4	$ 1,505	$ 787	$ 4,608	$ 214
	Grand Total	$ 412				$ 3,228				$ 877				$ 136				$ 7,114			
	OPTION 2																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 63	$ 16	$ 332	$ 17
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5	$ 4	$ 43	$ 2	$ 88	$ 60	$ 727	$ 40
	7.5	$ 64	$ 53	$ 282	$ 13	$ -	$ -	$ -	$ -	$ 25	$ 17	$ 83	$ 3	$ 3	$ 2	$ 10	$ 0	$ 174	$ 129	$ 647	$ 28
	25	$ -	$ -	$ -	$ -	$ 727	$ 536	$ 2,526	$ 89	$ 80	$ 50	$ 219	$ 7	$ 8	$ 5	$ 22	$ 1	$ 926	$ 661	$ 3,075	$ 105
	70	$ -	$ -	$ -	$ -	$ 345	$ 208	$ 1,389	$ 91	$ 27	$ 14	$ 87	$ 5	$ 5	$ 2	$ 15	$ 1	$ 415	$ 244	$ 1,612	$ 103
	200	$ -	$ -	$ -	$ -	$ 494	$ 53	$ -	$ -	$ 40	$ 4	$ -	$ -	$ 7	$ 1	$ -	$ -	$ 601	$ 63	$ -	$ -
	Total	$ 64	$ 53	$ 282	$ 13	$ 1,566	$ 797	$ 3,915	$ 179	$ 172	$ 85	$ 389	$ 15	$ 28	$ 14	$ 90	$ 4	$ 2,267	$ 1,172	$ 6,393	$ 294
	Grand Total	$ 412				$ 6,456				$ 661				$ 136				$ 10,126			
	OPTION 3																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 63	$ 16	$ 332	$ 17
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5	$ 4	$ 43	$ 2	$ 88	$ 60	$ 727	$ 40
	7.5	$ 64	$ 53	$ 282	$ 13	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3	$ 2	$ 10	$ 0	$ 149	$ 112	$ 564	$ 25
	25	$ -	$ -	$ -	$ -	$ 363	$ 268	$ 1,263	$ 44	$ -	$ -	$ -	$ -	$ 8	$ 5	$ 22	$ 1	$ 483	$ 343	$ 1,592	$ 54
	70	$ -	$ -	$ -	$ -	$ 173	$ 104	$ 694	$ 45	$ -	$ -	$ -	$ -	$ 5	$ 2	$ 15	$ 1	$ 216	$ 126	$ 832	$ 53
	200	$ -	$ -	$ -	$ -	$ 247	$ 27	$ -	$ -	$ -	$ -	$ -	$ -	$ 7	$ 1	$ -	$ -	$ 314	$ 33	$ -	$ -
	Total	$ 64	$ 53	$ 282	$ 13	$ 783	$ 399	$ 1,957	$ 90	$ -	$ -	$ -	$ -	$ 28	$ 14	$ 90	$ 4	$ 1,312	$ 689	$ 4,047	$ 189
	Grand Total	$ 412				$ 3,228				$ -				$ 136				$ 6,237			
	OPTION 4																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 63	$ 16	$ 332	$ 17
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5	$ 4	$ 43	$ 2	$ 88	$ 60	$ 727	$ 40
	7.5	$ 64	$ 53	$ 282	$ 13	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3	$ 2	$ 10	$ 0	$ 149	$ 112	$ 564	$ 25
	25	$ -	$ -	$ -	$ -	$ 727	$ 536	$ 2,526	$ 89	$ -	$ -	$ -	$ -	$ 8	$ 5	$ 22	$ 1	$ 846	$ 611	$ 2,855	$ 99
	70	$ -	$ -	$ -	$ -	$ 345	$ 208	$ 1,389	$ 91	$ -	$ -	$ -	$ -	$ 5	$ 2	$ 15	$ 1	$ 388	$ 230	$ 1,526	$ 98
	200	$ -	$ -	$ -	$ -	$ 494	$ 53	$ -	$ -	$ -	$ -	$ -	$ -	$ 7	$ 1	$ -	$ -	$ 561	$ 59	$ -	$ -
	Total	$ 64	$ 53	$ 282	$ 13	$ 1,566	$ 797	$ 3,915	$ 179	$ -	$ -	$ -	$ -	$ 28	$ 14	$ 90	$ 4	$ 2,095	$ 1,087	$ 6,005	$ 279
	Grand Total	$ 412				$ 6,456				$ -				$ 136				$ 9,465			

B-13. State BMP Costs (continued)

NH		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 76	$ 19	$ 405	$ 21
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 25	$ 17	$ 209	$ 11	$ 6	$ 4	$ 52	$ 3	$ 132	$ 90	$ 1,094	$ 60
	7.5	$ 77	$ 65	$ 343	$ 16	$ -	$ -	$ -	$ -	$ 31	$ 21	$ 101	$ 4	$ 4	$ 3	$ 13	$ 1	$ 212	$ 157	$ 787	$ 35
	25	$ -	$ -	$ -	$ -	$ 884	$ 652	$ 3,075	$ 108	$ 97	$ 61	$ 267	$ 8	$ 10	$ 6	$ 27	$ 1	$ 1,127	$ 805	$ 3,744	$ 128
	70	$ -	$ -	$ -	$ -	$ 422	$ 254	$ 1,693	$ 112	$ 33	$ 17	$ 106	$ 6	$ 6	$ 3	$ 18	$ 1	$ 508	$ 299	$ 1,966	$ 127
	200	$ -	$ -	$ -	$ -	$ 608	$ 72	$ -	$ -	$ 50	$ 5	$ -	$ -	$ 8	$ 1	$ -	$ -	$ 741	$ 86	$ -	$ -
Total		$ 77	$ 65	$ 343	$ 16	$ 1,915	$ 979	$ 4,769	$ 219	$ 236	$ 121	$ 683	$ 30	$ 34	$ 17	$ 110	$ 5	$ 2,796	$ 1,454	$ 7,996	$ 371
Grand Total		$ 502				$ 7,882				$ 1,069				$ 166				$ 12,616			
OPTION 2																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 76	$ 19	$ 405	$ 21
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6	$ 4	$ 52	$ 3	$ 107	$ 72	$ 885	$ 48
	7.5	$ 77	$ 65	$ 343	$ 16	$ -	$ -	$ -	$ -	$ 31	$ 21	$ 101	$ 4	$ 4	$ 3	$ 13	$ 1	$ 212	$ 157	$ 787	$ 35
	25	$ -	$ -	$ -	$ -	$ 884	$ 652	$ 3,075	$ 108	$ 97	$ 61	$ 267	$ 8	$ 10	$ 6	$ 27	$ 1	$ 1,127	$ 805	$ 3,744	$ 128
	70	$ -	$ -	$ -	$ -	$ 422	$ 254	$ 1,693	$ 112	$ 33	$ 17	$ 106	$ 6	$ 6	$ 3	$ 18	$ 1	$ 508	$ 299	$ 1,966	$ 127
	200	$ -	$ -	$ -	$ -	$ 608	$ 72	$ -	$ -	$ 50	$ 5	$ -	$ -	$ 8	$ 1	$ -	$ -	$ 741	$ 86	$ -	$ -
Total		$ 77	$ 65	$ 343	$ 16	$ 1,915	$ 979	$ 4,769	$ 219	$ 211	$ 104	$ 474	$ 18	$ 34	$ 17	$ 110	$ 5	$ 2,770	$ 1,437	$ 7,787	$ 359
Grand Total		$ 502				$ 7,882				$ 806				$ 166				$ 12,354			
OPTION 3																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 76	$ 19	$ 405	$ 21
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6	$ 4	$ 52	$ 3	$ 107	$ 72	$ 885	$ 48
	7.5	$ 77	$ 65	$ 343	$ 16	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4	$ 3	$ 13	$ 1	$ 181	$ 136	$ 687	$ 30
	25	$ -	$ -	$ -	$ -	$ 884	$ 652	$ 3,075	$ 108	$ -	$ -	$ -	$ -	$ 10	$ 6	$ 27	$ 1	$ 1,030	$ 744	$ 3,477	$ 120
	70	$ -	$ -	$ -	$ -	$ 422	$ 254	$ 1,693	$ 112	$ -	$ -	$ -	$ -	$ 6	$ 3	$ 18	$ 1	$ 475	$ 281	$ 1,861	$ 121
	200	$ -	$ -	$ -	$ -	$ 608	$ 72	$ -	$ -	$ -	$ -	$ -	$ -	$ 8	$ 1	$ -	$ -	$ 691	$ 81	$ -	$ -
Total		$ 77	$ 65	$ 343	$ 16	$ 1,915	$ 979	$ 4,769	$ 219	$ -	$ -	$ -	$ -	$ 34	$ 17	$ 110	$ 5	$ 2,560	$ 1,334	$ 7,313	$ 341
Grand Total		$ 502				$ 7,882				$ -				$ 166				$ 11,547			
OPTION 4																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 76	$ 19	$ 405	$ 21
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6	$ 4	$ 52	$ 3	$ 107	$ 72	$ 885	$ 48
	7.5	$ 77	$ 65	$ 343	$ 16	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4	$ 3	$ 13	$ 1	$ 181	$ 136	$ 687	$ 30
	25	$ -	$ -	$ -	$ -	$ 884	$ 652	$ 3,075	$ 108	$ -	$ -	$ -	$ -	$ 10	$ 6	$ 27	$ 1	$ 1,030	$ 744	$ 3,477	$ 120
	70	$ -	$ -	$ -	$ -	$ 422	$ 254	$ 1,693	$ 112	$ -	$ -	$ -	$ -	$ 6	$ 3	$ 18	$ 1	$ 475	$ 281	$ 1,861	$ 121
	200	$ -	$ -	$ -	$ -	$ 608	$ 72	$ -	$ -	$ -	$ -	$ -	$ -	$ 8	$ 1	$ -	$ -	$ 691	$ 81	$ -	$ -
Total		$ 77	$ 65	$ 343	$ 16	$ 1,915	$ 979	$ 4,769	$ 219	$ -	$ -	$ -	$ -	$ 34	$ 17	$ 110	$ 5	$ 2,560	$ 1,334	$ 7,313	$ 341
Grand Total		$ 502				$ 7,882				$ -				$ 166				$ 11,547			

B-13. State BMP Costs (continued)

NJ	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 319	$ 79	$ 1,688	$ 87
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 105	$ 71	$ 871	$ 47	$ 26	$ 18	$ 217	$ 12	$ 551	$ 374	$ 4,561	$ 249
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 127	$ 87	$ 421	$ 17	$ 16	$ 11	$ 52	$ 2	$ 561	$ 384	$ 1,855	$ 75
25	$ -	$ -	$ -	$ -	$ 1,844	$ 1,359	$ 6,411	$ 224	$ 404	$ 253	$ 1,113	$ 34	$ 40	$ 25	$ 111	$ 3	$ 2,854	$ 1,993	$ 9,197	$ 310
70	$ -	$ -	$ -	$ -	$ 874	$ 529	$ 3,530	$ 231	$ 138	$ 71	$ 440	$ 25	$ 24	$ 12	$ 77	$ 4	$ 1,230	$ 713	$ 4,668	$ 296
200	$ -	$ -	$ -	$ -	$ 1,261	$ 149	$ -	$ -	$ 207	$ 21	$ -	$ -	$ 34	$ 3	$ -	$ -	$ 1,809	$ 204	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 3,978	$ 2,038	$ 9,941	$ 455	$ 981	$ 504	$ 2,846	$ 124	$ 141	$ 70	$ 458	$ 22	$ 7,325	$ 3,747	$ 21,968	$ 1,017
Grand Total	$ -				$ 16,413				$ 4,455				$ 690				$ 34,056			
OPTION 2																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 319	$ 79	$ 1,688	$ 87
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 420	$ 284	$ 3,472	$ 189
7.5	$ 323	$ 271	$ 1,430	$ 68	$ -	$ -	$ -	$ -	$ 127	$ 87	$ 421	$ 17	$ 16	$ 11	$ 52	$ 2	$ 884	$ 655	$ 3,285	$ 143
25	$ -	$ -	$ -	$ -	$ 3,687	$ 2,719	$ 12,822	$ 449	$ 404	$ 253	$ 1,113	$ 34	$ 40	$ 25	$ 111	$ 3	$ 4,698	$ 3,353	$ 15,607	$ 534
70	$ -	$ -	$ -	$ -	$ 1,749	$ 1,059	$ 7,060	$ 462	$ 138	$ 71	$ 440	$ 25	$ 24	$ 12	$ 77	$ 4	$ 2,105	$ 1,242	$ 8,198	$ 527
200	$ -	$ -	$ -	$ -	$ 2,521	$ 298	$ -	$ -	$ 207	$ 21	$ -	$ -	$ 34	$ 3	$ -	$ -	$ 3,070	$ 353	$ -	$ -
Total	$ 323	$ 271	$ 1,430	$ 68	$ 7,957	$ 4,076	$ 19,882	$ 911	$ 876	$ 432	$ 1,975	$ 77	$ 115	$ 52	$ 240	$ 10	$ 11,494	$ 5,967	$ 32,250	$ 1,481
Grand Total	$ 2,091				$ 32,825				$ 3,359				$ 417				$ 51,191			
OPTION 3																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 319	$ 79	$ 1,688	$ 87
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 420	$ 284	$ 3,472	$ 189
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 418	$ 286	$ 1,381	$ 56
25	$ -	$ -	$ -	$ -	$ 1,844	$ 1,359	$ 6,411	$ 224	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,410	$ 1,715	$ 7,972	$ 272
70	$ -	$ -	$ -	$ -	$ 874	$ 529	$ 3,530	$ 231	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,069	$ 629	$ 4,151	$ 267
200	$ -	$ -	$ -	$ -	$ 1,261	$ 149	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,568	$ 180	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 3,978	$ 2,038	$ 9,941	$ 455	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,203	$ 3,174	$ 18,664	$ 871
Grand Total	$ -				$ 16,413				$ -				$ -				$ 28,912			
OPTION 4																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 319	$ 79	$ 1,688	$ 87
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 420	$ 284	$ 3,472	$ 189
7.5	$ 323	$ 271	$ 1,430	$ 68	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 16	$ 11	$ 52	$ 2	$ 756	$ 568	$ 2,864	$ 126
25	$ -	$ -	$ -	$ -	$ 3,687	$ 2,719	$ 12,822	$ 449	$ -	$ -	$ -	$ -	$ 40	$ 25	$ 111	$ 3	$ 4,294	$ 3,099	$ 14,494	$ 500
70	$ -	$ -	$ -	$ -	$ 1,749	$ 1,059	$ 7,060	$ 462	$ -	$ -	$ -	$ -	$ 24	$ 12	$ 77	$ 4	$ 1,967	$ 1,171	$ 7,757	$ 502
200	$ -	$ -	$ -	$ -	$ 2,521	$ 298	$ -	$ -	$ -	$ -	$ -	$ -	$ 34	$ 3	$ -	$ -	$ 2,863	$ 333	$ -	$ -
Total	$ 323	$ 271	$ 1,430	$ 68	$ 7,957	$ 4,076	$ 19,882	$ 911	$ -	$ -	$ -	$ -	$ 115	$ 52	$ 240	$ 10	$ 10,618	$ 5,535	$ 30,275	$ 1,404
Grand Total	$ 2,091				$ 32,825				$ -				$ 417				$ 47,832			

B-13. State BMP Costs (continued)

NM	Sediment Trap				Sediment Basins				Installation Certification			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1 (Site Sizes in Acres)	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 87	$ 59	$ 717	$ 39
7.5	$ 265	$ 222	$ 1,176	$ 56	$ -	$ -	$ -	$ -	$ 104	$ 71	$ 346	$ 14
25	$ -	$ -	$ -	$ -	$ 3,029	$ 2,232	$ 10,547	$ 363	$ 332	$ 208	$ 916	$ 28
70	$ -	$ -	$ -	$ -	$ 1,430	$ 856	$ 5,783	$ 352	$ 113	$ 57	$ 361	$ 19
200	$ -	$ -	$ -	$ -	$ 2,024	$ 202	$ -	$ -	$ 166	$ 14	$ -	$ -
Total	$ 265	$ 222	$ 1,176	$ 56	$ 6,483	$ 3,290	$ 16,331	$ 715	$ 801	$ 409	$ 2,340	$ 100
Grand Total	$ 1,718				$ 26,819				$ 3,650			
OPTION 2												
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7.5	$ 265	$ 222	$ 1,176	$ 56	$ -	$ -	$ -	$ -	$ 104	$ 71	$ 346	$ 14
25	$ -	$ -	$ -	$ -	$ 3,029	$ 2,232	$ 10,547	$ 363	$ 332	$ 208	$ 916	$ 28
70	$ -	$ -	$ -	$ -	$ 1,430	$ 856	$ 5,783	$ 352	$ 113	$ 57	$ 361	$ 19
200	$ -	$ -	$ -	$ -	$ 2,024	$ 202	$ -	$ -	$ 166	$ 14	$ -	$ -
Total	$ 265	$ 222	$ 1,176	$ 56	$ 6,483	$ 3,290	$ 16,331	$ 715	$ 715	$ 351	$ 1,623	$ 61
Grand Total	$ 1,718				$ 26,819				$ 2,749			
OPTION 3												
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7.5	$ 265	$ 222	$ 1,176	$ 56	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
25	$ -	$ -	$ -	$ -	$ 3,029	$ 2,232	$ 10,547	$ 363	$ -	$ -	$ -	$ -
70	$ -	$ -	$ -	$ -	$ 1,430	$ 856	$ 5,783	$ 352	$ -	$ -	$ -	$ -
200	$ -	$ -	$ -	$ -	$ 2,024	$ 202	$ -	$ -	$ -	$ -	$ -	$ -
Total	$ 265	$ 222	$ 1,176	$ 56	$ 6,483	$ 3,290	$ 16,331	$ 715	$ -	$ -	$ -	$ -
Grand Total	$ 1,718				$ 26,819				$ -			
OPTION 4												
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7.5	$ 265	$ 222	$ 1,176	$ 56	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
25	$ -	$ -	$ -	$ -	$ 3,029	$ 2,232	$ 10,547	$ 363	$ -	$ -	$ -	$ -
70	$ -	$ -	$ -	$ -	$ 1,430	$ 856	$ 5,783	$ 352	$ -	$ -	$ -	$ -
200	$ -	$ -	$ -	$ -	$ 2,024	$ 202	$ -	$ -	$ -	$ -	$ -	$ -
Total	$ 265	$ 222	$ 1,176	$ 56	$ 6,483	$ 3,290	$ 16,331	$ 715	$ -	$ -	$ -	$ -
Grand Total	$ 1,718				$ 26,819				$ -			

NM	E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1 (Site Sizes in Acres)	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
0.5	$ -	$ -	$ -	$ -	$ 262	$ 65	$ 1,388	$ 71
3	$ 22	$ 15	$ 179	$ 10	$ 453	$ 307	$ 3,752	$ 204
7.5	$ 13	$ 9	$ 43	$ 2	$ 725	$ 537	$ 2,701	$ 117
25	$ 33	$ 21	$ 91	$ 3	$ 3,859	$ 2,752	$ 12,839	$ 432
70	$ 20	$ 10	$ 63	$ 3	$ 1,721	$ 1,004	$ 6,716	$ 402
200	$ 28	$ 2	$ -	$ -	$ 2,464	$ 239	$ -	$ -
Total	$ 115	$ 57	$ 376	$ 18	$ 9,484	$ 4,905	$ 27,396	$ 1,227
Grand Total	$ 565				$ 43,011			
OPTION 2								
0.5	$ -	$ -	$ -	$ -	$ 262	$ 65	$ 1,388	$ 71
3	$ 22	$ 15	$ 179	$ 10	$ 366	$ 248	$ 3,035	$ 165
7.5	$ 13	$ 9	$ 43	$ 2	$ 725	$ 537	$ 2,701	$ 117
25	$ 33	$ 21	$ 91	$ 3	$ 3,859	$ 2,752	$ 12,839	$ 432
70	$ 20	$ 10	$ 63	$ 3	$ 1,721	$ 1,004	$ 6,716	$ 402
200	$ 28	$ 2	$ -	$ -	$ 2,464	$ 239	$ -	$ -
Total	$ 115	$ 57	$ 376	$ 18	$ 9,397	$ 4,846	$ 26,679	$ 1,188
Grand Total	$ 565				$ 42,110			
OPTION 3								
0.5	$ -	$ -	$ -	$ -	$ 262	$ 65	$ 1,388	$ 71
3	$ 22	$ 15	$ 179	$ 10	$ 366	$ 248	$ 3,035	$ 165
7.5	$ 13	$ 9	$ 43	$ 2	$ 620	$ 465	$ 2,355	$ 103
25	$ 33	$ 21	$ 91	$ 3	$ 3,528	$ 2,544	$ 11,923	$ 404
70	$ 20	$ 10	$ 63	$ 3	$ 1,608	$ 947	$ 6,355	$ 383
200	$ 28	$ 2	$ -	$ -	$ 2,298	$ 225	$ -	$ -
Total	$ 115	$ 57	$ 376	$ 18	$ 8,683	$ 4,495	$ 25,056	$ 1,127
Grand Total	$ 565				$ 39,361			
OPTION 4								
0.5	$ -	$ -	$ -	$ -	$ 262	$ 65	$ 1,388	$ 71
3	$ 22	$ 15	$ 179	$ 10	$ 366	$ 248	$ 3,035	$ 165
7.5	$ 13	$ 9	$ 43	$ 2	$ 620	$ 465	$ 2,355	$ 103
25	$ 33	$ 21	$ 91	$ 3	$ 3,528	$ 2,544	$ 11,923	$ 404
70	$ 20	$ 10	$ 63	$ 3	$ 1,608	$ 947	$ 6,355	$ 383
200	$ 28	$ 2	$ -	$ -	$ 2,298	$ 225	$ -	$ -
Total	$ 115	$ 57	$ 376	$ 18	$ 8,683	$ 4,495	$ 25,056	$ 1,127
Grand Total	$ 565				$ 39,361			

B-13. State BMP Costs (continued)

NV	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 36	$ 9	$ 192	$ 10
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12	$ 8	$ 99	$ 5	$ 3	$ 2	$ 25	$ 1	$ 63	$ 42	$ 518	$ 28
7.5	$ 37	$ 31	$ 162	$ 8	$ -	$ -	$ -	$ -	$ 14	$ 10	$ 48	$ 2	$ 2	$ 1	$ 6	$ 0	$ 100	$ 74	$ 373	$ 16
25	$ -	$ -	$ -	$ -	$ 419	$ 309	$ 1,457	$ 50	$ 46	$ 29	$ 127	$ 4	$ 5	$ 3	$ 13	$ 0	$ 534	$ 381	$ 1,774	$ 60
70	$ -	$ -	$ -	$ -	$ 199	$ 119	$ 800	$ 52	$ 16	$ 8	$ 50	$ 3	$ 3	$ 1	$ 9	$ 0	$ 239	$ 140	$ 929	$ 60
200	$ -	$ -	$ -	$ -	$ 281	$ 27	$ -	$ -	$ 23	$ 2	$ -	$ -	$ 4	$ 0	$ -	$ -	$ 342	$ 33	$ -	$ -
Total	$ 37	$ 31	$ 162	$ 8	$ 898	$ 456	$ 2,258	$ 103	$ 111	$ 57	$ 323	$ 14	$ 16	$ 8	$ 52	$ 2	$ 1,314	$ 679	$ 3,786	$ 174
Grand Total	$ 237				$ 3,715				$ 505				$ 78				$ 5,953			
OPTION 2																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 36	$ 9	$ 192	$ 10
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3	$ 2	$ 25	$ 1	$ 51	$ 34	$ 419	$ 23
7.5	$ 37	$ 31	$ 162	$ 8	$ -	$ -	$ -	$ -	$ 14	$ 10	$ 48	$ 2	$ 2	$ 1	$ 6	$ 0	$ 100	$ 74	$ 373	$ 16
25	$ -	$ -	$ -	$ -	$ 419	$ 309	$ 1,457	$ 50	$ 46	$ 29	$ 127	$ 4	$ 5	$ 3	$ 13	$ 0	$ 534	$ 381	$ 1,774	$ 60
70	$ -	$ -	$ -	$ -	$ 199	$ 119	$ 800	$ 52	$ 16	$ 8	$ 50	$ 3	$ 3	$ 1	$ 9	$ 0	$ 239	$ 140	$ 929	$ 60
200	$ -	$ -	$ -	$ -	$ 281	$ 27	$ -	$ -	$ 23	$ 2	$ -	$ -	$ 4	$ 0	$ -	$ -	$ 342	$ 33	$ -	$ -
Total	$ 37	$ 31	$ 162	$ 8	$ 898	$ 456	$ 2,258	$ 103	$ 99	$ 49	$ 224	$ 9	$ 16	$ 8	$ 52	$ 2	$ 1,302	$ 671	$ 3,687	$ 168
Grand Total	$ 237				$ 3,715				$ 380				$ 78				$ 5,829			
OPTION 3																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 36	$ 9	$ 192	$ 10
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3	$ 2	$ 25	$ 1	$ 51	$ 34	$ 419	$ 23
7.5	$ 37	$ 31	$ 162	$ 8	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2	$ 1	$ 6	$ 0	$ 86	$ 64	$ 325	$ 14
25	$ -	$ -	$ -	$ -	$ 419	$ 309	$ 1,457	$ 50	$ -	$ -	$ -	$ -	$ 5	$ 3	$ 13	$ 0	$ 488	$ 352	$ 1,647	$ 56
70	$ -	$ -	$ -	$ -	$ 199	$ 119	$ 800	$ 52	$ -	$ -	$ -	$ -	$ 3	$ 1	$ 9	$ 0	$ 224	$ 132	$ 880	$ 57
200	$ -	$ -	$ -	$ -	$ 281	$ 27	$ -	$ -	$ -	$ -	$ -	$ -	$ 4	$ 0	$ -	$ -	$ 319	$ 31	$ -	$ -
Total	$ 37	$ 31	$ 162	$ 8	$ 898	$ 456	$ 2,258	$ 103	$ -	$ -	$ -	$ -	$ 16	$ 8	$ 52	$ 2	$ 1,203	$ 622	$ 3,463	$ 160
Grand Total	$ 237				$ 3,715				$ -				$ 78				$ 5,448			
OPTION 4																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 36	$ 9	$ 192	$ 10
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3	$ 2	$ 25	$ 1	$ 51	$ 34	$ 419	$ 23
7.5	$ 37	$ 31	$ 162	$ 8	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2	$ 1	$ 6	$ 0	$ 86	$ 64	$ 325	$ 14
25	$ -	$ -	$ -	$ -	$ 419	$ 309	$ 1,457	$ 50	$ -	$ -	$ -	$ -	$ 5	$ 3	$ 13	$ 0	$ 488	$ 352	$ 1,647	$ 56
70	$ -	$ -	$ -	$ -	$ 199	$ 119	$ 800	$ 52	$ -	$ -	$ -	$ -	$ 3	$ 1	$ 9	$ 0	$ 224	$ 132	$ 880	$ 57
200	$ -	$ -	$ -	$ -	$ 281	$ 27	$ -	$ -	$ -	$ -	$ -	$ -	$ 4	$ 0	$ -	$ -	$ 319	$ 31	$ -	$ -
Total	$ 37	$ 31	$ 162	$ 8	$ 898	$ 456	$ 2,258	$ 103	$ -	$ -	$ -	$ -	$ 16	$ 8	$ 52	$ 2	$ 1,203	$ 622	$ 3,463	$ 160
Grand Total	$ 237				$ 3,715				$ -				$ 78				$ 5,448			

B-13. State BMP Costs (continued)

NY	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 495	$ 124	$ 2,624	$ 136
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 164	$ 111	$ 1,355	$ 74	$ 41	$ 28	$ 338	$ 18	$ 857	$ 581	$ 7,090	$ 387
7.5	$ 502	$ 421	$ 2,222	$ 106	$ -	$ -	$ -	$ -	$ 198	$ 135	$ 654	$ 27	$ 25	$ 17	$ 82	$ 3	$ 1,374	$ 1,017	$ 5,105	$ 224
25	$ -	$ -	$ -	$ -	$ 5,734	$ 4,229	$ 19,937	$ 698	$ 628	$ 394	$ 1,731	$ 53	$ 63	$ 39	$ 173	$ 5	$ 7,306	$ 5,215	$ 24,268	$ 831
70	$ -	$ -	$ -	$ -	$ 2,734	$ 1,649	$ 10,977	$ 722	$ 215	$ 110	$ 685	$ 40	$ 38	$ 19	$ 120	$ 7	$ 3,290	$ 1,935	$ 12,747	$ 824
200	$ -	$ -	$ -	$ -	$ 3,938	$ 464	$ -	$ -	$ 323	$ 32	$ -	$ -	$ 54	$ 5	$ -	$ -	$ 4,794	$ 550	$ -	$ -
Total	$ 502	$ 421	$ 2,222	$ 106	$ 12,406	$ 6,343	$ 30,914	$ 1,420	$ 1,528	$ 783	$ 4,425	$ 193	$ 219	$ 109	$ 712	$ 34	$ 18,117	$ 9,422	$ 51,833	$ 2,402
Grand Total	$ 3,252				$ 51,083				$ 6,929				$ 1,074				$ 81,775			
OPTION 2																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 495	$ 124	$ 2,624	$ 136
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 41	$ 28	$ 338	$ 18	$ 693	$ 470	$ 5,735	$ 313
7.5	$ 502	$ 421	$ 2,222	$ 106	$ -	$ -	$ -	$ -	$ 198	$ 135	$ 654	$ 27	$ 25	$ 17	$ 82	$ 3	$ 1,374	$ 1,017	$ 5,105	$ 224
25	$ -	$ -	$ -	$ -	$ 5,734	$ 4,229	$ 19,937	$ 698	$ 628	$ 394	$ 1,731	$ 53	$ 63	$ 39	$ 173	$ 5	$ 7,306	$ 5,215	$ 24,268	$ 831
70	$ -	$ -	$ -	$ -	$ 2,734	$ 1,649	$ 10,977	$ 722	$ 215	$ 110	$ 685	$ 40	$ 38	$ 19	$ 120	$ 7	$ 3,290	$ 1,935	$ 12,747	$ 824
200	$ -	$ -	$ -	$ -	$ 3,938	$ 464	$ -	$ -	$ 323	$ 32	$ -	$ -	$ 54	$ 5	$ -	$ -	$ 4,794	$ 550	$ -	$ -
Total	$ 502	$ 421	$ 2,222	$ 106	$ 12,406	$ 6,343	$ 30,914	$ 1,420	$ 1,364	$ 672	$ 3,070	$ 119	$ 219	$ 109	$ 712	$ 34	$ 17,953	$ 9,311	$ 50,479	$ 2,328
Grand Total	$ 3,252				$ 51,083				$ 5,226				$ 1,074				$ 80,071			
OPTION 3																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 495	$ 124	$ 2,624	$ 136
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 41	$ 28	$ 338	$ 18	$ 693	$ 470	$ 5,735	$ 313
7.5	$ 502	$ 421	$ 2,222	$ 106	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 25	$ 17	$ 82	$ 3	$ 1,176	$ 882	$ 4,451	$ 197
25	$ -	$ -	$ -	$ -	$ 5,734	$ 4,229	$ 19,937	$ 698	$ -	$ -	$ -	$ -	$ 63	$ 39	$ 173	$ 5	$ 6,678	$ 4,821	$ 22,537	$ 778
70	$ -	$ -	$ -	$ -	$ 2,734	$ 1,649	$ 10,977	$ 722	$ -	$ -	$ -	$ -	$ 38	$ 19	$ 120	$ 7	$ 3,075	$ 1,824	$ 12,062	$ 785
200	$ -	$ -	$ -	$ -	$ 3,938	$ 464	$ -	$ -	$ -	$ -	$ -	$ -	$ 54	$ 5	$ -	$ -	$ 4,472	$ 518	$ -	$ -
Total	$ 502	$ 421	$ 2,222	$ 106	$ 12,406	$ 6,343	$ 30,914	$ 1,420	$ -	$ -	$ -	$ -	$ 219	$ 109	$ 712	$ 34	$ 16,589	$ 8,639	$ 47,409	$ 2,209
Grand Total	$ 3,252				$ 51,083				$ -				$ 1,074				$ 74,845			
OPTION 4																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 495	$ 124	$ 2,624	$ 136
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 41	$ 28	$ 338	$ 18	$ 693	$ 470	$ 5,735	$ 313
7.5	$ 502	$ 421	$ 2,222	$ 106	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 25	$ 17	$ 82	$ 3	$ 1,176	$ 882	$ 4,451	$ 197
25	$ -	$ -	$ -	$ -	$ 5,734	$ 4,229	$ 19,937	$ 698	$ -	$ -	$ -	$ -	$ 63	$ 39	$ 173	$ 5	$ 6,678	$ 4,821	$ 22,537	$ 778
70	$ -	$ -	$ -	$ -	$ 2,734	$ 1,649	$ 10,977	$ 722	$ -	$ -	$ -	$ -	$ 38	$ 19	$ 120	$ 7	$ 3,075	$ 1,824	$ 12,062	$ 785
200	$ -	$ -	$ -	$ -	$ 3,938	$ 464	$ -	$ -	$ -	$ -	$ -	$ -	$ 54	$ 5	$ -	$ -	$ 4,472	$ 518	$ -	$ -
Total	$ 502	$ 421	$ 2,222	$ 106	$ 12,406	$ 6,343	$ 30,914	$ 1,420	$ -	$ -	$ -	$ -	$ 219	$ 109	$ 712	$ 34	$ 16,589	$ 8,639	$ 47,409	$ 2,209
Grand Total	$ 3,252				$ 51,083				$ -				$ 1,074				$ 74,845			

B-13. State BMP Costs (continued)

OH		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
	OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 470	$ 117	$ 2,490	$ 129
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 155	$ 105	$ 1,285	$ 70	$ 39	$ 26	$ 321	$ 17	$ 813	$ 551	$ 6,727	$ 367
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 188	$ 128	$ 621	$ 25	$ 23	$ 16	$ 77	$ 3	$ 829	$ 566	$ 2,736	$ 112
	25	$ -	$ -	$ -	$ -	$ 2,722	$ 2,006	$ 9,458	$ 333	$ 596	$ 374	$ 1,643	$ 51	$ 59	$ 37	$ 164	$ 5	$ 4,214	$ 2,941	$ 13,568	$ 460
	70	$ -	$ -	$ -	$ -	$ 1,295	$ 781	$ 5,207	$ 344	$ 204	$ 105	$ 649	$ 38	$ 36	$ 18	$ 113	$ 7	$ 1,823	$ 1,051	$ 6,886	$ 441
	200	$ -	$ -	$ -	$ -	$ 1,858	$ 213	$ -	$ -	$ 305	$ 30	$ -	$ -	$ 51	$ 5	$ -	$ -	$ 2,667	$ 292	$ -	$ -
	Total	$ -	$ -	$ -	$ -	$ 5,875	$ 2,999	$ 14,665	$ 677	$ 1,448	$ 742	$ 4,198	$ 184	$ 208	$ 103	$ 675	$ 32	$ 10,815	$ 5,518	$ 32,406	$ 1,509
	Grand Total	$ -				$ 24,217				$ 6,572				$ 1,018				$ 50,248			
	OPTION 2																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 470	$ 117	$ 2,490	$ 129
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 39	$ 26	$ 321	$ 17	$ 658	$ 446	$ 5,442	$ 297
	7.5	$ 476	$ 400	$ 2,109	$ 101	$ -	$ -	$ -	$ -	$ 188	$ 128	$ 621	$ 25	$ 23	$ 16	$ 77	$ 3	$ 1,305	$ 965	$ 4,845	$ 213
	25	$ -	$ -	$ -	$ -	$ 5,444	$ 4,011	$ 18,916	$ 666	$ 596	$ 374	$ 1,643	$ 51	$ 59	$ 37	$ 164	$ 5	$ 6,935	$ 4,947	$ 23,026	$ 793
	70	$ -	$ -	$ -	$ -	$ 2,591	$ 1,561	$ 10,414	$ 688	$ 204	$ 105	$ 649	$ 38	$ 36	$ 18	$ 113	$ 7	$ 3,118	$ 1,831	$ 12,093	$ 785
	200	$ -	$ -	$ -	$ -	$ 3,717	$ 426	$ -	$ -	$ 305	$ 30	$ -	$ -	$ 51	$ 5	$ -	$ -	$ 4,525	$ 505	$ -	$ -
	Total	$ 476	$ 400	$ 2,109	$ 101	$ 11,751	$ 5,998	$ 29,330	$ 1,354	$ 1,293	$ 636	$ 2,913	$ 114	$ 208	$ 103	$ 675	$ 32	$ 17,011	$ 8,811	$ 47,895	$ 2,217
	Grand Total	$ 3,086				$ 48,433				$ 4,956				$ 1,018				$ 75,934			
	OPTION 3																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 470	$ 117	$ 2,490	$ 129
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 39	$ 26	$ 321	$ 17	$ 658	$ 446	$ 5,442	$ 297
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 23	$ 16	$ 77	$ 3	$ 640	$ 437	$ 2,115	$ 86
	25	$ -	$ -	$ -	$ -	$ 2,722	$ 2,006	$ 9,458	$ 333	$ -	$ -	$ -	$ -	$ 59	$ 37	$ 164	$ 5	$ 3,617	$ 2,567	$ 11,925	$ 409
	70	$ -	$ -	$ -	$ -	$ 1,295	$ 781	$ 5,207	$ 344	$ -	$ -	$ -	$ -	$ 36	$ 18	$ 113	$ 7	$ 1,619	$ 946	$ 6,236	$ 404
	200	$ -	$ -	$ -	$ -	$ 1,858	$ 213	$ -	$ -	$ -	$ -	$ -	$ -	$ 51	$ 5	$ -	$ -	$ 2,362	$ 262	$ -	$ -
	Total	$ -	$ -	$ -	$ -	$ 5,875	$ 2,999	$ 14,665	$ 677	$ -	$ -	$ -	$ -	$ 208	$ 103	$ 675	$ 32	$ 9,367	$ 4,776	$ 28,208	$ 1,325
	Grand Total	$ -				$ 24,217				$ -				$ 1,018				$ 43,675			
	OPTION 4																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 470	$ 117	$ 2,490	$ 129
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 39	$ 26	$ 321	$ 17	$ 658	$ 446	$ 5,442	$ 297
	7.5	$ 476	$ 400	$ 2,109	$ 101	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 23	$ 16	$ 77	$ 3	$ 1,117	$ 837	$ 4,224	$ 187
	25	$ -	$ -	$ -	$ -	$ 5,444	$ 4,011	$ 18,916	$ 666	$ -	$ -	$ -	$ -	$ 59	$ 37	$ 164	$ 5	$ 6,339	$ 4,573	$ 21,383	$ 742
	70	$ -	$ -	$ -	$ -	$ 2,591	$ 1,561	$ 10,414	$ 688	$ -	$ -	$ -	$ -	$ 36	$ 18	$ 113	$ 7	$ 2,914	$ 1,727	$ 11,443	$ 748
	200	$ -	$ -	$ -	$ -	$ 3,717	$ 426	$ -	$ -	$ -	$ -	$ -	$ -	$ 51	$ 5	$ -	$ -	$ 4,221	$ 475	$ -	$ -
	Total	$ 476	$ 400	$ 2,109	$ 101	$ 11,751	$ 5,998	$ 29,330	$ 1,354	$ -	$ -	$ -	$ -	$ 208	$ 103	$ 675	$ 32	$ 15,718	$ 8,175	$ 44,982	$ 2,103
	Grand Total	$ 3,086				$ 48,433				$ -				$ 1,018				$ 70,978			

B-13. State BMP Costs (continued)

OK	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 199	$ 50	$ 1,053	$ 55
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 66	$ 45	$ 544	$ 30	$ 16	$ 11	$ 136	$ 7	$ 344	$ 233	$ 2,847	$ 155
7.5	$ 202	$ 169	$ 892	$ 43	$ -	$ -	$ -	$ -	$ 80	$ 54	$ 263	$ 11	$ 10	$ 7	$ 33	$ 1	$ 552	$ 408	$ 2,050	$ 90
25	$ -	$ -	$ -	$ -	$ 2,304	$ 1,698	$ 8,004	$ 282	$ 252	$ 158	$ 695	$ 22	$ 25	$ 16	$ 69	$ 2	$ 2,935	$ 2,094	$ 9,743	$ 336
70	$ -	$ -	$ -	$ -	$ 1,094	$ 661	$ 4,401	$ 286	$ 86	$ 44	$ 274	$ 16	$ 15	$ 8	$ 48	$ 3	$ 1,317	$ 775	$ 5,110	$ 327
200	$ -	$ -	$ -	$ -	$ 1,575	$ 174	$ -	$ -	$ 129	$ 12	$ -	$ -	$ 21	$ 2	$ -	$ -	$ 1,917	$ 207	$ -	$ -
Total	$ 202	$ 169	$ 892	$ 43	$ 4,972	$ 2,533	$ 12,405	$ 569	$ 613	$ 314	$ 1,776	$ 78	$ 88	$ 43	$ 286	$ 14	$ 7,264	$ 3,767	$ 20,804	$ 963
Grand Total	$ 1,306				$ 20,479				$ 2,780				$ 431				$ 32,797			
OPTION 2																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 199	$ 50	$ 1,053	$ 55
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 16	$ 11	$ 136	$ 7	$ 278	$ 189	$ 2,303	$ 126
7.5	$ 202	$ 169	$ 892	$ 43	$ -	$ -	$ -	$ -	$ 80	$ 54	$ 263	$ 11	$ 10	$ 7	$ 33	$ 1	$ 552	$ 408	$ 2,050	$ 90
25	$ -	$ -	$ -	$ -	$ 2,304	$ 1,698	$ 8,004	$ 282	$ 252	$ 158	$ 695	$ 22	$ 25	$ 16	$ 69	$ 2	$ 2,935	$ 2,094	$ 9,743	$ 336
70	$ -	$ -	$ -	$ -	$ 1,094	$ 661	$ 4,401	$ 286	$ 86	$ 44	$ 274	$ 16	$ 15	$ 8	$ 48	$ 3	$ 1,317	$ 775	$ 5,110	$ 327
200	$ -	$ -	$ -	$ -	$ 1,575	$ 174	$ -	$ -	$ 129	$ 12	$ -	$ -	$ 21	$ 2	$ -	$ -	$ 1,917	$ 207	$ -	$ -
Total	$ 202	$ 169	$ 892	$ 43	$ 4,972	$ 2,533	$ 12,405	$ 569	$ 547	$ 269	$ 1,232	$ 48	$ 88	$ 43	$ 286	$ 14	$ 7,198	$ 3,722	$ 20,260	$ 933
Grand Total	$ 1,306				$ 20,479				$ 2,096				$ 431				$ 32,113			
OPTION 3																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 199	$ 50	$ 1,053	$ 55
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 16	$ 11	$ 136	$ 7	$ 278	$ 189	$ 2,303	$ 126
7.5	$ 202	$ 169	$ 892	$ 43	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10	$ 7	$ 33	$ 1	$ 473	$ 354	$ 1,787	$ 79
25	$ -	$ -	$ -	$ -	$ 2,304	$ 1,698	$ 8,004	$ 282	$ -	$ -	$ -	$ -	$ 25	$ 16	$ 69	$ 2	$ 2,683	$ 1,935	$ 9,048	$ 315
70	$ -	$ -	$ -	$ -	$ 1,094	$ 661	$ 4,401	$ 286	$ -	$ -	$ -	$ -	$ 15	$ 8	$ 48	$ 3	$ 1,231	$ 731	$ 4,836	$ 311
200	$ -	$ -	$ -	$ -	$ 1,575	$ 174	$ -	$ -	$ -	$ -	$ -	$ -	$ 21	$ 2	$ -	$ -	$ 1,788	$ 195	$ -	$ -
Total	$ 202	$ 169	$ 892	$ 43	$ 4,972	$ 2,533	$ 12,405	$ 569	$ -	$ -	$ -	$ -	$ 88	$ 43	$ 286	$ 14	$ 6,651	$ 3,453	$ 19,027	$ 885
Grand Total	$ 1,306				$ 20,479				$ -				$ 431				$ 30,017			
OPTION 4																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 199	$ 50	$ 1,053	$ 55
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 16	$ 11	$ 136	$ 7	$ 278	$ 189	$ 2,303	$ 126
7.5	$ 202	$ 169	$ 892	$ 43	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10	$ 7	$ 33	$ 1	$ 473	$ 354	$ 1,787	$ 79
25	$ -	$ -	$ -	$ -	$ 2,304	$ 1,698	$ 8,004	$ 282	$ -	$ -	$ -	$ -	$ 25	$ 16	$ 69	$ 2	$ 2,683	$ 1,935	$ 9,048	$ 315
70	$ -	$ -	$ -	$ -	$ 1,094	$ 661	$ 4,401	$ 286	$ -	$ -	$ -	$ -	$ 15	$ 8	$ 48	$ 3	$ 1,231	$ 731	$ 4,836	$ 311
200	$ -	$ -	$ -	$ -	$ 1,575	$ 174	$ -	$ -	$ -	$ -	$ -	$ -	$ 21	$ 2	$ -	$ -	$ 1,788	$ 195	$ -	$ -
Total	$ 202	$ 169	$ 892	$ 43	$ 4,972	$ 2,533	$ 12,405	$ 569	$ -	$ -	$ -	$ -	$ 88	$ 43	$ 286	$ 14	$ 6,651	$ 3,453	$ 19,027	$ 885
Grand Total	$ 1,306				$ 20,479				$ -				$ 431				$ 30,017			

B-13. State BMP Costs (continued)

OR		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
	OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 150	$ 37	$ 798	$ 40
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50	$ 34	$ 412	$ 22	$ 12	$ 8	$ 103	$ 6	$ 260	$ 176	$ 2,157	$ 117
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 60	$ 41	$ 199	$ 8	$ 7	$ 5	$ 25	$ 1	$ 265	$ 180	$ 876	$ 34
	25	$ -	$ -	$ -	$ -	$ 868	$ 639	$ 3,028	$ 101	$ 190	$ 119	$ 526	$ 15	$ 19	$ 12	$ 52	$ 2	$ 1,343	$ 937	$ 4,344	$ 139
	70	$ -	$ -	$ -	$ -	$ 404	$ 232	$ 1,650	$ 90	$ 64	$ 31	$ 206	$ 10	$ 11	$ 5	$ 36	$ 2	$ 568	$ 313	$ 2,181	$ 116
	200	$ -	$ -	$ -	$ -	$ 563	$ 15	$ -	$ -	$ 92	$ 2	$ -	$ -	$ 15	$ 0	$ -	$ -	$ 808	$ 20	$ -	$ -
	Total	$ -	$ -	$ -	$ -	$ 1,834	$ 886	$ 4,678	$ 191	$ 456	$ 227	$ 1,343	$ 55	$ 65	$ 31	$ 216	$ 10	$ 3,394	$ 1,663	$ 10,356	$ 446
	Grand Total	$ -				$ 7,590				$ 2,080				$ 322				$ 15,860			
	OPTION 2																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 150	$ 37	$ 798	$ 40
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12	$ 8	$ 103	$ 6	$ 210	$ 142	$ 1,745	$ 94
	7.5	$ 152	$ 127	$ 675	$ 31	$ -	$ -	$ -	$ -	$ 60	$ 41	$ 199	$ 8	$ 7	$ 5	$ 25	$ 1	$ 417	$ 307	$ 1,551	$ 65
	25	$ -	$ -	$ -	$ -	$ 1,735	$ 1,278	$ 6,056	$ 202	$ 190	$ 119	$ 526	$ 15	$ 19	$ 12	$ 52	$ 2	$ 2,211	$ 1,576	$ 7,372	$ 240
	70	$ -	$ -	$ -	$ -	$ 807	$ 465	$ 3,299	$ 180	$ 64	$ 31	$ 206	$ 10	$ 11	$ 5	$ 36	$ 2	$ 971	$ 545	$ 3,831	$ 206
	200	$ -	$ -	$ -	$ -	$ 1,126	$ 29	$ -	$ -	$ 92	$ 2	$ -	$ -	$ 15	$ 0	$ -	$ -	$ 1,371	$ 35	$ -	$ -
	Total	$ 152	$ 127	$ 675	$ 31	$ 3,668	$ 1,772	$ 9,356	$ 382	$ 406	$ 193	$ 930	$ 33	$ 65	$ 31	$ 216	$ 10	$ 5,331	$ 2,642	$ 15,297	$ 646
	Grand Total	$ 985				$ 15,179				$ 1,563				$ 322				$ 23,917			
	OPTION 3																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 150	$ 37	$ 798	$ 40
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12	$ 8	$ 103	$ 6	$ 210	$ 142	$ 1,745	$ 94
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7	$ 5	$ 25	$ 1	$ 205	$ 139	$ 677	$ 26
	25	$ -	$ -	$ -	$ -	$ 868	$ 639	$ 3,028	$ 101	$ -	$ -	$ -	$ -	$ 19	$ 12	$ 52	$ 2	$ 1,153	$ 818	$ 3,818	$ 124
	70	$ -	$ -	$ -	$ -	$ 404	$ 232	$ 1,650	$ 90	$ -	$ -	$ -	$ -	$ 11	$ 5	$ 36	$ 2	$ 504	$ 282	$ 1,976	$ 106
	200	$ -	$ -	$ -	$ -	$ 563	$ 15	$ -	$ -	$ -	$ -	$ -	$ -	$ 15	$ 0	$ -	$ -	$ 716	$ 18	$ -	$ -
	Total	$ -	$ -	$ -	$ -	$ 1,834	$ 886	$ 4,678	$ 191	$ -	$ -	$ -	$ -	$ 65	$ 31	$ 216	$ 10	$ 2,939	$ 1,436	$ 9,014	$ 391
	Grand Total	$ -				$ 7,590				$ -				$ 322				$ 13,780			
	OPTION 4																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 150	$ 37	$ 798	$ 40
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12	$ 8	$ 103	$ 6	$ 210	$ 142	$ 1,745	$ 94
	7.5	$ 152	$ 127	$ 675	$ 31	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7	$ 5	$ 25	$ 1	$ 357	$ 266	$ 1,352	$ 57
	25	$ -	$ -	$ -	$ -	$ 1,735	$ 1,278	$ 6,056	$ 202	$ -	$ -	$ -	$ -	$ 19	$ 12	$ 52	$ 2	$ 2,021	$ 1,457	$ 6,846	$ 225
	70	$ -	$ -	$ -	$ -	$ 807	$ 465	$ 3,299	$ 180	$ -	$ -	$ -	$ -	$ 11	$ 5	$ 36	$ 2	$ 908	$ 514	$ 3,625	$ 196
	200	$ -	$ -	$ -	$ -	$ 1,126	$ 29	$ -	$ -	$ -	$ -	$ -	$ -	$ 15	$ 0	$ -	$ -	$ 1,279	$ 33	$ -	$ -
	Total	$ 152	$ 127	$ 675	$ 31	$ 3,668	$ 1,772	$ 9,356	$ 382	$ -	$ -	$ -	$ -	$ 65	$ 31	$ 216	$ 10	$ 4,925	$ 2,449	$ 14,367	$ 613
	Grand Total	$ 985				$ 15,179				$ -				$ 322				$ 22,354			

B-13. State BMP Costs (continued)

PA	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 739	$ 185	$ 3,916	$ 203
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 244	$ 166	$ 2,022	$ 110	$ 61	$ 41	$ 504	$ 28	$ 1,279	$ 867	$ 10,581	$ 577
7.5	$ 749	$ 629	$ 3,317	$ 159	$ -	$ -	$ -	$ -	$ 296	$ 202	$ 977	$ 40	$ 37	$ 25	$ 122	$ 5	$ 2,052	$ 1,518	$ 7,620	$ 334
25	$ -	$ -	$ -	$ -	$ 8,559	$ 6,310	$ 29,755	$ 1,045	$ 937	$ 588	$ 2,584	$ 80	$ 94	$ 59	$ 258	$ 8	$ 10,904	$ 7,781	$ 36,220	$ 1,245
70	$ -	$ -	$ -	$ -	$ 4,081	$ 2,459	$ 16,380	$ 1,084	$ 322	$ 165	$ 1,022	$ 59	$ 56	$ 29	$ 178	$ 10	$ 4,912	$ 2,884	$ 19,020	$ 1,237
200	$ -	$ -	$ -	$ -	$ 5,870	$ 693	$ -	$ -	$ 481	$ 48	$ -	$ -	$ 80	$ 8	$ -	$ -	$ 7,148	$ 822	$ -	$ -
Total	$ 749	$ 629	$ 3,317	$ 159	$ 18,510	$ 9,462	$ 46,135	$ 2,129	$ 2,280	$ 1,169	$ 6,604	$ 289	$ 328	$ 162	$ 1,062	$ 51	$ 27,035	$ 14,057	$ 77,356	$ 3,596
Grand Total	$ 4,853				$ 76,236				$ 10,342				$ 1,602				$ 122,044			
OPTION 2																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 739	$ 185	$ 3,916	$ 203
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 974	$ 660	$ 8,055	$ 439
7.5	$ 749	$ 629	$ 3,317	$ 159	$ -	$ -	$ -	$ -	$ 296	$ 202	$ 977	$ 40	$ 37	$ 25	$ 122	$ 5	$ 2,052	$ 1,518	$ 7,620	$ 334
25	$ -	$ -	$ -	$ -	$ 8,559	$ 6,310	$ 29,755	$ 1,045	$ 937	$ 588	$ 2,584	$ 80	$ 94	$ 59	$ 258	$ 8	$ 10,904	$ 7,781	$ 36,220	$ 1,245
70	$ -	$ -	$ -	$ -	$ 4,081	$ 2,459	$ 16,380	$ 1,084	$ 322	$ 165	$ 1,022	$ 59	$ 56	$ 29	$ 178	$ 10	$ 4,912	$ 2,884	$ 19,020	$ 1,237
200	$ -	$ -	$ -	$ -	$ 5,870	$ 693	$ -	$ -	$ 481	$ 48	$ -	$ -	$ 80	$ 8	$ -	$ -	$ 7,148	$ 822	$ -	$ -
Total	$ 749	$ 629	$ 3,317	$ 159	$ 18,510	$ 9,462	$ 46,135	$ 2,129	$ 2,036	$ 1,003	$ 4,582	$ 179	$ 267	$ 121	$ 558	$ 23	$ 26,729	$ 13,850	$ 74,830	$ 3,458
Grand Total	$ 4,853				$ 76,236				$ 7,800				$ 968				$ 118,868			
OPTION 3																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 739	$ 185	$ 3,916	$ 203
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 974	$ 660	$ 8,055	$ 439
7.5	$ 749	$ 629	$ 3,317	$ 159	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,719	$ 1,291	$ 6,522	$ 289
25	$ -	$ -	$ -	$ -	$ 8,559	$ 6,310	$ 29,755	$ 1,045	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,873	$ 7,135	$ 33,378	$ 1,157
70	$ -	$ -	$ -	$ -	$ 4,081	$ 2,459	$ 16,380	$ 1,084	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,534	$ 2,691	$ 17,820	$ 1,167
200	$ -	$ -	$ -	$ -	$ 5,870	$ 693	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,587	$ 765	$ -	$ -
Total	$ 749	$ 629	$ 3,317	$ 159	$ 18,510	$ 9,462	$ 46,135	$ 2,129	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 24,427	$ 12,727	$ 69,691	$ 3,256
Grand Total	$ 4,853				$ 76,236				$ -				$ -				$ 110,100			
OPTION 4																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 739	$ 185	$ 3,916	$ 203
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 974	$ 660	$ 8,055	$ 439
7.5	$ 749	$ 629	$ 3,317	$ 159	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 37	$ 25	$ 122	$ 5	$ 1,756	$ 1,316	$ 6,643	$ 294
25	$ -	$ -	$ -	$ -	$ 8,559	$ 6,310	$ 29,755	$ 1,045	$ -	$ -	$ -	$ -	$ 94	$ 59	$ 258	$ 8	$ 9,967	$ 7,193	$ 33,636	$ 1,165
70	$ -	$ -	$ -	$ -	$ 4,081	$ 2,459	$ 16,380	$ 1,084	$ -	$ -	$ -	$ -	$ 56	$ 29	$ 178	$ 10	$ 4,591	$ 2,720	$ 17,998	$ 1,178
200	$ -	$ -	$ -	$ -	$ 5,870	$ 693	$ -	$ -	$ -	$ -	$ -	$ -	$ 80	$ 8	$ -	$ -	$ 6,667	$ 773	$ -	$ -
Total	$ 749	$ 629	$ 3,317	$ 159	$ 18,510	$ 9,462	$ 46,135	$ 2,129	$ -	$ -	$ -	$ -	$ 267	$ 121	$ 558	$ 23	$ 24,693	$ 12,847	$ 70,249	$ 3,279
Grand Total	$ 4,853				$ 76,236				$ -				$ 968				$ 111,068			

B-13. State BMP Costs (continued)

RI	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1 (Site Sizes in Acres)	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9	$ 2	$ 50	$ 3
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3	$ 2	$ 26	$ 1	$ 1	$ 1	$ 6	$ 0	$ 16	$ 11	$ 136	$ 7
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4	$ 3	$ 13	$ 1	$ 0	$ 0	$ 2	$ 0	$ 17	$ 11	$ 55	$ 2
25	$ -	$ -	$ -	$ -	$ 55	$ 41	$ 191	$ 7	$ 12	$ 8	$ 33	$ 1	$ 1	$ 1	$ 3	$ 0	$ 85	$ 59	$ 274	$ 9
70	$ -	$ -	$ -	$ -	$ 26	$ 16	$ 105	$ 7	$ 4	$ 2	$ 13	$ 1	$ 1	$ 0	$ 2	$ 0	$ 37	$ 21	$ 139	$ 9
200	$ -	$ -	$ -	$ -	$ 38	$ 4	$ -	$ -	$ 6	$ 1	$ -	$ -	$ 1	$ 0	$ -	$ -	$ 54	$ 6	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 119	$ 61	$ 296	$ 14	$ 29	$ 15	$ 85	$ 4	$ 4	$ 2	$ 14	$ 1	$ 219	$ 112	$ 654	$ 30
Grand Total	$ -				$ 489				$ 133				$ 21				$ 1,015			
OPTION 2 (Site Sizes in Acres)																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9	$ 2	$ 50	$ 3
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1	$ 1	$ 6	$ 0	$ 13	$ 9	$ 110	$ 6
7.5	$ 10	$ 8	$ 43	$ 2	$ -	$ -	$ -	$ -	$ 4	$ 3	$ 13	$ 1	$ 0	$ 0	$ 2	$ 0	$ 26	$ 19	$ 98	$ 4
25	$ -	$ -	$ -	$ -	$ 110	$ 81	$ 382	$ 13	$ 12	$ 8	$ 33	$ 1	$ 1	$ 1	$ 3	$ 0	$ 140	$ 100	$ 465	$ 16
70	$ -	$ -	$ -	$ -	$ 52	$ 32	$ 210	$ 14	$ 4	$ 2	$ 13	$ 1	$ 1	$ 0	$ 2	$ 0	$ 63	$ 37	$ 244	$ 16
200	$ -	$ -	$ -	$ -	$ 76	$ 9	$ -	$ -	$ 6	$ 1	$ -	$ -	$ 1	$ 0	$ -	$ -	$ 92	$ 11	$ -	$ -
Total	$ 10	$ 8	$ 43	$ 2	$ 238	$ 122	$ 592	$ 27	$ 26	$ 13	$ 59	$ 2	$ 4	$ 2	$ 14	$ 1	$ 344	$ 178	$ 967	$ 45
Grand Total	$ 62				$ 979				$ 100				$ 21				$ 1,534			
OPTION 3 (Site Sizes in Acres)																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9	$ 2	$ 50	$ 3
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1	$ 1	$ 6	$ 0	$ 13	$ 9	$ 110	$ 6
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 0	$ 0	$ 2	$ 0	$ 13	$ 9	$ 43	$ 2
25	$ -	$ -	$ -	$ -	$ 55	$ 41	$ 191	$ 7	$ -	$ -	$ -	$ -	$ 1	$ 1	$ 3	$ 0	$ 73	$ 52	$ 241	$ 8
70	$ -	$ -	$ -	$ -	$ 26	$ 16	$ 105	$ 7	$ -	$ -	$ -	$ -	$ 1	$ 0	$ 2	$ 0	$ 33	$ 19	$ 126	$ 8
200	$ -	$ -	$ -	$ -	$ 38	$ 4	$ -	$ -	$ -	$ -	$ -	$ -	$ 1	$ 0	$ -	$ -	$ 48	$ 6	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 119	$ 61	$ 296	$ 14	$ -	$ -	$ -	$ -	$ 4	$ 2	$ 14	$ 1	$ 189	$ 97	$ 569	$ 27
Grand Total	$ -				$ 489				$ -				$ 21				$ 882			
OPTION 4 (Site Sizes in Acres)																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9	$ 2	$ 50	$ 3
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1	$ 1	$ 6	$ 0	$ 13	$ 9	$ 110	$ 6
7.5	$ 10	$ 8	$ 43	$ 2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 0	$ 0	$ 2	$ 0	$ 23	$ 17	$ 85	$ 4
25	$ -	$ -	$ -	$ -	$ 110	$ 81	$ 382	$ 13	$ -	$ -	$ -	$ -	$ 1	$ 1	$ 3	$ 0	$ 128	$ 92	$ 432	$ 15
70	$ -	$ -	$ -	$ -	$ 52	$ 32	$ 210	$ 14	$ -	$ -	$ -	$ -	$ 1	$ 0	$ 2	$ 0	$ 59	$ 35	$ 231	$ 15
200	$ -	$ -	$ -	$ -	$ 76	$ 9	$ -	$ -	$ -	$ -	$ -	$ -	$ 1	$ 0	$ -	$ -	$ 86	$ 10	$ -	$ -
Total	$ 10	$ 8	$ 43	$ 2	$ 238	$ 122	$ 592	$ 27	$ -	$ -	$ -	$ -	$ 4	$ 2	$ 14	$ 1	$ 318	$ 166	$ 908	$ 42
Grand Total	$ 62				$ 979				$ -				$ 21				$ 1,434			

B-13. State BMP Costs (continued)

SC	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 368	$ 92	$ 1,950	$ 101
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 122	$ 82	$ 1,007	$ 55	$ 30	$ 21	$ 251	$ 14	$ 637	$ 432	$ 5,270	$ 287
7.5	$ 373	$ 313	$ 1,652	$ 79	$ -	$ -	$ -	$ -	$ 147	$ 101	$ 486	$ 20	$ 18	$ 13	$ 61	$ 2	$ 1,021	$ 756	$ 3,796	$ 166
25	$ -	$ -	$ -	$ -	$ 4,263	$ 3,142	$ 14,816	$ 523	$ 467	$ 293	$ 1,287	$ 40	$ 47	$ 29	$ 128	$ 4	$ 5,432	$ 3,874	$ 18,035	$ 622
70	$ -	$ -	$ -	$ -	$ 2,023	$ 1,225	$ 8,156	$ 537	$ 159	$ 82	$ 509	$ 29	$ 28	$ 14	$ 89	$ 5	$ 2,435	$ 1,436	$ 9,470	$ 613
200	$ -	$ -	$ -	$ -	$ 2,916	$ 341	$ -	$ -	$ 239	$ 24	$ -	$ -	$ 40	$ 4	$ -	$ -	$ 3,551	$ 404	$ -	$ -
Total	$ 373	$ 313	$ 1,652	$ 79	$ 9,203	$ 4,707	$ 22,971	$ 1,060	$ 1,134	$ 582	$ 3,289	$ 144	$ 163	$ 81	$ 529	$ 25	$ 13,444	$ 6,994	$ 38,521	$ 1,789
Grand Total	$ 2,417				$ 37,941				$ 5,148				$ 798				$ 60,749			
OPTION 2																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 368	$ 92	$ 1,950	$ 101
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 30	$ 21	$ 251	$ 14	$ 515	$ 349	$ 4,263	$ 233
7.5	$ 373	$ 313	$ 1,652	$ 79	$ -	$ -	$ -	$ -	$ 147	$ 101	$ 486	$ 20	$ 18	$ 13	$ 61	$ 2	$ 1,021	$ 756	$ 3,796	$ 166
25	$ -	$ -	$ -	$ -	$ 4,263	$ 3,142	$ 14,816	$ 523	$ 467	$ 293	$ 1,287	$ 40	$ 47	$ 29	$ 128	$ 4	$ 5,432	$ 3,874	$ 18,035	$ 622
70	$ -	$ -	$ -	$ -	$ 2,023	$ 1,225	$ 8,156	$ 537	$ 159	$ 82	$ 509	$ 29	$ 28	$ 14	$ 89	$ 5	$ 2,435	$ 1,436	$ 9,470	$ 613
200	$ -	$ -	$ -	$ -	$ 2,916	$ 341	$ -	$ -	$ 239	$ 24	$ -	$ -	$ 40	$ 4	$ -	$ -	$ 3,551	$ 404	$ -	$ -
Total	$ 373	$ 313	$ 1,652	$ 79	$ 9,203	$ 4,707	$ 22,971	$ 1,060	$ 1,013	$ 499	$ 2,282	$ 89	$ 163	$ 81	$ 529	$ 25	$ 13,323	$ 6,912	$ 37,514	$ 1,734
Grand Total	$ 2,417				$ 37,941				$ 3,882				$ 798				$ 59,482			
OPTION 3																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 368	$ 92	$ 1,950	$ 101
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 30	$ 21	$ 251	$ 14	$ 515	$ 349	$ 4,263	$ 233
7.5	$ 373	$ 313	$ 1,652	$ 79	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 18	$ 13	$ 61	$ 2	$ 874	$ 656	$ 3,309	$ 146
25	$ -	$ -	$ -	$ -	$ 4,263	$ 3,142	$ 14,816	$ 523	$ -	$ -	$ -	$ -	$ 47	$ 29	$ 128	$ 4	$ 4,965	$ 3,581	$ 16,748	$ 583
70	$ -	$ -	$ -	$ -	$ 2,023	$ 1,225	$ 8,156	$ 537	$ -	$ -	$ -	$ -	$ 28	$ 14	$ 89	$ 5	$ 2,276	$ 1,355	$ 8,961	$ 583
200	$ -	$ -	$ -	$ -	$ 2,916	$ 341	$ -	$ -	$ -	$ -	$ -	$ -	$ 40	$ 4	$ -	$ -	$ 3,312	$ 380	$ -	$ -
Total	$ 373	$ 313	$ 1,652	$ 79	$ 9,203	$ 4,707	$ 22,971	$ 1,060	$ -	$ -	$ -	$ -	$ 163	$ 81	$ 529	$ 25	$ 12,310	$ 6,413	$ 35,232	$ 1,645
Grand Total	$ 2,417				$ 37,941				$ -				$ 798				$ 55,600			
OPTION 4																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 368	$ 92	$ 1,950	$ 101
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 30	$ 21	$ 251	$ 14	$ 515	$ 349	$ 4,263	$ 233
7.5	$ 373	$ 313	$ 1,652	$ 79	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 18	$ 13	$ 61	$ 2	$ 874	$ 656	$ 3,309	$ 146
25	$ -	$ -	$ -	$ -	$ 4,263	$ 3,142	$ 14,816	$ 523	$ -	$ -	$ -	$ -	$ 47	$ 29	$ 128	$ 4	$ 4,965	$ 3,581	$ 16,748	$ 583
70	$ -	$ -	$ -	$ -	$ 2,023	$ 1,225	$ 8,156	$ 537	$ -	$ -	$ -	$ -	$ 28	$ 14	$ 89	$ 5	$ 2,276	$ 1,355	$ 8,961	$ 583
200	$ -	$ -	$ -	$ -	$ 2,916	$ 341	$ -	$ -	$ -	$ -	$ -	$ -	$ 40	$ 4	$ -	$ -	$ 3,312	$ 380	$ -	$ -
Total	$ 373	$ 313	$ 1,652	$ 79	$ 9,203	$ 4,707	$ 22,971	$ 1,060	$ -	$ -	$ -	$ -	$ 163	$ 81	$ 529	$ 25	$ 12,310	$ 6,413	$ 35,232	$ 1,645
Grand Total	$ 2,417				$ 37,941				$ -				$ 798				$ 55,600			

B-13. State BMP Costs (continued)

SD		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 67	$ 17	$ 357	$ 18
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 22	$ 15	$ 184	$ 10	$ 6	$ 4	$ 46	$ 3	$ 117	$ 79	$ 965	$ 53
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 27	$ 18	$ 89	$ 4	$ 3	$ 2	$ 11	$ 0	$ 119	$ 81	$ 392	$ 16
	25	$ -	$ -	$ -	$ -	$ 781	$ 575	$ 2,713	$ 95	$ 86	$ 54	$ 236	$ 7	$ 9	$ 5	$ 23	$ 1	$ 995	$ 709	$ 3,302	$ 113
	70	$ -	$ -	$ -	$ -	$ 370	$ 223	$ 1,493	$ 97	$ 29	$ 15	$ 93	$ 5	$ 5	$ 3	$ 16	$ 1	$ 445	$ 261	$ 1,734	$ 110
	200	$ -	$ -	$ -	$ -	$ 530	$ 53	$ -	$ -	$ 43	$ 4	$ -	$ -	$ 7	$ 1	$ -	$ -	$ 646	$ 63	$ -	$ -
Total		$ -	$ -	$ -	$ -	$ 1,681	$ 851	$ 4,206	$ 192	$ 207	$ 106	$ 602	$ 26	$ 30	$ 15	$ 97	$ 5	$ 2,388	$ 1,211	$ 6,750	$ 311
Grand Total		$ -				$ 6,930				$ 941				$ 146				$ 10,660			
OPTION 2																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 67	$ 17	$ 357	$ 18
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6	$ 4	$ 46	$ 3	$ 94	$ 64	$ 781	$ 43
	7.5	$ 68	$ 57	$ 302	$ 14	$ -	$ -	$ -	$ -	$ 27	$ 18	$ 89	$ 4	$ 3	$ 2	$ 11	$ 0	$ 187	$ 138	$ 695	$ 30
	25	$ -	$ -	$ -	$ -	$ 781	$ 575	$ 2,713	$ 95	$ 86	$ 54	$ 236	$ 7	$ 9	$ 5	$ 23	$ 1	$ 995	$ 709	$ 3,302	$ 113
	70	$ -	$ -	$ -	$ -	$ 370	$ 223	$ 1,493	$ 97	$ 29	$ 15	$ 93	$ 5	$ 5	$ 3	$ 16	$ 1	$ 445	$ 261	$ 1,734	$ 110
	200	$ -	$ -	$ -	$ -	$ 530	$ 53	$ -	$ -	$ 43	$ 4	$ -	$ -	$ 7	$ 1	$ -	$ -	$ 646	$ 63	$ -	$ -
Total		$ 68	$ 57	$ 302	$ 14	$ 1,681	$ 851	$ 4,206	$ 192	$ 185	$ 91	$ 418	$ 16	$ 30	$ 15	$ 97	$ 5	$ 2,434	$ 1,253	$ 6,868	$ 315
Grand Total		$ 442				$ 6,930				$ 710				$ 146				$ 10,870			
OPTION 3																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 67	$ 17	$ 357	$ 18
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6	$ 4	$ 46	$ 3	$ 94	$ 64	$ 781	$ 43
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3	$ 2	$ 11	$ 0	$ 92	$ 63	$ 303	$ 12
	25	$ -	$ -	$ -	$ -	$ 781	$ 575	$ 2,713	$ 95	$ -	$ -	$ -	$ -	$ 9	$ 5	$ 23	$ 1	$ 909	$ 656	$ 3,066	$ 106
	70	$ -	$ -	$ -	$ -	$ 370	$ 223	$ 1,493	$ 97	$ -	$ -	$ -	$ -	$ 5	$ 3	$ 16	$ 1	$ 416	$ 246	$ 1,641	$ 105
	200	$ -	$ -	$ -	$ -	$ 530	$ 53	$ -	$ -	$ -	$ -	$ -	$ -	$ 7	$ 1	$ -	$ -	$ 602	$ 59	$ -	$ -
Total		$ -	$ -	$ -	$ -	$ 1,681	$ 851	$ 4,206	$ 192	$ -	$ -	$ -	$ -	$ 30	$ 15	$ 97	$ 5	$ 2,181	$ 1,105	$ 6,148	$ 284
Grand Total		$ -				$ 6,930				$ -				$ 146				$ 9,718			
OPTION 4																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 67	$ 17	$ 357	$ 18
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6	$ 4	$ 46	$ 3	$ 94	$ 64	$ 781	$ 43
	7.5	$ 68	$ 57	$ 302	$ 14	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3	$ 2	$ 11	$ 0	$ 160	$ 120	$ 606	$ 27
	25	$ -	$ -	$ -	$ -	$ 781	$ 575	$ 2,713	$ 95	$ -	$ -	$ -	$ -	$ 9	$ 5	$ 23	$ 1	$ 909	$ 656	$ 3,066	$ 106
	70	$ -	$ -	$ -	$ -	$ 370	$ 223	$ 1,493	$ 97	$ -	$ -	$ -	$ -	$ 5	$ 3	$ 16	$ 1	$ 416	$ 246	$ 1,641	$ 105
	200	$ -	$ -	$ -	$ -	$ 530	$ 53	$ -	$ -	$ -	$ -	$ -	$ -	$ 7	$ 1	$ -	$ -	$ 602	$ 59	$ -	$ -
Total		$ 68	$ 57	$ 302	$ 14	$ 1,681	$ 851	$ 4,206	$ 192	$ -	$ -	$ -	$ -	$ 30	$ 15	$ 97	$ 5	$ 2,249	$ 1,162	$ 6,450	$ 299
Grand Total		$ 442				$ 6,930				$ -				$ 146				$ 10,161			

B-13. State BMP Costs (continued)

TN	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 447	$ 112	$ 2,368	$ 123
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 148	$ 100	$ 1,222	$ 67	$ 37	$ 25	$ 305	$ 17	$ 773	$ 524	$ 6,397	$ 349
7.5	$ 453	$ 380	$ 2,006	$ 96	$ -	$ -	$ -	$ -	$ 179	$ 122	$ 591	$ 24	$ 22	$ 15	$ 74	$ 3	$ 1,241	$ 918	$ 4,608	$ 202
25	$ -	$ -	$ -	$ -	$ 5,176	$ 3,813	$ 17,988	$ 635	$ 567	$ 355	$ 1,562	$ 48	$ 57	$ 35	$ 156	$ 5	$ 6,594	$ 4,702	$ 21,897	$ 756
70	$ -	$ -	$ -	$ -	$ 2,466	$ 1,486	$ 9,900	$ 654	$ 194	$ 99	$ 617	$ 36	$ 34	$ 17	$ 108	$ 6	$ 2,968	$ 1,743	$ 11,496	$ 746
200	$ -	$ -	$ -	$ -	$ 3,541	$ 418	$ -	$ -	$ 290	$ 29	$ -	$ -	$ 48	$ 5	$ -	$ -	$ 4,311	$ 495	$ -	$ -
Total	$ 453	$ 380	$ 2,006	$ 96	$ 11,183	$ 5,716	$ 27,888	$ 1,288	$ 1,378	$ 706	$ 3,992	$ 175	$ 198	$ 98	$ 642	$ 31	$ 16,335	$ 8,494	$ 46,764	$ 2,175
Grand Total	$ 2,935				$ 46,076				$ 6,251				$ 969				$ 73,769			
OPTION 2																				
Site Sizes in Acres																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 447	$ 112	$ 2,368	$ 123
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 37	$ 25	$ 305	$ 17	$ 626	$ 424	$ 5,175	$ 282
7.5	$ 453	$ 380	$ 2,006	$ 96	$ -	$ -	$ -	$ -	$ 179	$ 122	$ 591	$ 24	$ 22	$ 15	$ 74	$ 3	$ 1,241	$ 918	$ 4,608	$ 202
25	$ -	$ -	$ -	$ -	$ 5,176	$ 3,813	$ 17,988	$ 635	$ 567	$ 355	$ 1,562	$ 48	$ 57	$ 35	$ 156	$ 5	$ 6,594	$ 4,702	$ 21,897	$ 756
70	$ -	$ -	$ -	$ -	$ 2,466	$ 1,486	$ 9,900	$ 654	$ 194	$ 99	$ 617	$ 36	$ 34	$ 17	$ 108	$ 6	$ 2,968	$ 1,743	$ 11,496	$ 746
200	$ -	$ -	$ -	$ -	$ 3,541	$ 418	$ -	$ -	$ 290	$ 29	$ -	$ -	$ 48	$ 5	$ -	$ -	$ 4,311	$ 495	$ -	$ -
Total	$ 453	$ 380	$ 2,006	$ 96	$ 11,183	$ 5,716	$ 27,888	$ 1,288	$ 1,230	$ 606	$ 2,770	$ 108	$ 198	$ 98	$ 642	$ 31	$ 16,188	$ 8,393	$ 45,542	$ 2,109
Grand Total	$ 2,935				$ 46,076				$ 4,715				$ 969				$ 72,232			
OPTION 3																				
Site Sizes in Acres																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 447	$ 112	$ 2,368	$ 123
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 37	$ 25	$ 305	$ 17	$ 626	$ 424	$ 5,175	$ 282
7.5	$ 453	$ 380	$ 2,006	$ 96	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 22	$ 15	$ 74	$ 3	$ 1,062	$ 796	$ 4,017	$ 178
25	$ -	$ -	$ -	$ -	$ 5,176	$ 3,813	$ 17,988	$ 635	$ -	$ -	$ -	$ -	$ 57	$ 35	$ 156	$ 5	$ 6,027	$ 4,347	$ 20,335	$ 707
70	$ -	$ -	$ -	$ -	$ 2,466	$ 1,486	$ 9,900	$ 654	$ -	$ -	$ -	$ -	$ 34	$ 17	$ 108	$ 6	$ 2,774	$ 1,643	$ 10,878	$ 711
200	$ -	$ -	$ -	$ -	$ 3,541	$ 418	$ -	$ -	$ -	$ -	$ -	$ -	$ 48	$ 5	$ -	$ -	$ 4,021	$ 466	$ -	$ -
Total	$ 453	$ 380	$ 2,006	$ 96	$ 11,183	$ 5,716	$ 27,888	$ 1,288	$ -	$ -	$ -	$ -	$ 198	$ 98	$ 642	$ 31	$ 14,957	$ 7,787	$ 42,772	$ 2,001
Grand Total	$ 2,935				$ 46,076				$ -				$ 969				$ 67,517			
OPTION 4																				
Site Sizes in Acres																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 447	$ 112	$ 2,368	$ 123
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 37	$ 25	$ 305	$ 17	$ 626	$ 424	$ 5,175	$ 282
7.5	$ 453	$ 380	$ 2,006	$ 96	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 22	$ 15	$ 74	$ 3	$ 1,062	$ 796	$ 4,017	$ 178
25	$ -	$ -	$ -	$ -	$ 5,176	$ 3,813	$ 17,988	$ 635	$ -	$ -	$ -	$ -	$ 57	$ 35	$ 156	$ 5	$ 6,027	$ 4,347	$ 20,335	$ 707
70	$ -	$ -	$ -	$ -	$ 2,466	$ 1,486	$ 9,900	$ 654	$ -	$ -	$ -	$ -	$ 34	$ 17	$ 108	$ 6	$ 2,774	$ 1,643	$ 10,878	$ 711
200	$ -	$ -	$ -	$ -	$ 3,541	$ 418	$ -	$ -	$ -	$ -	$ -	$ -	$ 48	$ 5	$ -	$ -	$ 4,021	$ 466	$ -	$ -
Total	$ 453	$ 380	$ 2,006	$ 96	$ 11,183	$ 5,716	$ 27,888	$ 1,288	$ -	$ -	$ -	$ -	$ 198	$ 98	$ 642	$ 31	$ 14,957	$ 7,787	$ 42,772	$ 2,001
Grand Total	$ 2,935				$ 46,076				$ -				$ 969				$ 67,517			

B-13. State BMP Costs (continued)

TX		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,029	$ 256	$ 5,455	$ 282
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 340	$ 231	$ 2,817	$ 154	$ 85	$ 58	$ 702	$ 38	$ 1,781	$ 1,207	$ 14,742	$ 803
	7.5	$ 1,043	$ 875	$ 4,621	$ 220	$ -	$ -	$ -	$ -	$ 412	$ 281	$ 1,361	$ 55	$ 51	$ 35	$ 170	$ 7	$ 2,856	$ 2,113	$ 10,615	$ 463
	25	$ -	$ -	$ -	$ -	$ 11,922	$ 8,785	$ 41,442	$ 1,452	$ 1,306	$ 819	$ 3,599	$ 111	$ 130	$ 82	$ 359	$ 11	$ 15,189	$ 10,833	$ 50,446	$ 1,729
	70	$ -	$ -	$ -	$ -	$ 5,652	$ 3,408	$ 22,770	$ 1,440	$ 445	$ 228	$ 1,420	$ 79	$ 78	$ 40	$ 248	$ 14	$ 6,803	$ 3,997	$ 26,440	$ 1,644
	200	$ -	$ -	$ -	$ -	$ 8,102	$ 884	$ -	$ -	$ 664	$ 62	$ -	$ -	$ 110	$ 10	$ -	$ -	$ 9,865	$ 1,048	$ -	$ -
Total		$ 1,043	$ 875	$ 4,621	$ 220	$ 25,676	$ 13,076	$ 64,212	$ 2,892	$ 3,167	$ 1,620	$ 9,196	$ 398	$ 455	$ 224	$ 1,479	$ 70	$ 37,524	$ 19,454	$ 107,697	$ 4,921
Grand Total		$ 6,758				$ 105,857				$ 14,381				$ 2,228				$ 169,596			
OPTION 2																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,029	$ 256	$ 5,455	$ 282
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 85	$ 58	$ 702	$ 38	$ 1,441	$ 976	$ 11,925	$ 650
	7.5	$ 1,043	$ 875	$ 4,621	$ 220	$ -	$ -	$ -	$ -	$ 412	$ 281	$ 1,361	$ 55	$ 51	$ 35	$ 170	$ 7	$ 2,856	$ 2,113	$ 10,615	$ 463
	25	$ -	$ -	$ -	$ -	$ 11,922	$ 8,785	$ 41,442	$ 1,452	$ 1,306	$ 819	$ 3,599	$ 111	$ 130	$ 82	$ 359	$ 11	$ 15,189	$ 10,833	$ 50,446	$ 1,729
	70	$ -	$ -	$ -	$ -	$ 5,652	$ 3,408	$ 22,770	$ 1,440	$ 445	$ 228	$ 1,420	$ 79	$ 78	$ 40	$ 248	$ 14	$ 6,803	$ 3,997	$ 26,440	$ 1,644
	200	$ -	$ -	$ -	$ -	$ 8,102	$ 884	$ -	$ -	$ 664	$ 62	$ -	$ -	$ 110	$ 10	$ -	$ -	$ 9,865	$ 1,048	$ -	$ -
Total		$ 1,043	$ 875	$ 4,621	$ 220	$ 25,676	$ 13,076	$ 64,212	$ 2,892	$ 2,827	$ 1,389	$ 6,379	$ 245	$ 455	$ 224	$ 1,479	$ 70	$ 37,183	$ 19,223	$ 104,880	$ 4,768
Grand Total		$ 6,758				$ 105,857				$ 10,840				$ 2,228				$ 166,055			
OPTION 3																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,029	$ 256	$ 5,455	$ 282
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 85	$ 58	$ 702	$ 38	$ 1,441	$ 976	$ 11,925	$ 650
	7.5	$ 1,043	$ 875	$ 4,621	$ 220	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 51	$ 35	$ 170	$ 7	$ 2,445	$ 1,832	$ 9,255	$ 408
	25	$ -	$ -	$ -	$ -	$ 11,922	$ 8,785	$ 41,442	$ 1,452	$ -	$ -	$ -	$ -	$ 130	$ 82	$ 359	$ 11	$ 13,883	$ 10,014	$ 46,847	$ 1,618
	70	$ -	$ -	$ -	$ -	$ 5,652	$ 3,408	$ 22,770	$ 1,440	$ -	$ -	$ -	$ -	$ 78	$ 40	$ 248	$ 14	$ 6,358	$ 3,769	$ 25,019	$ 1,565
	200	$ -	$ -	$ -	$ -	$ 8,102	$ 884	$ -	$ -	$ -	$ -	$ -	$ -	$ 110	$ 10	$ -	$ -	$ 9,201	$ 986	$ -	$ -
Total		$ 1,043	$ 875	$ 4,621	$ 220	$ 25,676	$ 13,076	$ 64,212	$ 2,892	$ -	$ -	$ -	$ -	$ 455	$ 224	$ 1,479	$ 70	$ 34,357	$ 17,834	$ 98,501	$ 4,523
Grand Total		$ 6,758				$ 105,857				$ -				$ 2,228				$ 155,215			
OPTION 4																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,029	$ 256	$ 5,455	$ 282
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 85	$ 58	$ 702	$ 38	$ 1,441	$ 976	$ 11,925	$ 650
	7.5	$ 1,043	$ 875	$ 4,621	$ 220	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 51	$ 35	$ 170	$ 7	$ 2,445	$ 1,832	$ 9,255	$ 408
	25	$ -	$ -	$ -	$ -	$ 11,922	$ 8,785	$ 41,442	$ 1,452	$ -	$ -	$ -	$ -	$ 130	$ 82	$ 359	$ 11	$ 13,883	$ 10,014	$ 46,847	$ 1,618
	70	$ -	$ -	$ -	$ -	$ 5,652	$ 3,408	$ 22,770	$ 1,440	$ -	$ -	$ -	$ -	$ 78	$ 40	$ 248	$ 14	$ 6,358	$ 3,769	$ 25,019	$ 1,565
	200	$ -	$ -	$ -	$ -	$ 8,102	$ 884	$ -	$ -	$ -	$ -	$ -	$ -	$ 110	$ 10	$ -	$ -	$ 9,201	$ 986	$ -	$ -
Total		$ 1,043	$ 875	$ 4,621	$ 220	$ 25,676	$ 13,076	$ 64,212	$ 2,892	$ -	$ -	$ -	$ -	$ 455	$ 224	$ 1,479	$ 70	$ 34,357	$ 17,834	$ 98,501	$ 4,523
Grand Total		$ 6,758				$ 105,857				$ -				$ 2,228				$ 155,215			

B-13. State BMP Costs (continued)

UT	Sediment Trap Total Cost ($ 1,000)				Sediment Basins Total Cost ($ 1,000)				Installation Certification Total Cost ($ 1,000)				E&S Site Inspection Total Cost ($ 1,000)				Total Cost Total Cost ($ 1,000)			
Site Sizes in Acres	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
OPTION 1																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 96	$ 24	$ 508	$ 26
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 32	$ 21	$ 262	$ 14	$ 8	$ 5	$ 65	$ 4	$ 166	$ 112	$ 1,373	$ 75
7.5	$ 97	$ 81	$ 430	$ 20	$ -	$ -	$ -	$ -	$ 38	$ 26	$ 127	$ 5	$ 5	$ 3	$ 16	$ 1	$ 265	$ 197	$ 988	$ 43
25	$ -	$ -	$ -	$ -	$ 1,109	$ 817	$ 3,860	$ 131	$ 121	$ 76	$ 335	$ 10	$ 12	$ 8	$ 33	$ 1	$ 1,412	$ 1,007	$ 4,699	$ 156
70	$ -	$ -	$ -	$ -	$ 522	$ 315	$ 2,120	$ 132	$ 41	$ 21	$ 132	$ 7	$ 7	$ 4	$ 23	$ 1	$ 628	$ 370	$ 2,461	$ 151
200	$ -	$ -	$ -	$ -	$ 733	$ 73	$ -	$ -	$ 60	$ 5	$ -	$ -	$ 10	$ 1	$ -	$ -	$ 892	$ 87	$ -	$ -
Total	$ 97	$ 81	$ 430	$ 20	$ 2,363	$ 1,205	$ 5,980	$ 263	$ 293	$ 150	$ 856	$ 37	$ 42	$ 21	$ 138	$ 6	$ 3,460	$ 1,797	$ 10,029	$ 451
Grand Total	$ 629				$ 9,812				$ 1,335				$ 207				$ 15,736			
OPTION 2																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 96	$ 24	$ 508	$ 26
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8	$ 5	$ 65	$ 4	$ 134	$ 91	$ 1,110	$ 60
7.5	$ 97	$ 81	$ 430	$ 20	$ -	$ -	$ -	$ -	$ 38	$ 26	$ 127	$ 5	$ 5	$ 3	$ 16	$ 1	$ 265	$ 197	$ 988	$ 43
25	$ -	$ -	$ -	$ -	$ 1,109	$ 817	$ 3,860	$ 131	$ 121	$ 76	$ 335	$ 10	$ 12	$ 8	$ 33	$ 1	$ 1,412	$ 1,007	$ 4,699	$ 156
70	$ -	$ -	$ -	$ -	$ 522	$ 315	$ 2,120	$ 132	$ 41	$ 21	$ 132	$ 7	$ 7	$ 4	$ 23	$ 1	$ 628	$ 370	$ 2,461	$ 151
200	$ -	$ -	$ -	$ -	$ 733	$ 73	$ -	$ -	$ 60	$ 5	$ -	$ -	$ 10	$ 1	$ -	$ -	$ 892	$ 87	$ -	$ -
Total	$ 97	$ 81	$ 430	$ 20	$ 2,363	$ 1,205	$ 5,980	$ 263	$ 261	$ 128	$ 594	$ 22	$ 42	$ 21	$ 138	$ 6	$ 3,428	$ 1,775	$ 9,767	$ 436
Grand Total	$ 629				$ 9,812				$ 1,006				$ 207				$ 15,407			
OPTION 3																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 96	$ 24	$ 508	$ 26
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8	$ 5	$ 65	$ 4	$ 134	$ 91	$ 1,110	$ 60
7.5	$ 97	$ 81	$ 430	$ 20	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5	$ 3	$ 16	$ 1	$ 227	$ 170	$ 862	$ 38
25	$ -	$ -	$ -	$ -	$ 1,109	$ 817	$ 3,860	$ 131	$ -	$ -	$ -	$ -	$ 12	$ 8	$ 33	$ 1	$ 1,291	$ 931	$ 4,364	$ 146
70	$ -	$ -	$ -	$ -	$ 522	$ 315	$ 2,120	$ 132	$ -	$ -	$ -	$ -	$ 7	$ 4	$ 23	$ 1	$ 587	$ 349	$ 2,329	$ 143
200	$ -	$ -	$ -	$ -	$ 733	$ 73	$ -	$ -	$ -	$ -	$ -	$ -	$ 10	$ 1	$ -	$ -	$ 832	$ 82	$ -	$ -
Total	$ 97	$ 81	$ 430	$ 20	$ 2,363	$ 1,205	$ 5,980	$ 263	$ -	$ -	$ -	$ -	$ 42	$ 21	$ 138	$ 6	$ 3,167	$ 1,647	$ 9,173	$ 414
Grand Total	$ 629				$ 9,812				$ -				$ 207				$ 14,401			
OPTION 4																				
0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 96	$ 24	$ 508	$ 26
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8	$ 5	$ 65	$ 4	$ 134	$ 91	$ 1,110	$ 60
7.5	$ 97	$ 81	$ 430	$ 20	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5	$ 3	$ 16	$ 1	$ 227	$ 170	$ 862	$ 38
25	$ -	$ -	$ -	$ -	$ 1,109	$ 817	$ 3,860	$ 131	$ -	$ -	$ -	$ -	$ 12	$ 8	$ 33	$ 1	$ 1,291	$ 931	$ 4,364	$ 146
70	$ -	$ -	$ -	$ -	$ 522	$ 315	$ 2,120	$ 132	$ -	$ -	$ -	$ -	$ 7	$ 4	$ 23	$ 1	$ 587	$ 349	$ 2,329	$ 143
200	$ -	$ -	$ -	$ -	$ 733	$ 73	$ -	$ -	$ -	$ -	$ -	$ -	$ 10	$ 1	$ -	$ -	$ 832	$ 82	$ -	$ -
Total	$ 97	$ 81	$ 430	$ 20	$ 2,363	$ 1,205	$ 5,980	$ 263	$ -	$ -	$ -	$ -	$ 42	$ 21	$ 138	$ 6	$ 3,167	$ 1,647	$ 9,173	$ 414
Grand Total	$ 629				$ 9,812				$ -				$ 207				$ 14,401			

B-13. State BMP Costs (continued)

VA		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
OPTION 1																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 401	$ 100	$ 2,122	$ 110
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132	$ 90	$ 1,096	$ 60	$ 33	$ 22	$ 273	$ 15	$ 693	$ 470	$ 5,734	$ 313
	7.5	$ 406	$ 341	$ 1,798	$ 86	$ -	$ -	$ -	$ -	$ 160	$ 109	$ 529	$ 22	$ 20	$ 14	$ 66	$ 3	$ 1,112	$ 823	$ 4,130	$ 181
	25	$ -	$ -	$ -	$ -	$ 4,640	$ 3,419	$ 16,124	$ 569	$ 508	$ 319	$ 1,400	$ 43	$ 51	$ 32	$ 140	$ 4	$ 5,911	$ 4,216	$ 19,627	$ 678
	70	$ -	$ -	$ -	$ -	$ 2,209	$ 1,333	$ 8,875	$ 588	$ 174	$ 89	$ 553	$ 32	$ 30	$ 16	$ 97	$ 6	$ 2,659	$ 1,563	$ 10,305	$ 671
	200	$ -	$ -	$ -	$ -	$ 3,179	$ 372	$ -	$ -	$ 261	$ 26	$ -	$ -	$ 43	$ 4	$ -	$ -	$ 3,871	$ 441	$ -	$ -
Total		$ 406	$ 341	$ 1,798	$ 86	$ 10,028	$ 5,124	$ 24,998	$ 1,157	$ 1,236	$ 633	$ 3,579	$ 157	$ 177	$ 88	$ 576	$ 28	$ 14,646	$ 7,613	$ 41,918	$ 1,952
Grand Total		$ 2,630				$ 41,307				$ 5,604				$ 868				$ 66,130			
OPTION 2																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 401	$ 100	$ 2,122	$ 110
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 33	$ 22	$ 273	$ 15	$ 561	$ 380	$ 4,639	$ 253
	7.5	$ 406	$ 341	$ 1,798	$ 86	$ -	$ -	$ -	$ -	$ 160	$ 109	$ 529	$ 22	$ 20	$ 14	$ 66	$ 3	$ 1,112	$ 823	$ 4,130	$ 181
	25	$ -	$ -	$ -	$ -	$ 4,640	$ 3,419	$ 16,124	$ 569	$ 508	$ 319	$ 1,400	$ 43	$ 51	$ 32	$ 140	$ 4	$ 5,911	$ 4,216	$ 19,627	$ 678
	70	$ -	$ -	$ -	$ -	$ 2,209	$ 1,333	$ 8,875	$ 588	$ 174	$ 89	$ 553	$ 32	$ 30	$ 16	$ 97	$ 6	$ 2,659	$ 1,563	$ 10,305	$ 671
	200	$ -	$ -	$ -	$ -	$ 3,179	$ 372	$ -	$ -	$ 261	$ 26	$ -	$ -	$ 43	$ 4	$ -	$ -	$ 3,871	$ 441	$ -	$ -
Total		$ 406	$ 341	$ 1,798	$ 86	$ 10,028	$ 5,124	$ 24,998	$ 1,157	$ 1,103	$ 543	$ 2,483	$ 97	$ 177	$ 88	$ 576	$ 28	$ 14,514	$ 7,524	$ 40,822	$ 1,893
Grand Total		$ 2,630				$ 41,307				$ 4,226				$ 868				$ 64,753			
OPTION 3																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 401	$ 100	$ 2,122	$ 110
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 33	$ 22	$ 273	$ 15	$ 561	$ 380	$ 4,639	$ 253
	7.5	$ 406	$ 341	$ 1,798	$ 86	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 20	$ 14	$ 66	$ 3	$ 952	$ 713	$ 3,601	$ 159
	25	$ -	$ -	$ -	$ -	$ 4,640	$ 3,419	$ 16,124	$ 569	$ -	$ -	$ -	$ -	$ 51	$ 32	$ 140	$ 4	$ 5,403	$ 3,897	$ 18,227	$ 634
	70	$ -	$ -	$ -	$ -	$ 2,209	$ 1,333	$ 8,875	$ 588	$ -	$ -	$ -	$ -	$ 30	$ 16	$ 97	$ 6	$ 2,485	$ 1,474	$ 9,751	$ 639
	200	$ -	$ -	$ -	$ -	$ 3,179	$ 372	$ -	$ -	$ -	$ -	$ -	$ -	$ 43	$ 4	$ -	$ -	$ 3,610	$ 415	$ -	$ -
Total		$ 406	$ 341	$ 1,798	$ 86	$ 10,028	$ 5,124	$ 24,998	$ 1,157	$ -	$ -	$ -	$ -	$ 177	$ 88	$ 576	$ 28	$ 13,411	$ 6,980	$ 38,340	$ 1,796
Grand Total		$ 2,630				$ 41,307				$ -				$ 868				$ 60,526			
OPTION 4																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 401	$ 100	$ 2,122	$ 110
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 33	$ 22	$ 273	$ 15	$ 561	$ 380	$ 4,639	$ 253
	7.5	$ 406	$ 341	$ 1,798	$ 86	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 20	$ 14	$ 66	$ 3	$ 952	$ 713	$ 3,601	$ 159
	25	$ -	$ -	$ -	$ -	$ 4,640	$ 3,419	$ 16,124	$ 569	$ -	$ -	$ -	$ -	$ 51	$ 32	$ 140	$ 4	$ 5,403	$ 3,897	$ 18,227	$ 634
	70	$ -	$ -	$ -	$ -	$ 2,209	$ 1,333	$ 8,875	$ 588	$ -	$ -	$ -	$ -	$ 30	$ 16	$ 97	$ 6	$ 2,485	$ 1,474	$ 9,751	$ 639
	200	$ -	$ -	$ -	$ -	$ 3,179	$ 372	$ -	$ -	$ -	$ -	$ -	$ -	$ 43	$ 4	$ -	$ -	$ 3,610	$ 415	$ -	$ -
Total		$ 406	$ 341	$ 1,798	$ 86	$ 10,028	$ 5,124	$ 24,998	$ 1,157	$ -	$ -	$ -	$ -	$ 177	$ 88	$ 576	$ 28	$ 13,411	$ 6,980	$ 38,340	$ 1,796
Grand Total		$ 2,630				$ 41,307				$ -				$ 868				$ 60,526			

B-13. State BMP Costs (continued)

VT		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
	OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13	$ 3	$ 69	$ 4
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4	$ 3	$ 36	$ 2	$ 1	$ 1	$ 9	$ 0	$ 23	$ 15	$ 188	$ 10
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5	$ 4	$ 17	$ 1	$ 1	$ 0	$ 2	$ 0	$ 23	$ 16	$ 76	$ 3
	25	$ -	$ -	$ -	$ -	$ 76	$ 56	$ 264	$ 9	$ 17	$ 10	$ 46	$ 1	$ 2	$ 1	$ 5	$ 0	$ 117	$ 82	$ 378	$ 13
	70	$ -	$ -	$ -	$ -	$ 36	$ 22	$ 145	$ 10	$ 6	$ 3	$ 18	$ 1	$ 1	$ 1	$ 3	$ 0	$ 51	$ 29	$ 192	$ 12
	200	$ -	$ -	$ -	$ -	$ 52	$ 6	$ -	$ -	$ 9	$ 1	$ -	$ -	$ 1	$ 0	$ -	$ -	$ 75	$ 9	$ -	$ -
	Total	$ -	$ -	$ -	$ -	$ 164	$ 84	$ 409	$ 19	$ 40	$ 21	$ 117	$ 5	$ 6	$ 3	$ 19	$ 1	$ 302	$ 154	$ 903	$ 42
	Grand Total	$ -				$ 676				$ 183				$ 28				$ 1,401			
	OPTION 2																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13	$ 3	$ 69	$ 4
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1	$ 1	$ 9	$ 0	$ 18	$ 12	$ 152	$ 8
	7.5	$ 13	$ 11	$ 59	$ 3	$ -	$ -	$ -	$ -	$ 5	$ 4	$ 17	$ 1	$ 1	$ 0	$ 2	$ 0	$ 36	$ 27	$ 135	$ 6
	25	$ -	$ -	$ -	$ -	$ 152	$ 112	$ 527	$ 18	$ 17	$ 10	$ 46	$ 1	$ 2	$ 1	$ 5	$ 0	$ 193	$ 138	$ 642	$ 22
	70	$ -	$ -	$ -	$ -	$ 72	$ 44	$ 290	$ 19	$ 6	$ 3	$ 18	$ 1	$ 1	$ 1	$ 3	$ 0	$ 87	$ 51	$ 337	$ 22
	200	$ -	$ -	$ -	$ -	$ 104	$ 12	$ -	$ -	$ 9	$ 1	$ -	$ -	$ 1	$ 0	$ -	$ -	$ 127	$ 15	$ -	$ -
	Total	$ 13	$ 11	$ 59	$ 3	$ 328	$ 168	$ 818	$ 38	$ 36	$ 18	$ 81	$ 3	$ 6	$ 3	$ 19	$ 1	$ 475	$ 246	$ 1,335	$ 62
	Grand Total	$ 86				$ 1,351				$ 138				$ 28				$ 2,118			
	OPTION 3																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13	$ 3	$ 69	$ 4
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1	$ 1	$ 9	$ 0	$ 18	$ 12	$ 152	$ 8
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1	$ 0	$ 2	$ 0	$ 18	$ 12	$ 59	$ 2
	25	$ -	$ -	$ -	$ -	$ 76	$ 56	$ 264	$ 9	$ -	$ -	$ -	$ -	$ 2	$ 1	$ 5	$ 0	$ 101	$ 72	$ 332	$ 11
	70	$ -	$ -	$ -	$ -	$ 36	$ 22	$ 145	$ 10	$ -	$ -	$ -	$ -	$ 1	$ 1	$ 3	$ 0	$ 45	$ 26	$ 174	$ 11
	200	$ -	$ -	$ -	$ -	$ 52	$ 6	$ -	$ -	$ -	$ -	$ -	$ -	$ 1	$ 0	$ -	$ -	$ 66	$ 8	$ -	$ -
	Total	$ -	$ -	$ -	$ -	$ 164	$ 84	$ 409	$ 19	$ -	$ -	$ -	$ -	$ 6	$ 3	$ 19	$ 1	$ 262	$ 134	$ 786	$ 37
	Grand Total	$ -				$ 676				$ -				$ 28				$ 1,218			
	OPTION 4																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13	$ 3	$ 69	$ 4
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1	$ 1	$ 9	$ 0	$ 18	$ 12	$ 152	$ 8
	7.5	$ 13	$ 11	$ 59	$ 3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1	$ 0	$ 2	$ 0	$ 31	$ 23	$ 118	$ 5
	25	$ -	$ -	$ -	$ -	$ 152	$ 112	$ 527	$ 18	$ -	$ -	$ -	$ -	$ 2	$ 1	$ 5	$ 0	$ 177	$ 128	$ 596	$ 21
	70	$ -	$ -	$ -	$ -	$ 72	$ 44	$ 290	$ 19	$ -	$ -	$ -	$ -	$ 1	$ 1	$ 3	$ 0	$ 81	$ 48	$ 319	$ 21
	200	$ -	$ -	$ -	$ -	$ 104	$ 12	$ -	$ -	$ -	$ -	$ -	$ -	$ 1	$ 0	$ -	$ -	$ 118	$ 14	$ -	$ -
	Total	$ 13	$ 11	$ 59	$ 3	$ 328	$ 168	$ 818	$ 38	$ -	$ -	$ -	$ -	$ 6	$ 3	$ 19	$ 1	$ 439	$ 229	$ 1,254	$ 58
	Grand Total	$ 86				$ 1,351				$ -				$ 28				$ 1,980			

B-13. State BMP Costs (continued)

WA

Sediment Trap — Total Cost ($ 1,000)

		Single Family	Multi family	Commercial	Industrial
	OPTION 1				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -
	3	$ -	$ -	$ -	$ -
	7.5	$ -	$ -	$ -	$ -
	25	$ -	$ -	$ -	$ -
	70	$ -	$ -	$ -	$ -
	200	$ -	$ -	$ -	$ -
	Total	$ -	$ -	$ -	$ -
	Grand Total	$ -			
	OPTION 2				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -
	3	$ -	$ -	$ -	$ -
	7.5	$ 343	$ 285	$ 1,519	$ 68
	25	$ -	$ -	$ -	$ -
	70	$ -	$ -	$ -	$ -
	200	$ -	$ -	$ -	$ -
	Total	$ 343	$ 285	$ 1,519	$ 68
	Grand Total	$ 2,215			
	OPTION 3				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -
	3	$ -	$ -	$ -	$ -
	7.5	$ -	$ -	$ -	$ -
	25	$ -	$ -	$ -	$ -
	70	$ -	$ -	$ -	$ -
	200	$ -	$ -	$ -	$ -
	Total	$ -	$ -	$ -	$ -
	Grand Total	$ -			
	OPTION 4				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -
	3	$ -	$ -	$ -	$ -
	7.5	$ 343	$ 285	$ 1,519	$ 68
	25	$ -	$ -	$ -	$ -
	70	$ -	$ -	$ -	$ -
	200	$ -	$ -	$ -	$ -
	Total	$ 343	$ 285	$ 1,519	$ 68
	Grand Total	$ 2,215			

Sediment Basins — Total Cost ($ 1,000)

		Single Family	Multi family	Commercial	Industrial
	OPTION 1				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -
	3	$ -	$ -	$ -	$ -
	7.5	$ -	$ -	$ -	$ -
	25	$ 1,948	$ 1,435	$ 6,822	$ 226
	70	$ 906	$ 515	$ 3,697	$ 188
	200	$ 1,260	$ 3	$ -	$ -
	Total	$ 4,114	$ 1,953	$ 10,520	$ 414
	Grand Total	$ 17,000			
	OPTION 2				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -
	3	$ -	$ -	$ -	$ -
	7.5	$ -	$ -	$ -	$ -
	25	$ 3,896	$ 2,870	$ 13,645	$ 452
	70	$ 1,811	$ 1,029	$ 7,395	$ 376
	200	$ 2,520	$ 6	$ -	$ -
	Total	$ 8,227	$ 3,906	$ 21,040	$ 828
	Grand Total	$ 34,000			
	OPTION 3				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -
	3	$ -	$ -	$ -	$ -
	7.5	$ -	$ -	$ -	$ -
	25	$ 1,948	$ 1,435	$ 6,822	$ 226
	70	$ 906	$ 515	$ 3,697	$ 188
	200	$ 1,260	$ 3	$ -	$ -
	Total	$ 4,114	$ 1,953	$ 10,520	$ 414
	Grand Total	$ 17,000			
	OPTION 4				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -
	3	$ -	$ -	$ -	$ -
	7.5	$ -	$ -	$ -	$ -
	25	$ 3,896	$ 2,870	$ 13,645	$ 452
	70	$ 1,811	$ 1,029	$ 7,395	$ 376
	200	$ 2,520	$ 6	$ -	$ -
	Total	$ 8,227	$ 3,906	$ 21,040	$ 828
	Grand Total	$ 34,000			

Installation Certification — Total Cost ($ 1,000)

		Single Family	Multi family	Commercial	Industrial
	OPTION 1				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -
	3	$ 112	$ 76	$ 928	$ 50
	7.5	$ 135	$ 91	$ 447	$ 17
	25	$ 427	$ 267	$ 1,185	$ 34
	70	$ 143	$ 69	$ 461	$ 21
	200	$ 207	$ 0	$ -	$ -
	Total	$ 1,023	$ 504	$ 3,022	$ 122
	Grand Total	$ 4,671			
	OPTION 2				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -
	3	$ -	$ -	$ -	$ -
	7.5	$ 135	$ 91	$ 447	$ 17
	25	$ 427	$ 267	$ 1,185	$ 34
	70	$ 143	$ 69	$ 461	$ 21
	200	$ 207	$ 0	$ -	$ -
	Total	$ 911	$ 428	$ 2,093	$ 72
	Grand Total	$ 3,505			
	OPTION 3				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -
	3	$ -	$ -	$ -	$ -
	7.5	$ -	$ -	$ -	$ -
	25	$ -	$ -	$ -	$ -
	70	$ -	$ -	$ -	$ -
	200	$ -	$ -	$ -	$ -
	Total	$ -	$ -	$ -	$ -
	Grand Total	$ -			
	OPTION 4				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -
	3	$ -	$ -	$ -	$ -
	7.5	$ -	$ -	$ -	$ -
	25	$ -	$ -	$ -	$ -
	70	$ -	$ -	$ -	$ -
	200	$ -	$ -	$ -	$ -
	Total	$ -	$ -	$ -	$ -
	Grand Total	$ -			

E&S Site Inspection — Total Cost ($ 1,000)

		Single Family	Multi family	Commercial	Industrial
	OPTION 1				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -
	3	$ 28	$ 19	$ 232	$ 13
	7.5	$ 17	$ 11	$ 56	$ 2
	25	$ 43	$ 27	$ 118	$ 3
	70	$ 25	$ 12	$ 81	$ 4
	200	$ 34	$ 0	$ -	$ -
	Total	$ 147	$ 69	$ 486	$ 22
	Grand Total	$ 723			
	OPTION 2				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -
	3	$ 28	$ 19	$ 232	$ 13
	7.5	$ 17	$ 11	$ 56	$ 2
	25	$ 43	$ 27	$ 118	$ 3
	70	$ 25	$ 12	$ 81	$ 4
	200	$ 34	$ 0	$ -	$ -
	Total	$ 147	$ 69	$ 486	$ 22
	Grand Total	$ 723			
	OPTION 3				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -
	3	$ 28	$ 19	$ 232	$ 13
	7.5	$ 17	$ 11	$ 56	$ 2
	25	$ 43	$ 27	$ 118	$ 3
	70	$ 25	$ 12	$ 81	$ 4
	200	$ 34	$ 0	$ -	$ -
	Total	$ 147	$ 69	$ 486	$ 22
	Grand Total	$ 723			
	OPTION 4				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -
	3	$ 28	$ 19	$ 232	$ 13
	7.5	$ 17	$ 11	$ 56	$ 2
	25	$ 43	$ 27	$ 118	$ 3
	70	$ 25	$ 12	$ 81	$ 4
	200	$ 34	$ 0	$ -	$ -
	Total	$ 147	$ 69	$ 486	$ 22
	Grand Total	$ 723			

Total Cost — Total Cost ($ 1,000)

		Single Family	Multi family	Commercial	Industrial
	OPTION 1				
Site Sizes in Acres	0.5	$ 338	$ 83	$ 1,799	$ 91
	3	$ 585	$ 395	$ 4,859	$ 263
	7.5	$ 597	$ 403	$ 1,970	$ 75
	25	$ 3,016	$ 2,104	$ 9,787	$ 312
	70	$ 1,274	$ 693	$ 4,889	$ 241
	200	$ 1,809	$ 4	$ -	$ -
	Total	$ 7,619	$ 3,682	$ 23,304	$ 982
	Grand Total	$ 35,587			
	OPTION 2				
Site Sizes in Acres	0.5	$ 338	$ 83	$ 1,799	$ 91
	3	$ 473	$ 320	$ 3,931	$ 212
	7.5	$ 940	$ 688	$ 3,489	$ 143
	25	$ 4,964	$ 3,540	$ 16,609	$ 538
	70	$ 2,180	$ 1,207	$ 8,586	$ 429
	200	$ 3,069	$ 7	$ -	$ -
	Total	$ 11,964	$ 5,844	$ 34,414	$ 1,414
	Grand Total	$ 53,636			
	OPTION 3				
Site Sizes in Acres	0.5	$ 338	$ 83	$ 1,799	$ 91
	3	$ 473	$ 320	$ 3,931	$ 212
	7.5	$ 461	$ 311	$ 1,523	$ 58
	25	$ 2,589	$ 1,837	$ 8,602	$ 278
	70	$ 1,132	$ 624	$ 4,428	$ 221
	200	$ 1,602	$ 4	$ -	$ -
	Total	$ 6,595	$ 3,178	$ 20,282	$ 860
	Grand Total	$ 30,916			
	OPTION 4				
Site Sizes in Acres	0.5	$ 338	$ 83	$ 1,799	$ 91
	3	$ 473	$ 320	$ 3,931	$ 212
	7.5	$ 804	$ 596	$ 3,042	$ 126
	25	$ 4,537	$ 3,272	$ 15,425	$ 503
	70	$ 2,037	$ 1,138	$ 8,125	$ 409
	200	$ 2,862	$ 7	$ -	$ -
	Total	$ 11,052	$ 5,416	$ 32,321	$ 1,342
	Grand Total	$ 50,131			

B-13. State BMP Costs (continued)

WI	Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
	Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 247	$ 62	$ 1,311	$ 68
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 82	$ 55	$ 677	$ 37	$ 20	$ 14	$ 169	$ 9	$ 428	$ 290	$ 3,544	$ 193
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 99	$ 68	$ 327	$ 13	$ 12	$ 8	$ 41	$ 2	$ 436	$ 298	$ 1,441	$ 59
25	$ -	$ -	$ -	$ -	$ 1,434	$ 1,057	$ 4,982	$ 175	$ 314	$ 197	$ 865	$ 27	$ 31	$ 20	$ 86	$ 3	$ 2,220	$ 1,550	$ 7,146	$ 242
70	$ -	$ -	$ -	$ -	$ 681	$ 411	$ 2,743	$ 180	$ 107	$ 55	$ 342	$ 20	$ 19	$ 10	$ 60	$ 3	$ 959	$ 554	$ 3,627	$ 230
200	$ -	$ -	$ -	$ -	$ 978	$ 109	$ -	$ -	$ 160	$ 15	$ -	$ -	$ 27	$ 3	$ -	$ -	$ 1,403	$ 149	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 3,093	$ 1,577	$ 7,725	$ 355	$ 763	$ 390	$ 2,211	$ 97	$ 109	$ 54	$ 356	$ 17	$ 5,694	$ 2,903	$ 17,070	$ 793
Grand Total	$ -				$ 12,749				$ 3,461				$ 536				$ 26,459			
OPTION 2																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 247	$ 62	$ 1,311	$ 68
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 20	$ 14	$ 169	$ 9	$ 346	$ 235	$ 2,867	$ 156
7.5	$ 251	$ 211	$ 1,111	$ 53	$ -	$ -	$ -	$ -	$ 99	$ 68	$ 327	$ 13	$ 12	$ 8	$ 41	$ 2	$ 687	$ 509	$ 2,552	$ 112
25	$ -	$ -	$ -	$ -	$ 2,868	$ 2,114	$ 9,963	$ 350	$ 314	$ 197	$ 865	$ 27	$ 31	$ 20	$ 86	$ 3	$ 3,654	$ 2,607	$ 12,128	$ 417
70	$ -	$ -	$ -	$ -	$ 1,363	$ 823	$ 5,486	$ 359	$ 107	$ 55	$ 342	$ 20	$ 19	$ 10	$ 60	$ 3	$ 1,640	$ 965	$ 6,371	$ 410
200	$ -	$ -	$ -	$ -	$ 1,955	$ 218	$ -	$ -	$ 160	$ 15	$ -	$ -	$ 27	$ 3	$ -	$ -	$ 2,381	$ 258	$ -	$ -
Total	$ 251	$ 211	$ 1,111	$ 53	$ 6,186	$ 3,154	$ 15,449	$ 710	$ 681	$ 335	$ 1,534	$ 60	$ 109	$ 54	$ 356	$ 17	$ 8,956	$ 4,635	$ 25,228	$ 1,164
Grand Total	$ 1,626				$ 25,499				$ 2,610				$ 536				$ 39,982			
OPTION 3																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 247	$ 62	$ 1,311	$ 68
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 20	$ 14	$ 169	$ 9	$ 346	$ 235	$ 2,867	$ 156
7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12	$ 8	$ 41	$ 2	$ 337	$ 230	$ 1,114	$ 46
25	$ -	$ -	$ -	$ -	$ 1,434	$ 1,057	$ 4,982	$ 175	$ -	$ -	$ -	$ -	$ 31	$ 20	$ 86	$ 3	$ 1,906	$ 1,353	$ 6,281	$ 215
70	$ -	$ -	$ -	$ -	$ 681	$ 411	$ 2,743	$ 180	$ -	$ -	$ -	$ -	$ 19	$ 10	$ 60	$ 3	$ 851	$ 499	$ 3,285	$ 211
200	$ -	$ -	$ -	$ -	$ 978	$ 109	$ -	$ -	$ -	$ -	$ -	$ -	$ 27	$ 3	$ -	$ -	$ 1,243	$ 134	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ 3,093	$ 1,577	$ 7,725	$ 355	$ -	$ -	$ -	$ -	$ 109	$ 54	$ 356	$ 17	$ 4,931	$ 2,512	$ 14,858	$ 696
Grand Total	$ -				$ 12,749				$ -				$ 536				$ 22,997			
OPTION 4																				
Site Sizes in Acres 0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 247	$ 62	$ 1,311	$ 68
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 20	$ 14	$ 169	$ 9	$ 346	$ 235	$ 2,867	$ 156
7.5	$ 251	$ 211	$ 1,111	$ 53	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12	$ 8	$ 41	$ 2	$ 588	$ 441	$ 2,225	$ 99
25	$ -	$ -	$ -	$ -	$ 2,868	$ 2,114	$ 9,963	$ 350	$ -	$ -	$ -	$ -	$ 31	$ 20	$ 86	$ 3	$ 3,340	$ 2,410	$ 11,263	$ 391
70	$ -	$ -	$ -	$ -	$ 1,363	$ 823	$ 5,486	$ 359	$ -	$ -	$ -	$ -	$ 19	$ 10	$ 60	$ 3	$ 1,533	$ 910	$ 6,028	$ 390
200	$ -	$ -	$ -	$ -	$ 1,955	$ 218	$ -	$ -	$ -	$ -	$ -	$ -	$ 27	$ 3	$ -	$ -	$ 2,220	$ 243	$ -	$ -
Total	$ 251	$ 211	$ 1,111	$ 53	$ 6,186	$ 3,154	$ 15,449	$ 710	$ -	$ -	$ -	$ -	$ 109	$ 54	$ 356	$ 17	$ 8,275	$ 4,300	$ 23,694	$ 1,104
Grand Total	$ 1,626				$ 25,499				$ -				$ 536				$ 37,372			

B-13. State BMP Costs (continued)

WV		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
	OPTION 1	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 228	$ 57	$ 1,207	$ 63
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 75	$ 51	$ 623	$ 34	$ 19	$ 13	$ 155	$ 8	$ 394	$ 267	$ 3,260	$ 178
	7.5	$ 231	$ 194	$ 1,022	$ 49	$ -	$ -	$ -	$ -	$ 91	$ 62	$ 301	$ 12	$ 11	$ 8	$ 38	$ 2	$ 633	$ 468	$ 2,348	$ 103
	25	$ -	$ -	$ -	$ -	$ 2,638	$ 1,943	$ 9,168	$ 323	$ 289	$ 181	$ 796	$ 25	$ 29	$ 18	$ 79	$ 2	$ 3,361	$ 2,397	$ 11,160	$ 385
	70	$ -	$ -	$ -	$ -	$ 1,258	$ 757	$ 5,046	$ 336	$ 99	$ 51	$ 315	$ 18	$ 17	$ 9	$ 55	$ 3	$ 1,514	$ 887	$ 5,859	$ 383
	200	$ -	$ -	$ -	$ -	$ 1,805	$ 212	$ -	$ -	$ 148	$ 15	$ -	$ -	$ 25	$ 2	$ -	$ -	$ 2,197	$ 251	$ -	$ -
	Total	$ 231	$ 194	$ 1,022	$ 49	$ 5,700	$ 2,912	$ 14,214	$ 659	$ 702	$ 360	$ 2,035	$ 89	$ 101	$ 50	$ 327	$ 16	$ 8,326	$ 4,327	$ 23,835	$ 1,112
	Grand Total	$ 1,496				$ 23,486				$ 3,186				$ 494				$ 37,600			
	OPTION 2																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 228	$ 57	$ 1,207	$ 63
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 300	$ 203	$ 2,482	$ 135
	7.5	$ 231	$ 194	$ 1,022	$ 49	$ -	$ -	$ -	$ -	$ 91	$ 62	$ 301	$ 12	$ 11	$ 8	$ 38	$ 2	$ 633	$ 468	$ 2,348	$ 103
	25	$ -	$ -	$ -	$ -	$ 2,638	$ 1,943	$ 9,168	$ 323	$ 289	$ 181	$ 796	$ 25	$ 29	$ 18	$ 79	$ 2	$ 3,361	$ 2,397	$ 11,160	$ 385
	70	$ -	$ -	$ -	$ -	$ 1,258	$ 757	$ 5,046	$ 336	$ 99	$ 51	$ 315	$ 18	$ 17	$ 9	$ 55	$ 3	$ 1,514	$ 887	$ 5,859	$ 383
	200	$ -	$ -	$ -	$ -	$ 1,805	$ 212	$ -	$ -	$ 148	$ 15	$ -	$ -	$ 25	$ 2	$ -	$ -	$ 2,197	$ 251	$ -	$ -
	Total	$ 231	$ 194	$ 1,022	$ 49	$ 5,700	$ 2,912	$ 14,214	$ 659	$ 627	$ 309	$ 1,412	$ 55	$ 82	$ 37	$ 172	$ 7	$ 8,232	$ 4,263	$ 23,056	$ 1,069
	Grand Total	$ 1,496				$ 23,486				$ 2,403				$ 298				$ 36,621			
	OPTION 3																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 228	$ 57	$ 1,207	$ 63
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 300	$ 203	$ 2,482	$ 135
	7.5	$ 231	$ 194	$ 1,022	$ 49	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 530	$ 398	$ 2,010	$ 89
	25	$ -	$ -	$ -	$ -	$ 2,638	$ 1,943	$ 9,168	$ 323	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,043	$ 2,197	$ 10,285	$ 358
	70	$ -	$ -	$ -	$ -	$ 1,258	$ 757	$ 5,046	$ 336	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,397	$ 828	$ 5,489	$ 362
	200	$ -	$ -	$ -	$ -	$ 1,805	$ 212	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,025	$ 234	$ -	$ -
	Total	$ 231	$ 194	$ 1,022	$ 49	$ 5,700	$ 2,912	$ 14,214	$ 659	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,523	$ 3,918	$ 21,473	$ 1,007
	Grand Total	$ 1,496				$ 23,486				$ -				$ -				$ 33,920			
	OPTION 4																				
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 228	$ 57	$ 1,207	$ 63
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 300	$ 203	$ 2,482	$ 135
	7.5	$ 231	$ 194	$ 1,022	$ 49	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11	$ 8	$ 38	$ 2	$ 542	$ 406	$ 2,047	$ 91
	25	$ -	$ -	$ -	$ -	$ 2,638	$ 1,943	$ 9,168	$ 323	$ -	$ -	$ -	$ -	$ 29	$ 18	$ 79	$ 2	$ 3,072	$ 2,215	$ 10,364	$ 360
	70	$ -	$ -	$ -	$ -	$ 1,258	$ 757	$ 5,046	$ 336	$ -	$ -	$ -	$ -	$ 17	$ 9	$ 55	$ 3	$ 1,414	$ 837	$ 5,544	$ 365
	200	$ -	$ -	$ -	$ -	$ 1,805	$ 212	$ -	$ -	$ -	$ -	$ -	$ -	$ 25	$ 2	$ -	$ -	$ 2,049	$ 237	$ -	$ -
	Total	$ 231	$ 194	$ 1,022	$ 49	$ 5,700	$ 2,912	$ 14,214	$ 659	$ -	$ -	$ -	$ -	$ 82	$ 37	$ 172	$ 7	$ 7,605	$ 3,955	$ 21,645	$ 1,014
	Grand Total	$ 1,496				$ 23,486				$ -				$ 298				$ 34,218			

B-13. State BMP Costs (continued)

WY		Sediment Trap				Sediment Basins				Installation Certification				E&S Site Inspection				Total Cost			
		Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)				Total Cost ($ 1,000)			
OPTION 1		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 39	$ 10	$ 205	$ 10
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13	$ 9	$ 106	$ 6	$ 3	$ 2	$ 26	$ 1	$ 67	$ 45	$ 554	$ 30
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15	$ 11	$ 51	$ 2	$ 2	$ 1	$ 6	$ 0	$ 68	$ 46	$ 225	$ 9
	25	$ -	$ -	$ -	$ -	$ 224	$ 164	$ 779	$ 26	$ 49	$ 31	$ 135	$ 4	$ 5	$ 3	$ 13	$ 0	$ 346	$ 241	$ 1,117	$ 36
	70	$ -	$ -	$ -	$ -	$ 104	$ 62	$ 428	$ 25	$ 16	$ 8	$ 53	$ 3	$ 3	$ 1	$ 9	$ 0	$ 146	$ 84	$ 565	$ 31
	200	$ -	$ -	$ -	$ -	$ 146	$ 9	$ -	$ -	$ 24	$ 1	$ -	$ -	$ 4	$ 0	$ -	$ -	$ 209	$ 13	$ -	$ -
Total		$ -	$ -	$ -	$ -	$ 473	$ 236	$ 1,206	$ 51	$ 117	$ 59	$ 346	$ 14	$ 17	$ 8	$ 56	$ 3	$ 874	$ 439	$ 2,667	$ 117
Grand Total		$ -				$ 1,966				$ 537				$ 83				$ 4,097			
OPTION 2																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 39	$ 10	$ 205	$ 10
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3	$ 2	$ 26	$ 1	$ 54	$ 37	$ 448	$ 24
	7.5	$ 39	$ 33	$ 174	$ 8	$ -	$ -	$ -	$ -	$ 15	$ 11	$ 51	$ 2	$ 2	$ 1	$ 6	$ 0	$ 107	$ 79	$ 399	$ 17
	25	$ -	$ -	$ -	$ -	$ 447	$ 329	$ 1,558	$ 52	$ 49	$ 31	$ 135	$ 4	$ 5	$ 3	$ 13	$ 0	$ 570	$ 406	$ 1,896	$ 62
	70	$ -	$ -	$ -	$ -	$ 207	$ 125	$ 855	$ 49	$ 16	$ 8	$ 53	$ 3	$ 3	$ 1	$ 9	$ 0	$ 249	$ 146	$ 993	$ 56
	200	$ -	$ -	$ -	$ -	$ 292	$ 18	$ -	$ -	$ 24	$ 1	$ -	$ -	$ 4	$ 0	$ -	$ -	$ 355	$ 22	$ -	$ -
Total		$ 39	$ 33	$ 174	$ 8	$ 946	$ 472	$ 2,413	$ 101	$ 105	$ 51	$ 240	$ 9	$ 17	$ 8	$ 56	$ 3	$ 1,373	$ 699	$ 3,941	$ 170
Grand Total		$ 253				$ 3,932				$ 404				$ 83				$ 6,183			
OPTION 3																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 39	$ 10	$ 205	$ 10
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3	$ 2	$ 26	$ 1	$ 54	$ 37	$ 448	$ 24
	7.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2	$ 1	$ 6	$ 0	$ 52	$ 36	$ 174	$ 7
	25	$ -	$ -	$ -	$ -	$ 224	$ 164	$ 779	$ 26	$ -	$ -	$ -	$ -	$ 5	$ 3	$ 13	$ 0	$ 297	$ 210	$ 982	$ 32
	70	$ -	$ -	$ -	$ -	$ 104	$ 62	$ 428	$ 25	$ -	$ -	$ -	$ -	$ 3	$ 1	$ 9	$ 0	$ 129	$ 76	$ 512	$ 29
	200	$ -	$ -	$ -	$ -	$ 146	$ 9	$ -	$ -	$ -	$ -	$ -	$ -	$ 4	$ 0	$ -	$ -	$ 185	$ 11	$ -	$ -
Total		$ -	$ -	$ -	$ -	$ 473	$ 236	$ 1,206	$ 51	$ -	$ -	$ -	$ -	$ 17	$ 8	$ 56	$ 3	$ 757	$ 379	$ 2,321	$ 103
Grand Total		$ -				$ 1,966				$ -				$ 83				$ 3,560			
OPTION 4																					
Site Sizes in Acres	0.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 39	$ 10	$ 205	$ 10
	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3	$ 2	$ 26	$ 1	$ 54	$ 37	$ 448	$ 24
	7.5	$ 39	$ 33	$ 174	$ 8	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2	$ 1	$ 6	$ 0	$ 91	$ 69	$ 347	$ 15
	25	$ -	$ -	$ -	$ -	$ 447	$ 329	$ 1,558	$ 52	$ -	$ -	$ -	$ -	$ 5	$ 3	$ 13	$ 0	$ 521	$ 375	$ 1,761	$ 58
	70	$ -	$ -	$ -	$ -	$ 207	$ 125	$ 855	$ 49	$ -	$ -	$ -	$ -	$ 3	$ 1	$ 9	$ 0	$ 233	$ 138	$ 940	$ 53
	200	$ -	$ -	$ -	$ -	$ 292	$ 18	$ -	$ -	$ -	$ -	$ -	$ -	$ 4	$ 0	$ -	$ -	$ 331	$ 21	$ -	$ -
Total		$ 39	$ 33	$ 174	$ 8	$ 946	$ 472	$ 2,413	$ 101	$ -	$ -	$ -	$ -	$ 17	$ 8	$ 56	$ 3	$ 1,269	$ 648	$ 3,701	$ 162
Grand Total		$ 253				$ 3,932				$ -				$ 83				$ 5,780			

Appendix C

RUSLE Evaluation Information

RUSLE Parameters and Calculations

Location	Soil Texture Group	Ambient						Construction	Construction Site Loadings Without BMPs (tons/ac/yr)	Increased Load Over Ambient (tons/ac/yr)
		K	R	LS	C	P	Discharge Load (tons/ac/yr)	C		
EcoRegion 1, Indicator City Denver Co										
3% slope, 200' length	Sand	0.05	36	0.485	0.2144	1	0.19	0.8408	0.73	0.55
3% slope, 200' length	Sandy Loam	0.27	36	0.485	0.2144	1	1.01	0.8408	3.96	2.95
3% slope, 200' length	Loam	0.38	36	0.485	0.2144	1	1.42	0.8408	5.58	4.16
7% slope, 140' length	Sand	0.05	36	1.06	0.2144	1	0.41	0.8408	1.60	1.20
7% slope, 140' length	Sandy Loam	0.27	36	1.06	0.2144	1	2.21	0.8408	8.66	6.45
7% slope, 140' length	Loam	0.38	36	1.06	0.2144	1	3.11	0.8408	12.19	9.08
12% slope, 100' length	Sand	0.05	36	1.79	0.2144	1	0.69	0.8408	2.71	2.02
12% slope, 100' length	Sandy Loam	0.27	36	1.79	0.2144	1	3.73	0.8408	14.63	10.90
12% slope, 100' length	Loam	0.38	36	1.79	0.2144	1	5.25	0.8408	20.59	15.34
EcoRegion 2, Indicator City Salt Lake City Ut										
3% slope, 200' length	Sand	0.05	18	0.485	0.16	1	0.07	0.8271	0.36	0.29
3% slope, 200' length	Sandy Loam	0.27	18	0.485	0.16	1	0.38	0.8271	1.95	1.57
3% slope, 200' length	Loam	0.38	18	0.485	0.16	1	0.53	0.8271	2.74	2.21
7% slope, 140' length	Sand	0.05	18	1.06	0.16	1	0.15	0.8271	0.79	0.64
7% slope, 140' length	Sandy Loam	0.27	18	1.06	0.16	1	0.82	0.8271	4.26	3.44
7% slope, 140' length	Loam	0.38	18	1.06	0.16	1	1.16	0.8271	6.00	4.84
12% slope, 100' length	Sand	0.05	18	1.79	0.16	1	0.26	0.8271	1.33	1.07
12% slope, 100' length	Sandy Loam	0.27	18	1.79	0.16	1	1.39	0.8271	7.20	5.80
12% slope, 100' length	Loam	0.38	18	1.79	0.16	1	1.96	0.8271	10.13	8.17

Location	Soil Texture Group	Ambient						Construction	Construction Site Loadings Without BMPs (tons/ac/yr)	Increased Load Over Ambient (tons/ac/yr)
		K	R	LS	C	P	Discharge Load (tons/ac/yr)	C		
EcoRegion 3, Indicator City Austin, Tx										
3% slope, 200' length	Sandy Loam	0.27	256.5	0.485	0.3611	1	12.13	0.8771	29.46	17.33
3% slope, 200' length	Loam	0.38	256.5	0.485	0.3611	1	17.07	0.8771	41.46	24.39
3% slope, 200' length	N/A									
7% slope, 140' length	Sandy Loam	0.27	256.5	1.06	0.3611	1	26.51	0.8771	64.39	37.88
7% slope, 140' length	Loam	0.38	256.5	1.06	0.3611	1	37.31	0.8771	90.62	53.31
7% slope, 140' length	N/A									
12% slope, 100' length	Sandy Loam	0.27	256.5	1.79	0.3611	1	44.76	0.8771	108.73	63.97
12% slope, 100' length	Loam	0.38	256.5	1.79	0.3611	1	63.00	0.8771	153.03	90.03
12% slope, 100' length	N/A									
EcoRegion 4, Indicator City Atlanta, Ga										
3% slope, 200' length	Loamy Sand	0.12	265.5	0.485	0.3403	1	5.26	0.8978	13.87	8.61
3% slope, 200' length	Sandy Loam	0.27	265.5	0.485	0.3403	1	11.83	0.8978	31.21	19.38
3% slope, 200' length	N/A									
7% slope, 140' length	Loamy Sand	0.12	265.5	1.06	0.3403	1	11.49	0.8978	30.32	18.83
7% slope, 140' length	Sandy Loam	0.27	265.5	1.06	0.3403	1	25.86	0.8978	68.22	42.36
7% slope, 140' length	N/A									
12% slope, 100' length	Loamy Sand	0.12	265.5	1.79	0.3403	1	19.41	0.8978	51.20	31.79
12% slope, 100' length	Sandy Loam	0.27	265.5	1.79	0.3403	1	43.67	0.8978	115.20	71.54
12% slope, 100' length	N/A									

Location	Soil Texture Group	Ambient						Construction	Construction Site Loadings Without BMPs (tons/ac/yr)	Increased Load Over Ambient (tons/ac/yr)
		K	R	LS	C	P	Discharge Load (tons/ac/yr)	C		
EcoRegion 5, Indicator City Charleston, SC										
3% slope, 200' length	Sand	0.05	360	0.485	0.359	1	3.13	0.9168	8.00	4.87
3% slope, 200' length	Sandy Loam	0.27	360	0.485	0.359	1	16.92	0.9168	43.22	26.30
3% slope, 200' length	Loamy Sand	0.12	360	0.485	0.359	1	7.52	0.9168	19.21	11.69
7% slope, 140' length	Sand	0.05	360	1.06	0.359	1	6.85	0.9168	17.49	10.64
7% slope, 140' length	Sandy Loam	0.27	360	1.06	0.359	1	36.99	0.9168	94.46	57.47
7% slope, 140' length	Loamy Sand	0.12	360	1.06	0.359	1	16.44	0.9168	41.98	25.54
12% slope, 100' length	Sand	0.05	360	1.79	0.359	1	11.57	0.9168	29.54	17.97
12% slope, 100' length	Sandy Loam	0.27	360	1.79	0.359	1	62.46	0.9168	159.51	97.05
12% slope, 100' length	Loamy Sand	0.12	360	1.79	0.359	1	27.76	0.9168	70.89	43.13
EcoRegion 6, Indicator City Jacksonville, Fl										
3% slope, 200' length	Sand	0.05	450	0.485	0.359	1	3.92	0.9168	10.00	6.09
3% slope, 200' length	Loamy Sand	0.12	450	0.485	0.359	1	9.40	0.9168	24.01	14.61
3% slope, 200' length	Sandy Loam	0.27	450	0.485	0.359	1	21.16	0.9168	54.02	32.87
7% slope, 140' length	Sand	0.05	450	1.06	0.359	1	8.56	0.9168	21.87	13.30
7% slope, 140' length	Loamy Sand	0.12	450	1.06	0.359	1	20.55	0.9168	52.48	31.93
7% slope, 140' length	Sandy Loam	0.27	450	1.06	0.359	1	46.24	0.9168	118.07	71.84
12% slope, 100' length	Sand	0.05	450	1.79	0.359	1	14.46	0.9168	36.92	22.47
12% slope, 100' length	Loamy Sand	0.12	450	1.79	0.359	1	34.70	0.9168	88.62	53.92
12% slope, 100' length	Sandy Loam	0.27	450	1.79	0.359	1	78.08	0.9168	199.39	121.31

Location	Soil Texture Group	Ambient						Construction	Construction Site Loadings Without BMPs (tons/ac/yr)	Increased Load Over Ambient (tons/ac/yr)
		K	R	LS	C	P	Discharge Load (tons/ac/yr)	C		
EcoRegion 7, Indicator Ci Miami, Flty										
3% slope, 200' length	Sand	0.05	600	0.485	0.359	1	5.22	0.9168	13.34	8.12
3% slope, 200' length	N/A									
3% slope, 200' length	N/A									
7% slope, 140' length	Sand	0.05	600	1.06	0.359	1	11.42	0.9168	29.15	17.74
7% slope, 140' length	N/A									
7% slope, 140' length	N/A									
12% slope, 100' length	Sand	0.05	600	1.79	0.359	1	19.28	0.9168	49.23	29.95
12% slope, 100' length	N/A									
12% slope, 100' length	N/A									
EcoRegion 8, Indicator Ci Albany, NY										
3% slope, 200' length	Sandy Loam	0.27	90	0.485	0.2828	1	3.33	0.8784	10.35	7.02
3% slope, 200' length	Silt Loam	0.48	90	0.485	0.2828	1	5.93	0.8784	18.40	12.48
3% slope, 200' length	N/A									
7% slope, 140' length	Sandy Loam	0.27	90	1.06	0.2828	1	7.28	0.8784	22.63	15.34
7% slope, 140' length	Silt Loam	0.48	90	1.06	0.2828	1	12.95	0.8784	40.22	27.27
7% slope, 140' length	N/A									
12% slope, 100' length	Sandy Loam	0.27	90	1.79	0.2828	1	12.30	0.8784	38.21	25.91
12% slope, 100' length	Silt Loam	0.48	90	1.79	0.2828	1	21.87	0.8784	67.92	46.06
12% slope, 100' length	N/A									

Location	Soil Texture Group	Ambient						Construction	Construction Site Loadings Without BMPs (tons/ac/yr)	Increased Load Over Ambient (tons/ac/yr)
		K	R	LS	C	P	Discharge Load (tons/ac/yr)	C		
EcoRegion 9, Indicator City Pittsburgh, Pa										
3% slope, 200' length	Silt Loam	0.48	139.5	0.485	0.2828	1	9.18	0.8784	28.53	19.34
3% slope, 200' length	Sandy Loam	0.27	139.5	0.485	0.2828	1	5.17	0.8784	16.05	10.88
3% slope, 200' length	Loam	0.38	139.5	0.485	0.2828	1	7.27	0.8784	22.58	15.31
7% slope, 140' length	Silt Loam	0.48	139.5	1.06	0.2828	1	20.07	0.8784	62.35	42.27
7% slope, 140' length	Sandy Loam	0.27	139.5	1.06	0.2828	1	11.29	0.8784	35.07	23.78
7% slope, 140' length	Loam	0.38	139.5	1.06	0.2828	1	15.89	0.8784	49.36	33.47
12% slope, 100' length	Silt Loam	0.48	139.5	1.79	0.2828	1	33.90	0.8784	105.28	71.39
12% slope, 100' length	Sandy Loam	0.27	139.5	1.79	0.2828	1	19.07	0.8784	59.22	40.16
12% slope, 100' length	Loam	0.38	139.5	1.79	0.2828	1	26.83	0.8784	83.35	56.52
EcoRegion 10, Indicator City St. Paul, Mn										
3% slope, 200' length	Silt Loam	0.48	103.5	0.485	0.225	1	5.42	0.8729	21.03	15.61
3% slope, 200' length	Sandy Loam	0.27	103.5	0.485	0.225	1	3.05	0.8729	11.83	8.78
3% slope, 200' length	Loam	0.38	103.5	0.485	0.225	1	4.29	0.8729	16.65	12.36
7% slope, 140' length	Silt Loam	0.48	103.5	1.06	0.225	1	11.85	0.8729	45.97	34.12
7% slope, 140' length	Sandy Loam	0.27	103.5	1.06	0.225	1	6.66	0.8729	25.86	19.19
7% slope, 140' length	Loam	0.38	103.5	1.06	0.225	1	9.38	0.8729	36.39	27.01
12% slope, 100' length	Silt Loam	0.48	103.5	1.79	0.225	1	20.01	0.8729	77.62	57.62
12% slope, 100' length	Sandy Loam	0.27	103.5	1.79	0.225	1	11.25	0.8729	43.66	32.41
12% slope, 100' length	Loam	0.38	103.5	1.79	0.225	1	15.84	0.8729	61.45	45.61

Location	Soil Texture Group	Ambient						Construction	Construction Site Loadings Without BMPs (tons/ac/yr)	Increased Load Over Ambient (tons/ac/yr)
		K	R	LS	C	P	Discharge Load (tons/ac/yr)	C		
EcoRegion 11, Indicator City Houston, Tx										
3% slope, 200' length	Silt Loam	0.48	427.5	0.485	0.3611	1	35.94	0.8771	87.29	51.35
3% slope, 200' length	Sandy Loam	0.27	427.5	0.485	0.3611	1	20.21	0.8771	49.10	28.89
3% slope, 200' length	Clay	0.17	427.5	0.485	0.3611	1	12.73	0.8771	30.92	18.19
7% slope, 140' length	Silt Loam	0.48	427.5	1.06	0.3611	1	78.54	0.8771	190.78	112.24
7% slope, 140' length	Sandy Loam	0.27	427.5	1.06	0.3611	1	44.18	0.8771	107.31	63.13
7% slope, 140' length	Clay	0.17	427.5	1.06	0.3611	1	27.82	0.8771	67.57	39.75
12% slope, 100' length	Silt Loam	0.48	427.5	1.79	0.3611	1	132.63	0.8771	322.17	189.53
12% slope, 100' length	Sandy Loam	0.27	427.5	1.79	0.3611	1	74.61	0.8771	181.22	106.61
12% slope, 100' length	Clay	0.17	427.5	1.79	0.3611	1	46.97	0.8771	114.10	67.13
EcoRegion 12 Kansas City,										
3% slope, 200' length	Silt Loam	0.48	175.5	0.485	0.3087	1	12.61	0.8847	36.15	23.53
3% slope, 200' length	Sandy Loam	0.27	175.5	0.485	0.3087	1	7.09	0.8847	20.33	13.24
3% slope, 200' length	Loam	0.38	175.5	0.485	0.3087	1	9.98	0.8847	28.62	18.63
7% slope, 140' length	Silt Loam	0.48	175.5	1.06	0.3087	1	27.57	0.8847	79.00	51.43
7% slope, 140' length	Sandy Loam	0.27	175.5	1.06	0.3087	1	15.51	0.8847	44.44	28.93
7% slope, 140' length	Loam	0.38	175.5	1.06	0.3087	1	21.82	0.8847	62.54	40.72
12% slope, 100' length	Silt Loam	0.48	175.5	1.79	0.3087	1	46.55	0.8847	133.40	86.85
12% slope, 100' length	Sandy Loam	0.27	175.5	1.79	0.3087	1	26.18	0.8847	75.04	48.86
12% slope, 100' length	Loam	0.38	175.5	1.79	0.3087	1	36.85	0.8847	105.61	68.76

Location	Soil Texture Group	Ambient						Construction	Construction Site Loadings Without BMPs (tons/ac/yr)	Increased Load Over Ambient (tons/ac/yr)
		K	R	LS	C	P	Discharge Load (tons/ac/yr)	C		
EcoRegion 13, Indicator City Rapid City, SD										
3% slope, 200' length	Silt Loam	0.48	40.5	0.485	0.2144	1	2.02	0.8408	7.93	5.91
3% slope, 200' length	Loam	0.38	40.5	0.485	0.2144	1	1.60	0.8408	6.28	4.68
3% slope, 200' length	N/A									
7% slope, 140' length	Silt Loam	0.48	40.5	1.06	0.2144	1	4.42	0.8408	17.33	12.91
7% slope, 140' length	Loam	0.38	40.5	1.06	0.2144	1	3.50	0.8408	13.72	10.22
7% slope, 140' length	N/A									
12% slope, 100' length	Silt Loam	0.48	40.5	1.79	0.2144	1	7.46	0.8408	29.26	21.80
12% slope, 100' length	Loam	0.38	40.5	1.79	0.2144	1	5.91	0.8408	23.16	17.26
12% slope, 100' length	N/A									
EcoRegion 14, Indicator City Boise, Id										
3% slope, 200' length	Sandy Loam	0.27	10.8	0.485	0.1434	1	0.20	0.8177	1.16	0.95
3% slope, 200' length	Loam	0.38	10.8	0.485	0.1434	1	0.29	0.8177	1.63	1.34
3% slope, 200' length	N/A									
7% slope, 140' length	Sandy Loam	0.27	10.8	1.06	0.1434	1	0.44	0.8177	2.53	2.08
7% slope, 140' length	Loam	0.38	10.8	1.06	0.1434	1	0.62	0.8177	3.56	2.93
7% slope, 140' length	N/A									
12% slope, 100' length	Sandy Loam	0.27	10.8	1.79	0.1434	1	0.75	0.8177	4.27	3.52
12% slope, 100' length	Loam	0.38	10.8	1.79	0.1434	1	1.05	0.8177	6.01	4.95
12% slope, 100' length	N/A									

Location	Soil Texture Group	Ambient						Construction	Construction Site Loadings Without BMPs (tons/ac/yr)	Increased Load Over Ambient (tons/ac/yr)
		K	R	LS	C	P	Discharge Load (tons/ac/yr)	C		
EcoRegion 15, Indicator City Eureka, Ca										
3% slope, 200' length	Silt Loam	0.48	85.5	0.485	0.2284	1	4.55	0.8643	17.20	12.66
3% slope, 200' length	Loam	0.38	85.5	0.485	0.2284	1	3.60	0.8643	13.62	10.02
3% slope, 200' length	N/A									
7% slope, 140' length	Silt Loam	0.48	85.5	1.06	0.2284	1	9.94	0.8643	37.60	27.66
7% slope, 140' length	Loam	0.38	85.5	1.06	0.2284	1	7.87	0.8643	29.77	21.90
7% slope, 140' length	N/A									
12% slope, 100' length	Silt Loam	0.48	85.5	1.79	0.2284	1	16.78	0.8643	63.49	46.71
12% slope, 100' length	Loam	0.38	85.5	1.79	0.2284	1	13.28	0.8643	50.27	36.98
12% slope, 100' length	N/A									
EcoRegion 16, Indicator City San Francisco, Ca										
3% slope, 200' length	Sandy Loam	0.27	40.5	0.485	0.2284	1	1.21	0.8643	4.58	3.37
3% slope, 200' length	Loam	0.38	40.5	0.485	0.2284	1	1.70	0.8643	6.45	4.75
3% slope, 200' length	N/A									
7% slope, 140' length	Sandy Loam	0.27	40.5	1.06	0.2284	1	2.65	0.8643	10.02	7.37
7% slope, 140' length	Loam	0.38	40.5	1.06	0.2284	1	3.73	0.8643	14.10	10.37
7% slope, 140' length	N/A									
12% slope, 100' length	Sandy Loam	0.27	40.5	1.79	0.2284	1	4.47	0.8643	16.92	12.45
12% slope, 100' length	Loam	0.38	40.5	1.79	0.2284	1	6.29	0.8643	23.81	17.52
12% slope, 100' length	N/A									

Location	Soil Texture Group	Ambient						Construction	Construction Site Loadings Without BMPs (tons/ac/yr)	Increased Load Over Ambient (tons/ac/yr)
		K	R	LS	C	P	Discharge Load (tons/ac/yr)	C		
EcoRegion 17, Indicator City Seattle, Wa										
3% slope, 200' length	Silt Loam	0.48	63	0.485	0.2284	1	3.35	0.8643	12.68	9.33
3% slope, 200' length	Loam	0.38	63	0.485	0.2284	1	2.65	0.8643	10.04	7.38
3% slope, 200' length	Silty Clay Loam	0.37	63	0.485	0.2284	1	2.58	0.8643	9.77	7.19
7% slope, 140' length	Silt Loam	0.48	63	1.06	0.2284	1	7.32	0.8643	27.70	20.38
7% slope, 140' length	Loam	0.38	63	1.06	0.2284	1	5.80	0.8643	21.93	16.14
7% slope, 140' length	Silty Clay Loam	0.37	63	1.06	0.2284	1	5.64	0.8643	21.36	15.71
12% slope, 100' length	Silt Loam	0.48	63	1.79	0.2284	1	12.36	0.8643	46.78	34.42
12% slope, 100' length	Loam	0.38	63	1.79	0.2284	1	9.79	0.8643	37.04	27.25
12% slope, 100' length	Silty Clay Loam	0.37	63	1.79	0.2284	1	9.53	0.8643	36.06	26.53
EcoRegion 18, Indicator City Highland, Wa										
3% slope, 200' length	Silt Loam	0.48	9	0.485	0.1434	1	0.30	0.8177	1.71	1.41
3% slope, 200' length	N/A									
3% slope, 200' length	N/A									
7% slope, 140' length	Silt Loam	0.48	9	1.06	0.1434	1	0.66	0.8177	3.74	3.09
7% slope, 140' length	N/A									
7% slope, 140' length	N/A									
12% slope, 100' length	Silt Loam	0.48	9	1.79	0.1434	1	1.11	0.8177	6.32	5.21
12% slope, 100' length	N/A									
12% slope, 100' length	N/A									

Location	Soil Texture Group	Ambient						Construction	Construction Site Loadings Without BMPs (tons/ac/yr)	Increased Load Over Ambient (tons/ac/yr)
		K	R	LS	C	P	Discharge Load (tons/ac/yr)	C		
EcoRegion 19, Indicator City Mount Hood, Wa										
3% slope, 200' length	Sandy Loam	0.27	45	0.485	0.2284	1	1.35	0.8643	5.09	3.75
3% slope, 200' length	Loam	0.38	45	0.485	0.2284	1	1.89	0.8643	7.17	5.27
3% slope, 200' length	Loamy sand	0.12	45	0.485	0.2284	1	0.60	0.8643	2.26	1.67
7% slope, 140' length	Sandy Loam	0.27	45	1.06	0.2284	1	2.94	0.8643	11.13	8.19
7% slope, 140' length	Loam	0.38	45	1.06	0.2284	1	4.14	0.8643	15.67	11.53
7% slope, 140' length	Loamy sand	0.12	45	1.06	0.2284	1	1.31	0.8643	4.95	3.64
12% slope, 100' length	Sandy Loam	0.27	45	1.79	0.2284	1	4.97	0.8643	18.80	13.83
12% slope, 100' length	Loam	0.38	45	1.79	0.2284	1	6.99	0.8643	26.46	19.46
12% slope, 100' length	Loamy sand	0.12	45	1.79	0.2284	1	2.21	0.8643	8.35	6.15

Appendix D

State Erosion and Sediment Control Requirements

State	Document	Date	Permit Expiration Date
Alabama	ADEM Instructions for Completion of NOI for Coverage under NPDES General Permit for Stormwater Discharges Not Authorized by an Existing NPDES permit	10/1/1997	
Alaska	Region 10 Storm Water Construction General Permit	2/17/1998	2/17/2003
American Samoa	NPDES General Permit for Storm Water Discharges from Construction Activities	2/17/1998	
Arizona	NPDES General Permit for Storm Water Discharges from Construction Activities	2/17/1998	
Arkansas	Authorization to Discharge Under the National Pollutant Discharge Elimination System and the Arkansas Water and Air Pollution Control Act	7/1/1998	6/30/2003
California Lahonton	NPDES General Permit CAG616002 for Discharges of Storm Water Runoff Associated with Construction Activity involing Land Disturbance in the Lake Tahoe Hydrologic Unit, El Dorado, Placer and Alpine Counties	1/12/2000	1/1/2005
California State	SWRCB Order No. 99-08 - DWQ NPDES General Permit CAS000002 Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity	8/19/1999	8/1/2001
Colorado	CDPS General Permit Stormwater Discharges Associated with Construction Activity, COR-030000	nd	6/30/2007
Connecticut	General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities	12/20/2000	10/1/2002
DC	NPDES General Permit for Storm Water Discharges from Construction Activities	2/17/1998	10/1/2002
Delaware	DNREC Sediment and Stormwater Regulations (DE Doc 1)	2/14/2002	10/1/2002
Delaware	NOI for Storm Water Discharges Associated with Construction Activity Under a NPDES General Permit (DE Doc 2)	nd	10/1/2002
Delaware	Sediment and Stormwater Plan Review Checklist (DE Doc 3)	nd	10/1/2002
Delaware	NOI Instructions for Storm Water Discharges Associated with Construction Activity Under a NPDES Permit (DE Doc 4)	nd	10/1/2002
Delaware	Application for Sediment and Stormwater Management Plan Approval (DE Doc 5)	nd	10/1/2002
Florida Region 4	Final Modification of the NPDES General Permit for Storm Water Discharges From Construction Activities, Region 4	4/28/2000	
Florida State	State of Florida DEP Generic Permit for Stormwater Discharge from Construction Activities That Disturb Five or More Acres of Land	10/22/2000	
Georgia	State of Georgia DNR Environmental Protection Division, Authorization to Discharge Under the NPDES Storm Water Discharges Associated with Construction Activity	8/1/2000	7/31/2003
Guam	NPDES General Permit for Storm Water Discharges from Construction Activities	2/17/1998	
Hawaii	NPDES General Permit Authorizing Discharges of Storm Water Associated with Construction Activity	9/1/2002	3/9/2003
Idaho	Region 10 Storm Water Construction General Permit	2/17/1998	2/17/2003
Illinios	NPDES Permit ILR10, Construction Site Activities NPDES Storm Water Permit	5/14/1998	5/21/2003
Indiana	Storm Water General Permit Rule 5	nd	
Iowa	Storm Water Management for Construction Activities, General Permit No. 2, A Brief Guide to Developing Pollution Prevention Plans and Best Management Practices	10/1/2002	10/1/2007
Iowa	Iowa DNR NPDES General Permit No. 2 - Storm Water Discharge Associated with Industrial Activity for Construction Activities	10/1/2002	10/1/2007
Kansas	Kansas Water Pollution Control General Permit and Authorization to Discharge Stormwater Runoff from Construction Activities Under the NPDES System	1/18/2002	12/31/2006
Kentucky	General KPDES Permit for Storm Water Point Source Discharge Construction Activities, KYR10	10/1/2002	10/30/2007
Louisiana	Storm Water General Permit For Construction Activities, Permit No. LAR100000 Authorization to Discharge Under The Louisiana NPDES System	10/1/1999	10/1/2004
Maine	NPDES General Permit for Storm Water Discharges from Construction Activities	2/17/1998	
Maryland	Maryland Department of the Environment General Permit for Construction Activity General NPDES 97-GP-0004	10/1/1997	9/30/2002
Massachusetts	NPDES General Permit for Storm Water Discharges from Construction Activities	2/17/1998	
	Michigan's Permit By Rule for Construction Activities	11/13/1992	
Michigan	Guidebook of Best Management Practices for Michigan Watersheds (DEQ)	Reprinted October, 1998	
Minnesota	Minnesota General Permit Authorization to Discharge Storm Water Associated with a Construction Activity Under the NPDES / State Disposal System Permit Program, MNR110000	10/4/1998	10/3/2003

State	Document	Date	Permit Expiration Date
Mississippi	State of Mississippi MDEQ Office of Pollution Control Water Pollution Control Storm Water Construction General Permit	3/28/2000	3/27/2005
Missouri	Missouri DNR Storm Water Permit Requirements for Land Disturbance Activities	12/1/1998	1/2/2002
Montana	Montana Department of Environmental Quality Authorization to Discharge Under the Montana Pollutant Discharge Elimination System General Permit for Stormwater Discharges Associated with Construction Activity	6/8/2002	12/31/2006
Nebraska	Authorization to Discharge Under the State of Nebraska NPDES, NER100000 A General NPDES permit for storm water discharges from construction sites to waters in the State of Nebraska	8/1/2002	7/31/2002
Nevada	State of Nevada Division of Environmental Protection General Permit for Stormwater Associated with Construction Activity	9/16/2002	9/15/2007
New Hampshire	NPDES General Permit for Storm Water Discharges from Construction Activities	2/17/1998	
New Jersey	NJ Stormwater Discharge Master General Permit for Construction and Mining Activity	3/1/2002	2/18/2007
New Mexico	NPDEs General Permit for Storm Water Discharges from Construction Activities in Region 6	7/6/1998	7/7/2003
New York	General Permit for Storm Water Discharges Associated with Industrial Activity From Construction Activities, GP-93-06	8/1/1993	8/1/1998
North Carolina	State of North Carolina Department of Environment And Natural Resources Division of Water Quality General Permit to Discharge Stormwater Under the National Pollution Discharge Elimination System	10/1/2001	10/30/2006
North Carolina	NC DENR Erosion and Sediment Control Checklist	11/23/1998	10/30/2006
North Dakota	Authorization to Discharge Under the North Dakota Pollutant Discharge Elimination Sytem	10/1/1999	9/30/2004
Northern Mariana Is.	NPDES General Permit for Storm Water Discharges from Construction Activities	2/17/1998	
Ohio	Ohio Environmental Protection Agency Authorization for Storm Water Discharges Associated With Construction Activity Under NPDES	10/26/1992	4/26/1994
Oklahoma	General Permit OKR10 For Storm Water Discharges from Construction Activities Within the State of Oklahoma	10/13/2002	10/12/2007
Oregon	General Permit NPDES Storm Water Discharge Permit for Construction Activities	12/1/2002	12/31/2005
Pennsylvania	Instructions for a General OR Individual NPDES Permit for Discharges of Stormwater Associated with Construction Activities (Doc #1)	8/1/2001	12/1/2007
Pennsylvania	Erosion and Sediment Control Plan Content (363-2134-008)	4/15/2000	12/1/2007
Pennsylvania	Fact Sheet: Stormwater Permits for Construction Activities (Doc #3)	2/1/2001	12/1/2007
Pennsylvania	PA General NPDES Permit for Stormwater Discharges Associated with Construction Activities (Doc #4)	12/1/2002	12/1/2007
Puerto Rico	NPDES General Permit for Storm Water Discharges from Construction Activities	2/17/1998	
Rhode Island	General Permit Rhode Island Pollutant Discharge Ellimination System Storm Water Discharge Associated with Construction Activity	3/1/1998	3/19/2003
South Carolina	South Carolina Department of Health and Environmental Control NPDES General Permit for Storm Water Discharges From Construction Activities	1/15/1998	1/31/2003
South Dakota	South Dakota Department of Environment and Natural Resources General Permit for Storm Water Discharges Associated with Construction Activity	7/1/2001	7/30/2007
Tennessee	Tennesse General Permit No TNR10-0000 Storm Water Discharges from Construction Activities	nd	
Texas	NPDEs General Permit for Storm Water Discharges from Construction Activities in Region 6	7/6/1998	7/7/2003
Utah	State of Utah Department of Environmental Quality Division of Water Quality Authorization to Discharge Under the Utah NPDES Storm Water General Permit for Construction Activities	10/1/1997	9/30/2002
Vermont	State of Vermont Agency of Natural Resources Department of Environmental Conservation, General Permit 3-9001(2002) For Stormwater Runoff From Construction Sites, NPDES VTR100000	nd	
Virginia	General Virginia Pollutant Discharge Elimination System Permit Regulation for Discharges of Storm Water From Construction Activities	12/4/2002	6/30/2004
Washington	NPDES and State Waste Discharge General Permit For Stormwater Discharges Associated with Construction Activities	11/18/2000	11/18/2005
West Virginia	West Virginia NPDES General Water Pollution Control Permit, Storm Water Associated With Construction Activities	12/5/2002	12/4/2007
Wisonsin	Chapter NR 216 Storm Water Discharge Permits Subchapter III Construction Site Storm Water Discharge Permits	10/1/2002	
Wyoming	Authorization To Discharge Storm Water Associated With Construction Activity Under The NPDES	nd	8/31/2002

State	Total New Developed Land 1992 - 1997 acres	A GENERAL EROSION AND SED CONTROL BASIC	B SEDIMENT CONTROL BASIC	B1 Sediment Basin 10 or more acres	B2 Operator consider public safety	B3 Sediment Basin less than 10 acres	B4 Equivalent Sediment controls	C POLLUTION CONTROL BASIC	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater	C2 Description of wate stored on-site	D SWPPP BASIC	D1 Description of construction activity and sequence	D2 General location map	D2a Drainage patterns and slopes	D2b Total area of site	D2c Areas that will not be disturbed	D2d Locations of structural and nonstructural controls	D2e Locations of stabilization practies	D2f Locations of off-site material, waste, equipment storage areas	D2g Surface waters / wetlands	D2h Locations of storm water discharges	D3 Description of available soils data	D4 Description of BMPs used	D5 Description of general timing when BMPs implemented in relation to construction schedule	D6 Runoff coefficients	D7 Names of receiving waters	D8 SWPPP implementation responsibilities	D9 Storm water runoff characteristics	E SWPPP	E1 SWPPP amended when change in design, construction or maintenance	E2 SWPPP amended when inspection	F SITE LOG BOOK / CERTIFICATION BASIC	F1 Copy of site log book on site
Table Letter		A	B	B1	B2	B3	B4	C	C1	C2	D	D1	D2	D2A	D2B	D2C	D2D	D2E	D2F	D2G	D2H	D3	D4	D5	D6	D7	D8	D9	E	E1	E2	F	F1
Alabama	315,300	Y	Y					Y			Y	Y	Y		Y						Y	Y	Y		Y	Y						Y	
Alaska		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
American Samoa		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Arizona	113,800	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Arkansas	168,900	Y	Y	Y		Y	Y	Y			Y	Y	Y	Y	Y		Y	Y		Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	
California State	553,400	Y	Y	Y				Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y		Y		Y	Y	Y	Y	Y		Y	Y	Y	Y	
California Lahonton	553,400	Y	Y					Y		Y	Y		Y	Y	Y		Y		Y	Y	Y	Y	Y			Y	Y		Y	Y	Y	Y	
Colorado	112,500	Y	Y					Y			Y	Y	Y		Y					Y	Y	Y	Y	Y	Y	Y		Y	Y	Y		Y	
Connecticut	39,400	Y	Y	Y				Y	Y		Y	Y	Y	Y	Y		Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	
DC		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Delaware	23,100	Y	Y	Y							Y	Y	Y	Y	Y		Y	Y		Y	Y	Y	Y	Y		Y	Y		Y			Y	
Florida State	825,200	Y	Y	Y		Y	Y	Y			Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	
Florida Region 4	825,200	Y	Y	Y		Y	Y	Y			Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Georgia	851,900	Y	Y				Y	Y			Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Guam	851,900	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Hawaii	6,800	Y	Y								Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y		Y	Y		Y				Y	
Idaho	91,900	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Illinios	246,500	Y	Y					Y			Y	Y	Y	Y	Y		Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Indiana	195,300	Y	Y								Y	Y	Y	Y	Y		Y	Y		Y	Y		Y	Y		Y						Y	
Iowa	69,100	Y	Y	Y		Y	Y	Y			Y	Y	Y	Y	Y	Y	Y	Y		Y		Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	
Kansas	96,500	Y	Y	Y			Y	Y			Y	Y	Y	Y	Y		Y	Y		Y	Y	Y	Y	Y	Y	Y			Y	Y	Y	Y	
Kentucky	237,100	Y	Y	Y				Y			Y	Y	Y	Y	Y		Y			Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	
Louisiana	133,600	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Maine	111,100	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Maryland	177,600	Y	Y					Y			Y	Y			Y							Y		Y		Y			Y			Y	
Massachusetts	211,800	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Michigan	364,100	Y	Y	Y		Y		Y			Y	Y	Y		Y						Y	Y	Y	Y	Y	Y		Y	Y			Y	
Minnesota	231,800	Y	Y								Y		Y			Y	Y	Y		Y	Y		Y	Y		Y	Y		Y				
Mississippi	206,400	Y	Y					Y			Y	Y	Y	Y			Y	Y					Y	Y					Y	Y	Y	Y	
Missouri	224,200	Y	Y					Y		Y	Y	Y	Y		Y		Y				Y	Y	Y		Y	Y		Y				Y	
Montana	76,300	Y	Y								Y	Y	Y	Y	Y		Y	Y		Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	
Nebraska	55,100	Y	Y			Y		Y			Y	Y	Y	Y	Y		Y				Y		Y	Y		Y	Y		Y		Y	Y	
Nevada	26,700	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	
New Hampshire	62,600	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
New Jersey	213,600	Y	Y								Y	Y		Y	Y		Y	Y		Y	Y	Y	Y		Y		Y		Y			Y	
New Mexico	217,200	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
New York	317,600	Y	Y	Y	Y	Y	Y	Y			Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
North Carolina	506,600	Y	Y								Y	Y	Y	Y	Y		Y	Y		Y	Y	Y		Y	Y	Y	Y		Y			Y	
North Dakota	32,800	Y	Y								Y	Y	Y	Y	Y		Y			Y	Y	Y	Y	Y		Y			Y	Y	Y	Y	
Northern Marianas		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Ohio	364,800	Y	Y					Y			Y	Y	Y	Y	Y		Y	Y		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Oklahoma	176,700	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Oregon	103,900	Y	Y					Y			Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y		Y			Y				
Pennsylvania	545,100	Y	Y					Y			Y	Y	Y	Y	Y		Y	Y		Y	Y	Y	Y	Y	Y	Y		Y	Y		Y	Y	
Puerto Rico	112,400	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Rhode Island	6,600	Y	Y					Y			Y	Y	Y	Y	Y		Y	Y		Y		Y	Y		Y	Y		Y	Y	Y		Y	
South Carolina	362,000	Y	Y	Y		Y	Y	Y			Y	Y	Y	Y	Y		Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
South Dakota	57,800	Y	Y	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y		Y			Y	Y	Y	Y	
Tennessee	401,900	Y	Y	Y			Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Texas	893,500	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Utah	81,300	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Virginia	343,500	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Vermont	11,500	Y	Y								Y	Y	Y	Y	Y		Y		Y	Y		Y	Y						Y	Y	Y		
Washington	240,800	Y	Y								Y												Y	Y					Y	Y	Y	Y	
West Virginia	176,800	Y	Y	Y		Y	Y	Y			Y	Y	Y	Y	Y		Y	Y	Y	Y		Y	Y	Y				Y	Y				
Wisonsin	188,200	Y	Y					Y			Y	Y	Y	Y	Y		Y	Y		Y	Y	Y	Y	Y	Y	Y			Y	Y	Y	Y	
Wyoming	34,400	Y	Y					Y			Y	Y	Y	Y	Y		Y	Y		Y	Y		Y	Y	Y	Y			Y	Y		Y	

State	F2 Operator certify SWPPP prepared correctly	F3 Operator have qualified professional conduct assessment	F4 Operator post inspection on site	G SITE INSPECTIONS BASIC	G1 Inspections every 14 days	G1 Inspectionsw ithin 24 hours of storm greater than 0.5 inches	G1a Record extent of initial disturbance	G1b Record sites undergone temp/perm stabilization	G1c Record sites not undergone work	G1d Inspect sediment control practices	G1e Ispect BMPs	G2 Final inspection prior to NOT	H STABILIZATION BASIC	H1 Stabilization initiated by day 14	I MAINTENANCE BASIC	I1 Sediment removed from traps when design capacity reduced by 50 percent
Table Letter	F2	F3	F4	G	G1	G1	G1A	G1B	G1C	G1D	G1E	G2	H	H1	I	I1
Alabama				Y									Y		Y	
Alaska				Y	Y	Y							Y	Y	Y	Y
American Samoa				Y	Y	Y							Y	Y	Y	Y
Arizona				Y	Y	Y							Y	Y	Y	Y
Arkansas				Y	Y	Y							Y	Y	Y	
California State				Y									Y		Y	
California Lahonton				Y									Y		Y	
Colorado				Y	Y								Y		Y	
Connecticut				Y	Y	Y							Y	Y	Y	
DC				Y	Y	Y							Y	Y	Y	Y
Delaware				Y									Y	Y	Y	
Florida State				Y	Y	Y							Y	Y	Y	
Florida Region 4				Y	Y	Y							Y	Y	Y	
Georgia				Y	Y	Y							Y	Y	Y	
Guam				Y	Y	Y							Y	Y	Y	Y
Hawaii				Y	Y	Y							Y			
Idaho				Y	Y	Y							Y	Y	Y	Y
Illinios				Y	Y	Y							Y	Y	Y	
Indiana				Y									Y	Y	Y	
Iowa				Y	Y	Y							Y	Y	Y	
Kansas				Y		Y							Y		Y	
Kentucky				Y	Y	Y							Y	Y	Y	
Louisiana				Y	Y	Y							Y	Y	Y	Y
Maine				Y	Y	Y							Y	Y	Y	Y
Maryland				Y									Y		Y	
Massachusetts				Y	Y	Y							Y	Y	Y	Y
Michigan				Y	Y								Y		Y	
Minnesota				Y	Y								Y		Y	
Mississippi				Y	Y	Y									Y	Y
Missouri													Y			
Montana				Y	Y	Y							Y		Y	
Nebraska				Y		Y							Y		Y	
Nevada				Y	Y	Y							Y	Y	Y	Y
New Hampshire				Y	Y	Y							Y	Y	Y	Y
New Jersey				Y									Y		Y	
New Mexico				Y	Y	Y							Y	Y	Y	Y
New York				Y	Y	Y							Y	Y	Y	
North Carolina				Y	Y	Y							Y		Y	
North Dakota				Y	Y	Y							Y		Y	
Northern Marianas				Y	Y	Y							Y	Y	Y	Y
Ohio				Y	Y	Y							Y	Y	Y	
Oklahoma				Y	Y	Y							Y	Y	Y	Y
Oregon				Y	Y	Y		Y					Y		Y	Y
Pennsylvania				Y									Y		Y	
Puerto Rico				Y	Y	Y							Y	Y	Y	Y
Rhode Island				Y	Y	Y							Y	Y	Y	
South Carolina				Y	Y	Y							Y	Y	Y	
South Dakota				Y	Y	Y							Y	Y	Y	Y
Tennessee				Y	Y	Y							Y	Y	Y	Y
Texas				Y	Y	Y							Y	Y	Y	Y
Utah				Y	Y	Y							Y	Y	Y	Y
Virginia				Y	Y								Y	Y	Y	Y
Vermont				Y	Y	Y							Y		Y	
Washington				Y	Y	Y							Y		Y	
West Virginia				Y	Y	Y							Y	Y	Y	
Wisonsin				Y	Y	Y							Y		Y	
Wyoming				Y	Y	Y							Y		Y	Y

STATE:	**Alabama**	**SECTION REFERENCED**	
DOCUMENT:	ADEM Instructions for Completion of NOI for Coverage under NPDES General Permit for Stormwater Discharges Not Authorized by an Existing NPDES permit 10/01/97		
PERMIT EXPIRATION DATE:		**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		Instructions	4
B SEDIMENT CONTROL BASIC		Instructions	4
	B1 Sediment Basin 10 or more acres		
	Size of Sediment Basin Required	*	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres		
	B4 Equivalent Sediment controls		
C POLLUTION CONTROL BASIC		Instructions	4
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater		
	C2 Description of wate stored on-site		
D SWPPP BASIC		Instructions	4
	D1 Description of construction activity and sequence	Instructions	4
	D2 General location map	Instructions	4
	D2a Drainage patterns and slopes		
	D2b Total area of site	Instructions	4
	D2c Areas that will not be disturbed		
	D2d Locations of structural and nonstructural controls		
	D2e Locations of stabilization practies		
	D2f Locations of off-site material, waste, equipment storage areas		
	D2g Surface waters / wetlands		
	D2h Locations of storm water discharges	Instructions	4
	D3 Description of available soils data	Instructions	4
	D4 Description of BMPs used	Instructions	4
	D5 Description of general timing when BMPs implemented in relation to construction schedule		
	D6 Runoff coefficients	Instructions	4
	D7 Names of receiving waters	VIII	3
	D8 SWPPP implementation responsibilities		
	D9 Storm water runoff characteristics		
E UPDATE SWPPP			
	E1 SWPPP amended when change in design, construction or maintenance		
	E2 SWPPP amended when inspection		
F SITE LOG BOOK / CERTIFICATION BASIC		XII	13
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		Instructions	4
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches		
	Inspection Frequency (if specified as other than CGP)	NA	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		Instructions	4
	H1 Stabilization initiated by day 14 where applicable		
	Stabilization time (if specified as other than CGP)	NA	
I MAINTENANCE BASIC		Instructions	4
	I1 Sediment removed from traps when design capacity reduced by 50 percent	EQ	
* Drainage from areas of ten (10) disturbed acres or larger depending on the soil type(s), slope, stability, etc., may be required to be controlled by construction of a designed sedimentation basin.			

STATE:	**Alabama**	**SECTION REFERENCED**	
DOCUMENT:	Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas		
	BMP MANUAL GUIDELINES	**SECTION**	**PAGE**
BMP-B1	Where site conditions preclude use of sufficient erosion controls - no acreage specified.	Chapter 3	III-SB-1
BMP-B1	Volume: 67 cubic yards (1,809 cubic feet) of storage per acre.	Chapter 3	III-SB-2
BMP-B3	Where site conditions preclude use of sufficient erosion controls - no acreage specified.		
BMP-B4	Sediment basin may be used in combination with other practices	Chapter 3	III-SB-1
BMP-B4	Dikes, swales, water control devices to direct runoff into basin	Chapter 3	III-SB-1
BMP-B4	No specific requirement for equivalent controls, but BMP manual describes additional ESC practices, assumed to be applied where sediment basin not appropriate	Chapter 3	III-SB-6
BMP-G1	No instructions on general inspection schedule; some discussion of inspection for specific BMPs are equivalent or more stringent (below):		
BMP-G1	Inspect mulches periodically, and after rainstorms	Chapter 4	IV-MU-6
BMP-G1	Inspect waterways periodically, and after rainstorms	Chapter 4	IV-WW-7
BMP-G1	Inspect stream crossings once a week and after every rainfall	Chapter 3	III-SX-6
BMP-G1	SW retention structure (permanent basin) - repairs daily and inspections regularly, after storms	Chapter 4	III-RS-6
BMP-G1	Repair sediment basins daily when damaged from soil erosion or construction operations	Chapter 3	III-SB-6
BMP-H1	No instructions on general stabilization requirements, but some BMP-specific discussion (below):		
BMP-H1	Stabilization immediately following construction of sediment basin, vegetative treatment applied within 7 days of basin completion	Chapter 3	III-SB-8
BMP-H1	Temporary seeding for bare areas not brought to final grade w/in 30 working days	Chapter 4	IV-TV-1
BMP-H1	Sodding for disturbed areas requiring immediate cover and steep critical areas	Chapter 4	IV-SD-1
BMP-I1	Sediment basins - clean out at 50% design capacity, restore to original design volume, sediment never higher than 1 foot below top of riser	Chapter 3	III-SB-2
BMP-I1	Sediment from silt fences removed at 1/2 height	Chapter 3	III-SF-3

			SECTION REFERENCED	
STATE:	**Alaska**			
DOCUMENT:	Region 10 Storm Water Construction General Permit	02/17/98		
PERMIT EXPIRATION DATE:		02/17/03	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC			IVD2	20
B SEDIMENT CONTROL BASIC			IVD2	20
	B1 Sediment Basin 10 or more acres		IVD2	22
	Size of Sediment Basin Required		RULE EQ	
	B2 Operator consider public safety		IVD2	22
	B3 Sediment Basin less than 10 acres		IVD2	23
	B4 Equivalent Sediment controls		IVD2	23
C POLLUTION CONTROL BASIC			IVD2	21
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater		IVD2	21
	C2 Description of wate stored on-site		IVD2	24
D SWPPP BASIC			IVD1	19
	D1 Description of construction activity and sequence		IVD1	19
	D2 General location map		IVD1	19
	D2a Drainage patterns and slopes		IVD1	19
	D2b Total area of site		IVD1	19
	D2c Areas that will not be disturbed		IVD1	19
	D2d Locations of structural and nonstructural controls		IVD1	19
	D2e Locations of stabilization practices		IVD1	19
	D2f Locations of off-site material, waste, equipment storage areas		IVD1	19
	D2g Surface waters / wetlands		IVD1	19
	D2h Locations of storm water discharges		IVD1	19
	D3 Description of available soils data		IVD1	19
	D4 Description of BMPs used		IVD2	20
	D5 Description of general timing when BMPs implemented in relation to construction schedule		IVD2	20
	D6 Runoff coefficients		IVD1	19
	D7 Names of receiving waters		IVD1	19
	D8 SWPPP implementation responsibilities		IVD2	20
	D9 Storm water runoff characteristics		IVD1	19
E UPDATE SWPPP			IVC	18
	E1 SWPPP amended when change in design, construction or maintenance		IVC	18
	E2 SWPPP amended when inspection		IVC	18
F SITE LOG BOOK / CERTIFICATION BASIC			VIG	30
	F1 Copy of site log book on site		VIG	30
	F2 Operator certify SWPPP prepared correctly			
	F3 Operator have qualified professional conduct assessment			
	F4 Operator post inspection on site			
G SITE INSPECTIONS BASIC			IVD4	25
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches		IVD4	25
	Inspection Frequency (if specified as other than CGP)		RULE EQ	
	G1a Record extent of initial disturbance			
	G1b Record sites undergone temp/perm stabilization			
	G1c Record sites not undergone work			
	G1d Inspect sediment control practices			
	G1e Ispect BMPs			
	G2 Final inspection prior to NOT			
H STABILIZATION BASIC			IVD2	21
	H1 Stabilization initiated by day 14 where applicable		IVD2	21
	Stabilization time (if specified as other than CGP)		RULE EQ	
I MAINTENANCE BASIC			IVD2	21
	I1 Sediment removed from traps when design capacity reduced by 50 percent		IVD2	21

STATE:	**Arizona**	**SECTION REFERENCED**	
DOCUMENT:	NPDES General Permit for Storm Water Discharges from Construction Activities 2/17/1998		
PERMIT EXPIRATION DATE:		**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		IV D	7868
B SEDIMENT CONTROL BASIC		IV D	7868
	B1 Sediment Basin 10 or more acres	IV D	7868
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety	IV D	7869
	B3 Sediment Basin less than 10 acres	IV D	7869
	B4 Equivalent Sediment controls	IV D	7869
C POLLUTION CONTROL BASIC		IV D	7868
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater	IV D	7868
	C2 Description of wate stored on-site	IV D	7870
D SWPPP BASIC		IV D	7868
	D1 Description of construction activity and sequence	IV D	7867
	D2 General location map	IV D	7868
	D2a Drainage patterns and slopes	IV D	7868
	D2b Total area of site	IV D	7868
	D2c Areas that will not be disturbed	IV D	7868
	D2d Locations of structural and nonstructural controls	IV D	7868
	D2e Locations of stabilization practies	IV D	7868
	D2f Locations of off-site material, waste, equipment storage areas	IV D	7868
	D2g Surface waters / wetlands	IV D	7868
	D2h Locations of storm water discharges	IV D	7868
	D3 Description of available soils data	IV D	7868
	D4 Description of BMPs used	IV D	7868
	D5 Description of general timing when BMPs implemented in relation to construction schedule	IV D	7868
	D6 Runoff coefficients	IV D	7868
	D7 Names of receiving waters	IV D	7868
	D8 SWPPP implementation responsibilities	III E	7867
	D9 Storm water runoff characteristics	IV D	7868
E UPDATE SWPPP		IV C	7867
	E1 SWPPP amended when change in design, construction or maintenance	IV C	7867
	E2 SWPPP amended when inspection	IV C	7867
F SITE LOG BOOK / CERTIFICATION BASIC		II	7866
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IV D	7870
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	IV D	7870
	Inspection Frequency (if specified as other than CGP)	RULE EQ	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		IV D	7868
	H1 Stabilization initiated by day 14 where applicable	IV D	7868
	Stabilization time (if specified as other than CGP)	RULE EQ	
I MAINTENANCE BASIC		IV D	7868
	I1 Sediment removed from traps when design capacity reduced by 50 percent	IV D	7868

STATE:	**Arkansas**	**SECTION REFERENCED**	
DOCUMENT:	Authorization to Discharge Under the National Pollutant Discharge Elimination System and the Arkansas Water and Air Pollution Control Act 7/1/1998		
PERMIT EXPIRATION DATE:	6/30/2003	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		3 D 4	11
B SEDIMENT CONTROL BASIC		3 D 4	11
	B1 Sediment Basin 10 or more acres	3 D 4	13
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres	3 D 4	13
	B4 Equivalent Sediment controls	3 D 4	13
C POLLUTION CONTROL BASIC		3 D 4	14
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater		
	C2 Description of wate stored on-site		
D SWPPP BASIC		3 D 4	10
	D1 Description of construction activity and sequence	3 D 4	10
	D2 General location map	3 D 4	11
	D2a Drainage patterns and slopes	3 D 4	11
	D2b Total area of site	3 D 4	10
	D2c Areas that will not be disturbed		
	D2d Locations of structural and nonstructural controls	3 D 4	11
	D2e Locations of stabilization practies	3 D 4	11
	D2f Locations of off-site material, waste, equipment storage areas		
	D2g Surface waters / wetlands	3 D 4	11
	D2h Locations of storm water discharges	3 D 4	11
	D3 Description of available soils data	3 D 4	11
	D4 Description of BMPs used	3 D 4	11
	D5 Description of general timing when BMPs implemented in relation to construction schedule	3 D 4	11
	D6 Runoff coefficients	3 D 4	10
	D7 Names of receiving waters	3 D 4	11
	D8 SWPPP implementation responsibilities	3 E 1	16
	D9 Storm water runoff characteristics		
E UPDATE SWPPP		3 D 3	10
	E1 SWPPP amended when change in design, construction or maintenance	3 D 3	10
	E2 SWPPP amended when inspection	3 D 3	10
F SITE LOG BOOK / CERTIFICATION BASIC		3 E 2	16
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		3 D 4	15
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	3 D 4	15
	Inspection Frequency (if specified as other than CGP)	RULE EQ	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		3 D 4	12
	H1 Stabilization initiated by day 14 where applicable	3 D 4	12
	Stabilization time (if specified as other than CGP)	RULE EQ	
I MAINTENANCE BASIC		3 D 4	15
	I1 Sediment removed from traps when design capacity reduced by 50 percent		

STATE:	**California Lahonton**	**SECTION REFERENCED**	
DOCUMENT:	NPDES General Permit CAG616002 for Discharges of Storm Water Runoff Associated with Construction Activity involing Land Disturbance in the Lake Tahoe Hydrologic Unit, El Dorado, Placer and Alpine Counties 01/12/00		
PERMIT EXPIRATION DATE:	01/01/05	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		D 7	4
B SEDIMENT CONTROL BASIC		D 7	4
	B1 Sediment Basin 10 or more acres		
	Size of Sediment Basin Required — acc. 20 year, 1hr storm		
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres		
	B4 Equivalent Sediment controls		
C POLLUTION CONTROL BASIC		D 6	3
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater		
	C2 Description of wate stored on-site	D 6	3
D SWPPP BASIC		D 6	2
	D1 Description of construction activity and sequence		
	D2 General location map	D 6	2
	D2a Drainage patterns and slopes	D 6	3
	D2b Total area of site	D 6	3
	D2c Areas that will not be disturbed		
	D2d Locations of structural and nonstructural controls	D 6	2
	D2e Locations of stabilization practies		
	D2f Locations of off-site material, waste, equipment storage areas	D 6	2
	D2g Surface waters / wetlands	D 6	2
	D2h Locations of storm water discharges	D 6	2
	D3 Description of available soils data	D 6	3
	D4 Description of BMPs used	D 7	4
	D5 Description of general timing when BMPs implemented in relation to construction schedule		
	D6 Runoff coefficients		
	D7 Names of receiving waters	NOI, VII	2
	D8 SWPPP implementation responsibilities	D 13	6
	D9 Storm water runoff characteristics		
E UPDATE SWPPP		D 5	2
	E1 SWPPP amended when change in design, construction or maintenance	D 5	2
	E2 SWPPP amended when inspection	D 5	2
F SITE LOG BOOK / CERTIFICATION BASIC		F10	3
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		D 11	5
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5		
	Inspection Frequency (if specified as other than CGP)	NA	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		D 7	4
	H1 Stabilization initiated by day 14 where applicable		
	Stabilization time (if specified as other than CGP)	NA	
I MAINTENANCE BASIC		D 11	5
	I1 Sediment removed from traps when design capacity reduced by 50 percent		

		SECTION REFERENCED	
STATE:	**California State Permit**		
DOCUMENT:	SWRCB Order No. 99-08 - DWQ NPDES General Permit CAS000002 Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity 08/19/99		
PERMIT EXPIRATION DATE:	08/01/01	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		A 5	
B SEDIMENT CONTROL BASIC		A 5	
	B1 Sediment Basin 10 or more acres	A 8	
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres		
	B4 Equivalent Sediment controls		
C POLLUTION CONTROL BASIC		A 5 b	
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater	A 5 b	
	C2 Description of wate stored on-site	A 5 b	
D SWPPP BASIC		A	
	D1 Description of construction activity and sequence	A 5 c	
	D2 General location map	A 5	
	D2a Drainage patterns and slopes	A 5 b	
	D2b Total area of site	A 5 a	
	D2c Areas that will not be disturbed		
	D2d Locations of structural and nonstructural controls	A 5	
	D2e Locations of stabilization practies	A 5	
	D2f Locations of off-site material, waste, equipment storage areas	A 5 b	
	D2g Surface waters / wetlands		
	D2h Locations of storm water discharges	A 5 a	
	D3 Description of available soils data		
	D4 Description of BMPs used	A 5 b	
	D5 Description of general timing when BMPs implemented in relation to construction schedule	A 6	
	D6 Runoff coefficients	A 5 c	
	D7 Names of receiving waters	A 5 b	
	D8 SWPPP implementation responsibilities	A 5 b	
	D9 Storm water runoff characteristics		
E UPDATE SWPPP		A 4	
	E1 SWPPP amended when change in design, construction or maintenance	A 4	
	E2 SWPPP amended when inspection	A 4	
F SITE LOG BOOK / CERTIFICATION BASIC		B 4	
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		A 11	
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches		
	Inspection Frequency (if specified as other than CGP)	*	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		A 6	
	H1 Stabilization initiated by day 14 where applicable		
	Stabilization time (if specified as other than CGP)	NA	
I MAINTENANCE BASIC		A 11	
	I1 Sediment removed from traps when design capacity reduced by 50 percent		
* Inspect before and after storm events and once each 24 hour period during extended storm events.			

		SECTION REFERENCED	
STATE:	**Colorado**		
DOCUMENT:	CDPS General Permit Stormwater Discharges Associated with Construction Activity, COR-030000 nd		
PERMIT EXPIRATION DATE:	6/30/2007	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		B3	7
B SEDIMENT CONTROL BASIC		B3	7
	B1 Sediment Basin 10 or more acres		
	Size of Sediment Basin Required	NA	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres		
	B4 Equivalent Sediment controls		
C POLLUTION CONTROL BASIC		B5	8
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater		
	C2 Description of wate stored on-site		
D SWPPP BASIC		B1	7
	D1 Description of construction activity and sequence	B1	7
	D2 General location map	B2	7
	D2a Drainage patterns and slopes		
	D2b Total area of site	B1	7
	D2c Areas that will not be disturbed		
	D2d Locations of structural and nonstructural controls		
	D2e Locations of stabilization practies		
	D2f Locations of off-site material, waste, equipment storage areas		
	D2g Surface waters / wetlands	B2	7
	D2h Locations of storm water discharges	B1	7
	D3 Description of available soils data	B1	7
	D4 Description of BMPs used	B3	7
	D5 Description of general timing when BMPs implemented in relation to construction schedule	B3	7
	D6 Runoff coefficients	B1	7
	D7 Names of receiving waters	B1	7
	D8 SWPPP implementation responsibilities		
	D9 Storm water runoff characteristics	B1	7
E UPDATE SWPPP		C4	9
	E1 SWPPP amended when change in design, construction or maintenance	C4	9
	E2 SWPPP amended when inspection	C4	9
F SITE LOG BOOK / CERTIFICATION BASIC		E1	12
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		B6	
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	C5	9
	Inspection Frequency (if specified as other than CGP)	*	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		B4	8
	H1 Stabilization initiated by day 14 where applicable		
	Stabilization time (if specified as other than CGP)	NA	
I MAINTENANCE BASIC		B6	
	I1 Sediment removed from traps when design capacity reduced by 50 percent		

* For sites where construction has not been completed, the permittee shall make a thorough inspection of their stormwater management system at least every 14 days and after any precipitation or snowmelt event that causes surface erosion.

STATE:	**Connecticut**	**SECTION REFERENCED**	
DOCUMENT:	General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities 12/20/2000		
PERMIT EXPIRATION DATE:	10/1/2002	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		6b	11
B SEDIMENT CONTROL BASIC		6b	11
	B1 Sediment Basin 10 or more acres	6b	12
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres		
	B4 Equivalent Sediment controls		
C POLLUTION CONTROL BASIC		6b	13
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater	6b	13
	C2 Description of wate stored on-site		
D SWPPP BASIC		6b	10
	D1 Description of construction activity and sequence	6b	10
	D2 General location map	6b	10
	D2a Drainage patterns and slopes	6b	10
	D2b Total area of site	6b	10
	D2c Areas that will not be disturbed		
	D2d Locations of structural and nonstructural controls	6b	10
	D2e Locations of stabilization practies	6b	10
	D2f Locations of off-site material, waste, equipment storage areas		
	D2g Surface waters / wetlands	6b	10
	D2h Locations of storm water discharges	6b	10
	D3 Description of available soils data	6b	10
	D4 Description of BMPs used	6b	11
	D5 Description of general timing when BMPs implemented in relation to construction schedule	6b	11
	D6 Runoff coefficients	6b	10
	D7 Names of receiving waters	6b	11
	D8 SWPPP implementation responsibilities	6b	14
	D9 Storm water runoff characteristics	6b	10
E UPDATE SWPPP		6b	10
	E1 SWPPP amended when change in design, construction or maintenance	6b	10
	E2 SWPPP amended when inspection		
F SITE LOG BOOK / CERTIFICATION BASIC		4c	6
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		6b	14
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	6b	14
	Inspection Frequency (if specified as other than CGP)	RULE EQ	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		6b	11
	H1 Stabilization initiated by day 14 where applicable	6b	11
	Stabilization time (if specified as other than CGP)	RULE EQ *	
I MAINTENANCE BASIC		6b	12
	I1 Sediment removed from traps when design capacity reduced by 50 percent		

* Where construction activities have permanently ceased or have been temporarily suspended for more than seven days, or when final grades are reached in any portion of the site, stabilization practices should be implemented within three days.

		SECTION REFERENCED	
STATE:	**DC**		
DOCUMENT:	NPDES General Permit for Storm Water Discharges from Construction Activities 2/17/1998		
PERMIT EXPIRATION DATE:		**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		IV D	7868
B SEDIMENT CONTROL BASIC		IV D	7868
	B1 Sediment Basin 10 or more acres	IV D	7868
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety	IV D	7869
	B3 Sediment Basin less than 10 acres	IV D	7869
	B4 Equivalent Sediment controls	IV D	7869
C POLLUTION CONTROL BASIC		IV D	7868
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater	IV D	7868
	C2 Description of wate stored on-site	IV D	7870
D SWPPP BASIC		IV D	7868
	D1 Description of construction activity and sequence	IV D	7867
	D2 General location map	IV D	7868
	D2a Drainage patterns and slopes	IV D	7868
	D2b Total area of site	IV D	7868
	D2c Areas that will not be disturbed	IV D	7868
	D2d Locations of structural and nonstructural controls	IV D	7868
	D2e Locations of stabilization practies	IV D	7868
	D2f Locations of off-site material, waste, equipment storage areas	IV D	7868
	D2g Surface waters / wetlands	IV D	7868
	D2h Locations of storm water discharges	IV D	7868
	D3 Description of available soils data	IV D	7868
	D4 Description of BMPs used	IV D	7868
	D5 Description of general timing when BMPs implemented in relation to construction schedule	IV D	7868
	D6 Runoff coefficients	IV D	7868
	D7 Names of receiving waters	IV D	7868
	D8 SWPPP implementation responsibilities	III E	7867
	D9 Storm water runoff characteristics	IV D	7868
E UPDATE SWPPP		IV C	7867
	E1 SWPPP amended when change in design, construction or maintenance	IV C	7867
	E2 SWPPP amended when inspection	IV C	7867
F SITE LOG BOOK / CERTIFICATION BASIC		II	7866
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IV D	7870
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	IV D	7870
	Inspection Frequency (if specified as other than CGP)	RULE EQ	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		IV D	7868
	H1 Stabilization initiated by day 14 where applicable	IV D	7868
	Stabilization time (if specified as other than CGP)	RULE EQ	
I MAINTENANCE BASIC		IV D	7868
	I1 Sediment removed from traps when design capacity reduced by 50 percent	IV D	7868

STATE:	**Delaware**		**SECTION REFERENCED**	
	DNREC Sediment and Stormwater Regulations (DE Doc 1)	2/14/2002		
	NOI for Storm Water Discharges Associated with Construction Activity Under a NPDES General Permit (DE Doc 2)	nd		
	Sediment and Stormwater Plan Review Checklist (DE Doc 3)	nd		
	NOI Instructions for Storm Water Discharges Associated with Construction Activity Under a NPDES Permit (DE Doc 4)	nd		
DOCUMENT:	Application for Sediment and Stormwater Management Plan Approval (DE Doc 5)	nd		
PERMIT EXPIRATION DATE:			**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC			Doc 3 - E	2
B SEDIMENT CONTROL BASIC			Doc 3 - E	2
	B1 Sediment Basin 10 or more acres		Doc 3 - E 8	2
	Size of Sediment Basin Required		RULE EQ	
	B2 Operator consider public safety			
	B3 Sediment Basin less than 10 acres			
	B4 Equivalent Sediment controls			
C POLLUTION CONTROL BASIC				
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater			
	C2 Description of wate stored on-site			
D SWPPP BASIC			Doc 3 - G	1
	D1 Description of construction activity and sequence		Doc 3 - N 6	2
	D2 General location map		Doc 3 -G 5	1
	D2a Drainage patterns and slopes		Doc 3 -G 10	1
	D2b Total area of site		Doc 2 - NOI	1
	D2c Areas that will not be disturbed			
	D2d Locations of structural and nonstructural controls		Doc 3 - G 16	1
	D2e Locations of stabilization practies		Doc 3 - G 16	1
	D2f Locations of off-site material, waste, equipment storage areas			
	D2g Surface waters / wetlands		Doc 3 - G 15	1
	D2h Locations of storm water discharges		Doc 3 - S 3	2
	D3 Description of available soils data		Doc 3 - G 14	1
	D4 Description of BMPs used		Doc 3 - E 1	2
	D5 Description of general timing when BMPs implemented in relation to construction schedule		Doc 3 - N 6	2
	D6 Runoff coefficients			
	D7 Names of receiving waters		Doc 2 - NOI	1
	D8 SWPPP implementation responsibilities		Doc 3 - N 7	2
	D9 Storm water runoff characteristics			
E UPDATE SWPPP			Doc 3 - N 4	2
	E1 SWPPP amended when change in design, construction or maintenance			
	E2 SWPPP amended when inspection			
F SITE LOG BOOK / CERTIFICATION BASIC			Doc 3 - N 2	1
	F1 Copy of site log book on site			
	F2 Operator certify SWPPP prepared correctly			
	F3 Operator have qualified professional conduct assessment			
	F4 Operator post inspection on site			
G SITE INSPECTIONS BASIC			Doc 1 - Reg 8	1
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches			
	Inspection Frequency (if specified as other than CGP)		NA	
	G1a Record extent of initial disturbance			
	G1b Record sites undergone temp/perm stabilization			
	G1c Record sites not undergone work			
	G1d Inspect sediment control practices			
	G1e Ispect BMPs			
	G2 Final inspection prior to NOT			
H STABILIZATION BASIC			Doc 3 - N 5	2
	H1 Stabilization initiated by day 14 where applicable		Doc 3 - N 5	2
	Stabilization time (if specified as other than CGP)		RULE EQ	
I MAINTENANCE BASIC			Doc 3 - N 8	2
	I1 Sediment removed from traps when design capacity reduced by 50 percent			

STATE:	**Florida - State Permit**	**SECTION REFERENCED**	
DOCUMENT:	State of Florida DEP Generic Permit for Stormwater Discharge from Construction Activities That Disturb Five or More Acres of Land 10/22/2000		
PERMIT EXPIRATION DATE:		**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		V D	8
B SEDIMENT CONTROL BASIC		V D	8
	B1 Sediment Basin 10 or more acres	V D	8
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres	V D	9
	B4 Equivalent Sediment controls	V D	10
C POLLUTION CONTROL BASIC		V D	11
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater		
	C2 Description of wate stored on-site		
D SWPPP BASIC		V D	7
	D1 Description of construction activity and sequence	V D	7
	D2 General location map	V D	7
	D2a Drainage patterns and slopes	V D	7
	D2b Total area of site	V D	7
	D2c Areas that will not be disturbed	V D	7
	D2d Locations of structural and nonstructural controls	V D	7
	D2e Locations of stabilization practies	V D	7
	D2f Locations of off-site material, waste, equipment storage areas		
	D2g Surface waters / wetlands	V D	7
	D2h Locations of storm water discharges	V D	7
	D3 Description of available soils data	V D	7
	D4 Description of BMPs used	V D	8
	D5 Description of general timing when BMPs implemented in relation to construction schedule	V D	8
	D6 Runoff coefficients		
	D7 Names of receiving waters	V D	8
	D8 SWPPP implementation responsibilities	V E	11
	D9 Storm water runoff characteristics	V C	7
E UPDATE SWPPP		V C	7
	E1 SWPPP amended when change in design, construction or maintenance	V C	7
	E2 SWPPP amended when inspection	V C	7
F SITE LOG BOOK / CERTIFICATION BASIC		V E	11
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		V D	10
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	V D	10
	Inspection Frequency (if specified as other than CGP)	RULE EQ, 7 DAYS	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		V D	8
	H1 Stabilization initiated by day 14 where applicable	V D	8
	Stabilization time (if specified as other than CGP)	RULE EQ	
I MAINTENANCE BASIC		V D	10
	I1 Sediment removed from traps when design capacity reduced by 50 percent		

STATE:	**Florida - State Permit**	**SECTION REFERENCED**	
DOCUMENT:	The Florida Development Manual: A Guide to Sound Land and Water Management; Chapter 6.		
	BMP MANUAL GUIDELINES	**SECTION**	**PAGE**
BMP-B1	For sites > 5 acres	ESC Practices	6-360
BMP-B1	Volume: 67 cubic yards (1,809 cubic feet) of storage per acre.	ESC Practices	6-361
BMP-B3	For sites > 5 acres	ESC Practices	6-360
BMP-B3	Sediment traps for sites < 5 acres must have 67 cubic yards (1,809 cubic feet) of storage per acre	ESC Practices	6-352
BMP-B4	No specific requirement for equivalent controls, but BMP manual describes additional ESC practices applicable to sites < 5 acres		
BMP-G1	Inspections after each rainfall and daily during prolonged rainfall	ESC Practices	6-321
BMP-G1	Temporary diversion dike- inspect weekly	ESC Practices	6-338
BMP-G1	Temporary fill diversion - inspect weekly	ESC Practices	6-345
BMP-G1	Temp. slope drain - inspect weekly	ESC Practices	6-345
BMP-H1	No instructions on general stabilization requirements, but some BMP-specific discussion (below):		
BMP-H1	Stabilize sediment basin embankment within 15 days after completion	ESC Practices	6-367
BMP-H1	Seeding for soils exposed for at least 30 days	ESC Practices	6-473
BMP-I1	Remove when sediment trap design volume reduced by 50%	ESC Practices	6-352, 6-359
BMP-I1	Remove when at 1/2 height of silt fence, barriers, check dams	ESC Practices	6-321, 6-438
BMP-I1	Sediment removed from basin when reaches 60% design capacity (design capacity reduced by 40%)	ESC Practices	6-362

		SECTION REFERENCED	
STATE:	**Florida - Region 4 CGP**		
DOCUMENT:	Final Modification of the NPDES General Permit for Storm Water Discharges From Construction Activities, Region 4 4/28/2000		
PERMIT EXPIRATION DATE:		**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		V D	25138
B SEDIMENT CONTROL BASIC		V D	25138
	B1 Sediment Basin 10 or more acres	V D	25139
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres	V D	25139
	B4 Equivalent Sediment controls	V D	25139
C POLLUTION CONTROL BASIC		V D	25139
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater		
	C2 Description of wate stored on-site		
D SWPPP BASIC		V D	25138
	D1 Description of construction activity and sequence	V D	25138
	D2 General location map	V D	25138
	D2a Drainage patterns and slopes	V D	25138
	D2b Total area of site	V D	25138
	D2c Areas that will not be disturbed	V D	25138
	D2d Locations of structural and nonstructural controls	V D	25138
	D2e Locations of stabilization practies	V D	25138
	D2f Locations of off-site material, waste, equipment storage areas		
	D2g Surface waters / wetlands	V D	25138
	D2h Locations of storm water discharges	V D	25138
	D3 Description of available soils data	I V	25123
	D4 Description of BMPs used	V D	25138
	D5 Description of general timing when BMPs implemented in relation to construction schedule	V D	25138
	D6 Runoff coefficients	V D	25138
	D7 Names of receiving waters	V C	25138
	D8 SWPPP implementation responsibilities	V E	25140
	D9 Storm water runoff characteristics	V D	25138
E UPDATE SWPPP		V C	25138
	E1 SWPPP amended when change in design, construction or maintenance	V C	25138
	E2 SWPPP amended when inspection	V C	25138
F SITE LOG BOOK / CERTIFICATION BASIC		V D	15139
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		V D	25140
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	V D	25140
	Inspection Frequency (if specified as other than CGP)	RULE EQ, 7 DAYS	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		V D	25138
	H1 Stabilization initiated by day 14 where applicable	V D	25138
	Stabilization time (if specified as other than CGP)	RULE EQ	
I MAINTENANCE BASIC		V D	25140
	I1 Sediment removed from traps when design capacity reduced by 50 percent		

STATE:	**Georgia**	**SECTION REFERENCED**	
DOCUMENT:	State of Georgia DNR Environmental Protection Division, Authorization to Discharge Under the NPDES Storm Water Discharges Associated with Construction Activity 8/1/2000		
PERMIT EXPIRATION DATE:	7/31/2003	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		IVD	18
B SEDIMENT CONTROL BASIC		IVD	18
	B1 Sediment Basin 10 or more acres		
	Size of Sediment Basin Required 1800 ft3	IVD	19
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres		
	B4 Equivalent Sediment controls	IVD	19
C POLLUTION CONTROL BASIC		IVD	19
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater		
	C2 Description of wate stored on-site		
D SWPPP BASIC		IVD	17
	D1 Description of construction activity and sequence	IIB	8
	D2 General location map	IVD	18
	D2a Drainage patterns and slopes	IVD	18
	D2b Total area of site	IVD	17
	D2c Areas that will not be disturbed	IVD	18
	D2d Locations of structural and nonstructural controls	IVD	18
	D2e Locations of stabilization practies	IVD	18
	D2f Locations of off-site material, waste, equipment storage areas		
	D2g Surface waters / wetlands	IVD	18
	D2h Locations of storm water discharges	IVD	18
	D3 Description of available soils data	IVD	17
	D4 Description of BMPs used	IVD	18
	D5 Description of general timing when BMPs implemented in relation to construction schedule	IVD	18
	D6 Runoff coefficients	IVD	17
	D7 Names of receiving waters	IIB	8
	D8 SWPPP implementation responsibilities	ID	7
	D9 Storm water runoff characteristics	IVD	17
E UPDATE SWPPP		IVC	17
	E1 SWPPP amended when change in design, construction or maintenance	IVC	17
	E2 SWPPP amended when inspection	IVC	17
F SITE LOG BOOK / CERTIFICATION BASIC		IV	13
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IVD	20
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	VA	26
	Inspection Frequency (if specified as other than CGP)	RULE EQ	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		IVD	18
	H1 Stabilization initiated by day 14 where applicable	IVD	18
	Stabilization time (if specified as other than CGP)	RULE EQ	
I MAINTENANCE BASIC		IVD	20
	I1 Sediment removed from traps when design capacity reduced by 50 percent		

STATE:	Georgia	SECTION REFERENCED	
DOCUMENT:	Manual for Erosion and Sediment control in Georgia		
	BMP MANUAL GUIDELINES	SECTION	PAGE
BMP-B1	Where site conditions preclude use of sufficient erosion controls - no acreage specified	Chapter 6	6-147
BMP-B1	Volume: 67 cubic yards (1,809 cubic feet) of storage per acre.	Chapter 6	6-147
BMP-B3	Where site conditions preclude use of sufficient erosion controls - no acreage specified.	Chapter 6	6-147
BMP-B3	No specific requirement for equivalent controls, but BMP manual describes additional ESC practices, assumed to be applied where sediment basin not appropriate - outlines principles for design, including importance of installing structures to retain sediment	Chapter 2	2-4
BMP-B3	"Appropriate sediment storage must be available on the site prior to any land-disturbing activities"	Chapter 6	6-1
BMP-B3	"Sediment basins, sediment barriers and related structures should be installed"	Chapter 6	6-9
BMP-B3	67 cubic yards (1809 cubic feet) of sediment storage per acre.	Chapter 6	6-13
BMP-B3	Sediment basin may be used in combination with other practices	Chapter 6	6-147
BMP-G1	No instructions on general inspection schedule; most BMPs have vague instructions, "periodically" and "after rainstorms" (below);		
BMP-G1	ESC structures inspected daily? (from fictional example)	Chapter 3	3-14
BMP-G1	Sediment trap should be inspected daily and after each rainfall	Chapter 6	6-140
BMP-H1	No instructions on general stabilization requirements, but some BMP specific discussion (below):		
BMP-H1	All steep slopes/concentrated flow areas must be stabilized with erosion control matting	Chapter 6	6-63
BMP-H1	Stabilization immediately after rough grading completed; stabilization should be employed immediately after land disturbance	Chapter 2	2-4
BMP-H1	Mulching, temporary vegatation of permanent vegetation for all exposed areas w/in 14 days after disturbance	Chapter 6	6-17,6-34,6-35
BMP-H1	Embankment for Sediment Basin must be stabilized within 7 days	Chapter 6	6-150
BMP-I1	Remove sediment from trap at 1/2 height of trap	Chapter 6	6-140
BMP-I1	Remove sediment from basin when 1/3 of storage volume lost (design capacity reduced by 1/3).	Chapter 6	6-147
BMP-I1	Repair damages caused by soil erosion or construction equipment daily	Chapter 6	6-151

STATE:	**Hawaii**	**SECTION REFERENCED**	
DOCUMENT:	NPDES General Permit Authorizing Discharges of Storm Water Associated with Construction Activity 9/1/2002		
PERMIT EXPIRATION DATE:	3/9/2003	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		C 4	55-C-6
B SEDIMENT CONTROL BASIC		C 4	55-C-6
	B1 Sediment Basin 10 or more acres		
	Size of Sediment Basin Required	*	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres		
	B4 Equivalent Sediment controls		
C POLLUTION CONTROL BASIC			
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater		
	C2 Description of wate stored on-site		
D SWPPP BASIC		C 4	55-C-5
	D1 Description of construction activity and sequence	C 4	55-C-5
	D2 General location map	C 4	55-C-5
	D2a Drainage patterns and slopes	C 4	55-C-5
	D2b Total area of site	C 4	55-C-5
	D2c Areas that will not be disturbed		
	D2d Locations of structural and nonstructural controls	C 4	55-C-5
	D2e Locations of stabilization practies	C 4	55-C-5
	D2f Locations of off-site material, waste, equipment storage areas	C 4	55-C-5
	D2g Surface waters / wetlands	C 4	55-C-6
	D2h Locations of storm water discharges	NOI 5	2
	D3 Description of available soils data	C 4	55-C-5
	D4 Description of BMPs used	C 4	55-C-6
	D5 Description of general timing when BMPs implemented in relation to construction schedule	C 4	55-C-5
	D6 Runoff coefficients	C 4	55-C-5
	D7 Names of receiving waters	NOI 5	2
	D8 SWPPP implementation responsibilities		
	D9 Storm water runoff characteristics	C 4	55-C-5
E UPDATE SWPPP			
	E1 SWPPP amended when change in design, construction or maintenance		
	E2 SWPPP amended when inspection		
F SITE LOG BOOK / CERTIFICATION BASIC		C 10	55-C-10
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		C 7	55-C-9
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	C 11	55-C-11
	Inspection Frequency (if specified as other than CGP)	RULE EQ	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		C 11	55-C-11
	H1 Stabilization initiated by day 14 where applicable		
	Stabilization time (if specified as other than CGP)	**	
I MAINTENANCE BASIC			
	I1 Sediment removed from traps when design capacity reduced by 50 percent		

* Erosion and sediment control measures shall be designed according to the size of disturbed or drainage areas to detain runoff and trap sediment.
** Stabilization must occur before another phase is initiated.

STATE:	**Idaho**	**SECTION REFERENCED**	
DOCUMENT:	Region 10 Storm Water Construction General Permit 2/17/1998		
PERMIT EXPIRATION DATE:	2/17/2003	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		IVD2	20
B SEDIMENT CONTROL BASIC		IVD2	20
	B1 Sediment Basin 10 or more acres	IVD2	22
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety	IVD2	22
	B3 Sediment Basin less than 10 acres	IVD2	23
	B4 Equivalent Sediment controls	IVD2	23
C POLLUTION CONTROL BASIC		IVD2	21
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater	IVD2	21
	C2 Description of wate stored on-site	IVD2	24
D SWPPP BASIC		IVD1	19
	D1 Description of construction activity and sequence	IVD1	19
	D2 General location map	IVD1	19
	D2a Drainage patterns and slopes	IVD1	19
	D2b Total area of site	IVD1	19
	D2c Areas that will not be disturbed	IVD1	19
	D2d Locations of structural and nonstructural controls	IVD1	19
	D2e Locations of stabilization practices	IVD1	19
	D2f Locations of off-site material, waste, equipment storage areas	IVD1	19
	D2g Surface waters / wetlands	IVD1	19
	D2h Locations of storm water discharges	IVD1	19
	D3 Description of available soils data	IVD1	19
	D4 Description of BMPs used	IVD2	20
	D5 Description of general timing when BMPs implemented in relation to construction schedule	IVD2	20
	D6 Runoff coefficients	IVD1	19
	D7 Names of receiving waters	IVD1	19
	D8 SWPPP implementation responsibilities	IVD2	20
	D9 Storm water runoff characteristics	IVD1	19
E UPDATE SWPPP		IVC	18
	E1 SWPPP amended when change in design, construction or maintenance	IVC	18
	E2 SWPPP amended when inspection	IVC	18
F SITE LOG BOOK / CERTIFICATION BASIC		VIG	30
	F1 Copy of site log book on site	VIG	30
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IVD4	25
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	IVD4	25
	Inspection Frequency (if specified as other than CGP)	RULE EQ	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		IVD2	21
	H1 Stabilization initiated by day 14 where applicable	IVD2	21
	Stabilization time (if specified as other than CGP)	RULE EQ	
I MAINTENANCE BASIC		IVD2	21
	I1 Sediment removed from traps when design capacity reduced by 50 percent	IVD2	21

		SECTION REFERENCED	
STATE:	**Illinois**		
DOCUMENT:	NPDES Permit ILR10, Construction Site Activities NPDES Storm Water Permit 5/14/1998		
PERMIT EXPIRATION DATE:	5/21/2003	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		IV	4
B SEDIMENT CONTROL BASIC		IV	4
	B1 Sediment Basin 10 or more acres		
	Size of Sediment Basin Required	NA	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres		
	B4 Equivalent Sediment controls		
C POLLUTION CONTROL BASIC		IVD	5
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater		
	C2 Description of wate stored on-site		
D SWPPP BASIC		IVD	4
	D1 Description of construction activity and sequence	IVD	4
	D2 General location map	IVD	4
	D2a Drainage patterns and slopes	IVD	4
	D2b Total area of site	IVD	4
	D2c Areas that will not be disturbed		
	D2d Locations of structural and nonstructural controls	IVD	4
	D2e Locations of stabilization practies	IVD	4
	D2f Locations of off-site material, waste, equipment storage areas		
	D2g Surface waters / wetlands	IVD	4
	D2h Locations of storm water discharges	IVD	4
	D3 Description of available soils data	IVD	4
	D4 Description of BMPs used	IVD	4
	D5 Description of general timing when BMPs implemented in relation to construction schedule	IVD	4
	D6 Runoff coefficients	IVD	4
	D7 Names of receiving waters	IIC	2
	D8 SWPPP implementation responsibilities	IVD	6
	D9 Storm water runoff characteristics	IVD	4
E UPDATE SWPPP		IVC	4
	E1 SWPPP amended when change in design, construction or maintenance	IVC	4
	E2 SWPPP amended when inspection	IVC	4
F SITE LOG BOOK / CERTIFICATION BASIC		IVD	6
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IVD	6
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	IVD	6
	Inspection Frequency (if specified as other than CGP)	DAYS	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		IVD	5
	H1 Stabilization initiated by day 14 where applicable	IVD	5
	Stabilization time (if specified as other than CGP)	RULE EQ	
I MAINTENANCE BASIC		IVD	5
	I1 Sediment removed from traps when design capacity reduced by 50 percent		

STATE:	**Indiana**	**SECTION REFERENCED**	
DOCUMENT:	Storm Water General Permit Rule 5 nd		
PERMIT EXPIRATION DATE:		**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		SEC 7	12
B SEDIMENT CONTROL BASIC		SEC 7	12
	B1 Sediment Basin 10 or more acres		
	Size of Sediment Basin Required	NA	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres		
	B4 Equivalent Sediment controls		
C POLLUTION CONTROL BASIC			
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater		
	C2 Description of wate stored on-site		
D SWPPP BASIC		SEC 7	13
	D1 Description of construction activity and sequence	SEC 5	11
	D2 General location map	SEC 7	13
	D2a Drainage patterns and slopes	SEC 7	13
	D2b Total area of site	SEC 5	11
	D2c Areas that will not be disturbed		
	D2d Locations of structural and nonstructural controls	SEC 7	13
	D2e Locations of stabilization practies	SEC 7	13
	D2f Locations of off-site material, waste, equipment storage areas		
	D2g Surface waters / wetlands	SEC 7	13
	D2h Locations of storm water discharges	SEC 7	13
	D3 Description of available soils data		
	D4 Description of BMPs used	SEC 7	13
	D5 Description of general timing when BMPs implemented in relation to construction schedule	SEC 5	13
	D6 Runoff coefficients		
	D7 Names of receiving waters	SEC 7	13
	D8 SWPPP implementation responsibilities		
	D9 Storm water runoff characteristics		
E UPDATE SWPPP			
	E1 SWPPP amended when change in design, construction or maintenance		
	E2 SWPPP amended when inspection		
F SITE LOG BOOK / CERTIFICATION BASIC		SEC 5	11
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		SEC 8	14
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches		
	Inspection Frequency (if specified as other than CGP)		
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		SEC 7	12
	H1 Stabilization initiated by day 14 where applicable	SEC 7	12
	Stabilization time (if specified as other than CGP)	RULE EQ, 7 DAYS	
I MAINTENANCE BASIC		SEC 7	13
	I1 Sediment removed from traps when design capacity reduced by 50 percent		

			SECTION REFERENCED	
STATE:	**Iowa**			
DOCUMENT:	Iowa DNR NPDES General Permit No. 2 - Storm Water Discharge Associated with Industrial Activity for Construction Activities (Doc 1)	10/1/2002		
	Storm Water Management for Construction Activities, General Permit No. 2, A Brief Guide to Developing Pollution Prevention Plans and Best Management Practices (Doc 2)	10/1/2002		
PERMIT EXPIRATION DATE:		10/1/2007	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC			Doc 2 - Phase 3B	13
B SEDIMENT CONTROL BASIC			Doc 2 - Phase 3B	13
	B1 Sediment Basin 10 or more acres		Doc 2 - Phase 3B	14
	Size of Sediment Basin Required		RULE EQ	
	B2 Operator consider public safety			
	B3 Sediment Basin less than 10 acres		Doc 2 - Phase 3B	14
	B4 Equivalent Sediment controls		Doc 2 - Phase 3B	14
C POLLUTION CONTROL BASIC			Doc 2 - Phase 3C	14
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater			
	C2 Description of wate stored on-site			
D SWPPP BASIC			Doc 2 - Phase 3B	13
	D1 Description of construction activity and sequence		Doc 2 - Phase 1C	9
	D2 General location map		Doc 2 - Phase 1D	9
	D2a Drainage patterns and slopes		Doc 2 - Phase 1D	9
	D2b Total area of site		Doc 2 - Phase 2A	10
	D2c Areas that will not be disturbed		Doc 2 - Phase 1D	9
	D2d Locations of structural and nonstructural controls		Doc 2 - Phase 3B	13
	D2e Locations of stabilization practies		Doc 2 - Phase 3B	13
	D2f Locations of off-site material, waste, equipment storage areas			
	D2g Surface waters / wetlands		Doc 2 - Phase 1A	8
	D2h Locations of storm water discharges			
	D3 Description of available soils data		Doc 2 - Phase 1A	8
	D4 Description of BMPs used		Doc 2 - Phase 3B	13
	D5 Description of general timing when BMPs implemented in relation to construction schedule		Doc 2 - Phase 3H	16
	D6 Runoff coefficients		Doc 2 - Phase 2C	10
	D7 Names of receiving waters		Doc 2 - Phase 1A	8
	D8 SWPPP implementation responsibilities			
	D9 Storm water runoff characteristics		Doc 2 - Phase 1A	8
E UPDATE SWPPP			Doc 2 - Phase 5D	20
	E1 SWPPP amended when change in design, construction or maintenance		Doc 2 - Phase 5D	20
	E2 SWPPP amended when inspection		Doc 2 - Phase 5D	20
F SITE LOG BOOK / CERTIFICATION BASIC			Doc 2 - Phase 4A	17
	F1 Copy of site log book on site			
	F2 Operator certify SWPPP prepared correctly			
	F3 Operator have qualified professional conduct assessment			
	F4 Operator post inspection on site			
G SITE INSPECTIONS BASIC			Doc 2 - Phase 3F	15
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches		Doc 2 - Phase 3F	15
	Inspection Frequency (if specified as other than CGP)		RULE EQ	
	G1a Record extent of initial disturbance			
	G1b Record sites undergone temp/perm stabilization			
	G1c Record sites not undergone work			
	G1d Inspect sediment control practices			
	G1e Ispect BMPs			
	G2 Final inspection prior to NOT			
H STABILIZATION BASIC			Doc 2 - Phase 3B	13
	H1 Stabilization initiated by day 14 where applicable		Doc 2 - Phase 3B	13
	Stabilization time (if specified as other than CGP)		RULE EQ	
I MAINTENANCE BASIC			Doc 2 - Phase 3F	15
	I1 Sediment removed from traps when design capacity reduced by 50 percent			

STATE:	**Kansas**	**SECTION REFERENCED**	
DOCUMENT:	Kansas Water Pollution Control General Permit and Authorization to Discharge Stormwater Runoff from Construction Activities Under the NPDES System 1/18/2002		
PERMIT EXPIRATION DATE:	12/31/2006	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		P-VII	8
B SEDIMENT CONTROL BASIC		P-VII	8
	B1 Sediment Basin 10 or more acres	P-VII	8
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres		
	B4 Equivalent Sediment controls	P-VII	8
C POLLUTION CONTROL BASIC		P-VII	8
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater		
	C2 Description of wate stored on-site		
D SWPPP BASIC		P-VII	6
	D1 Description of construction activity and sequence	NOI-ID	2
	D2 General location map	NOI INST IIE	2
	D2a Drainage patterns and slopes	NOI INST IIE	2
	D2b Total area of site	NOI INST IIE	2
	D2c Areas that will not be disturbed		
	D2d Locations of structural and nonstructural controls	NOI INST IIE	2
	D2e Locations of stabilization practices	NOI INST IIE	2
	D2f Locations of off-site material, waste, equipment storage areas		
	D2g Surface waters / wetlands	NOI INST IIE	2
	D2h Locations of storm water discharges	NOI INST IIB	1
	D3 Description of available soils data	NOI IB	1
	D4 Description of BMPs used	P-VII	7
	D5 Description of general timing when BMPs implemented in relation to construction schedule	NOI IB	1
	D6 Runoff coefficients	NOI INST IIB	1
	D7 Names of receiving waters	NOI INST IIB	1
	D8 SWPPP implementation responsibilities		
	D9 Storm water runoff characteristics		
E UPDATE SWPPP		P-VII	6
	E1 SWPPP amended when change in design, construction or maintenance	P-VII	7
	E2 SWPPP amended when inspection	P-VII	7
F SITE LOG BOOK / CERTIFICATION BASIC		P-VII	10
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		P-VII	9
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	P-VII	9
	Inspection Frequency (if specified as other than CGP)	*	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		P-VII	6
	H1 Stabilization initiated by day 14 where applicable		
	Stabilization time (if specified as other than CGP)	NA	
I MAINTENANCE BASIC		P-VII	7
	I1 Sediment removed from traps when design capacity reduced by 50 percent		

*Permittee shall ensure that the construction site is inspected on a regular schedule and within 24 hours of the end of a storm which construction activity.

			SECTION REFERENCED	
STATE:	**Kentucky**			
DOCUMENT:	General KPDES Permit for Storm Water Point Source Discharge Construction Activities, KYR10	10/1/2002		
PERMIT EXPIRATION DATE:		10/30/2007	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC			IV	IV-2
B SEDIMENT CONTROL BASIC			IV	IV-2
	B1 Sediment Basin 10 or more acres		IV	IV-2
	Size of Sediment Basin Required		RULE EQ	
	B2 Operator consider public safety			
	B3 Sediment Basin less than 10 acres			
	B4 Equivalent Sediment controls			
C POLLUTION CONTROL BASIC			IV	IV-3
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater			
	C2 Description of wate stored on-site			
D SWPPP BASIC			IV	IV-2
	D1 Description of construction activity and sequence		IV	IV-2
	D2 General location map		IV	IV-2
	D2a Drainage patterns and slopes		IV	IV-2
	D2b Total area of site		IV	IV-2
	D2c Areas that will not be disturbed			
	D2d Locations of structural and nonstructural controls		IV	IV-2
	D2e Locations of stabilization practices			
	D2f Locations of off-site material, waste, equipment storage areas			
	D2g Surface waters / wetlands		IV	IV-2
	D2h Locations of storm water discharges		IV	IV-2
	D3 Description of available soils data		IV	IV-2
	D4 Description of BMPs used		IV	IV-2
	D5 Description of general timing when BMPs implemented in relation to construction schedule		IV	IV-2
	D6 Runoff coefficients		IV	IV-2
	D7 Names of receiving waters		IV	IV-2
	D8 SWPPP implementation responsibilities			
	D9 Storm water runoff characteristics		IV	IV-2
E UPDATE SWPPP			IV	IV-1
	E1 SWPPP amended when change in design, construction or maintenance		IV	IV-1
	E2 SWPPP amended when inspection		IV	IV-1
F SITE LOG BOOK / CERTIFICATION BASIC			IV	IV-4
	F1 Copy of site log book on site			
	F2 Operator certify SWPPP prepared correctly			
	F3 Operator have qualified professional conduct assessment			
	F4 Operator post inspection on site			
G SITE INSPECTIONS BASIC			IV	IV-3
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches		IV	IV-3
	Inspection Frequency (if specified as other than CGP)		7 DAYS	
	G1a Record extent of initial disturbance			
	G1b Record sites undergone temp/perm stabilization			
	G1c Record sites not undergone work			
	G1d Inspect sediment control practices			
	G1e Ispect BMPs			
	G2 Final inspection prior to NOT			
H STABILIZATION BASIC			IV	IV-2
	H1 Stabilization initiated by day 14 where applicable		IV	IV-2
	Stabilization time (if specified as other than CGP)		RULE EQ	
I MAINTENANCE BASIC			IV	IV-2
	I1 Sediment removed from traps when design capacity reduced by 50 percent			

STATE:	Kentucky	SECTION REFERENCED	
DOCUMENT:	Kentucky Best Management Practices for Construction Activities (Doc #1) Field Handbook; Erosion and Sediment Control on Construction Sites (Doc #2)		
	BMP MANUAL GUIDELINES	**SECTION**	**PAGE**
BMP-B1	Where site conditions preclude use of sufficient erosion controls - no acreage specified.	Doc #1 - Chapter 4	150
BMP-B1	Volume: 1,800 cubic feet of storage per acre	Doc #1 - Chapter 4	152
BMP-B3	Where site conditions preclude use of sufficient erosion controls - no acreage specified.	Doc #1 - Chapter 4	150
BMP-B3	No specific requirement for equivalent controls, but BMP manual describes additional ESC practices, assumed to be applied where sediment basin not appropriate (ie, small sites)	Doc #1 -	
BMP-B4	Should be used in conjunction with other BMPs to increase effectiveness	Doc #2 - Field	151/15
BMP-B4	Manual describes BMPs for small sites (ex: silf fence for less than 2 acres)	Doc #1 - Chapter 4	165
BMP-G1	No instructions on general inspection schedule; some discussion of inspection for specific BMPs are equivalent or more stringent (below):	Doc #1 -	
BMP-G1	Inspect sed traps immediately after rainfall and daily during prolonged rainfal	Doc #1 - Chapter 4	172
BMP-G1	Inspect check dams for accumulation after each "significant" rainfall	Doc #1 - Chapter 4	102
BMP-H			26
BMP-H1	No instructions on general stabilization requirements, but some BMP-specific discussion (below):	Doc #1 -	
BMP-H1	Temporary seeding for exposed soil not scheduled for grading for 3 wks - 1 year	Doc #1 - Chapter 4	
BMP-H1	Establish vegetation "upon completion of construction" of sediment basin	Doc #1 - Chapter 4	157
BMP-H1	Permanent seeding when exposed for several months	Doc #1 - Chapter 4	30
BMP-H1	Use riprap where erosion potential is high	Doc #1 - Chapter 4	56
BMP-H1	Vegetative filters should be planned and established prior to land disturbing activities	Doc #1 - Chapter 4	183
BMP-I1	Sediment removed from trap at 50% capacity	Handbook	17
BMP-I1	Sediment removed from basin when reaches 60% design capacity (design capacity reduced by 40%)	Doc #1 - Chapter 4	152, 156

STATE:	**Louisiana**	**SECTION REFERENCED**	
DOCUMENT:	Storm Water General Permit For Construction Activities, Permit No. LAR100000 Authorization to Discharge Under The Louisiana NPDES System 10/1/1999		
PERMIT EXPIRATION DATE:	10/1/2004	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		IVD	22
B SEDIMENT CONTROL BASIC		IVD	22
	B1 Sediment Basin 10 or more acres	IVD	24
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety	IVD	25
	B3 Sediment Basin less than 10 acres	IVD	25
	B4 Equivalent Sediment controls	IVD	25
C POLLUTION CONTROL BASIC		IVD	23
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater	IVD	23
	C2 Description of wate stored on-site	IVD	23
D SWPPP BASIC		IVD	22
	D1 Description of construction activity and sequence	IVD	21
	D2 General location map	IVD	22
	D2a Drainage patterns and slopes	IVD	22
	D2b Total area of site	IVD	21
	D2c Areas that will not be disturbed	IVD	22
	D2d Locations of structural and nonstructural controls	IVD	22
	D2e Locations of stabilization practies	IVD	22
	D2f Locations of off-site material, waste, equipment storage areas	IVD	22
	D2g Surface waters / wetlands	IVD	22
	D2h Locations of storm water discharges	IVD	22
	D3 Description of available soils data	IVD	22
	D4 Description of BMPs used	IVD	22
	D5 Description of general timing when BMPs implemented in relation to construction schedule	IVD	22
	D6 Runoff coefficients	IVD	22
	D7 Names of receiving waters	IVD	22
	D8 SWPPP implementation responsibilities	IVE	28
	D9 Storm water runoff characteristics	IVD	22
E UPDATE SWPPP		IVD	21
	E1 SWPPP amended when change in design, construction or maintenance	IVD	21
	E2 SWPPP amended when inspection	IVD	21
F SITE LOG BOOK / CERTIFICATION BASIC		IVE	28
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IVD	27
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	IVD	27
	Inspection Frequency (if specified as other than CGP)	RULE EQ	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		IVD	23
	H1 Stabilization initiated by day 14 where applicable	IVD	24
	Stabilization time (if specified as other than CGP)	RULE EQ	
I MAINTENANCE BASIC		IVD	22
	I1 Sediment removed from traps when design capacity reduced by 50 percent	IVD	22

STATE:	**Maine**	**SECTION REFERENCED**	
DOCUMENT:	NPDES General Permit for Storm Water Discharges from Construction Activities 2/17/1998		
PERMIT EXPIRATION DATE:		**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		IV D	7868
B SEDIMENT CONTROL BASIC		IV D	7868
	B1 Sediment Basin 10 or more acres	IV D	7868
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety	IV D	7869
	B3 Sediment Basin less than 10 acres	IV D	7869
	B4 Equivalent Sediment controls	IV D	7869
C POLLUTION CONTROL BASIC		IV D	7868
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater	IV D	7868
	C2 Description of wate stored on-site	IV D	7870
D SWPPP BASIC		IV D	7868
	D1 Description of construction activity and sequence	IV D	7867
	D2 General location map	IV D	7868
	D2a Drainage patterns and slopes	IV D	7868
	D2b Total area of site	IV D	7868
	D2c Areas that will not be disturbed	IV D	7868
	D2d Locations of structural and nonstructural controls	IV D	7868
	D2e Locations of stabilization practies	IV D	7868
	D2f Locations of off-site material, waste, equipment storage areas	IV D	7868
	D2g Surface waters / wetlands	IV D	7868
	D2h Locations of storm water discharges	IV D	7868
	D3 Description of available soils data	IV D	7868
	D4 Description of BMPs used	IV D	7868
	D5 Description of general timing when BMPs implemented in relation to construction schedule	IV D	7868
	D6 Runoff coefficients	IV D	7868
	D7 Names of receiving waters	IV D	7868
	D8 SWPPP implementation responsibilities	III E	7867
	D9 Storm water runoff characteristics	IV D	7868
E UPDATE SWPPP		IV C	7867
	E1 SWPPP amended when change in design, construction or maintenance	IV C	7867
	E2 SWPPP amended when inspection	IV C	7867
F SITE LOG BOOK / CERTIFICATION BASIC		II	7866
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IV D	7870
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	IV D	7870
	Inspection Frequency (if specified as other than CGP)	RULE EQ	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		IV D	7868
	H1 Stabilization initiated by day 14 where applicable	IV D	7868
	Stabilization time (if specified as other than CGP)	RULE EQ	
I MAINTENANCE BASIC		IV D	7868
	I1 Sediment removed from traps when design capacity reduced by 50 percent	IV D	7868

STATE:	**Maryland**		**SECTION REFERENCED**	
DOCUMENT:	Maryland Department of the Environment General Permit for Construction Activity General NPDES 97-GP-0004	10/1/1997		
PERMIT EXPIRATION DATE:		9/30/2002	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC			R7B	1
B SEDIMENT CONTROL BASIC			R7B	1
	B1 Sediment Basin 10 or more acres			
	Size of Sediment Basin Required		NA	
	B2 Operator consider public safety			
	B3 Sediment Basin less than 10 acres			
	B4 Equivalent Sediment controls			
C POLLUTION CONTROL BASIC			P III B	4
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater			
	C2 Description of wate stored on-site			
D SWPPP BASIC			P II A	2
	D1 Description of construction activity and sequence		RTB	2
	D2 General location map			
	D2a Drainage patterns and slopes			
	D2b Total area of site		P II C	3
	D2c Areas that will not be disturbed			
	D2d Locations of structural and nonstructural controls			
	D2e Locations of stabilization practies			
	D2f Locations of off-site material, waste, equipment storage areas			
	D2g Surface waters / wetlands			
	D2h Locations of storm water discharges			
	D3 Description of available soils data		RTB	2
	D4 Description of BMPs used			
	D5 Description of general timing when BMPs implemented in relation to construction schedule		RTB	2
	D6 Runoff coefficients			
	D7 Names of receiving waters		P II C	3
	D8 SWPPP implementation responsibilities			
	D9 Storm water runoff characteristics			
E UPDATE SWPPP			P II B	4
	E1 SWPPP amended when change in design, construction or maintenance			
	E2 SWPPP amended when inspection			
F SITE LOG BOOK / CERTIFICATION BASIC			P V J	6
	F1 Copy of site log book on site			
	F2 Operator certify SWPPP prepared correctly			
	F3 Operator have qualified professional conduct assessment			
	F4 Operator post inspection on site			
G SITE INSPECTIONS BASIC			P IV B	5
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches			
	Inspection Frequency (if specified as other than CGP)		*	
	G1a Record extent of initial disturbance			
	G1b Record sites undergone temp/perm stabilization			
	G1c Record sites not undergone work			
	G1d Inspect sediment control practices			
	G1e Ispect BMPs			
	G2 Final inspection prior to NOT			
H STABILIZATION BASIC			R 7 B	1
	H1 Stabilization initiated by day 14 where applicable			
	Stabilization time (if specified as other than CGP)		NA	
I MAINTENANCE BASIC			PVF	6
	I1 Sediment removed from traps when design capacity reduced by 50 percent			
* Inspections weekly and the next business day after a rainfall event resulting in runoff.				

STATE:	**Massachusetts**	**SECTION REFERENCED**	
DOCUMENT:	NPDES General Permit for Storm Water Discharges from Construction Activities 2/17/1998		
PERMIT EXPIRATION DATE:		**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		IV D	7868
B SEDIMENT CONTROL BASIC		IV D	7868
	B1 Sediment Basin 10 or more acres	IV D	7868
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety	IV D	7869
	B3 Sediment Basin less than 10 acres	IV D	7869
	B4 Equivalent Sediment controls	IV D	7869
C POLLUTION CONTROL BASIC		IV D	7868
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater	IV D	7868
	C2 Description of wate stored on-site	IV D	7870
D SWPPP BASIC		IV D	7868
	D1 Description of construction activity and sequence	IV D	7867
	D2 General location map	IV D	7868
	D2a Drainage patterns and slopes	IV D	7868
	D2b Total area of site	IV D	7868
	D2c Areas that will not be disturbed	IV D	7868
	D2d Locations of structural and nonstructural controls	IV D	7868
	D2e Locations of stabilization practies	IV D	7868
	D2f Locations of off-site material, waste, equipment storage areas	IV D	7868
	D2g Surface waters / wetlands	IV D	7868
	D2h Locations of storm water discharges	IV D	7868
	D3 Description of available soils data	IV D	7868
	D4 Description of BMPs used	IV D	7868
	D5 Description of general timing when BMPs implemented in relation to construction schedule	IV D	7868
	D6 Runoff coefficients	IV D	7868
	D7 Names of receiving waters	IV D	7868
	D8 SWPPP implementation responsibilities	III E	7867
	D9 Storm water runoff characteristics	IV D	7868
E UPDATE SWPPP		IV C	7867
	E1 SWPPP amended when change in design, construction or maintenance	IV C	7867
	E2 SWPPP amended when inspection	IV C	7867
F SITE LOG BOOK / CERTIFICATION BASIC		II	7866
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IV D	7870
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	IV D	7870
	Inspection Frequency (if specified as other than CGP)	RULE EQ	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		IV D	7868
	H1 Stabilization initiated by day 14 where applicable	IV D	7868
	Stabilization time (if specified as other than CGP)	RULE EQ	
I MAINTENANCE BASIC		IV D	7868
	I1 Sediment removed from traps when design capacity reduced by 50 percent	IV D	7868

STATE:	**Michigan**		**SECTION REFERENCED**	
DOCUMENT:	Michigan's Permit By Rule for Construction Activities	11/13/1992		
PERMIT EXPIRATION DATE:			**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC			NOC	2
B SEDIMENT CONTROL BASIC			NOC	2
	B1 Sediment Basin 10 or more acres			
	Size of Sediment Basin Required		NA	
	B2 Operator consider public safety			
	B3 Sediment Basin less than 10 acres			
	B4 Equivalent Sediment controls			
C POLLUTION CONTROL BASIC			PBR	1
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater			
	C2 Description of wate stored on-site			
D SWPPP BASIC			PBR	1
	D1 Description of construction activity and sequence		NOC	2
	D2 General location map		PBR	1
	D2a Drainage patterns and slopes			
	D2b Total area of site		NOC	1
	D2c Areas that will not be disturbed			
	D2d Locations of structural and nonstructural controls			
	D2e Locations of stabilization practices			
	D2f Locations of off-site material, waste, equipment storage areas			
	D2g Surface waters / wetlands			
	D2h Locations of storm water discharges		PBR	1
	D3 Description of available soils data		NOC	1
	D4 Description of BMPs used		NOC	2
	D5 Description of general timing when BMPs implemented in relation to construction schedule		NOC	2
	D6 Runoff coefficients		NOC	2
	D7 Names of receiving waters		NOC	1
	D8 SWPPP implementation responsibilities			
	D9 Storm water runoff characteristics		NOC	1
E UPDATE SWPPP			PBR	1
	E1 SWPPP amended when change in design, construction or maintenance			
	E2 SWPPP amended when inspection			
F SITE LOG BOOK / CERTIFICATION BASIC			NOC	2
	F1 Copy of site log book on site			
	F2 Operator certify SWPPP prepared correctly			
	F3 Operator have qualified professional conduct assessment			
	F4 Operator post inspection on site			
G SITE INSPECTIONS BASIC			PBR	1
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches		PBR	1
	Inspection Frequency (if specified as other than CGP)		*	
	G1a Record extent of initial disturbance			
	G1b Record sites undergone temp/perm stabilization			
	G1c Record sites not undergone work			
	G1d Inspect sediment control practices			
	G1e Ispect BMPs			
	G2 Final inspection prior to NOT			
H STABILIZATION BASIC			NOC	2
	H1 Stabilization initiated by day 14 where applicable			
	Stabilization time (if specified as other than CGP)		NA	
I MAINTENANCE BASIC			PBR	1
	I1 Sediment removed from traps when design capacity reduced by 50 percent			
* Inspection once per week and within 24 hours after every precipitation event that results in a discharge from the site.				

STATE:	**Michigan**		
DOCUMENT:	Guidebook of Best Management Practices for Michigan Watersheds (DEQ) Reprinted October, 1998	**SECTION REFERENCED**	
	BMP MANUAL GUIDELINES	**SECTION**	**PAGE**
BMPs-B1	Applicable to all land uses. No acreage specified. Capacity should be 1 inch of runoff from the entire drainage area to the sediment pond pluss expected soil volume from USLE.	SB	1
BMPs-B2	Applicable to all land uses. No acreage specified. Capacity should be 1 inch of runoff from the entire drainage area to the sediment pond pluss expected soil volume from USLE.	SB	1

STATE:	**Minnesota**		**SECTION REFERENCED**	
DOCUMENT:	Minnesota General Permit Authorization to Discharge Storm Water Associated with a Construction Activity Under the NPDES / State Disposal System Permit Program, MNR110000	10/4/1998		
PERMIT EXPIRATION DATE:		10/3/2003	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC			ID	6
B SEDIMENT CONTROL BASIC			ID	6
	B1 Sediment Basin 10 or more acres			
	Size of Sediment Basin Required	1800 ft3	ID	6
	B2 Operator consider public safety			
	B3 Sediment Basin less than 10 acres			
	B4 Equivalent Sediment controls			
C POLLUTION CONTROL BASIC				
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater			
	C2 Description of wate stored on-site			
D SWPPP BASIC			APP B	11
	D1 Description of construction activity and sequence			
	D2 General location map		APP A (D)	10
	D2a Drainage patterns and slopes			
	D2b Total area of site			
	D2c Areas that will not be disturbed		APP A (D)	10
	D2d Locations of structural and nonstructural controls		APP A (D)	10
	D2e Locations of stabilization practies		APP A (D)	10
	D2f Locations of off-site material, waste, equipment storage areas			
	D2g Surface waters / wetlands		APP A (D)	10
	D2h Locations of storm water discharges		APP A (D)	10
	D3 Description of available soils data			
	D4 Description of BMPs used		APP A (D)	10
	D5 Description of general timing when BMPs implemented in relation to construction schedule		APP A (D)	10
	D6 Runoff coefficients			
	D7 Names of receiving waters		APP A (D)	10
	D8 SWPPP implementation responsibilities		APP A (D)	9
	D9 Storm water runoff characteristics			
E UPDATE SWPPP			APP A (F)	10
	E1 SWPPP amended when change in design, construction or maintenance			
	E2 SWPPP amended when inspection			
F SITE LOG BOOK / CERTIFICATION BASIC				
	F1 Copy of site log book on site			
	F2 Operator certify SWPPP prepared correctly			
	F3 Operator have qualified professional conduct assessment			
	F4 Operator post inspection on site			
G SITE INSPECTIONS BASIC			ID	7
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches		ID	7
	Inspection Frequency (if specified as other than CGP)		*	
	G1a Record extent of initial disturbance			
	G1b Record sites undergone temp/perm stabilization			
	G1c Record sites not undergone work			
	G1d Inspect sediment control practices			
	G1e Ispect BMPs			
	G2 Final inspection prior to NOT			
H STABILIZATION BASIC			ID	5
	H1 Stabilization initiated by day 14 where applicable			
	Stabilization time (if specified as other than CGP)		NA	
I MAINTENANCE BASIC			ID	7
	I1 Sediment removed from traps when design capacity reduced by 50 percent			

* Inspections once every 7 days and within 24 hours after every rain event, which results in runoff leaving the construction site or entering waters of the state.

STATE:	**Mississippi**		**SECTION REFERENCED**	
DOCUMENT:	State of Mississippi MDEQ Office of Pollution Control Water Pollution Control Storm Water Construction General Permit	3/28/2000		
PERMIT EXPIRATION DATE:		3/27/2005	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC			IIIC	5
B SEDIMENT CONTROL BASIC			IIIC	5
	B1 Sediment Basin 10 or more acres			
	Size of Sediment Basin Required	1800 FT3	IIIC	5
	B2 Operator consider public safety			
	B3 Sediment Basin less than 10 acres			
	B4 Equivalent Sediment controls			
C POLLUTION CONTROL BASIC			IIIC	5
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater			
	C2 Description of wate stored on-site			
D SWPPP BASIC			IIIC	5
	D1 Description of construction activity and sequence		IIC	6
	D2 General location map		IIC	6
	D2a Drainage patterns and slopes		IIC	6
	D2b Total area of site			
	D2c Areas that will not be disturbed			
	D2d Locations of structural and nonstructural controls		IIC	6
	D2e Locations of stabilization practies		IIC	6
	D2f Locations of off-site material, waste, equipment storage areas			
	D2g Surface waters / wetlands			
	D2h Locations of storm water discharges			
	D3 Description of available soils data			
	D4 Description of BMPs used		IIC	5
	D5 Description of general timing when BMPs implemented in relation to construction schedule		IIC	6
	D6 Runoff coefficients			
	D7 Names of receiving waters			
	D8 SWPPP implementation responsibilities			
	D9 Storm water runoff characteristics			
E UPDATE SWPPP			IIIA	4
	E1 SWPPP amended when change in design, construction or maintenance		IIIA	4
	E2 SWPPP amended when inspection		IIIA	4
F SITE LOG BOOK / CERTIFICATION BASIC			IIIA	8
	F1 Copy of site log book on site			
	F2 Operator certify SWPPP prepared correctly			
	F3 Operator have qualified professional conduct assessment			
	F4 Operator post inspection on site			
G SITE INSPECTIONS BASIC			IVD	7
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches		IVD	7
	Inspection Frequency (if specified as other than CGP)		*	
	G1a Record extent of initial disturbance			
	G1b Record sites undergone temp/perm stabilization			
	G1c Record sites not undergone work			
	G1d Inspect sediment control practices			
	G1e Ispect BMPs			
	G2 Final inspection prior to NOT			
H STABILIZATION BASIC				
	H1 Stabilization initiated by day 14 where applicable			
	Stabilization time (if specified as other than CGP)		NA	
I MAINTENANCE BASIC			IIIC	6
	I1 Sediment removed from traps when design capacity reduced by 50 percent		IIIC	6

* Once every 7 days, within 24 hours after commencement of a rainfall event greater than or equal to a two year 24 hour storm event, 6 inches on the Gulf coast to 4 inches at the Tennesee state border.

STATE:	**Mississippi**	**SECTION REFERENCED**	
DOCUMENT:	Planning and Design Manual for the Control of Erosion, Sediment and Stormwater		
	BMP MANUAL GUIDELINES	**SECTION**	**PAGE**
BMPs-B1	Recommended for >5 acres along with check dam, diversion, grade stabilization, slope drains	Chapter 3	Table 3-1
BMPs-B1	Volume: 67 cubic yards (1,809 cubic feet) of storage per acre.	Chapter 4	(4-21)
BMPs-B1	Recommended for 2-5 acres along with check dam and diversion	Chapter 3	Table 3-1
BMPs-B4	No specific requirement for equivalent controls, but BMP manual describes additional ESC practices, assumed to be applied where sediment basin not appropriate		
BMPs-G1	No instructions on general inspection schedule; some discussion of inspection for specific BMPs are equivalent or more stringent (below):		
BMPs-G1	Major inspections can be performed once or twice a year, but brief inspections should be conducted after major storms (SW Ret. Basin)	Chapter 4	Retention Basins (4-107)
BMPs-G1	Inspect silt fences immediately after rainfall and daily during prolonged rainfall	Chapter 4	35)
BMPs-G1	Inspections weekly and after every rainfall (sample ESC plan)	Chapter 7	Plan
BMPs-H1	Protective cover required for all disturbed areas within 30 days of grading	Chapter 3	Seeding (5-44)
BMPs-H1	Embankment of Sediment Basin stabilized within 15 days of completion	Chapter 4	(4-23)
BMPs-I1	Remove when sed basin volume reduced to 27 cubic yards per acre (design capacity reduced by about 60%), sediment never higher than one foot below riser	Chapter 4	Sediment Basin (4-21)
BMPs-I1	Remove sediment at 50% capacity (sample ESC plan)	Chapter 7	Plan

			SECTION REFERENCED	
STATE:	**Missouri**			
DOCUMENT:	Missouri DNR Storm Water Permit Requirements for Land Disturbance Activities	12/1/1998		
PERMIT EXPIRATION DATE:		1/2/2002	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC			TB	4
B SEDIMENT CONTROL BASIC			TB	4
	B1 Sediment Basin 10 or more acres			
	Size of Sediment Basin Required		NA	
	B2 Operator consider public safety			
	B3 Sediment Basin less than 10 acres			
	B4 Equivalent Sediment controls			
C POLLUTION CONTROL BASIC			TB	4
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater			
	C2 Description of wate stored on-site		E 7.5	1
D SWPPP BASIC			TB	4
	D1 Description of construction activity and sequence		G	1
	D2 General location map		E 7.6	1
	D2a Drainage patterns and slopes			
	D2b Total area of site		G6	1
	D2c Areas that will not be disturbed			
	D2d Locations of structural and nonstructural controls		TB	4
	D2e Locations of stabilization practices			
	D2f Locations of off-site material, waste, equipment storage areas			
	D2g Surface waters / wetlands			
	D2h Locations of storm water discharges		E 7	1
	D3 Description of available soils data		G 13	1
	D4 Description of BMPs used		TB	4
	D5 Description of general timing when BMPs implemented in relation to construction schedule			
	D6 Runoff coefficients		G 14	2
	D7 Names of receiving waters		E 7	1
	D8 SWPPP implementation responsibilities			
	D9 Storm water runoff characteristics		G 13	1
E UPDATE SWPPP				
	E1 SWPPP amended when change in design, construction or maintenance			
	E2 SWPPP amended when inspection			
F SITE LOG BOOK / CERTIFICATION BASIC			E 8	1
	F1 Copy of site log book on site			
	F2 Operator certify SWPPP prepared correctly			
	F3 Operator have qualified professional conduct assessment			
	F4 Operator post inspection on site			
G SITE INSPECTIONS BASIC				
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches			
	Inspection Frequency (if specified as other than CGP)		NA	
	G1a Record extent of initial disturbance			
	G1b Record sites undergone temp/perm stabilization			
	G1c Record sites not undergone work			
	G1d Inspect sediment control practices			
	G1e Ispect BMPs			
	G2 Final inspection prior to NOT			
H STABILIZATION BASIC			TB	4
	H1 Stabilization initiated by day 14 where applicable			
	Stabilization time (if specified as other than CGP)		NA	
I MAINTENANCE BASIC				
	I1 Sediment removed from traps when design capacity reduced by 50 percent			

		SECTION REFERENCED	
STATE:	**Montana**		
DOCUMENT:	Montana Department of Environmental Quality Authorization to Discharge Under the Montana Pollutant Discharge Elimination System General Permit for Stormwater Discharges Associated with Construction Activity 6/8/2002		
PERMIT EXPIRATION DATE:	12/31/2006	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		IVG	16
B SEDIMENT CONTROL BASIC		IVG	16
	B1 Sediment Basin 10 or more acres		
	Size of Sediment Basin Required	NA	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres		
	B4 Equivalent Sediment controls		
C POLLUTION CONTROL BASIC			
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater		
	C2 Description of wate stored on-site		
D SWPPP BASIC		IVG	15
	D1 Description of construction activity and sequence	IVG	15
	D2 General location map	IVG	15
	D2a Drainage patterns and slopes	IVG	15
	D2b Total area of site	IVG	15
	D2c Areas that will not be disturbed		
	D2d Locations of structural and nonstructural controls	IVG	15
	D2e Locations of stabilization practies	IVG	15
	D2f Locations of off-site material, waste, equipment storage areas		
	D2g Surface waters / wetlands	IVG	15
	D2h Locations of storm water discharges	IC	6
	D3 Description of available soils data	IVG	16
	D4 Description of BMPs used	IVG	16
	D5 Description of general timing when BMPs implemented in relation to construction schedule	IVG	15
	D6 Runoff coefficients	IVG	16
	D7 Names of receiving waters	IC	6
	D8 SWPPP implementation responsibilities	IC	6
	D9 Storm water runoff characteristics		
E UPDATE SWPPP		IVD	14
	E1 SWPPP amended when change in design, construction or maintenance	IVD	14
	E2 SWPPP amended when inspection	IVD	14
F SITE LOG BOOK / CERTIFICATION BASIC		IVH	21
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IIIA	10
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	IIIA	10
	Inspection Frequency (if specified as other than CGP)	RULE EQ	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		IVG	16
	H1 Stabilization initiated by day 14 where applicable		
	Stabilization time (if specified as other than CGP)	NA	
I MAINTENANCE BASIC		VN	22
	I1 Sediment removed from traps when design capacity reduced by 50 percent		

STATE:	**Nebraska**	**SECTION REFERENCED**	
DOCUMENT:	Authorization to Discharge Under the State of Nebraska NPDES, NER100000 A General NPDES permit for storm water discharges from construction sites to waters in the State of Nebraska 8/1/02		
PERMIT EXPIRATION DATE:	7/31/02	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		Permit - D4	12
B SEDIMENT CONTROL BASIC		Permit - D4	12
	B1 Sediment Basin 10 or more acres		
	Size of Sediment Basin Required	NA	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres	Permit - D3	12
	B4 Equivalent Sediment controls		
C POLLUTION CONTROL BASIC		Permit - D2	9
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater		
	C2 Description of wate stored on-site		
D SWPPP BASIC		Permit - D3	10
	D1 Description of construction activity and sequence	Permit - D3	10
	D2 General location map	Permit - D2	9
	D2a Drainage patterns and slopes	Permit - D2	9
	D2b Total area of site	NOI 3	2
	D2c Areas that will not be disturbed		
	D2d Locations of structural and nonstructural controls	Permit - D2	9
	D2e Locations of stabilization practies		
	D2f Locations of off-site material, waste, equipment storage areas		
	D2g Surface waters / wetlands		
	D2h Locations of storm water discharges	Permit - D2	9
	D3 Description of available soils data		
	D4 Description of BMPs used	Permit - D3	10
	D5 Description of general timing when BMPs implemented in relation to construction schedule	Permit - D2	9
	D6 Runoff coefficients		
	D7 Names of receiving waters	NOI 4	2
	D8 SWPPP implementation responsibilities	H	33
	D9 Storm water runoff characteristics		
E UPDATE SWPPP		Permit - D3	10
	E1 SWPPP amended when change in design, construction or maintenance		
	E2 SWPPP amended when inspection	Permit - D3	10
F SITE LOG BOOK / CERTIFICATION BASIC		Permit - APP C H	34
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		Permit - D4	12
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	Permit - D4	12
	Inspection Frequency (if specified as other than CGP)	*	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		Permit - D3	12
	H1 Stabilization initiated by day 14 where applicable		
	Stabilization time (if specified as other than CGP)	NA	
I MAINTENANCE BASIC		Permit - D5	12
	I1 Sediment removed from traps when design capacity reduced by 50 percent		
* Inspect once per month and within 24 hours after precipitation of 0.5 inches or more.			

STATE:	**Nevada**	**SECTION REFERENCED**	
DOCUMENT:	General Permit for Stormwater Associated with Construction Activity 9/16/02		
PERMIT EXPIRATION DATE:	9/15/07	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		IB	10
B SEDIMENT CONTROL BASIC		IB	10
	B1 Sediment Basin 10 or more acres	IB	10
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety	IB	10
	B3 Sediment Basin less than 10 acres	IB	10
	B4 Equivalent Sediment controls	IB	10
C POLLUTION CONTROL BASIC		IB	8
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater	IB	8
	C2 Description of wate stored on-site	IB	11
D SWPPP BASIC		IB	6
	D1 Description of construction activity and sequence	IB	7
	D2 General location map	IB	7
	D2a Drainage patterns and slopes	IB	7
	D2b Total area of site	IB	7
	D2c Areas that will not be disturbed	IB	7
	D2d Locations of structural and nonstructural controls	IB	7
	D2e Locations of stabilization practies	IB	7
	D2f Locations of off-site material, waste, equipment storage areas	IB	7
	D2g Surface waters / wetlands	IB	7
	D2h Locations of storm water discharges	IB	7
	D3 Description of available soils data	IB	7
	D4 Description of BMPs used	IB	8
	D5 Description of general timing when BMPs implemented in relation to construction schedule	IB	8
	D6 Runoff coefficients	IB	7
	D7 Names of receiving waters	IB	7
	D8 SWPPP implementation responsibilities	IB	7
	D9 Storm water runoff characteristics	IB	7
E UPDATE SWPPP		IB	13
	E1 SWPPP amended when change in design, construction or maintenance		
	E2 SWPPP amended when inspection	IB	13
F SITE LOG BOOK / CERTIFICATION BASIC		IIB	16
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IB	12
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5	IB	12
	Inspection Frequency (if specified as other than CGP)	7 DAYS	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		IB	9
	H1 Stabilization initiated by day 14 where applicable	IB	9
	Stabilization time (if specified as other than CGP)	RULE EQ	
I MAINTENANCE BASIC		IB	8
	I1 Sediment removed from traps when design capacity reduced by 50 percent	IB	8

STATE:	**New Hampshire**	**SECTION REFERENCED**	
DOCUMENT:	NPDES General Permit for Storm Water Discharges from Construction Activities 2/17/98		
PERMIT EXPIRATION DATE:		**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		IV D	7868
B SEDIMENT CONTROL BASIC		IV D	7868
	B1 Sediment Basin 10 or more acres	IV D	7868
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety	IV D	7869
	B3 Sediment Basin less than 10 acres	IV D	7869
	B4 Equivalent Sediment controls	IV D	7869
C POLLUTION CONTROL BASIC		IV D	7868
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater	IV D	7868
	C2 Description of wate stored on-site	IV D	7870
D SWPPP BASIC		IV D	7868
	D1 Description of construction activity and sequence	IV D	7867
	D2 General location map	IV D	7868
	D2a Drainage patterns and slopes	IV D	7868
	D2b Total area of site	IV D	7868
	D2c Areas that will not be disturbed	IV D	7868
	D2d Locations of structural and nonstructural controls	IV D	7868
	D2e Locations of stabilization practies	IV D	7868
	D2f Locations of off-site material, waste, equipment storage areas	IV D	7868
	D2g Surface waters / wetlands	IV D	7868
	D2h Locations of storm water discharges	IV D	7868
	D3 Description of available soils data	IV D	7868
	D4 Description of BMPs used	IV D	7868
	D5 Description of general timing when BMPs implemented in relation to construction schedule	IV D	7868
	D6 Runoff coefficients	IV D	7868
	D7 Names of receiving waters	IV D	7868
	D8 SWPPP implementation responsibilities	III E	7867
	D9 Storm water runoff characteristics	IV D	7868
E UPDATE SWPPP		IV C	7867
	E1 SWPPP amended when change in design, construction or maintenance	IV C	7867
	E2 SWPPP amended when inspection	IV C	7867
F SITE LOG BOOK / CERTIFICATION BASIC		II	7866
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IV D	7870
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	IV D	7870
	Inspection Frequency (if specified as other than CGP)	RULE EQ	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		IV D	7868
	H1 Stabilization initiated by day 14 where applicable	IV D	7868
	Stabilization time (if specified as other than CGP)	RULE EQ	
I MAINTENANCE BASIC		IV D	7868
	I1 Sediment removed from traps when design capacity reduced by 50 percent	IV D	7868

STATE:	**New Jersey**		**SECTION REFERENCED**	
	NJ DOA Application for Soil Erosion and Sediment Control Plan Certification	4/1/99		
	NJ DEP General Permit for Construction and Mining Activity	3/1/02		
DOCUMENT:	RFA - NPDES NJ0088323 Request for Authorization Form	5/1/97		
PERMIT EXPIRATION DATE:		2/18/07	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC			DOA	2
B SEDIMENT CONTROL BASIC			DOA	2
	B1 Sediment Basin 10 or more acres			
	Size of Sediment Basin Required		NA	
	B2 Operator consider public safety			
	B3 Sediment Basin less than 10 acres			
	B4 Equivalent Sediment controls			
C POLLUTION CONTROL BASIC				
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater			
	C2 Description of wate stored on-site			
D SWPPP BASIC			DOA	1
	D1 Description of construction activity and sequence		DOA	2
	D2 General location map			
	D2a Drainage patterns and slopes		DOA	2
	D2b Total area of site		DOA	1
	D2c Areas that will not be disturbed			
	D2d Locations of structural and nonstructural controls		DOA	2
	D2e Locations of stabilization practies		DOA	2
	D2f Locations of off-site material, waste, equipment storage areas			
	D2g Surface waters / wetlands		DOA	2
	D2h Locations of storm water discharges		RFA	2
	D3 Description of available soils data		DOA	4
	D4 Description of BMPs used		DOA	2
	D5 Description of general timing when BMPs implemented in relation to construction schedule			
	D6 Runoff coefficients		DOA	5
	D7 Names of receiving waters			
	D8 SWPPP implementation responsibilities		DOA	8
	D9 Storm water runoff characteristics			
E UPDATE SWPPP			DOA	7
	E1 SWPPP amended when change in design, construction or maintenance			
	E2 SWPPP amended when inspection			
F SITE LOG BOOK / CERTIFICATION BASIC			DEP-E	6
	F1 Copy of site log book on site			
	F2 Operator certify SWPPP prepared correctly			
	F3 Operator have qualified professional conduct assessment			
	F4 Operator post inspection on site			
G SITE INSPECTIONS BASIC			DEP-E	6
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches			
	Inspection Frequency (if specified as other than CGP)		ANNUAL	
	G1a Record extent of initial disturbance			
	G1b Record sites undergone temp/perm stabilization			
	G1c Record sites not undergone work			
	G1d Inspect sediment control practices			
	G1e Ispect BMPs			
	G2 Final inspection prior to NOT			
H STABILIZATION BASIC			DOA	2
	H1 Stabilization initiated by day 14 where applicable			
	Stabilization time (if specified as other than CGP)		NA	
I MAINTENANCE BASIC			DOA	7
	I1 Sediment removed from traps when design capacity reduced by 50 percent			

STATE:	New Mexico	SECTION REFERENCED	
DOCUMENT:	NPDEs General Permit for Storm Water Discharges from Construction Activities in Region 6 7/6/98		
PERMIT EXPIRATION DATE:	7/7/03	SECTION	PAGE
A GENERAL EROSION AND SED CONTROL BASIC		IVD	36503
B SEDIMENT CONTROL BASIC		IVD	36503
	B1 Sediment Basin 10 or more acres	IVD	36504
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety	IVD	36504
	B3 Sediment Basin less than 10 acres	IVD	36504
	B4 Equivalent Sediment controls	IVD	36504
C POLLUTION CONTROL BASIC		IVD	36503
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater	IVD	36503
	C2 Description of wate stored on-site	IVD	36504
D SWPPP BASIC		IVD	36502
	D1 Description of construction activity and sequence	IVD	36502
	D2 General location map	IVD	36503
	D2a Drainage patterns and slopes	IVD	36503
	D2b Total area of site	IVD	36503
	D2c Areas that will not be disturbed	IVD	36503
	D2d Locations of structural and nonstructural controls	IVD	36503
	D2e Locations of stabilization practies	IVD	36503
	D2f Locations of off-site material, waste, equipment storage areas	IVD	36503
	D2g Surface waters / wetlands	IVD	36503
	D2h Locations of storm water discharges	IVD	36503
	D3 Description of available soils data	IVD	36503
	D4 Description of BMPs used	IVD	36503
	D5 Description of general timing when BMPs implemented in relation to construction schedule	IVD	36503
	D6 Runoff coefficients	IVD	36503
	D7 Names of receiving waters	IVD	36503
	D8 SWPPP implementation responsibilities	IVD	36503
	D9 Storm water runoff characteristics	IVD	36503
E UPDATE SWPPP		IVE	36502
	E1 SWPPP amended when change in design, construction or maintenance	IVE	36502
	E2 SWPPP amended when inspection	IVE	36502
F SITE LOG BOOK / CERTIFICATION BASIC		IVG	36507
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IVC	36505
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	IVC	36505
	Inspection Frequency (if specified as other than CGP)	RULE EQ	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		IVD	36503
	H1 Stabilization initiated by day 14 where applicable	IVD	36503
	Stabilization time (if specified as other than CGP)	RULE EQ	
I MAINTENANCE BASIC		IVD	36503
	I1 Sediment removed from traps when design capacity reduced by 50 percent	IVD	36503

STATE:	New York		SECTION REFERENCED	
DOCUMENT:	General Permit for Storm Water Discharges Associated with Industrial Activity From Construction Activities, GP-93-06	8/1/93		
PERMIT EXPIRATION DATE:		8/1/98	SECTION	PAGE
A GENERAL EROSION AND SED CONTROL BASIC			IIID	11
B SEDIMENT CONTROL BASIC			IIID	11
	B1 Sediment Basin 10 or more acres		IIID	12
	Size of Sediment Basin Required		RULE EQ	
	B2 Operator consider public safety		IIID	12
	B3 Sediment Basin less than 10 acres		IIID	12
	B4 Equivalent Sediment controls		IIID	13
C POLLUTION CONTROL BASIC			IIID	13
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater			
	C2 Description of wate stored on-site			
D SWPPP BASIC			III	8
	D1 Description of construction activity and sequence		IIID	10
	D2 General location map		IIID	10
	D2a Drainage patterns and slopes		IIID	10
	D2b Total area of site		IIID	10
	D2c Areas that will not be disturbed		IIID	10
	D2d Locations of structural and nonstructural controls		IIID	10
	D2e Locations of stabilization practies		IIID	10
	D2f Locations of off-site material, waste, equipment storage areas			
	D2g Surface waters / wetlands		IIID	10
	D2h Locations of storm water discharges		IIID	10
	D3 Description of available soils data		IIID	10
	D4 Description of BMPs used		IIID	10
	D5 Description of general timing when BMPs implemented in relation to construction schedule		IIID	10
	D6 Runoff coefficients		IIID	10
	D7 Names of receiving waters		IIID	10
	D8 SWPPP implementation responsibilities		IIIE	16
	D9 Storm water runoff characteristics		IIID	10
E UPDATE SWPPP			IIIC	9
	E1 SWPPP amended when change in design, construction or maintenance		IIIC	9
	E2 SWPPP amended when inspection		IIIC	9
F SITE LOG BOOK / CERTIFICATION BASIC			IIID	13
	F1 Copy of site log book on site			
	F2 Operator certify SWPPP prepared correctly			
	F3 Operator have qualified professional conduct assessment			
	F4 Operator post inspection on site			
G SITE INSPECTIONS BASIC			IIID	14
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches		IIID	14
	Inspection Frequency (if specified as other than CGP)			
	G1a Record extent of initial disturbance			
	G1b Record sites undergone temp/perm stabilization			
	G1c Record sites not undergone work			
	G1d Inspect sediment control practices			
	G1e Ispect BMPs			
	G2 Final inspection prior to NOT			
H STABILIZATION BASIC			IIID	11
	H1 Stabilization initiated by day 14 where applicable		IIID	1
	Stabilization time (if specified as other than CGP)		RULE EQ	
I MAINTENANCE BASIC			IIID	14
	I1 Sediment removed from traps when design capacity reduced by 50 percent			

STATE:	**North Carolina**		**SECTION REFERENCED**	
	State of North Carolina Department of Environment And Natural Resources Division of Water Quality General Permit to Discharge Stormwater Under the National Pollution Discharge Elimination System (Doc #1)	10/1/01		
	NC DENR Erosion and Sediment Control Checklist (Doc #2)	11/23/98		
DOCUMENT:	NCGA General Statutes - Approval of erosion control plans (Doc #3)			
PERMIT EXPIRATION DATE:		10/30/06	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC			Doc #2 - Chklist	1
B SEDIMENT CONTROL BASIC			Doc #2 - Chklist	1
	B1 Sediment Basin 10 or more acres			
	Size of Sediment Basin Required		NA	
	B2 Operator consider public safety			
	B3 Sediment Basin less than 10 acres			
	B4 Equivalent Sediment controls			
C POLLUTION CONTROL BASIC				
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater			
	C2 Description of wate stored on-site			
D SWPPP BASIC			Doc #2 - Chklist	1
	D1 Description of construction activity and sequence		Doc #2 - Chklist	1
	D2 General location map		Doc #2 - Chklist	1
	D2a Drainage patterns and slopes		Doc #2 - Chklist	1
	D2b Total area of site		Doc #2 - Chklist	1
	D2c Areas that will not be disturbed			
	D2d Locations of structural and nonstructural controls		Doc #2 - Chklist	1
	D2e Locations of stabilization practies		Doc #2 - Chklist	1
	D2f Locations of off-site material, waste, equipment storage areas			
	D2g Surface waters / wetlands		Doc #2 - Chklist	1
	D2h Locations of storm water discharges		Doc #2 - Chklist	1
	D3 Description of available soils data		Doc #2 - Chklist	1
	D4 Description of BMPs used			
	D5 Description of general timing when BMPs implemented in relation to construction schedule		Doc #2 - Chklist	1
	D6 Runoff coefficients		Doc #2 - Chklist	1
	D7 Names of receiving waters		Doc #2 - Chklist	1
	D8 SWPPP implementation responsibilities		Doc #2 - Chklist	1
	D9 Storm water runoff characteristics			
E UPDATE SWPPP			Doc #3 - REG	1
	E1 SWPPP amended when change in design, construction or maintenance			
	E2 SWPPP amended when inspection			
F SITE LOG BOOK / CERTIFICATION BASIC			Doc #1 - IIB	11
	F1 Copy of site log book on site			
	F2 Operator certify SWPPP prepared correctly			
	F3 Operator have qualified professional conduct assessment			
	F4 Operator post inspection on site			
G SITE INSPECTIONS BASIC			Doc #1 - IB	5
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches		Doc #1 - IB	5
	Inspection Frequency (if specified as other than CGP)		RULE EQ	
	G1a Record extent of initial disturbance			
	G1b Record sites undergone temp/perm stabilization			
	G1c Record sites not undergone work			
	G1d Inspect sediment control practices			
	G1e Ispect BMPs			
	G2 Final inspection prior to NOT			
H STABILIZATION BASIC			Doc #2 - Chklist	1
	H1 Stabilization initiated by day 14 where applicable			
	Stabilization time (if specified as other than CGP)		NA	
I MAINTENANCE BASIC			Doc #2 - Chklist	1
	I1 Sediment removed from traps when design capacity reduced by 50 percent			

*prohibits off-site sedimentation but permits owner/developer to determing most economical, effective means of ESC.

STATE	**North Carolina**	**SECTION REFERENCED**	
	Erosion and Sediment Control Field Manual (Doc #4)		
	Erosion and Sediment Control Planning and Design Manual (Doc #5)		
DOCUMENT:	Erosion and Sediment Control Inspector's Guide (Doc #6)		
	BMP MANUAL GUIDELINES*	**SECTION**	**PAGE**
BMP-B1	Volume: 1,800 cubic feet of storage	Doc #4 - Practice Installation	6.61.1
BMP-B1	Sediment basins applicable for >2 acres	Doc #5 - Section 5	5.2
BMP-B1	Applicable where erosion control measures not adequate	Doc #5 - Section 6	6.61.1
BMP-B3	Sediment traps applicable for <5 acres; Basins for >2 acres		
BMP-B4	No specific requirement for equivalent controls, but BMP manual describes additional ESC practices and requirements, assumed to be applied where sediment basin not appropriate (below):		
BMP-B4	"sediment must be contained onsite" by law	Doc #4 - Practice Installation	1.1
BMP-B4	Sediment fence applicable to sites <2 acres	Doc #5 - Section 5	5.2
BMP-G1	No instructions on general inspection schedule; some discussion of inspection for specific BMPs are equivalent or more stringent (below):		
BMP-G1	Inspect after each rainfall	Doc #4 - Practice Installation	6.60.5
BMP-G1	Inspect after each rainfall	Doc #5 - Section 6	6.60.5, 6.61.7
BMP-H1	Stablilization within 30 working days or 120 calendar days, unless in High Quality Waters Zone (15 working or 60 calendar)	Doc #6 - Section 3	3.3
BMP-H1	Stablilize within 30 working days	Doc #5 - Section 6	6.10.1
BMP-I1	Sediment basins and traps - clean out at 50% design capacity	Doc #4 - Practice Installation	6.60.5, 6.61.8
BMP-I1	Sediment basins and traps - clean out at 50% design capacity	Doc #5 - Section 6	6.60.2

		SECTION REFERENCED	
STATE:	**North Dakota**		
DOCUMENT:	Authorization to Discharge Under the North Dakota Pollutant Discharge Elimination Sytem 10/1/99		
PERMIT EXPIRATION DATE:	9/30/04	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		IIC	7
B SEDIMENT CONTROL BASIC		IIC	7
	B1 Sediment Basin 10 or more acres		
	Size of Sediment Basin Required	NA	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres		
	B4 Equivalent Sediment controls		
C POLLUTION CONTROL BASIC			
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater		
	C2 Description of wate stored on-site		
D SWPPP BASIC		IIC	6
	D1 Description of construction activity and sequence	IIC	6
	D2 General location map	IIC	6
	D2a Drainage patterns and slopes	IIC	6
	D2b Total area of site	IIC	6
	D2c Areas that will not be disturbed		
	D2d Locations of structural and nonstructural controls	IIC	6
	D2e Locations of stabilization practies		
	D2f Locations of off-site material, waste, equipment storage areas		
	D2g Surface waters / wetlands	IIC	6
	D2h Locations of storm water discharges	IIC	6
	D3 Description of available soils data	IIC	6
	D4 Description of BMPs used	IIC	7
	D5 Description of general timing when BMPs implemented in relation to construction schedule	IIC	7
	D6 Runoff coefficients		
	D7 Names of receiving waters	IIC	6
	D8 SWPPP implementation responsibilities		
	D9 Storm water runoff characteristics		
E UPDATE SWPPP		IIC	6
	E1 SWPPP amended when change in design, construction or maintenance	IIC	6
	E2 SWPPP amended when inspection	IIC	6
F SITE LOG BOOK / CERTIFICATION BASIC		IIC	8
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IIC	8
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5	IIB	9
	Inspection Frequency (if specified as other than CGP)	RULE EQ	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		IG	4
	H1 Stabilization initiated by day 14 where applicable		
	Stabilization time (if specified as other than CGP)	NA	
I MAINTENANCE BASIC		IIC	8
	I1 Sediment removed from traps when design capacity reduced by 50 percent		

			SECTION REFERENCED	
STATE:	**Ohio**			
DOCUMENT:	Ohio Environmental Protection Agency Authorization for Storm Water Discharges Associated With Construction Activity Under NPDES	10/26/92		
PERMIT EXPIRATION DATE:		4/26/94	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC			IIIC	6
B SEDIMENT CONTROL BASIC			IIIC	6
	B1 Sediment Basin 10 or more acres			
	Size of Sediment Basin Required		NA	
	B2 Operator consider public safety			
	B3 Sediment Basin less than 10 acres			
	B4 Equivalent Sediment controls			
C POLLUTION CONTROL BASIC			IIIC	6
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater			
	C2 Description of wate stored on-site			
D SWPPP BASIC			IIIC	4
	D1 Description of construction activity and sequence		IIIC	5
	D2 General location map		IIIC	5
	D2a Drainage patterns and slopes		IIIC	5
	D2b Total area of site		IIIC	5
	D2c Areas that will not be disturbed			
	D2d Locations of structural and nonstructural controls		IIIC	5
	D2e Locations of stabilization practies		IIIC	5
	D2f Locations of off-site material, waste, equipment storage areas			
	D2g Surface waters / wetlands		IIIC	5
	D2h Locations of storm water discharges			
	D3 Description of available soils data		IIIC	5
	D4 Description of BMPs used		IIIC	5
	D5 Description of general timing when BMPs implemented in relation to construction schedule		IIIC	5
	D6 Runoff coefficients		IIIC	5
	D7 Names of receiving waters		IIIC	5
	D8 SWPPP implementation responsibilities		IIIC	5
	D9 Storm water runoff characteristics		IIIC	5
E UPDATE SWPPP			IIIC	5
	E1 SWPPP amended when change in design, construction or maintenance		IIIC	5
	E2 SWPPP amended when inspection		IIIC	5
F SITE LOG BOOK / CERTIFICATION BASIC			VH	11
	F1 Copy of site log book on site			
	F2 Operator certify SWPPP prepared correctly			
	F3 Operator have qualified professional conduct assessment			
	F4 Operator post inspection on site			
G SITE INSPECTIONS BASIC			IIIC	8
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches		IIIC	8
	Inspection Frequency (if specified as other than CGP)		7 DAYS	
	G1a Record extent of initial disturbance			
	G1b Record sites undergone temp/perm stabilization			
	G1c Record sites not undergone work			
	G1d Inspect sediment control practices			
	G1e Ispect BMPs			
	G2 Final inspection prior to NOT			
H STABILIZATION BASIC			IIIC	6
	H1 Stabilization initiated by day 14 where applicable		IIIC	6
	Stabilization time (if specified as other than CGP)		7 DAYS	
I MAINTENANCE BASIC			IIIC	6
	I1 Sediment removed from traps when design capacity reduced by 50 percent			

STATE:	**Oklahoma**	**SECTION REFERENCED**	
DOCUMENT:	General Permit OKR10 For Storm Water Discharges from Construction Activities Within the State of Oklahoma 10/13/02		
PERMIT EXPIRATION DATE:	10/12/07	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		IVE	14
B SEDIMENT CONTROL BASIC		IVE	15
	B1 Sediment Basin 10 or more acres	IVE	15
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety	IVE	15
	B3 Sediment Basin less than 10 acres	IVE	15
	B4 Equivalent Sediment controls	IVE	15
C POLLUTION CONTROL BASIC		IVE	14
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater	IVE	16
	C2 Description of wate stored on-site	IVE	12
D SWPPP BASIC		IVE	12
	D1 Description of construction activity and sequence	IVE	12
	D2 General location map	IVE	12
	D2a Drainage patterns and slopes	IVE	12
	D2b Total area of site	IVE	12
	D2c Areas that will not be disturbed	IVE	12
	D2d Locations of structural and nonstructural controls	IVE	12
	D2e Locations of stabilization practies	IVE	12
	D2f Locations of off-site material, waste, equipment storage areas	IVE	12
	D2g Surface waters / wetlands	IVE	13
	D2h Locations of storm water discharges	IVE	13
	D3 Description of available soils data	IVE	12
	D4 Description of BMPs used	IVE	13
	D5 Description of general timing when BMPs implemented in relation to construction schedule	IVE	13
	D6 Runoff coefficients	IVE	12
	D7 Names of receiving waters	IVE	13
	D8 SWPPP implementation responsibilities	IVF	18
	D9 Storm water runoff characteristics	IVE	12
E UPDATE SWPPP		IVD	12
	E1 SWPPP amended when change in design, construction or maintenance	IVD	12
	E2 SWPPP amended when inspection	IVD	12
F SITE LOG BOOK / CERTIFICATION BASIC		VIG	21
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IVE	17
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	IVE	17
	Inspection Frequency (if specified as other than CGP)	RULE EQ	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		IVE	14
	H1 Stabilization initiated by day 14 where applicable	IVE	14
	Stabilization time (if specified as other than CGP)	NA	
I MAINTENANCE BASIC		IVE	14
	I1 Sediment removed from traps when design capacity reduced by 50 percent	IVE	14

STATE:	**Oregon**	**SECTION REFERENCED**	
DOCUMENT:	General Permit NPDES Storm Water Discharge Permit for Construction Activities 12/1/02		
PERMIT EXPIRATION DATE:	12/31/05	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		A3	3
B SEDIMENT CONTROL BASIC		A3	3
	B1 Sediment Basin 10 or more acres		
	Size of Sediment Basin Required	NA	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres		
	B4 Equivalent Sediment controls		
C POLLUTION CONTROL BASIC		A3	5
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater		
	C2 Description of wate stored on-site		
D SWPPP BASIC		A3	3
	D1 Description of construction activity and sequence	A3	3
	D2 General location map	A3	3
	D2a Drainage patterns and slopes	A3	3
	D2b Total area of site	A3	3
	D2c Areas that will not be disturbed		
	D2d Locations of structural and nonstructural controls	A3	3
	D2e Locations of stabilization practies	A3	3
	D2f Locations of off-site material, waste, equipment storage areas	A3	3
	D2g Surface waters / wetlands	A3	3
	D2h Locations of storm water discharges	A3	3
	D3 Description of available soils data	A3	3
	D4 Description of BMPs used	A3	4
	D5 Description of general timing when BMPs implemented in relation to construction schedule	A3	4
	D6 Runoff coefficients		
	D7 Names of receiving waters	A3	3
	D8 SWPPP implementation responsibilities		
	D9 Storm water runoff characteristics		
E UPDATE SWPPP		B7	9
	E1 SWPPP amended when change in design, construction or maintenance		
	E2 SWPPP amended when inspection		
F SITE LOG BOOK / CERTIFICATION BASIC			
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		B1	8
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	B1	8
	Inspection Frequency (if specified as other than CGP)	7 DAYS	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization	B1	8
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		A6	7
	H1 Stabilization initiated by day 14 where applicable		
	Stabilization time (if specified as other than CGP)	NA	
I MAINTENANCE BASIC		A4	5
	I1 Sediment removed from traps when design capacity reduced by 50 percent	A4	5

STATE:	**Pennsylvania**		**SECTION REFERENCED**	
	Instructions for a General OR Individual NPDES Permit for Discharges of Stormwater Associated with Construction Activities (Doc #1)	8/1/01		
	Erosion and Sediment Control Plan Content (363-2134-008) (Doc #2)	4/15/00		
	Fact Sheet: Stormwater Permits for Construction Activities (Doc #3)	2/1/01		
DOCUMENT:	PA General NPDES Permit for Stormwater Discharges Associated with Construction Activities (Doc #4)	12/1/02		
PERMIT EXPIRATION DATE:		12/1/07	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC			Doc #1 - A	2
B SEDIMENT CONTROL BASIC			Doc #1 - A	2
	B1 Sediment Basin 10 or more acres			
	Size of Sediment Basin Required			
	B2 Operator consider public safety			
	B3 Sediment Basin less than 10 acres			
	B4 Equivalent Sediment controls			
C POLLUTION CONTROL BASIC			Doc #3 - 10	1
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater			
	C2 Description of wate stored on-site			
D SWPPP BASIC			Doc #1	1
	D1 Description of construction activity and sequence		Doc #1 - A	2
	D2 General location map		Doc #2 - 1	1
	D2a Drainage patterns and slopes		Doc #2 - 1	1
	D2b Total area of site		Doc #1 - A	2
	D2c Areas that will not be disturbed			
	D2d Locations of structural and nonstructural controls		Doc #2	1
	D2e Locations of stabilization practies		Doc #2	1
	D2f Locations of off-site material, waste, equipment storage areas			
	D2g Surface waters / wetlands		Doc #2 - C	1
	D2h Locations of storm water discharges		Doc #1 - A	3
	D3 Description of available soils data		Doc #1 - A	2
	D4 Description of BMPs used		Doc #1 - A	2
	D5 Description of general timing when BMPs implemented in relation to construction schedule		Doc #3 - 10	1
	D6 Runoff coefficients		Doc #1 - A	2
	D7 Names of receiving waters		Doc #1 - A	3
	D8 SWPPP implementation responsibilities			
	D9 Storm water runoff characteristics		Doc #1 - A	2
E UPDATE SWPPP			Doc #4	1
	E1 SWPPP amended when change in design, construction or maintenance			
	E2 SWPPP amended when inspection		Doc #4	1
F SITE LOG BOOK / CERTIFICATION BASIC			Doc #1 - G	4
	F1 Copy of site log book on site			
	F2 Operator certify SWPPP prepared correctly			
	F3 Operator have qualified professional conduct assessment			
	F4 Operator post inspection on site			
G SITE INSPECTIONS BASIC			Doc #2	3
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches			
	Inspection Frequency (if specified as other than CGP)		*	
	G1a Record extent of initial disturbance			
	G1b Record sites undergone temp/perm stabilization			
	G1c Record sites not undergone work			
	G1d Inspect sediment control practices			
	G1e Ispect BMPs			
	G2 Final inspection prior to NOT			
H STABILIZATION BASIC			Doc #2	3
	H1 Stabilization initiated by day 14 where applicable			
	Stabilization time (if specified as other than CGP)		NA	
I MAINTENANCE BASIC			Doc #3 - 10	1
	I1 Sediment removed from traps when design capacity reduced by 50 percent			

* A maintenance program which provides for inspection of BMPs on a weekly basis and after each measureable rainfall event, including the repair of BMPs to ensure effective and efficient operation.

STATE	Pennsylvania	SECTION REFERENCED	
DOCUMENT:	PA DEP Erosion and Sediment Pollution Control Manual (Doc #5) 4/15/00		
	BMP MANUAL GUIDELINES	SECTION	PAGE
BMP-B1	Minimum required dewatering zone is at least 3,600 cubic feet per acre	Doc #5	42
BMP-B3	Sediment traps used when <5 acres	Doc #5	64
BMP-B4	Vegetative filter strip, etc.	Doc #5	82
BMP-I1	Sediment must be removed from the trap when the storage volume has been reduced to 1,300 cubic feet per acre of contributing drainage area.	Doc #5	69

STATE: **Puerto Rico**		**SECTION REFERENCED**	
DOCUMENT: NPDES General Permit for Storm Water Discharges from Construction Activities 2/17/98			
PERMIT EXPIRATION DATE:		**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		IV D	7868
B SEDIMENT CONTROL BASIC		IV D	7868
	B1 Sediment Basin 10 or more acres	IV D	7868
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety	IV D	7869
	B3 Sediment Basin less than 10 acres	IV D	7869
	B4 Equivalent Sediment controls	IV D	7869
C POLLUTION CONTROL BASIC		IV D	7868
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater	IV D	7868
	C2 Description of wate stored on-site	IV D	7870
D SWPPP BASIC		IV D	7868
	D1 Description of construction activity and sequence	IV D	7867
	D2 General location map	IV D	7868
	D2a Drainage patterns and slopes	IV D	7868
	D2b Total area of site	IV D	7868
	D2c Areas that will not be disturbed	IV D	7868
	D2d Locations of structural and nonstructural controls	IV D	7868
	D2e Locations of stabilization practies	IV D	7868
	D2f Locations of off-site material, waste, equipment storage areas	IV D	7868
	D2g Surface waters / wetlands	IV D	7868
	D2h Locations of storm water discharges	IV D	7868
	D3 Description of available soils data	IV D	7868
	D4 Description of BMPs used	IV D	7868
	D5 Description of general timing when BMPs implemented in relation to construction schedule	IV D	7868
	D6 Runoff coefficients	IV D	7868
	D7 Names of receiving waters	IV D	7868
	D8 SWPPP implementation responsibilities	III E	7867
	D9 Storm water runoff characteristics	IV D	7868
E UPDATE SWPPP		IV C	7867
	E1 SWPPP amended when change in design, construction or maintenance	IV C	7867
	E2 SWPPP amended when inspection	IV C	7867
F SITE LOG BOOK / CERTIFICATION BASIC		II	7866
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IV D	7870
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	IV D	7870
	Inspection Frequency (if specified as other than CGP)	RULE EQ	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		IV D	7868
	H1 Stabilization initiated by day 14 where applicable	IV D	7868
	Stabilization time (if specified as other than CGP)	RULE EQ	
I MAINTENANCE BASIC		IV D	7868
	I1 Sediment removed from traps when design capacity reduced by 50 percent	IV D	7868

		SECTION REFERENCED	
STATE:	**Rhode Island**		
DOCUMENT:	General Permit Rhode Island Pollutant Discharge Ellimination System Storm Water Discharge Associated with Construction Activity 3/1/98		
PERMIT EXPIRATION DATE:	3/19/03	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		IVE	7
B SEDIMENT CONTROL BASIC		IVE	7
	B1 Sediment Basin 10 or more acres		
	Size of Sediment Basin Required	NA	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres		
	B4 Equivalent Sediment controls		
C POLLUTION CONTROL BASIC		IVE	8
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater		
	C2 Description of wate stored on-site		
D SWPPP BASIC		IV	5
	D1 Description of construction activity and sequence	IVE	6
	D2 General location map	IVE	6
	D2a Drainage patterns and slopes	IVE	6
	D2b Total area of site	IIIA	4
	D2c Areas that will not be disturbed		
	D2d Locations of structural and nonstructural controls	IVE	6
	D2e Locations of stabilization practies	IVE	6
	D2f Locations of off-site material, waste, equipment storage areas		
	D2g Surface waters / wetlands	IVE	6
	D2h Locations of storm water discharges		
	D3 Description of available soils data	IVE	7
	D4 Description of BMPs used	IVE	7
	D5 Description of general timing when BMPs implemented in relation to construction schedule		
	D6 Runoff coefficients	IIIA	4
	D7 Names of receiving waters	IIIA	4
	D8 SWPPP implementation responsibilities		
	D9 Storm water runoff characteristics	IVE	7
E UPDATE SWPPP		IVD	6
	E1 SWPPP amended when change in design, construction or maintenance	IVD	6
	E2 SWPPP amended when inspection		
F SITE LOG BOOK / CERTIFICATION BASIC		IID	4
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IIB	3
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	IIB	3
	Inspection Frequency (if specified as other than CGP)	RULE EQ	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		IVE	7
	H1 Stabilization initiated by day 14 where applicable	IVE	7
	Stabilization time (if specified as other than CGP)	RULE EQ	
I MAINTENANCE BASIC		IVE	7
	I1 Sediment removed from traps when design capacity reduced by 50 percent		

			SECTION REFERENCED	
STATE:	**South Carolina**			
DOCUMENT:	South Carolina Department of Health and Environmental Control NPDES General Permit for Storm Water Discharges From Construction Activities	1/15/98		
PERMIT EXPIRATION DATE:		1/31/03	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC			IVD	14
B SEDIMENT CONTROL BASIC			IVD	14
	B1 Sediment Basin 10 or more acres		IVD	14
	Size of Sediment Basin Required		RULE EQ	
	B2 Operator consider public safety			
	B3 Sediment Basin less than 10 acres		IVD	14
	B4 Equivalent Sediment controls		IVD	14
C POLLUTION CONTROL BASIC			IVD	14
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater			
	C2 Description of wate stored on-site			
D SWPPP BASIC			IVD	12
	D1 Description of construction activity and sequence		IVD	12
	D2 General location map		IVD	13
	D2a Drainage patterns and slopes		IVD	13
	D2b Total area of site		IVD	13
	D2c Areas that will not be disturbed			
	D2d Locations of structural and nonstructural controls		IVD	13
	D2e Locations of stabilization practies		IVD	13
	D2f Locations of off-site material, waste, equipment storage areas			
	D2g Surface waters / wetlands		IVD	13
	D2h Locations of storm water discharges		IVD	13
	D3 Description of available soils data		IVD	13
	D4 Description of BMPs used		IVD	13
	D5 Description of general timing when BMPs implemented in relation to construction schedule		IVD	13
	D6 Runoff coefficients		IVD	13
	D7 Names of receiving waters		IVD	13
	D8 SWPPP implementation responsibilities		IVE	17
	D9 Storm water runoff characteristics		IIB	9
E UPDATE SWPPP			IVC	12
	E1 SWPPP amended when change in design, construction or maintenance		IVC	12
	E2 SWPPP amended when inspection		IVC	12
F SITE LOG BOOK / CERTIFICATION BASIC			IVE	17
	F1 Copy of site log book on site			
	F2 Operator certify SWPPP prepared correctly			
	F3 Operator have qualified professional conduct assessment			
	F4 Operator post inspection on site			
G SITE INSPECTIONS BASIC			IVD	16
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches		IVD	16
	Inspection Frequency (if specified as other than CGP)		RULE EQ	
	G1a Record extent of initial disturbance			
	G1b Record sites undergone temp/perm stabilization			
	G1c Record sites not undergone work			
	G1d Inspect sediment control practices			
	G1e Ispect BMPs			
	G2 Final inspection prior to NOT			
H STABILIZATION BASIC			IVD	13
	H1 Stabilization initiated by day 14 where applicable		IVD	13
	Stabilization time (if specified as other than CGP)		RULE EQ	
I MAINTENANCE BASIC			IVD	16
	I1 Sediment removed from traps when design capacity reduced by 50 percent		RULE EQ	

* NOTE: BMP Manual - no state BMP manual exists; S.Carolina DEHC refers anyone requesting additional information to the EPA guidance document on erosion and sediment control permitting; information here is from a handbook describing permit compliance request.

STATE:	**South Dakota**	**SECTION REFERENCED**	
DOCUMENT:	South Dakota Department of Environment and Natural Resources General Permit for Storm Water Discharges Associated with Construction Activity 7/1/01		
PERMIT EXPIRATION DATE:	7/30/07	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		4.2	9
B SEDIMENT CONTROL BASIC		4.2	9
	B1 Sediment Basin 10 or more acres	4.2	9
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres		
	B4 Equivalent Sediment controls	4.2	10
C POLLUTION CONTROL BASIC		4.2	9
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater	4.2	10
	C2 Description of wate stored on-site	4.2	10
D SWPPP BASIC		4.2	8
	D1 Description of construction activity and sequence	4.2	8
	D2 General location map	4.2	8
	D2a Drainage patterns and slopes	4.2	8
	D2b Total area of site	4.2	8
	D2c Areas that will not be disturbed		
	D2d Locations of structural and nonstructural controls	4.2	8
	D2e Locations of stabilization practies	4.2	8
	D2f Locations of off-site material, waste, equipment storage areas	4.2	9
	D2g Surface waters / wetlands	4.2	8
	D2h Locations of storm water discharges	4.2	8
	D3 Description of available soils data	4.2	8
	D4 Description of BMPs used	4.2	8
	D5 Description of general timing when BMPs implemented in relation to construction schedule	4.2	8
	D6 Runoff coefficients		
	D7 Names of receiving waters	4.2	8
	D8 SWPPP implementation responsibilities		
	D9 Storm water runoff characteristics		
E UPDATE SWPPP		4.2	12
	E1 SWPPP amended when change in design, construction or maintenance	4.2	12
	E2 SWPPP amended when inspection	4.2	12
F SITE LOG BOOK / CERTIFICATION BASIC		6.7	15
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		4.2	11
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	4.2	11
	Inspection Frequency (if specified as other than CGP)	RULE EQ	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		4.2	9
	H1 Stabilization initiated by day 14 where applicable	4.2	9
	Stabilization time (if specified as other than CGP)	RULE EQ	
I MAINTENANCE BASIC		4.2	9
	I1 Sediment removed from traps when design capacity reduced by 50 percent	4.2	9

STATE:	**Tennessee**	**SECTION REFERENCED**	
DOCUMENT:	Tennessee General Permit No TNR10-0000 Storm Water Discharges from Construction Activities nd		
PERMIT EXPIRATION DATE:		**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		IVD	14
B SEDIMENT CONTROL BASIC		IVD	14
	B1 Sediment Basin 10 or more acres	IVD	16
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres		
	B4 Equivalent Sediment controls	IVD	16
C POLLUTION CONTROL BASIC		IVD	14
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater	IVD	14
	C2 Description of wate stored on-site		
D SWPPP BASIC		IVD	13
	D1 Description of construction activity and sequence	IVD	13
	D2 General location map	IVD	14
	D2a Drainage patterns and slopes	IVD	14
	D2b Total area of site	IVD	13
	D2c Areas that will not be disturbed	IVD	14
	D2d Locations of structural and nonstructural controls	IVD	14
	D2e Locations of stabilization practies	IVD	14
	D2f Locations of off-site material, waste, equipment storage areas	IVD	15
	D2g Surface waters / wetlands	IVD	14
	D2h Locations of storm water discharges	IVD	14
	D3 Description of available soils data	IVD	14
	D4 Description of BMPs used	IVD	14
	D5 Description of general timing when BMPs implemented in relation to construction schedule	IVD	14
	D6 Runoff coefficients	IVD	14
	D7 Names of receiving waters	IVD	14
	D8 SWPPP implementation responsibilities	IVD	14
	D9 Storm water runoff characteristics	IVD	14
E UPDATE SWPPP		IVC	13
	E1 SWPPP amended when change in design, construction or maintenance	IVC	1
	E2 SWPPP amended when inspection	IVC	13
F SITE LOG BOOK / CERTIFICATION BASIC		IVD	22
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IVD	18
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	IVD	18
	Inspection Frequency (if specified as other than CGP)	RULE EQ	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		IVD	14
	H1 Stabilization initiated by day 14 where applicable	IVD	14
	Stabilization time (if specified as other than CGP)	7 DAYS	
I MAINTENANCE BASIC		IVD	14
	I1 Sediment removed from traps when design capacity reduced by 50 percent	IVD	14

STATE	**Tennessee**	**SECTION REFERENCED**	
DOCUMENT:	Tennessee Erosion & Sediment Control Handbook		
	BMP MANUAL GUIDELINES	**SECTION**	**PAGE**
BMP-B1	Required at sites > 10 acres	Structural Practices	SB-1
BMP-B1	Volume: 1809 cubic feet of storage	Structural Practices	SB-2
BMP-B3	Sediment traps used below 10 acres	Structural Practices	ST-1
BMP-B3	Sediment controls must total 134 cubic yards (3618 cubic feet) of storage per acre	Structural Practices	ST-1
BMP-B4	For sites 10 acres or more where sed basin not feasible, at least 3618 cubic feet of storage required per acre for alternate controls	Structural Practices	SB-4
BMP-G1	Inspect ESC measures before anticipated storm events and after events > 0.5 inches and every 14 days	Structural Practices	CRS-3, MA-3, etc.
BMP-G1	When sites stabilized, can inspect monthly	Structural Practices	etc.
BMP-H1	No instructions on general stabilization requirements, but some BMP-specific discussion (below):		
BMP-H1	Stabilization of concentrated flow areas and steep slopes w/ ESC matting	Structural Practices	MA-1
BMP-H1	Stabilization of basin "immediately after construction"	Structural Practices	SB-23
BMP-I1	Remove from basin within 1 foot from dewatering orifice or at 50% design capacity, whichever comes first	Structural Practices	SB-20
BMP-I1	Remove sediment from traps at 1/2 design volume	Structural Practices	ST-3

STATE:	**Texas**	**SECTION REFERENCED**	
DOCUMENT:	NPDEs General Permit for Storm Water Discharges from Construction Activities in Region 6 7/6/98		
PERMIT EXPIRATION DATE:	7/7/03	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		IVD	36503
B SEDIMENT CONTROL BASIC		IVD	36503
	B1 Sediment Basin 10 or more acres	IVD	36504
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety	IVD	36504
	B3 Sediment Basin less than 10 acres	IVD	36504
	B4 Equivalent Sediment controls	IVD	36504
C POLLUTION CONTROL BASIC		IVD	36503
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater	IVD	36503
	C2 Description of wate stored on-site	IVD	36504
D SWPPP BASIC		IVD	36502
	D1 Description of construction activity and sequence	IVD	36502
	D2 General location map	IVD	36503
	D2a Drainage patterns and slopes	IVD	36503
	D2b Total area of site	IVD	36503
	D2c Areas that will not be disturbed	IVD	36503
	D2d Locations of structural and nonstructural controls	IVD	36503
	D2e Locations of stabilization practies	IVD	36503
	D2f Locations of off-site material, waste, equipment storage areas	IVD	36503
	D2g Surface waters / wetlands	IVD	36503
	D2h Locations of storm water discharges	IVD	36503
	D3 Description of available soils data	IVD	36503
	D4 Description of BMPs used	IVD	36503
	D5 Description of general timing when BMPs implemented in relation to construction schedule	IVD	36503
	D6 Runoff coefficients	IVD	36503
	D7 Names of receiving waters	IVD	36503
	D8 SWPPP implementation responsibilities	IVD	36503
	D9 Storm water runoff characteristics	IVD	36503
E UPDATE SWPPP		IVE	36502
	E1 SWPPP amended when change in design, construction or maintenance	IVE	36502
	E2 SWPPP amended when inspection	IVE	36502
F SITE LOG BOOK / CERTIFICATION BASIC		IVG	36507
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IVC	36505
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	IVC	36505
	Inspection Frequency (if specified as other than CGP)	RULE EQ	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		IVD	36503
	H1 Stabilization initiated by day 14 where applicable	IVD	36503
	Stabilization time (if specified as other than CGP)	RULE EQ	
I MAINTENANCE BASIC		IVD	36503
	I1 Sediment removed from traps when design capacity reduced by 50 percent	IVD	36503

STATE:	**Utah**	**SECTION REFERENCED**	
DOCUMENT:	State of Utah Department of Environmental Quality Division of Water Quality Authorization to Discharge Under the Utah NPDES Storm Water General Permit for Construction Activities 10/1/97		
PERMIT EXPIRATION DATE:	9/30/02	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		IIID	10
B SEDIMENT CONTROL BASIC		IIID	10
	B1 Sediment Basin 10 or more acres	IIID	10
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres	IIID	11
	B4 Equivalent Sediment controls	IIID	10
C POLLUTION CONTROL BASIC		IIID	9
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater	IIID	9
	C2 Description of wate stored on-site	IIID	12
D SWPPP BASIC		IIID	6
	D1 Description of construction activity and sequence	IIID	7
	D2 General location map	IIID	8
	D2a Drainage patterns and slopes	IIID	8
	D2b Total area of site	IIID	7
	D2c Areas that will not be disturbed	IIID	8
	D2d Locations of structural and nonstructural controls	IIID	8
	D2e Locations of stabilization practies	IIID	8
	D2f Locations of off-site material, waste, equipment storage areas	IIID	9
	D2g Surface waters / wetlands	IIID	8
	D2h Locations of storm water discharges	IIID	8
	D3 Description of available soils data	IIID	7
	D4 Description of BMPs used	IIID	8
	D5 Description of general timing when BMPs implemented in relation to construction schedule	IIID	8
	D6 Runoff coefficients	IIID	7
	D7 Names of receiving waters	IIID	8
	D8 SWPPP implementation responsibilities	IIIE	5
	D9 Storm water runoff characteristics	IIID	7
E UPDATE SWPPP		IIIC	7
	E1 SWPPP amended when change in design, construction or maintenance	IIIC	7
	E2 SWPPP amended when inspection	IIIC	7
F SITE LOG BOOK / CERTIFICATION BASIC		IIIG	17
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IIID	13
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	IIID	13
	Inspection Frequency (if specified as other than CGP)	RULE EQ	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		IIID	9
	H1 Stabilization initiated by day 14 where applicable	IIID	9
	Stabilization time (if specified as other than CGP)	RULE EQ	
I MAINTENANCE BASIC		IIID	9
	I1 Sediment removed from traps when design capacity reduced by 50 percent	IIID	9

		SECTION REFERENCED	
STATE:	**Vermont**		
DOCUMENT:	State of Vermont Agency of Natural Resources Department of Environmental Conservation, General Permit 3-9001(2002) For Stormwater Runoff From Construction Sites, NPDES VTR100000 nd		
PERMIT EXPIRATION DATE:		**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		IIIB	6
B SEDIMENT CONTROL BASIC		IIIB	6
	B1 Sediment Basin 10 or more acres		
	Size of Sediment Basin Required	*	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres		
	B4 Equivalent Sediment controls		
C POLLUTION CONTROL BASIC			
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater		
	C2 Description of wate stored on-site		
D SWPPP BASIC		III	5
	D1 Description of construction activity and sequence	IIIC	7
	D2 General location map	IIIC	7
	D2a Drainage patterns and slopes	IIIC	7
	D2b Total area of site	IIIC	7
	D2c Areas that will not be disturbed		
	D2d Locations of structural and nonstructural controls	IIIC	7
	D2e Locations of stabilization practies		
	D2f Locations of off-site material, waste, equipment storage areas	IIIC	7
	D2g Surface waters / wetlands	IIIC	7
	D2h Locations of storm water discharges		
	D3 Description of available soils data	IIIC	7
	D4 Description of BMPs used	IIIC	7
	D5 Description of general timing when BMPs implemented in relation to construction schedule		
	D6 Runoff coefficients		
	D7 Names of receiving waters		
	D8 SWPPP implementation responsibilities		
	D9 Storm water runoff characteristics		
E UPDATE SWPPP		IIIF	8
	E1 SWPPP amended when change in design, construction or maintenance	IIIF	8
	E2 SWPPP amended when inspection	IIIF	8
F SITE LOG BOOK / CERTIFICATION BASIC			
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IIIC	7
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	VC	9
	Inspection Frequency (if specified as other than CGP)	**	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		IIIC	6
	H1 Stabilization initiated by day 14 where applicable		
	Stabilization time (if specified as other than CGP)	NA	
I MAINTENANCE BASIC		VA	9
	I1 Sediment removed from traps when design capacity reduced by 50 percent		

* See Vermont Handbook for Soil Erosion and Sediment Control on Construction Sites, Chapters 4 and 5, and Appendix B
** Inspect every 7 days and 24 hours after "any storm event which generates a discharge of stormwater runoff from the construction site."

STATE:	**Virginia**	**SECTION REFERENCED**	
DOCUMENT:	General Virginia Pollutant Discharge Elimination System Permit Regulation for Discharges of Storm Water From Construction Activities 12/4/02		
PERMIT EXPIRATION DATE:	6/30/04	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		IID	12
B SEDIMENT CONTROL BASIC		IID	12
	B1 Sediment Basin 10 or more acres	IID	13
	Size of Sediment Basin Required	RULE EQ	
	B2 Operator consider public safety	IID	13
	B3 Sediment Basin less than 10 acres	IID	13
	B4 Equivalent Sediment controls	IID	13
C POLLUTION CONTROL BASIC		IID	12
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater	IID	12
	C2 Description of wate stored on-site	IID	14
D SWPPP BASIC		II	9
	D1 Description of construction activity and sequence	IID	11
	D2 General location map	IID	11
	D2a Drainage patterns and slopes	IID	11
	D2b Total area of site	IID	11
	D2c Areas that will not be disturbed	IID	11
	D2d Locations of structural and nonstructural controls	IID	11
	D2e Locations of stabilization practies	IID	11
	D2f Locations of off-site material, waste, equipment storage areas	IID	12
	D2g Surface waters / wetlands	IID	11
	D2h Locations of storm water discharges	IID	11
	D3 Description of available soils data	IID	11
	D4 Description of BMPs used	IID	12
	D5 Description of general timing when BMPs implemented in relation to construction schedule	IID	12
	D6 Runoff coefficients	IID	11
	D7 Names of receiving waters	IID	11
	D8 SWPPP implementation responsibilities	IIE	16
	D9 Storm water runoff characteristics	IID	11
E UPDATE SWPPP		IIC	10
	E1 SWPPP amended when change in design, construction or maintenance	IIC	10
	E2 SWPPP amended when inspection	IIC	10
F SITE LOG BOOK / CERTIFICATION BASIC		IIE	16
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IID	15
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	IID	15
	Inspection Frequency (if specified as other than CGP)	*	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		IID	12
	H1 Stabilization initiated by day 14 where applicable	IID	12
	Stabilization time (if specified as other than CGP)	7 DAYS	
I MAINTENANCE BASIC		IID	12
	I1 Sediment removed from traps when design capacity reduced by 50 percent	IID	12
* Inspect every 14 days and within 48 hours of storm event.			

STATE:	Washington		SECTION REFERENCED	
DOCUMENT:	NPDES and State Waste Discharge General Permit For Stormwater Discharges Associated with Construction Activities	11/18/00		
PERMIT EXPIRATION DATE:		11/18/05	SECTION	PAGE
A GENERAL EROSION AND SED CONTROL BASIC			S9C	12
B SEDIMENT CONTROL BASIC			S9C	12
	B1 Sediment Basin 10 or more acres			
	Size of Sediment Basin Required		NA	
	B2 Operator consider public safety			
	B3 Sediment Basin less than 10 acres			
	B4 Equivalent Sediment controls			
C POLLUTION CONTROL BASIC				
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater			
	C2 Description of wate stored on-site			
D SWPPP BASIC			S9	10
	D1 Description of construction activity and sequence			
	D2 General location map			
	D2a Drainage patterns and slopes			
	D2b Total area of site			
	D2c Areas that will not be disturbed			
	D2d Locations of structural and nonstructural controls			
	D2e Locations of stabilization practies			
	D2f Locations of off-site material, waste, equipment storage areas			
	D2g Surface waters / wetlands			
	D2h Locations of storm water discharges			
	D3 Description of available soils data			
	D4 Description of BMPs used		S9C	11
	D5 Description of general timing when BMPs implemented in relation to construction schedule		S9C	12
	D6 Runoff coefficients			
	D7 Names of receiving waters			
	D8 SWPPP implementation responsibilities			
	D9 Storm water runoff characteristics			
E UPDATE SWPPP			S9B	11
	E1 SWPPP amended when change in design, construction or maintenance		S9B	11
	E2 SWPPP amended when inspection		S9B	11
F SITE LOG BOOK / CERTIFICATION BASIC			SIC	6
	F1 Copy of site log book on site			
	F2 Operator certify SWPPP prepared correctly			
	F3 Operator have qualified professional conduct assessment			
	F4 Operator post inspection on site			
G SITE INSPECTIONS BASIC			S9C	13
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches		S9C	13
	Inspection Frequency (if specified as other than CGP)		7 DAYS	
	G1a Record extent of initial disturbance			
	G1b Record sites undergone temp/perm stabilization			
	G1c Record sites not undergone work			
	G1d Inspect sediment control practices			
	G1e Ispect BMPs			
	G2 Final inspection prior to NOT			
H STABILIZATION BASIC			S913	12
	H1 Stabilization initiated by day 14 where applicable			
	Stabilization time (if specified as other than CGP)		NA	
I MAINTENANCE BASIC			S9C	13
	I1 Sediment removed from traps when design capacity reduced by 50 percent			

			SECTION REFERENCED	
STATE:	**West Virginia**			
DOCUMENT:	West Virginia NPDES General Water Pollution Control Permit, Storm Water Associated With Construction Activities	12/5/02		
PERMIT EXPIRATION DATE:		12/4/07	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC			G4	18
B SEDIMENT CONTROL BASIC			G4	18
	B1 Sediment Basin 10 or more acres		G4	18
	Size of Sediment Basin Required		RULE EQ	
	B2 Operator consider public safety			
	B3 Sediment Basin less than 10 acres		G4	18
	B4 Equivalent Sediment controls		G4	18
C POLLUTION CONTROL BASIC			G4	21
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater			
	C2 Description of wate stored on-site			
D SWPPP BASIC			G4	14
	D1 Description of construction activity and sequence		G4	16
	D2 General location map		G4	17
	D2a Drainage patterns and slopes		G4	17
	D2b Total area of site		G4	16
	D2c Areas that will not be disturbed			
	D2d Locations of structural and nonstructural controls		G4	17
	D2e Locations of stabilization practies		G4	17
	D2f Locations of off-site material, waste, equipment storage areas		G4	17
	D2g Surface waters / wetlands		G4	17
	D2h Locations of storm water discharges			
	D3 Description of available soils data		G4	17
	D4 Description of BMPs used		G4	17
	D5 Description of general timing when BMPs implemented in relation to construction schedule		G4	17
	D6 Runoff coefficients			
	D7 Names of receiving waters			
	D8 SWPPP implementation responsibilities			
	D9 Storm water runoff characteristics		G4	17
E UPDATE SWPPP			G4	17
	E1 SWPPP amended when change in design, construction or maintenance			
	E2 SWPPP amended when inspection			
F SITE LOG BOOK / CERTIFICATION BASIC				
	F1 Copy of site log book on site			
	F2 Operator certify SWPPP prepared correctly			
	F3 Operator have qualified professional conduct assessment			
	F4 Operator post inspection on site			
G SITE INSPECTIONS BASIC			G4	22
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches		G4	22
	Inspection Frequency (if specified as other than CGP)		7 DAYS	
	G1a Record extent of initial disturbance			
	G1b Record sites undergone temp/perm stabilization			
	G1c Record sites not undergone work			
	G1d Inspect sediment control practices			
	G1e Ispect BMPs			
	G2 Final inspection prior to NOT			
H STABILIZATION BASIC			G4	17
	H1 Stabilization initiated by day 14 where applicable		G4	17
	Stabilization time (if specified as other than CGP)		7 DAYS	
I MAINTENANCE BASIC			G4	22
	I1 Sediment removed from traps when design capacity reduced by 50 percent			

STATE:	**Wisconsin**	**SECTION REFERENCED**	
DOCUMENT:	Chapter NR 216 Storm Water Discharge Permits Subchapter III Construction Site Storm Water Discharge Permits 10/1/02		
PERMIT EXPIRATION DATE:		**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		216.46	149
B SEDIMENT CONTROL BASIC		216.46	149
	B1 Sediment Basin 10 or more acres		
	Size of Sediment Basin Required	NA	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres		
	B4 Equivalent Sediment controls		
C POLLUTION CONTROL BASIC		216.46	149
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater		
	C2 Description of wate stored on-site		
D SWPPP BASIC		216.46	149
	D1 Description of construction activity and sequence	216.46	149
	D2 General location map	216.46	149
	D2a Drainage patterns and slopes	216.46	149
	D2b Total area of site	216.46	149
	D2c Areas that will not be disturbed		
	D2d Locations of structural and nonstructural controls	216.46	149
	D2e Locations of stabilization practies	216.46	149
	D2f Locations of off-site material, waste, equipment storage areas		
	D2g Surface waters / wetlands	216.46	149
	D2h Locations of storm water discharges	216.46	149
	D3 Description of available soils data	216.46	149
	D4 Description of BMPs used	216.46	149
	D5 Description of general timing when BMPs implemented in relation to construction schedule	216.46	149
	D6 Runoff coefficients	216.46	149
	D7 Names of receiving waters	216.46	149
	D8 SWPPP implementation responsibilities		
	D9 Storm water runoff characteristics		
E UPDATE SWPPP		216.5	150
	E1 SWPPP amended when change in design, construction or maintenance	216.5	150
	E2 SWPPP amended when inspection	216.5	150
F SITE LOG BOOK / CERTIFICATION BASIC		216.43	148
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		216.48	150
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	216.48	150
	Inspection Frequency (if specified as other than CGP)	7 DAYS	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		216.46	149
	H1 Stabilization initiated by day 14 where applicable		
	Stabilization time (if specified as other than CGP)	*	
I MAINTENANCE BASIC		216.47	150
	I1 Sediment removed from traps when design capacity reduced by 50 percent		
* Stabilize as soon as possible.			

STATE:	**Wyoming**	**SECTION REFERENCED**	
DOCUMENT:	Authorization To Discharge Storm Water Associated With Construction Activity Under The NPDES nd		
PERMIT EXPIRATION DATE:	8/31/02	**SECTION**	**PAGE**
A GENERAL EROSION AND SED CONTROL BASIC		BB	22
B SEDIMENT CONTROL BASIC		BB	22
	B1 Sediment Basin 10 or more acres		
	Size of Sediment Basin Required	NA	
	B2 Operator consider public safety		
	B3 Sediment Basin less than 10 acres		
	B4 Equivalent Sediment controls		
C POLLUTION CONTROL BASIC		BB	23
	C1 Litter, construction chemicals, and debris prevented from becoming pollutant in stormwater		
	C2 Description of wate stored on-site		
D SWPPP BASIC		III	6
	D1 Description of construction activity and sequence	BA	21
	D2 General location map	BA	22
	D2a Drainage patterns and slopes	BA	2
	D2b Total area of site	BA	21
	D2c Areas that will not be disturbed		
	D2d Locations of structural and nonstructural controls	BA	22
	D2e Locations of stabilization practies	BA	22
	D2f Locations of off-site material, waste, equipment storage areas		
	D2g Surface waters / wetlands	BA	22
	D2h Locations of storm water discharges	BA	22
	D3 Description of available soils data		
	D4 Description of BMPs used	BA	22
	D5 Description of general timing when BMPs implemented in relation to construction	BA	22
	D6 Runoff coefficients	BA	22
	D7 Names of receiving waters	BA	22
	D8 SWPPP implementation responsibilities		
	D9 Storm water runoff characteristics		
E UPDATE SWPPP		IIIH	8
	E1 SWPPP amended when change in design, construction or maintenance	IIIH	8
	E2 SWPPP amended when inspection		
F SITE LOG BOOK / CERTIFICATION BASIC		VIIJ	11
	F1 Copy of site log book on site		
	F2 Operator certify SWPPP prepared correctly		
	F3 Operator have qualified professional conduct assessment		
	F4 Operator post inspection on site		
G SITE INSPECTIONS BASIC		IVA	8
	G1 Inspections every 14 days and within 24 hours of storm greater than 0.5 inches	IVA	8
	Inspection Frequency (if specified as other than CGP)	7 DAYS	
	G1a Record extent of initial disturbance		
	G1b Record sites undergone temp/perm stabilization		
	G1c Record sites not undergone work		
	G1d Inspect sediment control practices		
	G1e Ispect BMPs		
	G2 Final inspection prior to NOT		
H STABILIZATION BASIC		BB	22
	H1 Stabilization initiated by day 14 where applicable		
	Stabilization time (if specified as other than CGP)	NA	
I MAINTENANCE BASIC		VIIQ	12
	I1 Sediment removed from traps when design capacity reduced by 50 percent	VIIQ	12

Appendix E

State Distribution of Construction Sites by Site Size, Land Use and Erosive Risk

Table E-1. State Distribution of Construction Sites by Size, Land Use and Erosive Risk

		Single Family	Multi Family	Commercial	Industrial
AL	Low Erosive Risk	332	172	1688	84
	Moderate Erosive Risk	387	201	1966	98
	High Erosive Risk	442	229	2244	111
	0.5	362	90	1920	99
	3	311	211	2570	140
	7.5	188	128	621	25
	25	238	149	657	20
	70	41	21	130	8
	200	20	2	0	0
AR	Low Erosive Risk	68	35	345	17
	Moderate Erosive Risk	207	107	1,053	52
	High Erosive Risk	347	180	1,761	87
	0.5	194	48	1,029	53
	3	166	113	1,377	75
	7.5	101	69	333	14
	25	128	80	352	11
	70	22	11	69	4
	200	11	1	-	-
AZ	Low Erosive Risk	149	77	756	37
	Moderate Erosive Risk	235	122	1,197	59
	High Erosive Risk	34	18	175	9
	0.5	131	33	693	36
	3	112	76	927	50
	7.5	68	46	224	9
	25	86	54	237	7
	70	15	7	47	3
	200	7	1	-	-
CA	Low Erosive Risk	685	354	3,486	172
	Moderate Erosive Risk	838	434	4,264	210
	High Erosive Risk	511	264	2,598	128
	0.5	636	158	3,370	173
	3	545	369	4,510	245
	7.5	329	225	1,089	44
	25	418	262	1,152	35
	70	71	35	227	13
	200	35	3	-	-

		Single Family	Multi Family	Commercial	Industrial
CO	Low Erosive Risk	141	73	716	35
	Moderate Erosive Risk	212	110	1,080	53
	High Erosive Risk	60	31	308	15
	0.5	129	32	685	35
	3	111	75	917	50
	7.5	67	46	221	9
	25	85	53	234	7
	70	14	7	46	2
	200	7	1	-	-
CT	Low Erosive Risk	23	12	114	6
	Moderate Erosive Risk	48	25	246	12
	High Erosive Risk	74	38	377	19
	0.5	45	11	240	12
	3	39	26	321	18
	7.5	23	16	78	3
	25	30	19	82	3
	70	5	3	16	1
	200	3	-	-	-
DE	Low Erosive Risk	39	20	196	10
	Moderate Erosive Risk	28	15	144	7
	High Erosive Risk	18	9	92	5
	0.5	27	7	141	7
	3	23	15	188	10
	7.5	14	9	45	2
	25	17	11	48	1
	70	3	2	10	1
	200	1	-	-	-
FL	Low Erosive Risk	1,884	976	9,584	475
	Moderate Erosive Risk	1,011	524	5,145	255
	High Erosive Risk	139	72	705	35
	0.5	948	236	5,026	259
	3	813	551	6,726	367
	7.5	491	336	1,624	67
	25	624	391	1,719	52
	70	106	55	339	19
	200	52	5	-	-

		Single Family	Multi Family	Commercial	Industrial
GA	Low Erosive Risk	1,348	699	6,850	340
	Moderate Erosive Risk	1,045	542	5,312	264
	High Erosive Risk	743	385	3,774	188
	0.5	979	244	5,189	269
	3	840	569	6,944	379
	7.5	508	347	1,677	69
	25	644	404	1,775	55
	70	110	57	351	20
	200	55	5	-	-
IA	Low Erosive Risk	22	12	113	6
	Moderate Erosive Risk	85	44	431	21
	High Erosive Risk	147	76	749	37
	0.5	79	20	421	22
	3	68	46	563	31
	7.5	41	28	136	6
	25	52	33	144	4
	70	9	5	28	2
	200	4	-	-	-
ID	Low Erosive Risk	56	29	287	14
	Moderate Erosive Risk	279	144	1,426	70
	High Erosive Risk	1	-	5	-
	0.5	105	26	559	29
	3	90	61	749	41
	7.5	54	37	181	7
	25	69	43	191	6
	70	12	6	38	2
	200	6	-	-	-
IL	Low Erosive Risk	111	58	565	28
	Moderate Erosive Risk	302	157	1,537	76
	High Erosive Risk	494	256	2,509	125
	0.5	283	71	1,501	78
	3	243	165	2,009	110
	7.5	147	100	485	20
	25	186	117	513	16
	70	32	16	102	6
	200	16	2	-	-

		Single Family	Multi Family	Commercial	Industrial
IN	Low Erosive Risk	75	39	383	19
	Moderate Erosive Risk	240	124	1,218	60
	High Erosive Risk	404	209	2,053	102
	0.5	225	56	1,190	62
	3	192	130	1,592	87
	7.5	116	80	385	16
	25	148	93	407	13
	70	25	13	80	5
	200	13	1	-	-
KS	Low Erosive Risk	44	23	223	11
	Moderate Erosive Risk	117	61	596	30
	High Erosive Risk	194	101	986	49
	0.5	111	28	588	30
	3	95	64	787	43
	7.5	58	39	190	8
	25	73	46	201	6
	70	12	6	40	2
	200	6	1	-	-
KY	Low Erosive Risk	57	29	289	14
	Moderate Erosive Risk	291	151	1,478	73
	High Erosive Risk	525	272	2,668	132
	0.5	273	68	1,444	75
	3	234	158	1,933	105
	7.5	141	97	467	19
	25	179	112	494	15
	70	31	16	98	6
	200	15	2	-	-
LA	Low Erosive Risk	75	39	382	19
	Moderate Erosive Risk	164	85	833	41
	High Erosive Risk	253	131	1,284	64
	0.5	153	38	814	42
	3	132	89	1,089	59
	7.5	80	54	263	11
	25	101	63	278	9
	70	17	9	55	3
	200	9	1	-	-

		Single Family	Multi Family	Commercial	Industrial
MA	Low Erosive Risk	121	63	615	31
	Moderate Erosive Risk	260	135	1,321	66
	High Erosive Risk	399	207	2,026	101
	0.5	244	61	1,290	67
	3	209	141	1,726	94
	7.5	126	86	417	17
	25	160	100	441	14
	70	27	14	87	5
	200	14	1	-	-
MD	Low Erosive Risk	183	95	933	46
	Moderate Erosive Risk	218	113	1,107	55
	High Erosive Risk	252	131	1,282	64
	0.5	204	51	1,082	56
	3	175	119	1,448	79
	7.5	106	72	350	14
	25	134	84	370	11
	70	23	12	73	4
	200	11	1	-	-
ME	Low Erosive Risk	64	33	323	16
	Moderate Erosive Risk	136	71	693	34
	High Erosive Risk	209	108	1,063	53
	0.5	128	32	677	35
	3	109	74	906	49
	7.5	66	45	219	9
	25	84	53	231	7
	70	14	7	46	3
	200	7	1	-	-
MI	Low Erosive Risk	164	85	836	41
	Moderate Erosive Risk	447	232	2,270	113
	High Erosive Risk	729	378	3,705	184
	0.5	419	104	2,218	115
	3	359	243	2,968	162
	7.5	217	148	717	29
	25	275	173	758	23
	70	47	24	150	9
	200	23	2	-	-

		Single Family	Multi Family	Commercial	Industrial
MN	Low Erosive Risk	100	52	509	25
	Moderate Erosive Risk	284	147	1,445	72
	High Erosive Risk	469	243	2,382	118
	0.5	266	66	1,412	73
	3	228	155	1,890	103
	7.5	138	94	456	19
	25	175	110	483	15
	70	30	15	95	5
	200	15	1	-	-
MO	Low Erosive Risk	79	41	403	20
	Moderate Erosive Risk	275	143	1,398	69
	High Erosive Risk	471	244	2,393	119
	0.5	258	64	1,365	71
	3	221	150	1,828	100
	7.5	134	91	441	18
	25	170	106	467	14
	70	29	15	92	5
	200	14	1	-	-
MS	Low Erosive Risk	272	141	1,380	68
	Moderate Erosive Risk	253	131	1,287	64
	High Erosive Risk	235	122	1,193	59
	0.5	237	59	1,257	65
	3	203	138	1,682	92
	7.5	123	84	406	17
	25	156	98	430	13
	70	27	14	85	5
	200	13	1	-	-
MT	Low Erosive Risk	-	-	1	-
	Moderate Erosive Risk	279	144	1,424	70
	High Erosive Risk	-	-	-	-
	0.5	87	22	464	24
	3	75	51	622	34
	7.5	45	31	150	6
	25	58	36	159	5
	70	10	5	31	2
	200	5	-	-	-

		Single Family	Multi Family	Commercial	Industrial
NC	Low Erosive Risk	716	371	3,639	180
	Moderate Erosive Risk	622	322	3,159	157
	High Erosive Risk	527	273	2,678	133
	0.5	582	145	3,086	160
	3	499	338	4,130	225
	7.5	302	206	997	41
	25	383	240	1,055	33
	70	65	34	209	12
	200	33	3	-	-
ND	Low Erosive Risk	13	7	67	3
	Moderate Erosive Risk	49	25	250	12
	High Erosive Risk	58	30	296	15
	0.5	38	9	200	10
	3	32	22	267	15
	7.5	20	13	65	3
	25	25	16	68	2
	70	4	2	14	1
	200	2	-	-	-
NE	Low Erosive Risk	37	19	189	9
	Moderate Erosive Risk	76	39	385	19
	High Erosive Risk	90	47	456	23
	0.5	63	16	336	17
	3	54	37	449	24
	7.5	33	22	108	4
	25	42	26	115	4
	70	7	4	23	1
	200	4	-	-	-
NH	Low Erosive Risk	36	19	182	9
	Moderate Erosive Risk	77	40	390	19
	High Erosive Risk	118	61	599	30
	0.5	72	18	381	20
	3	62	42	510	28
	7.5	37	25	123	5
	25	47	30	130	4
	70	8	4	26	1
	200	4	-	-	-

		Single Family	Multi Family	Commercial	Industrial
NJ	Low Erosive Risk	250	130	1,273	63
	Moderate Erosive Risk	262	136	1,332	66
	High Erosive Risk	274	142	1,391	69
	0.5	246	61	1,301	67
	3	211	143	1,741	95
	7.5	127	87	421	17
	25	161	101	445	14
	70	28	14	88	5
	200	14	1	-	-
NM	Low Erosive Risk	286	148	1,453	72
	Moderate Erosive Risk	409	212	2,084	102
	High Erosive Risk	103	53	525	26
	0.5	250	62	1,323	68
	3	214	145	1,770	96
	7.5	129	88	427	17
	25	164	103	452	14
	70	28	14	89	5
	200	14	1	-	-
NV	Low Erosive Risk	39	20	197	10
	Moderate Erosive Risk	59	31	300	15
	High Erosive Risk	-	-	2	-
	0.5	31	8	163	8
	3	26	18	218	12
	7.5	16	11	53	2
	25	20	13	56	2
	70	3	2	11	1
	200	2	-	-	-
NY	Low Erosive Risk	176	91	893	44
	Moderate Erosive Risk	390	202	1,980	98
	High Erosive Risk	604	313	3,067	152
	0.5	365	91	1,934	100
	3	313	212	2,589	141
	7.5	189	129	625	26
	25	240	151	662	20
	70	41	21	131	8
	200	21	2	-	-

		Single Family	Multi Family	Commercial	Industrial
OH	Low Erosive Risk	121	63	616	31
	Moderate Erosive Risk	448	232	2,275	113
	High Erosive Risk	774	401	3,933	195
	0.5	419	105	2,222	115
	3	359	244	2,974	162
	7.5	218	149	718	29
	25	276	173	760	23
	70	47	24	150	9
	200	23	2	-	-
OK	Low Erosive Risk	66	34	333	16
	Moderate Erosive Risk	220	114	1,120	56
	High Erosive Risk	364	189	1,852	92
	0.5	203	51	1,076	56
	3	174	118	1,440	79
	7.5	105	72	348	14
	25	134	84	368	11
	70	23	12	73	4
	200	11	1	-	-
OR	Low Erosive Risk	47	24	241	12
	Moderate Erosive Risk	185	95	945	46
	High Erosive Risk	148	76	755	36
	0.5	119	29	633	32
	3	102	69	847	46
	7.5	62	42	204	8
	25	78	49	216	6
	70	13	6	42	2
	200	6	-	-	-
PA	Low Erosive Risk	224	116	1,140	57
	Moderate Erosive Risk	669	347	3,399	169
	High Erosive Risk	1,113	577	5,658	281
	0.5	627	156	3,320	172
	3	537	364	4,443	242
	7.5	325	222	1,073	44
	25	412	258	1,136	35
	70	71	36	225	13
	200	35	4	-	-

		Single Family	Multi Family	Commercial	Industrial
RI	Low Erosive Risk	4	2	19	1
	Moderate Erosive Risk	8	4	41	2
	High Erosive Risk	12	6	63	3
	0.5	8	2	40	2
	3	7	4	54	3
	7.5	4	3	13	1
	25	5	3	14	-
	70	1	-	3	-
	200	-	-	-	-
SC	Low Erosive Risk	593	308	3,013	149
	Moderate Erosive Risk	444	230	2,257	112
	High Erosive Risk	295	153	1,501	75
	0.5	416	104	2,205	114
	3	357	242	2,951	161
	7.5	216	147	713	29
	25	274	172	754	23
	70	47	24	149	9
	200	23	2	-	-
SD	Low Erosive Risk	24	12	122	6
	Moderate Erosive Risk	85	44	432	21
	High Erosive Risk	104	54	527	26
	0.5	66	17	352	18
	3	57	39	471	26
	7.5	34	24	114	5
	25	44	27	120	4
	70	7	4	24	1
	200	4	-	-	-
TN	Low Erosive Risk	108	56	547	27
	Moderate Erosive Risk	493	256	2,506	124
	High Erosive Risk	879	456	4,465	222
	0.5	462	115	2,448	127
	3	396	268	3,276	179
	7.5	240	164	791	32
	25	304	190	837	26
	70	52	27	165	10
	200	26	3	-	-

		Single Family	Multi Family	Commercial	Industrial
TX	Low Erosive Risk	620	321	3,153	156
	Moderate Erosive Risk	1,291	669	6,565	324
	High Erosive Risk	1,376	713	6,994	347
	0.5	1,027	256	5,441	281
	3	880	596	7,283	397
	7.5	532	363	1,759	71
	25	675	423	1,861	57
	70	115	59	367	20
	200	57	5	-	-
UT	Low Erosive Risk	110	57	560	28
	Moderate Erosive Risk	165	86	840	41
	High Erosive Risk	23	12	120	6
	0.5	93	23	495	25
	3	80	54	663	36
	7.5	48	33	160	6
	25	61	38	169	5
	70	10	5	33	2
	200	5	-	-	-
VA	Low Erosive Risk	342	177	1,739	86
	Moderate Erosive Risk	422	219	2,142	106
	High Erosive Risk	501	260	2,545	126
	0.5	395	99	2,092	108
	3	339	229	2,800	153
	7.5	205	140	676	28
	25	260	163	716	22
	70	44	23	141	8
	200	22	2	-	-
VT	Low Erosive Risk	7	3	33	2
	Moderate Erosive Risk	14	7	72	4
	High Erosive Risk	22	11	110	5
	0.5	13	3	70	4
	3	11	8	94	5
	7.5	7	5	23	1
	25	9	5	24	1
	70	1	1	5	-
	200	1	-	-	-

		Single Family	Multi Family	Commercial	Industrial
WA	Low Erosive Risk	50	26	257	13
	Moderate Erosive Risk	450	230	2,301	110
	High Erosive Risk	381	195	1,941	94
	0.5	276	67	1,466	74
	3	236	160	1,962	106
	7.5	143	97	473	18
	25	180	113	501	15
	70	30	15	97	4
	200	15	-	-	-
WI	Low Erosive Risk	82	42	415	21
	Moderate Erosive Risk	231	120	1,174	58
	High Erosive Risk	380	197	1,932	96
	0.5	216	54	1,146	59
	3	185	126	1,534	84
	7.5	112	77	371	15
	25	142	89	392	12
	70	24	12	78	4
	200	12	1	-	-
WV	Low Erosive Risk	39	20	200	10
	Moderate Erosive Risk	217	112	1,102	55
	High Erosive Risk	395	205	2,005	100
	0.5	203	51	1,077	56
	3	174	118	1,441	79
	7.5	105	72	348	14
	25	134	84	368	11
	70	23	12	73	4
	200	11	1	-	-
WY	Low Erosive Risk	24	12	122	6
	Moderate Erosive Risk	97	50	497	24
	High Erosive Risk	5	2	25	1
	0.5	39	10	209	11
	3	34	23	280	15
	7.5	20	14	68	3
	25	26	16	72	2
	70	4	2	14	1
	200	2	-	-	-

		Single Family	Multi Family	Commercial	Industrial
Total	**Low Erosive Risk**	**10,106**	**5,235**	**51,380**	**2,545**
	Moderate Erosive Risk	**15,024**	**7,784**	**76,419**	**3,777**
	High Erosive Risk	**15,696**	**8,130**	**79,772**	**3,957**
	0.5	**12,752**	**3,177**	**67,591**	**3,491**
	3	**10,932**	**7,408**	**90,459**	**4,932**
	7.5	**6,610**	**4,513**	**21,846**	**891**
	25	**8,386**	**5,257**	**23,114**	**708**
	70	**1,428**	**732**	**4,565**	**260**
	200	**709**	**61**	**-**	**-**
	TOTAL	**40,817**	**21,148**	**207,575**	**10,282**

Appendix F

Supporting Loads Data

Table F-1. National Loads by Site Size, Land Use and Erosivity Risk

	National	Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	1,977,030	970,228	6,144,178	214,737	65,393	31,059	278,642	10,327	53,931	24,734	242,113	9,278
	Moderate Erosive Risk	5,382,620	2,623,263	16,716,476	575,785	280,220	132,522	1,074,499	38,707	231,865	106,984	930,087	34,618
	High Erosive Risk	12,706,946	6,173,868	39,113,205	1,416,726	874,695	414,744	3,184,133	118,393	719,346	334,194	2,730,665	105,621
Site Sizes in Acres	0.5	242,786	64,936	1,532,761	74,381	96,735	31,105	888,510	38,268	96,735	31,105	888,510	38,268
	3	1,242,252	907,793	12,307,877	625,658	89,368	66,771	929,412	46,473	89,368	66,771	929,412	46,473
	7.5	1,876,616	1,376,620	7,428,306	261,142	129,814	97,290	540,091	18,237	73,781	55,356	306,504	10,608
	25	7,943,241	5,385,688	26,246,617	701,035	392,563	268,202	1,319,539	34,323	315,661	215,635	1,061,546	28,068
	70	3,737,811	1,949,621	14,458,299	545,031	220,234	112,214	859,721	30,127	183,283	94,895	716,892	26,102
	200	5,023,891	82,701	0	0	291,595	2,742	0	0	246,314	2,151	0	0
	Total	20,066,596	9,767,360	61,973,860	2,207,247	1,220,308	578,325	4,537,274	167,428	1,005,141	465,913	3,902,864	149,518
	Grand Total	94,015,064				6,503,334				5,523,437			

Table F-2. State Loads by Site Size, Land Use and Erosivity Risk

	AL	Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	59,646	29,221	178,004	7,236	2,549	1,248	10,085	424	1,730	792	7,556	328
	Moderate Erosive Risk	172,465	82,697	514,525	20,914	10,602	5,154	39,781	1,624	7,251	3,346	29,827	1,259
	High Erosive Risk	516,060	244,371	1,549,203	61,202	40,756	19,791	149,128	5,930	28,016	13,009	112,039	4,608
Site Sizes in Acres	0.5	8,834	2,328	55,676	2,561	3,641	1,139	32,608	1,341	3,641	1,139	32,608	1,341
	3	45,294	32,198	447,107	22,840	4,377	3,195	45,339	2,292	4,377	3,195	45,339	2,292
	7.5	66,704	50,423	268,708	10,056	7,624	5,844	31,979	1,186	2,562	1,954	10,677	397
	25	286,798	191,971	948,123	29,361	16,435	11,008	54,690	1,624	10,881	7,295	36,276	1,075
	70	130,339	79,369	522,117	24,534	8,594	5,007	34,378	1,536	6,116	3,564	24,522	1,090
	200	210,202	0	0	0	13,237	0	0	0	9,420	0	0	0
	Total	748,171	356,289	2,241,732	89,352	53,907	26,193	198,994	7,978	36,996	17,147	149,422	6,194
	Grand Total	3,435,543				287,073				209,759			

	AR	Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	13,330	6,938	47,693	1,119	558	309	2,678	69	558	309	2,678	69
	Moderate Erosive Risk	91,261	45,671	290,725	8,196	5,484	2,657	20,335	626	5,484	2,657	20,335	626
	High Erosive Risk	414,274	204,875	1,271,881	37,919	27,119	12,780	94,984	3,046	27,119	12,780	94,984	3,046
Site Sizes in Acres	0.5	6,232	1,584	39,095	2,003	2,424	747	22,504	1,017	2,424	747	22,504	1,017
	3	31,564	23,753	314,832	16,271	2,180	1,679	22,839	1,177	2,180	1,679	22,839	1,177
	7.5	48,444	38,027	192,149	7,653	2,523	2,014	10,410	404	2,523	2,014	10,410	404
	25	200,865	136,356	673,352	21,307	10,816	7,514	36,380	1,144	10,816	7,514	36,380	1,144
	70	77,769	57,765	390,871	0	5,104	3,792	25,864	0	5,104	3,792	25,864	0
	200	153,992	0	0	0	10,114	0	0	0	10,114	0	0	0
	Total	518,866	257,484	1,610,299	47,234	33,161	15,746	117,998	3,742	33,161	15,746	117,998	3,742
	Grand Total	2,433,883				170,647				170,647			

Table F-2. State Loads by Site Size, Land Use and Erosivity Risk (continued)

AZ		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		16,145	7,317	56,750	799	463	186	2,225	48	463	186	2,225	48
Moderate Erosive Risk		87,587	39,023	321,969	5,976	4,769	1,984	21,102	477	4,769	1,984	21,102	477
High Erosive Risk		1,548	944	7,603	96	80	50	503	13	80	50	503	13
Site Sizes in Acres	0.5	1,577	374	9,581	392	609	176	5,499	198	609	176	5,499	198
	3	7,529	5,733	76,564	3,766	428	331	4,522	216	428	331	4,522	216
	7.5	11,687	9,035	47,585	2,054	479	384	2,092	107	479	384	2,092	107
	25	51,468	30,376	159,811	660	2,256	1,276	6,874	16	2,256	1,276	6,874	16
	70	28,452	1,765	92,781	0	1,401	54	4,843	0	1,401	54	4,843	0
	200	4,566	0	0	0	139	0	0	0	139	0	0	0
Total		105,279	47,283	386,321	6,871	5,313	2,220	23,830	538	5,313	2,220	23,830	538
Grand Total		545,755				31,901				31,901			

CA		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		54,874	24,936	176,619	6,027	2,346	1,079	10,045	371	1,549	659	7,419	297
Moderate Erosive Risk		209,118	96,685	573,876	22,795	15,989	7,418	50,775	2,125	11,159	5,019	38,408	1,670
High Erosive Risk		102,478	49,160	326,879	10,321	8,864	4,280	33,247	1,115	6,152	2,878	25,359	896
Site Sizes in Acres	0.5	4,275	1,049	27,134	1,372	1,778	518	15,957	722	1,778	518	15,957	722
	3	21,836	15,966	217,496	11,189	1,959	1,472	20,413	1,044	1,959	1,472	20,413	1,044
	7.5	32,874	23,146	130,844	4,639	3,452	2,460	14,363	525	1,275	903	5,262	199
	25	140,211	93,278	458,717	13,833	8,202	5,558	27,121	899	5,429	3,685	17,992	598
	70	68,682	37,342	243,182	8,110	4,481	2,769	16,213	422	3,187	1,978	11,561	299
	200	98,593	0	0	0	7,327	0	0	0	5,234	0	0	0
Total		366,471	170,780	1,077,374	39,143	27,199	12,777	94,067	3,611	18,861	8,556	71,185	2,862
Grand Total		1,653,768				137,654				101,464			

CO		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		3,986	1,918	13,997	269	176	83	798	22	94	43	531	17
Moderate Erosive Risk		11,869	5,673	36,763	973	861	417	3,160	98	462	221	2,058	72
High Erosive Risk		11,674	5,545	30,117	1,256	1,122	527	3,310	141	673	314	2,293	103
Site Sizes in Acres	0.5	311	81	2,019	101	132	40	1,195	54	132	40	1,195	54
	3	1,555	1,209	16,332	854	137	111	1,525	78	137	111	1,525	78
	7.5	2,424	1,622	9,946	356	248	174	1,092	43	84	59	367	15
	25	10,098	7,035	35,417	1,188	614	437	2,217	87	311	222	1,125	45
	70	4,842	3,188	17,163	0	340	264	1,238	0	185	147	670	0
	200	8,299	0	0	0	688	0	0	0	381	0	0	0
Total		27,529	13,135	80,877	2,499	2,158	1,027	7,267	261	1,229	579	4,883	191
Grand Total		124,040				10,713				6,882			

Table F-2. State Loads by Site Size, Land Use and Erosivity Risk (continued)

CT		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		1,944	957	8,355	153	99	50	523	15	57	27	358	10
Moderate Erosive Risk		11,012	5,274	34,683	1,052	947	452	3,173	122	575	268	2,199	86
High Erosive Risk		46,916	22,235	127,341	4,783	4,658	2,197	13,862	585	2,856	1,331	9,652	417
Site Sizes in Acres	0.5	644	161	4,300	221	267	79	2,526	116	267	79	2,526	116
	3	3,419	2,732	34,577	1,829	358	294	3,784	201	358	294	3,784	201
	7.5	5,192	3,632	20,599	1,256	643	447	2,648	156	221	152	904	53
	25	21,037	14,695	73,158	2,683	1,563	1,116	5,449	248	884	632	3,083	142
	70	10,441	7,244	37,745	0	860	763	3,150	0	521	468	1,912	0
	200	19,137	0	0	0	2,012	0	0	0	1,235	0	0	0
Total		59,872	28,465	170,379	5,989	5,704	2,698	17,557	721	3,487	1,625	12,209	512
Grand Total		264,705				26,680				17,834			

DE		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		9,806	5,631	43,434	535	311	157	1,685	47	272	126	1,552	47
Moderate Erosive Risk		18,501	10,128	78,993	954	621	318	3,329	83	548	259	3,075	83
High Erosive Risk		26,914	14,189	112,745	1,326	1,026	574	5,720	121	917	482	5,306	121
Site Sizes in Acres	0.5	894	198	5,569	292	343	93	3,185	148	343	93	3,185	148
	3	4,671	3,320	44,933	2,522	184	130	1,862	104	184	130	1,862	104
	7.5	7,730	6,099	25,891	0	395	331	1,446	0	174	148	645	0
	25	25,767	20,331	95,995	0	592	496	2,321	0	592	496	2,321	0
	70	16,159	0	62,785	0	444	0	1,919	0	444	0	1,919	0
	200	0	0	0	0	0	0	0	0	0	0	0	0
Total		55,221	29,948	235,172	2,815	1,958	1,049	10,734	252	1,738	866	9,933	252
Grand Total		323,156				13,992				12,789			

FL		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		438,086	216,566	1,325,069	56,239	7,851	3,561	38,878	1,704	7,851	3,561	38,878	1,704
Moderate Erosive Risk		570,665	284,762	1,734,883	73,540	11,043	5,093	53,270	2,335	11,043	5,093	53,270	2,335
High Erosive Risk		226,797	121,662	717,631	30,124	6,995	3,474	29,563	1,297	6,995	3,474	29,563	1,297
Site Sizes in Acres	0.5	14,909	3,898	93,260	4,547	5,679	1,811	53,176	2,281	5,679	1,811	53,176	2,281
	3	77,039	56,107	748,649	37,918	2,213	1,648	22,537	1,120	2,213	1,648	22,537	1,120
	7.5	115,661	84,098	452,158	16,576	1,625	1,201	6,623	234	1,625	1,201	6,623	234
	25	492,243	331,055	1,598,571	40,844	7,101	4,825	23,330	548	7,101	4,825	23,330	548
	70	240,847	136,369	884,946	60,018	4,341	2,531	16,046	1,154	4,341	2,531	16,046	1,154
	200	294,848	11,464	0	0	4,929	112	0	0	4,929	112	0	0
Total		1,235,548	622,991	3,777,584	159,903	25,889	12,128	121,711	5,337	25,889	12,128	121,711	5,337
Grand Total		5,796,025				165,065				165,065			

Table F-2. State Loads by Site Size, Land Use and Erosivity Risk (continued)

GA		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	319,558	159,545	963,505	35,141	10,309	5,040	41,846	1,660	8,712	4,087	36,743	1,482
	Moderate Erosive Risk	606,397	304,252	1,815,169	68,394	21,798	10,626	85,110	3,435	18,379	8,634	74,496	3,051
	High Erosive Risk	941,003	472,499	2,776,432	111,341	42,079	20,283	153,700	6,413	35,298	16,497	133,616	5,646
Site Sizes in Acres	0.5	21,853	5,914	137,446	6,721	8,413	2,769	78,709	3,393	8,413	2,769	78,709	3,393
	3	112,464	80,802	1,102,933	55,788	4,558	3,342	46,926	2,336	4,558	3,342	46,926	2,336
	7.5	169,972	125,099	664,949	24,821	9,147	6,902	37,628	1,376	4,238	3,191	17,309	635
	25	716,052	482,921	2,346,760	71,474	20,872	14,164	69,357	2,149	18,133	12,303	60,219	1,862
	70	332,614	205,941	1,303,019	56,072	12,101	7,607	48,036	2,254	10,503	6,594	41,691	1,953
	200	514,003	35,619	0	0	19,096	1,164	0	0	16,545	1,019	0	0
	Total	1,866,957	936,296	5,555,107	214,876	74,186	35,949	280,656	11,508	62,389	29,218	244,855	10,179
	Grand Total	8,573,237				402,299				346,641			

IA		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	3,815	1,720	13,454	173	110	47	534	14	110	47	534	14
	Moderate Erosive Risk	31,233	13,973	95,421	2,170	1,763	750	6,211	186	1,763	750	6,211	186
	High Erosive Risk	148,620	66,362	437,826	11,167	9,360	3,981	31,618	962	9,360	3,981	31,618	962
Site Sizes in Acres	0.5	2,157	606	13,705	712	846	287	7,911	363	846	287	7,911	363
	3	11,028	7,760	110,523	5,900	732	526	7,706	404	732	526	7,706	404
	7.5	16,575	11,847	66,157	1,592	797	600	3,368	91	797	600	3,368	91
	25	71,196	47,488	233,876	5,306	3,485	2,359	11,704	305	3,485	2,359	11,704	305
	70	44,644	14,353	122,440	0	2,708	1,006	7,675	0	2,708	1,006	7,675	0
	200	38,068	0	0	0	2,665	0	0	0	2,665	0	0	0
	Total	183,667	82,055	546,701	13,510	11,233	4,778	38,364	1,163	11,233	4,778	38,364	1,163
	Grand Total	825,933				55,537				55,537			

ID		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	735	395	3,312	52	15	7	107	3	15	7	107	3
	Moderate Erosive Risk	15,280	7,524	59,500	956	745	349	3,671	91	745	349	3,671	91
	High Erosive Risk	0	0	0	0	0	0	0	0	0	0	0	0
Site Sizes in Acres	0.5	246	63	1,586	88	100	31	928	46	100	31	928	46
	3	1,179	901	12,422	576	73	58	811	37	73	58	811	37
	7.5	1,693	1,379	7,799	117	70	60	343	4	70	60	343	4
	25	8,171	4,967	26,424	228	313	185	1,007	7	313	185	1,007	7
	70	3,151	610	14,582	0	144	23	688	0	144	23	688	0
	200	1,574	0	0	0	60	0	0	0	60	0	0	0
	Total	16,015	7,919	62,813	1,009	760	356	3,778	94	760	356	3,778	94
	Grand Total	87,755				4,988				4,988			

Table F-2. State Loads by Site Size, Land Use and Erosivity Risk (continued)

IL		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	19,114	8,825	57,558	1,643	644	293	2,576	83	526	228	2,213	73
	Moderate Erosive Risk	65,151	30,848	197,844	7,850	3,961	1,841	14,134	602	3,320	1,503	12,221	528
	High Erosive Risk	252,711	121,190	770,597	34,948	18,891	8,823	65,509	2,975	15,925	7,277	56,738	2,605
Site Sizes in Acres	0.5	3,919	1,041	25,352	1,253	1,584	505	14,788	652	1,584	505	14,788	652
	3	19,747	14,629	203,693	10,302	1,327	1,006	14,433	718	1,327	1,006	14,433	718
	7.5	30,187	22,307	122,771	4,651	2,629	1,982	11,298	419	1,460	1,094	6,217	232
	25	127,877	87,623	432,512	13,116	7,229	5,006	24,813	749	6,202	4,294	21,271	642
	70	63,015	35,263	241,670	15,119	4,307	2,459	16,886	1,122	3,691	2,110	14,463	961
	200	92,230	0	0	0	6,419	0	0	0	5,507	0	0	0
	Total	336,976	160,863	1,025,998	44,441	23,496	10,958	82,219	3,659	19,771	9,008	71,172	3,205
	Grand Total	1,568,278				120,331				103,157			

IN		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	15,112	7,059	44,218	1,487	507	236	1,964	73	413	185	1,685	63
	Moderate Erosive Risk	56,455	28,732	176,148	6,074	3,448	1,742	12,672	475	2,879	1,420	10,928	416
	High Erosive Risk	227,021	119,673	724,294	25,459	16,744	8,593	60,666	2,287	14,054	7,060	52,383	2,005
Site Sizes in Acres	0.5	3,661	1,012	23,407	1,161	1,471	489	13,628	602	1,471	489	13,628	602
	3	18,471	13,605	188,288	9,040	1,250	944	13,389	630	1,250	944	13,389	630
	7.5	28,114	20,854	113,242	4,278	2,459	1,859	10,457	392	1,347	1,015	5,683	212
	25	121,356	81,604	401,198	10,102	6,770	4,624	22,701	558	5,786	3,951	19,386	478
	70	55,958	38,387	218,524	8,439	3,961	2,654	15,127	653	3,390	2,266	12,910	562
	200	71,028	0	0	0	4,789	0	0	0	4,103	0	0	0
	Total	298,589	155,464	944,660	33,020	20,699	10,570	75,302	2,835	17,346	8,665	64,996	2,485
	Grand Total	1,431,732				109,407				93,492			

KS		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	4,078	1,876	16,681	303	189	93	982	29	122	54	715	20
	Moderate Erosive Risk	32,679	14,496	107,886	2,453	2,813	1,262	10,473	298	1,932	833	7,815	237
	High Erosive Risk	155,340	68,084	485,482	11,646	14,828	6,574	52,776	1,487	10,258	4,402	39,531	1,208
Site Sizes in Acres	0.5	2,278	606	14,812	712	944	298	8,702	374	944	298	8,702	374
	3	11,742	8,533	119,235	5,900	1,313	975	13,874	676	1,313	975	13,874	676
	7.5	18,214	12,708	72,785	2,484	2,372	1,664	9,913	309	887	619	3,692	111
	25	77,151	48,255	255,968	5,306	5,700	3,591	19,126	455	3,796	2,393	12,758	305
	70	44,644	14,353	147,249	0	3,787	1,402	12,616	0	2,708	1,006	9,036	0
	200	38,068	0	0	0	3,715	0	0	0	2,665	0	0	0
	Total	192,097	84,456	610,049	14,402	17,831	7,929	64,231	1,814	12,312	5,289	48,062	1,465
	Grand Total	901,003				91,805				67,129			

Table F-2. State Loads by Site Size, Land Use and Erosivity Risk (continued)

KY	Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk	8,510	3,743	29,468	712	253	106	1,315	34	234	93	1,213	31
Moderate Erosive Risk	83,266	40,195	263,132	8,843	4,711	2,266	18,250	660	4,397	2,044	16,921	614
High Erosive Risk	411,636	201,946	1,280,471	45,450	25,387	12,344	95,414	3,571	23,720	11,163	88,524	3,326
Site Sizes in Acres												
0.5	6,089	1,476	38,969	1,740	2,407	705	22,551	894	2,407	705	22,551	894
3	30,671	23,291	315,119	16,847	2,105	1,640	22,663	1,204	2,105	1,640	22,663	1,204
7.5	47,906	32,809	189,159	6,677	4,279	2,994	17,652	617	2,278	1,578	9,331	324
25	199,363	139,447	681,991	18,097	9,332	6,645	32,335	828	9,332	6,645	32,335	828
70	90,334	48,862	347,831	11,643	5,018	2,732	19,778	722	5,018	2,732	19,778	722
200	129,048	0	0	0	7,209	0	0	0	7,209	0	0	0
Total	503,412	245,884	1,573,070	55,005	30,351	14,717	114,979	4,265	28,350	13,300	106,657	3,971
Grand Total	2,377,371				164,311				152,279			

LA	Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk	17,299	8,812	71,011	921	1,412	678	6,433	138	1,021	485	5,116	122
Moderate Erosive Risk	99,032	49,375	346,994	6,651	9,241	4,411	35,912	897	6,747	3,207	28,599	795
High Erosive Risk	425,910	209,752	1,399,411	30,653	41,459	19,733	152,614	4,004	30,368	14,417	121,619	3,552
Site Sizes in Acres												
0.5	7,215	2,158	44,631	2,227	2,967	1,053	26,154	1,163	2,967	1,053	26,154	1,163
3	36,710	26,631	358,074	17,680	4,365	3,189	44,082	2,171	4,365	3,189	44,082	2,171
7.5	54,728	41,294	218,699	5,292	4,550	3,501	18,484	547	2,979	2,298	12,161	360
25	239,108	162,484	773,296	13,026	20,039	13,494	65,025	1,159	13,358	8,996	43,403	776
70	109,838	35,372	422,716	0	10,601	3,585	41,213	0	7,583	2,573	29,534	0
200	94,643	0	0	0	9,591	0	0	0	6,884	0	0	0
Total	542,242	267,939	1,817,416	38,225	52,113	24,821	194,958	5,040	38,136	18,108	155,334	4,470
Grand Total	2,665,822				276,932				216,048			

MA	Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk	10,293	5,103	31,014	1,531	279	129	1,183	56	279	129	1,183	56
Moderate Erosive Risk	43,334	20,853	131,398	6,186	1,929	871	7,309	337	1,929	871	7,309	337
High Erosive Risk	160,439	75,832	488,287	22,340	8,784	3,939	32,124	1,474	8,784	3,939	32,124	1,474
Site Sizes in Acres												
0.5	2,503	697	15,973	777	987	332	9,234	398	987	332	9,234	398
3	12,783	9,339	128,062	6,672	793	589	8,336	428	793	589	8,336	428
7.5	19,335	14,095	77,490	2,512	810	599	3,393	106	810	599	3,393	106
25	81,757	55,055	274,659	8,373	3,411	2,283	11,591	343	3,411	2,283	11,591	343
70	38,022	22,601	154,516	11,722	1,994	1,136	8,063	591	1,994	1,136	8,063	591
200	59,665	0	0	0	2,997	0	0	0	2,997	0	0	0
Total	214,065	101,787	650,699	30,056	10,992	4,939	40,616	1,866	10,992	4,939	40,616	1,866
Grand Total	996,607				58,414				58,414			

Table F-2. State Loads by Site Size, Land Use and Erosivity Risk (continued)

MD		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	25,006	12,996	101,203	1,620	1,173	611	5,896	145	701	343	4,164	116
	Moderate Erosive Risk	64,927	33,513	247,205	4,534	4,255	2,142	18,684	476	2,583	1,239	13,094	381
	High Erosive Risk	171,180	86,391	608,546	12,579	14,933	7,314	59,807	1,547	9,167	4,321	41,761	1,249
Site Sizes in Acres	0.5	3,784	861	23,502	1,071	1,551	420	13,733	560	1,551	420	13,733	560
	3	18,787	13,852	189,294	9,496	1,690	1,264	17,721	876	1,690	1,264	17,721	876
	7.5	30,276	21,709	114,934	3,979	3,128	2,314	12,634	428	1,011	750	4,088	138
	25	121,319	85,177	404,639	4,186	7,281	5,132	24,667	304	4,117	2,901	13,963	172
	70	57,114	11,301	224,586	0	4,241	936	15,631	0	2,582	568	9,514	0
	200	29,832	0	0	0	2,470	0	0	0	1,498	0	0	0
	Total	261,113	132,900	956,954	18,733	20,361	10,066	84,387	2,167	12,450	5,903	59,019	1,746
	Grand Total	1,369,700				116,981				79,118			

ME		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	6,008	3,017	19,069	490	164	76	727	23	164	76	727	23
	Moderate Erosive Risk	24,784	12,561	80,657	1,999	1,096	526	4,485	131	1,096	526	4,485	131
	High Erosive Risk	90,655	46,201	299,443	7,264	4,943	2,390	19,701	557	4,943	2,390	19,701	557
Site Sizes in Acres	0.5	1,561	404	9,793	472	615	192	5,661	242	615	192	5,661	242
	3	7,734	5,948	78,623	3,839	478	379	5,119	245	478	379	5,119	245
	7.5	11,905	9,252	47,454	1,256	497	396	2,086	53	497	396	2,086	53
	25	49,533	34,875	167,168	4,186	2,071	1,457	7,059	172	2,071	1,457	7,059	172
	70	20,883	11,301	96,131	0	1,043	568	4,988	0	1,043	568	4,988	0
	200	29,832	0	0	0	1,498	0	0	0	1,498	0	0	0
	Total	121,447	61,779	399,169	9,753	6,203	2,993	24,913	712	6,203	2,993	24,913	712
	Grand Total	592,149				34,821				34,821			

MI		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	25,957	12,758	84,542	2,190	1,137	570	4,956	163	748	351	3,620	116
	Moderate Erosive Risk	93,957	45,537	293,398	10,235	7,409	3,640	27,631	1,069	5,092	2,399	20,629	821
	High Erosive Risk	375,401	180,735	1,148,519	45,235	35,800	17,512	128,626	5,173	24,827	11,707	96,576	4,031
Site Sizes in Acres	0.5	5,796	1,591	37,872	1,825	2,456	796	22,447	973	2,456	796	22,447	973
	3	29,803	22,388	303,640	15,235	3,346	2,573	35,939	1,769	3,346	2,573	35,939	1,769
	7.5	44,485	33,662	183,495	6,965	5,839	4,533	25,423	941	2,147	1,665	9,301	343
	25	189,717	131,607	647,679	18,516	13,811	9,590	47,617	1,383	9,202	6,395	31,791	923
	70	95,296	49,782	353,775	15,119	7,845	4,231	29,787	1,340	5,608	3,029	21,347	961
	200	130,217	0	0	0	11,048	0	0	0	7,909	0	0	0
	Total	495,314	239,030	1,526,459	57,660	44,345	21,722	161,212	6,406	30,667	14,457	120,825	4,969
	Grand Total	2,318,464				233,685				170,917			

Table F-2. State Loads by Site Size, Land Use and Erosivity Risk (continued)

MN		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		16,287	8,498	48,725	1,500	710	370	2,867	99	472	235	2,090	73
Moderate Erosive Risk		60,412	30,294	195,507	6,332	4,797	2,386	18,640	669	3,292	1,570	13,911	521
High Erosive Risk		241,358	117,651	800,730	26,857	23,205	11,387	89,030	3,239	16,035	7,557	66,797	2,546
Site Sizes in Acres	0.5	4,113	1,087	25,724	1,238	1,731	541	15,210	657	1,731	541	15,210	657
	3	20,634	15,180	207,449	10,288	2,321	1,739	24,448	1,205	2,321	1,739	24,448	1,205
	7.5	31,412	23,180	125,475	4,623	4,107	3,137	17,326	643	1,519	1,159	6,372	238
	25	131,969	89,837	443,872	10,102	9,674	6,529	32,827	718	6,445	4,351	21,912	478
	70	58,900	27,159	242,441	8,439	5,142	2,197	20,727	783	3,680	1,572	14,856	562
	200	71,028	0	0	0	5,738	0	0	0	4,103	0	0	0
Total		318,056	156,444	1,044,961	34,689	28,712	14,143	110,538	4,007	19,799	9,362	82,798	3,140
Grand Total		1,554,151				157,401				115,099			

MO		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		13,302	6,459	46,162	1,079	764	329	3,121	87	461	185	2,142	65
Moderate Erosive Risk		91,767	44,864	294,502	9,509	8,668	4,185	31,318	1,111	5,411	2,529	21,895	840
High Erosive Risk		420,043	207,055	1,327,987	46,263	44,093	21,721	156,681	5,770	27,656	13,247	109,874	4,368
Site Sizes in Acres	0.5	6,578	1,843	41,202	2,157	2,728	906	24,217	1,134	2,728	906	24,217	1,134
	3	34,751	23,909	331,311	16,710	3,909	2,758	38,987	1,940	3,909	2,758	38,987	1,940
	7.5	49,854	37,948	197,346	5,337	6,593	5,140	27,112	714	2,468	1,921	10,124	267
	25	209,667	146,569	706,518	17,789	18,405	12,737	61,584	1,523	10,740	7,440	35,973	888
	70	96,709	48,110	392,274	14,858	9,453	4,694	39,220	1,657	5,904	2,936	24,610	1,044
	200	127,554	0	0	0	12,437	0	0	0	7,779	0	0	0
Total		525,113	258,378	1,668,650	56,851	53,525	26,235	191,120	6,968	33,528	15,961	133,912	5,273
Grand Total		2,508,992				277,848				188,674			

MS		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		70,457	32,648	217,806	7,227	3,666	1,720	14,641	487	2,498	1,109	11,006	398
Moderate Erosive Risk		181,093	83,498	545,230	17,775	12,507	5,869	45,684	1,469	8,589	3,857	34,320	1,190
High Erosive Risk		472,612	218,145	1,381,368	42,956	41,909	19,705	143,113	4,471	28,969	13,128	107,555	3,601
Site Sizes in Acres	0.5	8,795	2,192	53,635	2,656	3,587	1,064	31,290	1,381	3,587	1,064	31,290	1,381
	3	44,086	31,728	428,170	20,834	4,330	3,223	43,750	2,116	4,330	3,223	43,750	2,116
	7.5	66,260	47,780	256,339	7,287	7,707	5,633	30,677	860	2,812	2,049	11,162	301
	25	281,104	186,712	916,625	24,290	18,353	12,600	60,592	1,541	12,152	8,354	40,185	1,023
	70	148,121	65,879	489,635	12,891	11,353	4,774	37,128	529	8,081	3,405	26,493	368
	200	175,796	0	0	0	12,752	0	0	0	9,095	0	0	0
Total		724,162	334,291	2,144,404	67,957	58,082	27,294	203,437	6,428	40,057	18,095	152,881	5,189
Grand Total		3,270,813				295,241				216,221			

Table F-2. State Loads by Site Size, Land Use and Erosivity Risk (continued)

MT		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		0	0	0	0	0	0	0	0	0	0	0	0
Moderate Erosive Risk		32,088	15,957	108,767	2,682	3,160	1,580	12,259	343	1,890	917	8,354	255
High Erosive Risk		0	0	0	0	0	0	0	0	0	0	0	0
Site Sizes in Acres	0.5	412	113	2,683	117	175	56	1,592	63	175	56	1,592	63
	3	2,165	1,586	21,425	1,056	243	183	2,537	123	243	183	2,537	123
	7.5	3,092	2,534	12,658	610	406	341	1,750	85	147	123	633	30
	25	12,885	9,309	45,365	899	1,070	776	3,819	73	585	424	2,089	40
	70	7,216	2,416	26,636	0	683	223	2,562	0	400	130	1,503	0
	200	6,318	0	0	0	582	0	0	0	338	0	0	0
Total		32,088	15,957	108,767	2,682	3,160	1,580	12,259	343	1,890	917	8,354	255
Grand Total		159,494				17,343				11,416			

NC		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		217,112	108,139	654,312	24,093	9,367	4,729	37,708	1,501	6,372	3,046	28,689	1,219
Moderate Erosive Risk		413,223	206,828	1,242,209	44,900	19,471	9,860	76,965	2,964	13,223	6,366	58,296	2,393
High Erosive Risk		630,592	317,929	1,902,453	64,769	35,571	18,070	137,387	4,893	24,169	11,752	103,667	3,924
Site Sizes in Acres	0.5	15,107	4,046	94,582	4,712	6,115	1,953	54,924	2,437	6,115	1,953	54,924	2,437
	3	77,397	56,522	759,740	38,998	5,415	4,032	55,574	2,812	5,415	4,032	55,574	2,812
	7.5	115,958	84,232	458,325	15,040	9,575	7,066	39,669	1,235	2,854	2,099	11,792	361
	25	496,922	334,758	1,618,523	43,473	19,162	13,044	63,194	1,642	12,439	8,483	41,125	1,063
	70	242,560	117,719	867,804	31,538	10,601	5,100	38,699	1,232	7,445	3,577	27,238	862
	200	312,983	35,619	0	0	13,541	1,465	0	0	9,495	1,019	0	0
Total		1,260,927	632,895	3,798,974	133,762	64,409	32,660	252,059	9,358	43,764	21,163	190,652	7,536
Grand Total		5,826,559				358,486				263,116			

ND		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		782	90	2,999	0	36	6	199	0	23	4	133	0
Moderate Erosive Risk		5,837	3,701	28,812	365	546	361	3,167	55	329	224	2,178	55
High Erosive Risk		8,470	6,051	43,908	605	905	636	5,321	94	559	399	3,712	94
Site Sizes in Acres	0.5	298	75	1,944	78	126	38	1,152	42	126	38	1,152	42
	3	1,375	1,502	15,981	892	152	170	1,885	107	152	170	1,885	107
	7.5	1,961	1,127	9,726	0	266	162	1,338	0	99	60	486	0
	25	11,456	7,138	36,225	0	943	634	3,071	0	534	359	1,740	0
	70	0	0	11,843	0	0	0	1,241	0	0	0	759	0
	200	0	0	0	0	0	0	0	0	0	0	0	0
Total		15,089	9,842	75,719	970	1,487	1,003	8,687	149	911	627	6,023	149
Grand Total		101,620				11,326				7,709			

Table F-2. State Loads by Site Size, Land Use and Erosivity Risk (continued)

NE		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		1,184	651	8,442	61	57	31	490	8	39	21	367	8
Moderate Erosive Risk		10,420	5,395	49,321	527	953	471	4,790	84	645	320	3,589	84
High Erosive Risk		50,157	25,744	213,942	2,540	5,039	2,483	23,494	422	3,409	1,691	17,618	422
Site Sizes in Acres	0.5	1,130	344	6,923	356	469	169	4,071	187	469	169	4,071	187
	3	5,759	3,984	55,773	2,771	644	458	6,484	327	644	458	6,484	327
	7.5	7,009	5,155	32,831	0	505	391	2,528	0	330	256	1,663	0
	25	34,539	22,308	122,903	0	2,958	1,967	10,458	0	1,722	1,149	6,079	0
	70	13,324	0	53,276	0	1,474	0	5,235	0	928	0	3,276	0
	200	0	0	0	0	0	0	0	0	0	0	0	0
Total		61,760	31,791	271,705	3,127	6,050	2,985	28,775	513	4,093	2,032	21,573	513
Grand Total		368,383				38,323				28,211			

NH		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		5,109	2,385	13,561	433	136	59	517	19	136	59	517	19
Moderate Erosive Risk		20,859	9,525	57,806	1,766	910	392	3,218	107	910	392	3,218	107
High Erosive Risk		75,810	34,140	215,567	6,412	4,107	1,765	14,174	452	4,107	1,765	14,174	452
Site Sizes in Acres	0.5	1,065	294	6,956	335	420	140	4,021	172	420	140	4,021	172
	3	5,496	4,185	56,061	2,834	342	264	3,649	182	342	264	3,649	182
	7.5	8,549	6,054	33,595	1,256	359	253	1,471	53	359	253	1,471	53
	25	35,954	24,216	119,355	4,186	1,491	991	5,055	172	1,491	991	5,055	172
	70	20,883	11,301	70,967	0	1,043	568	3,713	0	1,043	568	3,713	0
	200	29,832	0	0	0	1,498	0	0	0	1,498	0	0	0
Total		101,779	46,049	286,935	8,611	5,153	2,216	17,909	579	5,153	2,216	17,909	579
Grand Total		443,374				25,857				25,857			

NJ		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		58,217	28,454	192,040	4,747	2,541	1,256	10,912	348	1,561	728	7,821	273
Moderate Erosive Risk		116,517	56,979	379,773	9,408	6,218	3,038	25,242	779	3,820	1,785	17,928	614
High Erosive Risk		207,212	100,893	664,038	16,556	15,115	7,281	57,441	1,702	9,315	4,357	40,452	1,346
Site Sizes in Acres	0.5	4,825	1,254	30,150	1,533	1,960	607	17,540	795	1,960	607	17,540	795
	3	24,678	18,108	242,116	12,220	1,877	1,412	19,424	961	1,877	1,412	19,424	961
	7.5	37,417	26,462	146,625	5,192	3,348	2,419	13,880	503	1,017	734	4,218	156
	25	160,339	108,659	516,929	11,767	7,848	5,368	25,632	571	4,444	3,040	14,533	322
	70	70,134	31,844	300,030	0	4,155	1,769	17,121	0	2,544	1,077	10,486	0
	200	84,552	0	0	0	4,686	0	0	0	2,853	0	0	0
Total		381,946	186,326	1,235,852	30,711	23,874	11,575	93,596	2,829	14,696	6,870	66,201	2,233
Grand Total		1,834,834				131,874				90,000			

Table F-2. State Loads by Site Size, Land Use and Erosivity Risk (continued)

NM		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	15,021	9,813	60,822	1,127	400	233	2,300	65	400	233	2,300	65
	Moderate Erosive Risk	74,474	40,640	276,838	3,975	3,961	1,985	17,541	365	3,961	1,985	17,541	365
	High Erosive Risk	18,537	9,385	60,322	1,529	1,011	488	3,957	114	1,011	488	3,957	114
Site Sizes in Acres	0.5	1,555	479	10,025	513	608	227	5,779	261	608	227	5,779	261
	3	7,687	6,042	80,209	3,456	425	347	4,652	199	425	347	4,652	199
	7.5	11,880	8,258	48,152	639	475	344	2,043	21	475	344	2,043	21
	25	48,473	39,347	174,044	2,024	1,965	1,581	7,062	62	1,965	1,581	7,062	62
	70	24,293	5,712	85,553	0	1,364	207	4,262	0	1,364	207	4,262	0
	200	14,143	0	0	0	534	0	0	0	534	0	0	0
	Total	108,032	59,839	397,982	6,631	5,372	2,706	23,797	544	5,372	2,706	23,797	544
	Grand Total	572,484				32,418				32,418			

NV		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	393	194	2,594	18	8	4	88	2	8	4	88	2
	Moderate Erosive Risk	1,400	795	8,911	75	58	31	453	9	58	31	453	9
	High Erosive Risk	0	0	1,453	0	0	0	93	0	0	0	93	0
Site Sizes in Acres	0.5	42	13	344	13	17	6	201	7	17	6	201	7
	3	211	157	2,713	79	10	8	142	4	10	8	142	4
	7.5	356	189	1,751	0	10	6	59	0	10	6	59	0
	25	1,185	630	6,136	0	28	16	171	0	28	16	171	0
	70	0	0	2,014	0	0	0	62	0	0	0	62	0
	200	0	0	0	0	0	0	0	0	0	0	0	0
	Total	1,793	989	12,958	92	66	35	634	11	66	35	634	11
	Grand Total	15,833				747				747			

NY		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	19,056	9,387	63,310	1,933	522	240	2,429	90	522	240	2,429	90
	Moderate Erosive Risk	81,948	39,599	251,955	9,179	3,892	1,787	14,527	570	3,892	1,787	14,527	570
	High Erosive Risk	320,681	154,026	952,683	36,757	18,477	8,491	65,148	2,575	18,477	8,491	65,148	2,575
Site Sizes in Acres	0.5	4,896	1,357	31,322	1,540	1,946	650	18,160	793	1,946	650	18,160	793
	3	25,088	18,803	251,544	12,764	1,598	1,222	16,843	840	1,598	1,222	16,843	840
	7.5	37,281	27,523	151,710	5,388	1,640	1,242	6,980	245	1,640	1,242	6,980	245
	25	160,564	110,965	532,769	16,455	7,038	4,880	23,669	766	7,038	4,880	23,669	766
	70	77,067	44,365	300,603	11,722	4,035	2,524	16,452	591	4,035	2,524	16,452	591
	200	116,789	0	0	0	6,633	0	0	0	6,633	0	0	0
	Total	421,684	203,012	1,267,948	47,869	22,891	10,518	82,104	3,235	22,891	10,518	82,104	3,235
	Grand Total	1,940,514				118,749				118,749			

Table F-2. State Loads by Site Size, Land Use and Erosivity Risk (continued)

	OH	Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	23,115	11,148	73,060	1,989	781	364	3,276	110	635	284	2,810	98
	Moderate Erosive Risk	106,022	51,382	333,185	13,001	6,633	3,138	24,225	1,023	5,529	2,545	20,854	890
	High Erosive Risk	458,583	222,558	1,431,331	62,297	33,417	15,843	118,766	5,223	27,978	12,935	102,319	4,534
Site Sizes in Acres	0.5	7,054	1,877	45,205	2,094	2,826	905	26,288	1,083	2,826	905	26,288	1,083
	3	35,823	26,744	363,245	18,167	2,421	1,845	25,866	1,266	2,421	1,845	25,866	1,266
	7.5	53,637	40,772	220,020	8,832	4,693	3,656	20,324	787	2,551	1,978	10,961	425
	25	231,469	157,975	773,592	21,432	12,868	8,841	43,664	1,246	10,973	7,536	37,209	1,064
	70	108,182	57,720	435,514	26,762	7,280	4,098	30,125	1,974	6,200	3,498	25,658	1,683
	200	151,556	0	0	0	10,743	0	0	0	9,172	0	0	0
	Total	587,720	285,088	1,837,576	77,288	40,830	19,345	146,268	6,356	34,142	15,763	125,983	5,521
	Grand Total	2,787,673				212,799				181,410			

	OK	Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	11,335	5,378	33,104	917	321	142	1,302	45	321	142	1,302	45
	Moderate Erosive Risk	78,300	37,064	230,531	8,724	4,241	1,911	14,881	621	4,241	1,911	14,881	621
	High Erosive Risk	356,368	168,576	1,049,818	42,871	21,984	9,924	75,433	3,235	21,984	9,924	75,433	3,235
Site Sizes in Acres	0.5	5,066	1,396	32,350	1,589	1,987	662	18,672	811	1,987	662	18,672	811
	3	26,001	19,644	260,292	12,941	1,732	1,331	18,139	891	1,732	1,331	18,139	891
	7.5	40,789	29,710	157,235	5,337	1,988	1,475	8,013	267	1,988	1,475	8,013	267
	25	167,853	112,158	556,498	17,789	8,301	5,573	27,926	888	8,301	5,573	27,926	888
	70	78,740	48,110	307,077	14,858	4,760	2,936	18,866	1,044	4,760	2,936	18,866	1,044
	200	127,554	0	0	0	7,779	0	0	0	7,779	0	0	0
	Total	446,003	211,018	1,313,453	52,513	26,546	11,978	91,615	3,901	26,546	11,978	91,615	3,901
	Grand Total	2,022,988				134,039				134,039			

	OR	Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	1,018	799	6,714	75	51	38	383	8	30	22	267	8
	Moderate Erosive Risk	10,617	5,438	50,810	520	995	492	5,311	75	616	297	3,684	75
	High Erosive Risk	44,763	24,377	201,013	2,338	4,557	2,472	22,944	363	2,866	1,500	16,092	363
Site Sizes in Acres	0.5	971	256	6,367	285	411	128	3,775	152	411	128	3,775	152
	3	5,057	3,584	51,604	2,648	538	391	5,808	295	538	391	5,808	295
	7.5	7,767	5,578	31,671	0	963	710	4,176	0	363	268	1,562	0
	25	29,745	21,196	110,327	0	2,466	1,774	9,246	0	1,429	1,032	5,371	0
	70	12,859	0	58,568	0	1,224	0	5,632	0	770	0	3,527	0
	200	0	0	0	0	0	0	0	0	0	0	0	0
	Total	56,399	30,614	258,537	2,933	5,603	3,003	28,638	446	3,512	1,819	20,043	446
	Grand Total	348,482				37,690				25,820			

Table F-2. State Loads by Site Size, Land Use and Erosivity Risk (continued)

PA		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	25,452	12,829	80,958	2,816	993	485	4,225	165	720	348	3,404	138
	Moderate Erosive Risk	152,402	73,664	471,166	17,054	10,692	5,043	39,838	1,543	7,858	3,700	32,251	1,297
	High Erosive Risk	665,150	317,992	2,047,649	74,705	53,860	25,299	196,449	7,588	39,669	18,630	159,180	6,389
Site Sizes in Acres	0.5	10,009	2,771	64,123	3,161	4,168	1,367	37,737	1,666	4,168	1,367	37,737	1,666
	3	51,999	38,086	514,481	26,143	5,738	4,306	59,514	2,975	5,738	4,306	59,514	2,975
	7.5	77,852	57,660	310,562	11,249	5,372	4,012	22,193	802	3,510	2,628	14,585	526
	25	327,939	223,204	1,098,816	30,657	21,922	14,934	74,092	2,018	14,583	9,941	49,380	1,343
	70	156,659	82,764	611,792	23,365	11,963	6,209	46,977	1,835	8,545	4,436	33,620	1,313
	200	218,545	0	0	0	16,381	0	0	0	11,703	0	0	0
	Total	843,003	404,485	2,599,774	94,575	65,545	30,828	240,512	9,297	48,247	22,679	194,835	7,824
	Grand Total	3,941,837				346,182				273,585			

RI		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	587	329	3,280	31	32	18	209	4	18	10	143	4
	Moderate Erosive Risk	2,689	1,682	13,731	168	224	141	1,277	25	134	84	887	25
	High Erosive Risk	10,426	6,873	50,668	709	1,021	663	5,588	110	620	400	3,902	110
Site Sizes in Acres	0.5	272	81	1,790	84	113	40	1,052	44	113	40	1,052	44
	3	1,342	969	14,517	824	138	102	1,586	95	138	102	1,586	95
	7.5	2,237	1,211	8,952	0	269	149	1,154	0	92	51	394	0
	25	9,850	6,623	29,839	0	757	531	2,233	0	429	302	1,264	0
	70	0	0	12,582	0	0	0	1,050	0	0	0	637	0
	200	0	0	0	0	0	0	0	0	0	0	0	0
	Total	13,702	8,883	67,679	908	1,277	821	7,074	139	771	494	4,933	139
	Grand Total	91,172				9,311				6,337			

SC		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	169,820	81,454	516,586	20,894	4,627	2,068	19,764	828	4,627	2,068	19,764	828
	Moderate Erosive Risk	302,904	144,705	923,277	36,846	8,593	3,826	36,336	1,502	8,593	3,826	36,336	1,502
	High Erosive Risk	385,779	182,801	1,185,034	45,614	11,860	5,253	49,607	1,978	11,860	5,253	49,607	1,978
Site Sizes in Acres	0.5	10,344	2,800	65,303	3,079	3,962	1,306	37,320	1,550	3,962	1,306	37,320	1,550
	3	53,528	38,218	524,605	27,360	1,934	1,396	19,871	1,015	1,934	1,396	19,871	1,015
	7.5	79,604	59,367	315,768	11,270	1,682	1,289	7,013	237	1,682	1,289	7,013	237
	25	347,033	227,018	1,108,410	30,107	7,689	4,982	24,562	643	7,689	4,982	24,562	643
	70	150,968	81,557	610,811	31,538	4,035	2,173	16,941	862	4,035	2,173	16,941	862
	200	217,026	0	0	0	5,778	0	0	0	5,778	0	0	0
	Total	858,503	408,960	2,624,896	103,354	25,079	11,146	105,706	4,307	25,079	11,146	105,706	4,307
	Grand Total	3,995,714				146,239				146,239			

Table F-2. State Loads by Site Size, Land Use and Erosivity Risk (continued)

SD		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		1,001	1,066	7,048	94	37	29	282	3	31	23	260	3
Moderate Erosive Risk		13,986	7,240	60,199	664	831	414	4,163	69	768	358	3,880	69
High Erosive Risk		21,150	10,190	85,686	955	1,442	687	6,692	112	1,336	601	6,288	112
Site Sizes in Acres	0.5	589	143	3,653	149	238	69	2,131	77	238	69	2,131	77
	3	2,667	2,083	29,234	1,564	181	145	2,075	107	181	145	2,075	107
	7.5	4,469	3,755	17,025	0	389	329	1,565	0	215	180	856	0
	25	18,781	12,515	63,558	0	895	587	3,079	0	895	587	3,079	0
	70	9,632	0	39,465	0	607	0	2,287	0	607	0	2,287	0
	200	0	0	0	0	0	0	0	0	0	0	0	0
Total		36,137	18,496	152,933	1,713	2,310	1,130	11,137	184	2,136	981	10,428	184
Grand Total		209,279				14,761				13,729			

TN		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		19,895	10,224	72,278	2,355	880	396	3,901	111	880	396	3,901	111
Moderate Erosive Risk		175,509	85,718	544,580	21,708	10,231	4,685	36,931	1,464	10,231	4,685	36,931	1,464
High Erosive Risk		849,258	410,127	2,538,935	106,004	52,072	23,900	181,351	7,583	52,072	23,900	181,351	7,583
Site Sizes in Acres	0.5	12,390	3,387	78,346	3,720	4,863	1,608	45,239	1,901	4,863	1,608	45,239	1,901
	3	63,152	46,507	628,800	33,111	4,401	3,315	45,750	2,368	4,401	3,315	45,750	2,368
	7.5	95,399	69,491	379,677	14,766	4,701	3,526	19,450	744	4,701	3,526	19,450	744
	25	410,347	279,994	1,338,110	39,440	20,186	13,837	66,677	2,026	20,186	13,837	66,677	2,026
	70	180,357	106,691	730,859	39,030	11,274	6,694	45,067	2,119	11,274	6,694	45,067	2,119
	200	283,016	0	0	0	17,757	0	0	0	17,757	0	0	0
Total		1,044,662	506,069	3,155,792	130,068	63,182	28,981	222,183	9,158	63,182	28,981	222,183	9,158
Grand Total		4,836,590				323,505				323,505			

TX		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		122,051	56,812	352,425	11,822	4,882	2,115	17,416	607	4,882	2,115	17,416	607
Moderate Erosive Risk		676,097	317,929	2,050,278	70,558	39,815	17,736	140,596	5,096	39,815	17,736	140,596	5,096
High Erosive Risk		1,698,942	810,824	5,119,569	215,540	110,486	50,111	382,654	16,469	110,486	50,111	382,654	16,469
Site Sizes in Acres	0.5	29,702	8,050	185,497	9,076	11,541	3,792	106,731	4,608	11,541	3,792	106,731	4,608
	3	152,052	110,985	1,488,746	76,256	10,293	7,674	105,062	5,296	10,293	7,674	105,062	5,296
	7.5	229,917	168,629	900,900	35,517	11,697	8,798	47,552	1,847	11,697	8,798	47,552	1,847
	25	966,616	651,592	3,173,877	90,789	50,330	34,067	166,799	4,713	50,330	34,067	166,799	4,713
	70	463,570	246,309	1,773,252	86,282	29,703	15,631	114,522	5,708	29,703	15,631	114,522	5,708
	200	655,233	0	0	0	41,620	0	0	0	41,620	0	0	0
Total		2,497,090	1,185,565	7,522,272	297,919	155,182	69,963	540,666	22,171	155,182	69,963	540,666	22,171
Grand Total		11,502,846				787,982				787,982			

Table F-2. State Loads by Site Size, Land Use and Erosivity Risk (continued)

UT		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		2,891	1,435	12,005	131	67	29	393	9	67	29	393	9
Moderate Erosive Risk		6,710	3,309	27,532	341	247	114	1,327	30	247	114	1,327	30
High Erosive Risk		5,915	2,897	23,532	478	319	149	1,534	40	319	149	1,534	40
Site Sizes in Acres	0.5	217	60	1,505	63	88	29	878	33	88	29	878	33
	3	1,179	865	12,046	647	60	45	660	35	60	45	660	35
	7.5	1,900	1,550	7,240	240	66	55	262	12	66	55	262	12
	25	7,270	5,167	25,901	0	233	163	816	0	233	163	816	0
	70	4,950	0	16,377	0	186	0	638	0	186	0	638	0
	200	0	0	0	0	0	0	0	0	0	0	0	0
Total		15,516	7,642	63,069	950	633	292	3,255	79	633	292	3,255	79
Grand Total		87,177				4,258				4,258			

VA		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		105,183	50,503	316,271	10,448	2,921	1,316	12,162	464	2,921	1,316	12,162	464
Moderate Erosive Risk		225,480	108,315	669,475	23,043	7,446	3,361	29,440	1,096	7,446	3,361	29,440	1,096
High Erosive Risk		444,917	213,632	1,314,974	45,574	19,008	8,605	71,379	2,510	19,008	8,605	71,379	2,510
Site Sizes in Acres	0.5	8,966	2,453	57,099	2,708	3,471	1,153	32,772	1,372	3,471	1,153	32,772	1,372
	3	46,778	33,434	458,162	22,945	2,166	1,579	22,316	1,107	2,166	1,579	22,316	1,107
	7.5	71,526	50,879	276,297	11,417	2,093	1,550	8,530	378	2,093	1,550	8,530	378
	25	295,872	202,849	970,164	29,104	8,777	6,072	29,171	846	8,777	6,072	29,171	846
	70	143,169	82,836	538,999	12,891	5,369	2,929	20,191	368	5,369	2,929	20,191	368
	200	209,270	0	0	0	7,498	0	0	0	7,498	0	0	0
Total		775,580	372,450	2,300,721	79,065	29,374	13,283	112,981	4,070	29,374	13,283	112,981	4,070
Grand Total		3,527,816				159,707				159,707			

VT		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		587	329	3,120	31	32	18	195	4	18	10	135	4
Moderate Erosive Risk		2,341	1,305	12,670	122	192	106	1,159	19	116	64	809	19
High Erosive Risk		8,382	4,662	45,898	434	834	459	5,022	74	511	283	3,517	75
Site Sizes in Acres	0.5	272	81	1,643	84	113	40	965	44	113	40	965	44
	3	1,342	969	12,899	502	138	102	1,412	53	138	102	1,412	53
	7.5	2,237	1,211	7,604	0	269	149	983	0	92	51	336	0
	25	7,458	4,036	26,961	0	537	292	1,966	0	303	165	1,111	0
	70	0	0	12,582	0	0	0	1,050	0	0	0	637	0
	200	0	0	0	0	0	0	0	0	0	0	0	0
Total		11,310	6,296	61,688	586	1,057	583	6,376	97	646	357	4,461	97
Grand Total		79,880				8,113				5,561			

Table F-2. State Loads by Site Size, Land Use and Erosivity Risk (continued)

WA		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	1,293	544	5,378	51	61	26	312	6	38	15	223	6
	Moderate Erosive Risk	31,403	16,241	110,944	2,433	3,017	1,573	12,099	309	1,794	913	8,223	241
	High Erosive Risk	101,157	50,864	306,353	8,815	10,495	5,214	35,572	1,098	6,560	3,196	24,979	848
Site Sizes in Acres	0.5	1,612	408	10,599	468	684	204	6,289	250	684	204	6,289	250
	3	8,394	6,292	84,967	4,464	925	709	9,856	511	925	709	9,856	511
	7.5	13,340	9,113	51,586	1,469	1,720	1,202	7,008	206	641	448	2,595	77
	25	54,045	38,669	179,728	4,897	4,557	3,330	15,397	446	2,620	1,917	8,853	256
	70	22,026	13,166	95,794	0	2,116	1,368	9,433	0	1,312	846	5,833	0
	200	34,435	0	0	0	3,571	0	0	0	2,209	0	0	0
	Total	133,853	67,649	422,675	11,298	13,574	6,813	47,983	1,412	8,391	4,124	33,425	1,094
	Grand Total	635,475				69,782				47,035			

WI		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	16,116	8,031	47,138	1,594	787	394	2,974	110	465	223	2,023	78
	Moderate Erosive Risk	57,633	28,116	182,615	6,101	5,063	2,447	18,654	660	3,111	1,456	12,935	493
	High Erosive Risk	226,587	109,132	739,774	24,862	24,264	11,615	88,602	3,114	15,043	6,996	61,711	2,353
Site Sizes in Acres	0.5	3,699	904	23,904	1,132	1,560	450	14,143	601	1,560	450	14,143	601
	3	19,173	13,733	191,443	9,853	2,157	1,584	22,587	1,135	2,157	1,584	22,587	1,135
	7.5	28,851	21,642	114,059	3,031	3,809	2,907	15,773	403	1,408	1,072	5,792	146
	25	118,685	81,840	413,568	10,102	9,948	6,954	35,486	837	5,711	3,997	20,414	478
	70	58,900	27,159	226,552	8,439	5,952	2,562	22,241	908	3,680	1,572	13,733	562
	200	71,028	0	0	0	6,688	0	0	0	4,103	0	0	0
	Total	300,336	145,278	969,527	32,557	30,114	14,456	110,230	3,884	18,618	8,674	76,669	2,923
	Grand Total	1,447,698				158,684				106,885			

WV		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
	Low Erosive Risk	6,298	3,194	17,276	624	164	78	648	25	164	78	648	25
	Moderate Erosive Risk	57,037	28,067	169,590	6,958	2,946	1,374	10,807	458	2,946	1,374	10,807	458
	High Erosive Risk	277,520	135,698	838,439	35,178	15,817	7,364	57,575	2,464	15,817	7,364	57,575	2,464
Site Sizes in Acres	0.5	3,978	1,047	25,318	1,169	1,574	500	14,656	600	1,574	500	14,656	600
	3	19,998	14,870	202,917	10,579	1,368	1,042	14,545	749	1,368	1,042	14,545	749
	7.5	31,261	22,144	123,506	5,429	1,457	1,050	6,015	258	1,457	1,050	6,015	258
	25	130,684	91,264	431,105	13,939	6,005	4,186	19,998	617	6,005	4,186	19,998	617
	70	55,549	37,634	242,459	11,643	3,147	2,038	13,816	722	3,147	2,038	13,816	722
	200	99,386	0	0	0	5,376	0	0	0	5,376	0	0	0
	Total	340,855	166,958	1,025,305	42,759	18,927	8,815	69,030	2,946	18,927	8,815	69,030	2,946
	Grand Total	1,575,878				99,719				99,719			

Table F-2. State Loads by Site Size, Land Use and Erosivity Risk (continued)

WY		Tons Generated				Tons Released - Baseline				Tons Released - Options 2 and 4			
		Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial	Single Family	Multi family	Commercial	Industrial
Low Erosive Risk		167	103	1,400	10	8	5	81	1	4	2	52	1
Moderate Erosive Risk		4,478	3,243	23,414	306	427	297	2,510	46	249	177	1,706	46
High Erosive Risk		0	0	1,270	0	0	0	146	0	0	0	101	0
Site Sizes in Acres	0.5	91	25	691	26	39	12	410	14	39	12	410	14
	3	413	409	5,465	291	44	45	605	33	44	45	605	33
	7.5	696	370	3,372	0	89	44	430	0	31	16	151	0
	25	3,445	2,542	12,643	0	263	201	965	0	139	106	511	0
	70	0	0	3,912	0	0	0	327	0	0	0	182	0
	200	0	0	0	0	0	0	0	0	0	0	0	0
Total		4,645	3,346	26,083	317	435	302	2,737	47	253	180	1,859	47
Grand Total		34,391				3,521				2,338			

Table F-3. HUC-Level Loads by Site Size (Baseline and Option 2/4)

							Baseline (tons)						Options 2 and 4 (tons)					
HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
1010001	13	17	5	6	1	0	104.6	96.9	47.2	167.7	102.8	0	104.6	96.9	47.2	167.7	102.8	0
1010002	1	1	0	0	0	0	6.2	5.7	0	0	0	0	6.2	5.7	0	0	0	0
1010004	3	4	1	1	0	0	24.6	22.8	11.1	39.5	0	0	24.6	22.8	11.1	39.5	0	0
1010005	4	5	1	2	0	0	30.8	28.5	13.9	49.3	0	0	30.8	28.5	13.9	49.3	0	0
1020001	3	4	1	1	0	0	24.6	22.8	11.1	39.5	0	0	24.6	22.8	11.1	39.5	0	0
1020002	2	2	1	1	0	0	12.3	11.4	5.6	19.7	0	0	12.3	11.4	5.6	19.7	0	0
1020003	15	20	6	6	1	0	123	114.1	55.6	197.3	121	0	123	114.1	55.6	197.3	121	0
1020004	7	9	3	3	1	0	55.4	51.3	25	88.8	54.4	0	55.4	51.3	25	88.8	54.4	0
1020005	77	100	30	33	6	1	621.3	576	280.7	996.2	610.9	138.7	621.3	576	280.7	996.2	610.9	138.7
1030001	11	15	4	5	1	0	92.3	85.5	41.7	147.9	90.7	0	92.3	85.5	41.7	147.9	90.7	0
1030002	2	2	1	1	0	0	12.3	11.4	5.6	19.7	0	0	12.3	11.4	5.6	19.7	0	0
1030003	115	150	45	49	9	1	935	866.8	422.4	1499.2	919.4	208.8	935	866.8	422.4	1499.2	919.4	208.8
1040001	10	13	4	4	1	0	79.7	74.1	35.9	128.4	83.1	0	79.7	74.1	35.9	128.4	83.1	0
1040002	84	110	33	36	6	1	682.6	633	308.3	1095	674.7	154.8	682.6	633	308.3	1095	674.7	154.8
1050002	87	113	34	37	7	1	701.3	650.1	316.8	1124.4	689.5	156.6	701.3	650.1	316.8	1124.4	689.5	156.6
1050003	71	93	28	31	5	1	578.2	536.1	261.2	927.1	568.6	129.1	578.2	536.1	261.2	927.1	568.6	129.1
1060001	230	299	89	98	17	2	1863.9	1727.9	842.1	2988.5	1832.7	416.1	1863.9	1727.9	842.1	2988.5	1832.7	416.1
1060002	47	61	18	20	4	0	379.9	353.5	171.2	612.7	400.1	0	379.9	353.5	171.2	612.7	400.1	0
1060003	189	248	74	82	16	2	1537.4	1431.1	692.4	2481.3	1634.3	425.6	1537.4	1431.1	692.4	2481.3	1634.3	425.6
1070001	29	38	11	13	3	0	238.1	222.3	107	386.2	266.7	0	238.1	222.3	107	386.2	266.7	0
1070002	321	421	125	140	28	3	2609.8	2433.8	1172.4	4227.4	2905.5	806.1	2609.8	2433.8	1172.4	4227.4	2905.5	806.1
1070003	32	41	12	14	3	0	256.4	239.4	115.3	415.9	287.2	0	256.4	239.4	115.3	415.9	287.2	0
1070004	70	92	27	30	6	1	571	529.6	256	920.2	618.5	160.1	571	529.6	256	920.2	618.5	160.1
1070005	136	178	53	59	11	1	1106.3	1024.9	495.9	1780.8	1190.4	302.7	1106.3	1024.9	495.9	1780.8	1190.4	302.7
1080101	24	31	9	10	2	0	191.7	206.5	125.2	351.4	203.6	0	191.7	206.5	84.2	297.4	185.3	0
1080102	4	5	1	1	0	0	32.1	47	38.7	77.2	0	0	32.1	47	13.2	43.6	0	0
1080103	4	5	1	1	0	0	32.1	47	38.7	77.2	0	0	32.1	47	13.2	43.6	0	0
1080104	60	78	23	25	4	0	488.9	529.2	323	899.9	518	0	488.9	529.2	214.6	757	469.6	0
1080105	5	6	2	2	0	0	38.5	56.4	46.4	92.6	0	0	38.5	56.4	15.9	52.3	0	0
1080106	2	2	1	1	0	0	12.8	18.8	15.5	30.9	0	0	12.8	18.8	5.3	17.4	0	0
1080107	3	4	1	1	0	0	25.6	37.6	30.9	61.7	0	0	25.6	37.6	10.6	34.9	0	0
1080201	73	95	28	31	6	1	589	555.1	275	962.3	642.3	167.7	589	555.1	263.8	947.5	637.3	167.7
1080202	39	50	15	17	3	0	313	290.5	140.4	504.6	339.7	0	313	290.5	140.4	504.6	339.7	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
1080203	7	9	3	3	0	0	56.5	67.3	46.3	112.9	0	0	56.5	67.3	24.3	84	0	0
1080204	102	133	40	44	8	1	829.7	768.7	371.9	1335.6	892.8	227	829.7	768.7	371.9	1335.6	892.8	227
1080205	125	166	49	53	10	1	1038.3	1537.6	1253	2770.6	1597.1	652.4	1038.3	1537.6	462.3	1649.5	1020.3	412.8
1080206	52	67	20	22	4	0	418	387.9	188.3	674.1	450.3	0	418	387.9	187.3	672.7	449.6	0
1080207	31	41	12	13	2	0	254.4	353.2	274.7	633.8	371.7	0	254.4	353.2	113.4	405.1	254	0
1090001	361	470	139	155	30	3	2925.6	2710.2	1311.3	4709.1	3148.1	800.5	2925.6	2710.2	1311.3	4709.1	3148.1	800.5
1090002	239	311	92	103	19	2	1936.6	1822.5	905.8	3173.7	2072.9	517.1	1936.6	1822.5	867.1	3116.7	2057.5	517.1
1090003	121	158	46	52	9	1	986.6	1084.2	667.9	1925.2	996.2	193.8	986.6	1084.2	437.1	1584.8	904.2	193.8
1090004	217	284	83	92	14	1	1778.9	2115.4	1417.1	3789.1	1734.6	277.6	1778.9	2115.4	783.2	2854.3	1482.1	277.6
1090005	18	24	7	8	1	0	149.3	229.8	188.8	420.6	140.8	0	149.3	229.8	64.4	238.2	85.5	0
1100001	50	66	20	22	4	0	415.3	556.1	419.8	997	567.4	0	415.3	556.1	184.8	662.3	404.2	0
1100002	19	26	8	8	1	0	161.9	249.7	209.1	451.1	257.3	0	161.9	249.7	72	256.8	157.4	0
1100003	24	32	9	10	2	0	199.2	309	259.5	558.3	318.1	0	199.2	309	88.6	316	193.4	0
1100004	56	75	22	24	4	0	467	724.3	608.3	1308.6	745.6	0	467	724.3	207.8	740.7	453.4	0
1100005	79	104	31	34	6	1	650.8	860.3	644.2	1539.1	913.7	344	650.8	860.3	290.7	1037.9	655.9	236.9
1100006	44	58	17	19	3	0	360.7	534.7	436.2	963.5	554.7	0	360.7	534.7	160.8	573.1	353.8	0
1110000	5	6	2	2	0	0	38.5	56.4	46.4	92.6	0	0	38.5	56.4	15.9	52.3	0	0
2010001	44	56	17	18	3	0	356	399.7	258.7	676.3	357.7	0	356	399.7	156.2	541.2	311.8	0
2010002	14	18	5	5	1	0	115.4	169.3	139.2	277.7	104.3	0	115.4	169.3	47.6	156.9	63.4	0
2010003	16	20	6	6	1	0	128.2	187.9	154.4	308.3	115.9	0	128.2	187.9	52.9	174.4	70.5	0
2010004	19	25	7	8	2	0	153.9	142.8	70.1	248.2	163.4	0	153.9	142.8	69.8	247.9	163.3	0
2010005	14	18	5	5	1	0	115.4	169.1	139	277.5	104.4	0	115.4	169.1	47.6	156.9	63.5	0
2010006	22	29	9	9	2	0	178.5	165.7	81.4	288	189.5	0	178.5	165.7	81	287.6	189.3	0
2010007	8	10	3	3	0	0	64.1	94.1	77.4	154.3	0	0	64.1	94.1	26.4	87.2	0	0
2020001	43	56	17	19	4	0	350.8	325.2	159.2	565.4	372.6	0	350.8	325.2	159.2	565.4	372.6	0
2020002	19	25	7	8	2	0	153.9	142.6	69.8	248	163.4	0	153.9	142.6	69.8	248	163.4	0
2020003	100	129	38	42	7	1	814.2	862.9	519.9	1471.2	834	177.8	814.2	862.9	360.8	1261.5	762.9	177.8
2020004	115	151	44	49	9	1	1070.8	1045.5	518.8	1889.3	1209.4	347.5	1070.8	1045.5	518.8	1889.3	1209.4	347.5
2020005	24	31	9	10	2	0	204.1	193	95	340.8	222	0	204.1	193	95	340.8	222	0
2020006	131	171	51	57	11	1	1065.3	987.8	483.6	1717.6	1131.9	310.5	1065.3	987.8	483.6	1717.6	1131.9	310.5
2020007	98	128	38	42	8	1	796.8	821.1	476.1	1444.3	924.2	236.8	796.8	821.1	359.9	1278.8	836.7	219.4
2020008	60	78	23	26	5	1	486.2	450.8	220.7	783.6	516.4	141.8	486.2	450.8	220.7	783.6	516.4	141.8
2030101	186	242	72	80	15	2	1510.2	1481.7	797.9	2591.3	1678.2	463.4	1510.2	1481.7	684	2429.4	1593.4	439.2
2030102	21	28	8	9	2	0	172.3	159.9	78.5	278.1	183.2	0	172.3	159.9	78.2	277.7	183	0
2030103	236	308	91	102	18	2	1947	2762	2212.1	4997.5	2973.6	620.1	1947	2762	862.6	3076.5	1957.7	417.2

							Baseline (tons)						Options 2 and 4 (tons)					
HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
2030104	85	111	33	37	7	1	945	1085.8	901.4	1829.5	1077.8	223.6	945	1085.8	298.2	1082.3	686.3	143.6
2030105	275	359	106	119	21	2	2290.2	3486.9	2940.9	6336.4	3717.4	739.5	2290.2	3486.9	1003.5	3583.6	2261.7	448.7
2030201	73	95	28	31	6	1	590.9	547.8	268.2	952.2	627.5	172.3	590.9	547.8	268.2	952.2	627.5	172.3
2030202	333	434	130	144	27	3	2701.9	2504.8	1226.5	4354.4	2869.5	787.8	2701.9	2504.8	1226.5	4354.4	2869.5	787.8
2040101	36	47	14	16	3	0	296.9	320.4	151.8	535.4	341.8	0	296.9	320.4	134.1	475.7	311.4	0
2040102	12	16	5	5	1	0	98.5	91.3	44.7	158.7	104.6	0	98.5	91.3	44.7	158.7	104.6	0
2040103	45	59	18	20	4	0	376.5	576.3	256.5	893.1	533.1	0	376.5	576.3	167.7	593.1	380.5	0
2040104	161	210	63	69	13	1	1319.5	1682.2	835.7	2748	1693.3	439.7	1319.5	1682.2	592.1	2098.7	1360.5	356.6
2040105	331	432	128	143	25	2	2745	4198.8	2998.5	7271	4287.5	931.5	2745	4198.8	1213.9	4320	2741.2	600.1
2040106	246	320	96	106	20	2	2032.9	3112.2	1385	4822.8	2878.8	752.4	2032.9	3112.2	905.8	3202.6	2054.9	536.4
2040201	113	147	44	49	9	1	1038.2	1450	930.5	2376.9	1404.9	324	1038.2	1450	408.3	1458.2	928.5	215.8
2040202	296	387	115	128	23	2	3325.9	3925.1	2875.5	6317.2	3713	819.7	3325.9	3925.1	1036.6	3755.8	2384	528.5
2040203	278	362	108	119	22	2	2330.2	3577.8	1592.5	5544.7	3310.4	864.4	2330.2	3577.8	1041.7	3682.6	2363.2	616.2
2040204	12	16	5	5	1	0	163.6	132.2	118	202.8	124.8	0	163.6	132.2	42.1	150.6	97.7	0
2040205	233	306	90	99	18	1	2139.3	2396.8	1507.7	3739	2285.5	371	2139.3	2396.8	843.9	2931	1874.6	263.8
2040206	256	335	100	110	20	2	3831.1	3572.2	3063.8	5492.4	3199.6	664.5	3831.1	3572.2	837.2	3119.8	1971.2	406
2040207	67	89	26	28	5	0	1016.6	541.6	518.5	782.3	573.9	0	1016.6	541.6	216.3	782.3	573.9	0
2040301	250	327	97	108	19	2	3887.1	3522.7	3025	5342.9	3110.4	648.7	3887.1	3522.7	811.3	3035.2	1918	396.6
2040302	195	256	76	84	15	1	3039.1	2752.6	2363.7	4173.6	2429.7	506.7	3039.1	2752.6	633.7	2371	1498.3	309.8
2050101	76	99	30	33	6	1	632.1	636.8	307.3	1091.6	704.9	193.5	632.1	636.8	289.3	1030.9	674	185.4
2050102	44	57	17	19	4	0	359.4	334.5	164	583.3	383.5	0	359.4	334.5	164	583.3	383.5	0
2050103	45	58	17	19	4	0	364.1	369.3	177.2	626.8	405.3	0	364.1	369.3	164.8	584.9	384	0
2050104	26	34	10	11	2	0	211.2	258.7	119.6	419.7	261.2	0	211.2	258.7	95	336.7	219	0
2050105	55	71	21	24	4	0	444.5	454.2	217.6	769.5	496.8	0	444.5	454.2	201.2	713.8	468.5	0
2050106	80	104	31	34	6	1	658.8	1008.6	448.8	1562.9	933	243.8	658.8	1008.6	293.5	1037.9	665.9	173.8
2050107	213	279	83	92	17	2	2236.8	3581.5	1598.3	5556.1	3325.9	856.2	2236.8	3581.5	1048.3	3698.9	2378.1	611.5
2050201	60	78	23	26	5	1	752.6	1238.8	553.8	1923.1	1153.1	294.2	752.6	1238.8	363.8	1282.2	825.3	210.3
2050202	23	31	9	10	2	0	194.5	297.8	132.5	461.4	275.4	0	194.5	297.8	86.7	306.4	196.6	0
2050203	15	19	6	6	1	0	133.5	208.8	93	323.7	193.5	0	133.5	208.8	60.9	215.2	138.2	0
2050204	56	73	22	24	4	0	699.9	1151.6	514.8	1787.7	1071.8	0	699.9	1151.6	338.2	1191.9	767.2	0
2050205	46	60	18	20	4	0	395.9	610.1	271.6	945.6	564.7	0	395.9	610.1	177.7	628.2	403.2	0
2050206	122	159	47	52	10	1	1419.1	2309.6	1031.8	3584.4	2147.7	549.9	1419.1	2309.6	677.4	2388.4	1536.6	393
2050301	115	150	45	49	9	1	1619.1	2702.3	1209	4196.3	2518.1	639.5	1619.1	2702.3	794.9	2799.8	1803.3	457.5
2050302	59	77	23	25	5	0	839.6	1402.6	627.5	2178.1	1307.1	0	839.6	1402.6	412.6	1453.3	936.1	0
2050303	27	35	10	11	2	0	379.6	634.1	283.7	984.6	590.9	0	379.6	634.1	186.5	657	423.1	0

							Baseline (tons)						Options 2 and 4 (tons)					
HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
2050304	44	57	17	19	4	0	621.1	1037.5	464.2	1611.2	966.9	0	621.1	1037.5	305.2	1075	692.4	0
2050305	252	329	98	108	20	2	3056.1	5002.6	2235.5	7764.8	4654.1	1189.5	3056.1	5002.6	1468.2	5175.4	3330.6	850.3
2050306	424	553	165	182	34	4	3561.3	5472.6	2678.4	8632.1	5117.5	1306.8	3561.3	5472.6	1592.2	5626.1	3588.3	917.7
2060001	8	10	3	3	1	0	106.1	107.4	94.6	170.8	87.7	0	106.1	107.4	27	96.9	53.7	0
2060002	99	131	39	43	7	0	1370.6	1323.9	1147.4	2075.5	1083.2	0	1370.6	1323.9	343.4	1230.8	697.9	0
2060003	325	426	126	138	24	2	2689.8	4139.7	3483.3	7435.8	4193	897.4	2689.8	4139.7	1196	4212.3	2553.1	545.5
2060004	76	101	30	33	5	0	844.2	1018.1	879.7	1719	925.5	0	844.2	1018.1	274.1	973.8	564.9	0
2060005	88	116	35	38	6	0	1368.4	1173.1	1053.3	1779.1	914	0	1368.4	1173.1	297.6	1074.6	604.3	0
2060006	249	327	97	106	18	1	2381.2	3239	2766.9	5655.9	3122.1	567.7	2381.2	3239	905.3	3201.6	1901.5	344.4
2060007	43	57	17	19	3	0	677.2	615.9	549.5	938.2	463.6	0	677.2	615.9	147.8	533.6	285.7	0
2060008	58	77	23	25	4	0	888.6	601.3	555.5	892.9	542.4	0	888.6	601.3	190.9	690	453.2	0
2060009	23	30	9	10	2	0	355	308.8	272.1	469.5	237.5	0	355	308.8	77.3	279.4	153.9	0
2060010	72	95	28	31	5	0	1105.5	719.7	638.9	1068.6	659.2	0	1105.5	719.7	237.2	859.7	567.3	0
2070001	55	72	22	24	4	1	765	781.5	387.9	1358.5	867	229.2	765	781.5	387.9	1358.5	867	229.2
2070002	74	96	29	32	6	0	1039	1437.3	921	2492.7	1512.5	0	1039	1437.3	513.9	1805.1	1149.8	0
2070003	32	42	13	14	3	0	453.5	551.9	308.1	948.4	588.8	0	453.5	551.9	227	797	509.4	0
2070004	387	506	152	166	31	2	5467.4	7694.4	4256	12827.5	7773.7	1440.7	5467.4	7694.4	2714.6	9506.8	6044.7	1191.8
2070005	145	189	57	61	11	1	2014.6	2056.7	1031.1	3531.7	2166.9	346.7	2014.6	2056.7	1031.1	3531.7	2166.9	346.7
2070006	28	37	11	12	2	0	393.9	402.1	201.6	690.8	424.3	0	393.9	402.1	201.6	690.8	424.3	0
2070007	46	60	18	20	3	0	641.5	655.4	327.9	1129.8	701.8	0	641.5	655.4	327.3	1129	701.4	0
2070008	198	260	79	86	16	1	1911	2369.8	1631.4	4281.1	2555.8	516.4	1911	2369.8	939.9	3296.2	2043.4	460.8
2070009	176	230	68	75	13	1	1673.7	2635.2	1944.6	4577.3	2638.7	483.3	1673.7	2635.2	766	2697.7	1672.8	311.4
2070010	253	333	100	110	21	2	2685.4	3851.3	2909.2	8837	2570	707.7	2685.4	3851.3	2364.5	8104	2191.4	637.7
2070011	149	199	59	64	11	1	2062.4	1651.5	1227	2670.4	1619.7	234.1	2062.4	1651.5	529.2	1897.1	1219.2	211.4
2080101	2	3	1	1	0	0	33.4	17.5	7.1	26.5	0	0	33.4	17.5	7.1	26.5	0	0
2080102	53	69	21	23	4	0	782.8	416.6	174.6	650	422.2	0	782.8	416.6	174.6	650	422.2	0
2080103	95	124	38	41	8	1	928.3	883	437.8	1534.4	1012.8	283.3	928.3	883	437.8	1534.4	1012.8	283.3
2080104	81	105	31	35	6	1	1167.2	628.4	268.1	998.8	665.1	191.2	1167.2	628.4	268.1	998.8	665.1	191.2
2080105	47	61	18	20	4	0	673.3	364.8	156.1	581.1	387.6	0	673.3	364.8	156.1	581.1	387.6	0
2080106	166	217	65	72	14	1	2145	1288.1	571.2	2101.3	1414.1	427.3	2145	1288.1	571.2	2101.3	1414.1	427.3
2080107	30	39	12	13	2	0	436.4	234.5	99.8	371.7	246.6	0	436.4	234.5	99.8	371.7	246.6	0
2080108	79	102	31	33	6	1	1201	629	256.9	955.3	597.2	272.6	1201	629	256.9	955.3	597.2	272.6
2080109	47	61	18	20	3	0	717.3	375.7	153.4	570.5	356.7	0	717.3	375.7	153.4	570.5	356.7	0
2080110	12	16	5	5	1	0	183.5	96.1	39.2	145.9	91.2	0	183.5	96.1	39.2	145.9	91.2	0
2080201	30	39	12	13	2	0	416.4	425.1	213	730.4	448.9	0	416.4	425.1	213	730.4	448.9	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
2080202	19	25	8	8	1	0	270.1	275.8	138.2	473.5	290.5	0	270.1	275.8	138.2	473.5	290.5	0
2080203	118	154	46	51	9	1	1592.5	1169.1	548.3	1948.6	1251.9	290.3	1592.5	1169.1	548.3	1948.6	1251.9	290.3
2080204	64	84	26	28	5	0	687.6	651.7	322.8	1126.7	731.4	0	687.6	651.7	322.8	1126.7	731.4	0
2080205	64	84	25	28	5	1	913.8	499.9	214.7	798.3	533	153.2	913.8	499.9	214.7	798.3	533	153.2
2080206	305	397	118	131	24	3	4425	2422.2	1036.2	3844.4	2535.2	756.7	4425	2422.2	1036.2	3844.4	2535.2	756.7
2080207	120	157	46	52	10	1	1735.1	934.5	399	1486.6	991.1	282.1	1735.1	934.5	399	1486.6	991.1	282.1
2080208	145	189	57	62	11	1	2184.4	1152.9	476.8	1773.8	1130	457.6	2184.4	1152.9	476.8	1773.8	1130	457.6
3010101	127	166	50	55	10	1	1812.2	1317.2	616.1	2186.7	1391.9	301.4	1812.2	1317.2	616.1	2186.7	1391.9	301.4
3010102	60	79	23	26	5	1	875.7	532	289	819.8	533.2	153.8	875.7	532	201.1	748.3	496.9	142.8
3010103	132	173	51	57	10	1	1916.7	1488.2	1009.8	2243.7	1396.6	379.5	1916.7	1488.2	500.9	1828.3	1186.3	316.3
3010104	84	109	32	36	7	1	1217.7	938.1	689.9	1368.4	850.1	251.4	1217.7	938.1	278.7	1034.1	680.4	200
3010105	14	19	6	6	1	0	206.8	111.4	47.6	177.2	118.1	0	206.8	111.4	47.6	177.2	118.1	0
3010106	32	42	12	14	3	0	462.9	332.9	227.8	492.9	310.2	0	462.9	332.9	106.1	393.9	259.9	0
3010107	38	50	15	16	3	0	559.3	520.2	446.4	728.6	435.8	0	559.3	520.2	126.7	469.5	304.8	0
3010201	49	64	19	21	4	0	713.1	385.1	165.5	612.1	407.7	0	713.1	385.1	164	610.9	407.1	0
3010202	35	46	14	15	3	0	512.2	275.8	117.7	437.8	291.1	0	512.2	275.8	117.5	437.6	291	0
3010203	14	18	5	6	1	0	208.5	184.1	152	258.7	155	0	208.5	184.1	46.8	173.9	112.4	0
3010204	23	30	9	10	2	0	339	226.7	142	340.2	216.5	0	339	226.7	77.4	288	190.1	0
3010205	245	320	94	105	18	2	3752.1	3128	2458.2	4270.3	2462.3	730.5	3752.1	3128	788.9	2967.4	1836.3	559.8
3020101	122	160	48	53	10	1	1797.6	1674.7	1439.4	2354	1413.8	425.9	1797.6	1674.7	410.1	1517.1	988.7	297.2
3020102	17	23	7	8	1	0	256.8	239.2	205.6	336.3	202	0	256.8	239.2	58.6	216.7	141.2	0
3020103	100	131	39	43	8	1	1475.7	1371.6	1176.2	1918.3	1145.5	341.4	1475.7	1371.6	333.5	1236.2	801	238.2
3020104	10	13	4	4	1	0	154.6	142	120.2	193.2	111.7	0	154.6	142	33.2	124.4	78	0
3020105	19	24	7	8	1	0	289.8	262.7	219.4	347.1	193.2	0	289.8	262.7	58.8	223.4	135	0
3020106	48	63	18	21	4	0	751.2	681.1	568.8	899.6	500.7	0	751.2	681.1	152.4	579.1	349.7	0
3020201	542	708	211	233	43	5	7960.6	7416.4	6374.6	10425	6261	1886	7960.6	7416.4	1816	6718.5	4378.7	1316.2
3020202	76	99	29	33	6	1	1138.3	1050.8	894.6	1447.2	848.7	244.6	1138.3	1050.8	249.9	932.3	593.3	170.5
3020203	84	110	33	36	7	1	1237.3	1152.7	990.8	1620.3	973.1	293.1	1237.3	1152.7	282.3	1044.2	680.6	204.6
3020204	33	43	12	14	2	0	506.1	459.2	383.8	607.6	338.9	0	506.1	459.2	103	391.1	236.7	0
3030001	34	44	13	15	3	0	529.3	479.8	400.8	633.8	352.7	0	529.3	479.8	107.4	408	246.4	0
3030002	292	381	113	126	23	3	4283.8	3991	3430.3	5609.9	3369.2	1014.9	4283.8	3991	977.2	3615.4	2356.3	708.3
3030003	149	194	58	64	12	1	2182.7	2033.5	1747.9	2858.5	1716.7	517.1	2182.7	2033.5	497.9	1842.2	1200.6	360.9
3030004	189	247	74	81	15	2	2778	2588.1	2224.6	3638	2184.9	658.2	2778	2588.1	633.7	2344.6	1528.1	459.3
3030005	105	136	40	45	8	1	1598	1460.3	1230	1965	1120	304.8	1598	1460.3	335.8	1265.3	782.6	212.1
3030006	94	123	36	40	7	1	1418.9	1304.8	1106.4	1781.5	1033.8	291.8	1418.9	1304.8	306.4	1147.4	722.6	203.3

							Baseline (tons)						Options 2 and 4 (tons)					
HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
3030007	154	201	59	66	12	1	2358.7	2151.2	1808.3	2881.9	1633.3	439.2	2358.7	2151.2	491.5	1855.5	1141.2	305.6
3040101	184	240	71	79	14	1	2659.9	3210.6	2662	4811.4	2685.8	645.9	2659.9	3210.6	891	3238.2	1941.7	462.2
3040102	68	89	26	29	5	1	991	1026.7	875.1	1480.2	859.3	238.2	991	1026.7	261.7	962.4	604.2	166.9
3040103	114	148	44	49	9	1	1669.2	1555.1	1336.6	2185.9	1312.8	395.4	1669.2	1555.1	380.8	1408.7	918.1	276
3040104	52	67	20	22	4	0	758.6	704.1	603.7	990.4	595.1	0	758.6	704.1	173.1	640.3	417.3	0
3040105	227	296	88	98	18	2	3326.6	3097.9	2661.9	4354.9	2615.6	787.8	3326.6	3097.9	758.9	2807.6	1829.8	549.9
3040201	190	249	74	82	15	2	2786.4	1668.2	884.5	2544.3	1615.1	420.2	2786.4	1668.2	632.8	2339.6	1511.1	388.7
3040202	126	164	49	54	10	1	1827.9	997	439	1567.1	1013.7	257.6	1827.9	997	419.5	1551.2	1005.6	255.2
3040203	143	186	55	61	11	1	2135.7	1894.3	1566.8	2622.9	1545.1	439.7	2135.7	1894.3	468.3	1745.6	1110	313.5
3040204	62	82	24	27	5	1	928.3	587.3	340.3	869.9	541.4	140.1	928.3	587.3	205.8	760.7	486.1	123.4
3040205	160	209	62	69	12	1	2364.8	1262.7	528.5	1953.4	1250.6	304.8	2364.8	1262.7	528.5	1953.4	1250.6	304.8
3040206	119	155	46	51	9	1	1830.7	1410.2	1029	1925.7	1109.5	277.4	1830.7	1410.2	379.1	1424.6	873	215.2
3040207	130	171	50	56	10	1	2005.9	1374.7	882.8	1922.7	1133.6	274.4	2005.9	1374.7	419.1	1565.7	965.5	230.5
3050101	318	414	121	136	24	2	4587.7	5708.7	4735.8	8601.2	4736.4	1113.1	4587.7	5708.7	1577.2	5748.9	3404.7	798.7
3050102	105	137	40	45	8	1	1525.7	1712	1450.8	2510.5	1424.5	371.1	1525.7	1712	448.1	1641.5	1005.2	260.9
3050103	340	444	132	146	27	3	4930.5	3249.1	1996.7	4907.7	3097	847.1	4930.5	3249.1	1138.1	4209.6	2742.5	739.7
3050104	133	173	52	57	11	1	1912.9	1032.6	443.8	1641.4	1069.2	274.2	1912.9	1032.6	443.8	1641.4	1069.2	274.2
3050105	264	344	101	113	20	2	3816	3629.8	2728.9	5478.1	3163.5	784.7	3816	3629.8	1100.2	4036	2479.6	614.4
3050106	98	129	38	42	8	1	1420.3	766.7	329.5	1218.8	793.9	203.6	1420.3	766.7	329.5	1218.8	793.9	203.6
3050107	211	275	80	90	16	2	3030	1745.5	745.2	2773.1	1723.2	401.7	3030	1745.5	745.2	2773.1	1723.2	401.7
3050108	149	194	58	64	12	1	2141.7	1161.4	498.9	1846	1198.5	305.5	2141.7	1161.4	498.9	1846	1198.5	305.5
3050109	284	371	108	121	22	2	4080.3	2396.6	1027.6	3806.7	2337.4	531.4	4080.3	2396.6	1019.5	3798.9	2333.9	530.7
3050110	147	192	57	63	12	1	2119.1	1143.9	491.7	1818.3	1184.4	303.8	2119.1	1143.9	491.7	1818.3	1184.4	303.8
3050111	30	39	12	13	2	0	439.8	235.8	99.7	368.7	237.6	0	439.8	235.8	99.7	368.7	237.6	0
3050112	7	9	3	3	0	0	99.8	52.6	21.3	78.7	0	0	99.8	52.6	21.3	78.7	0	0
3050201	42	55	16	18	3	0	634.8	334.5	135.3	499.9	312.7	0	634.8	334.5	135.3	499.9	312.7	0
3050202	133	175	52	57	10	1	2038	1073.9	434.5	1604.9	1003.9	227.2	2038	1073.9	434.5	1604.9	1003.9	227.2
3050203	56	74	22	24	5	0	813.3	439	188.7	697.8	454.6	0	813.3	439	188.7	697.8	454.6	0
3050204	41	53	16	17	3	0	584.2	315.4	135.5	501.3	326.5	0	584.2	315.4	135.5	501.3	326.5	0
3050205	44	58	17	19	3	0	662	351.8	145.5	537.7	341.5	0	662	351.8	145.5	537.7	341.5	0
3050206	25	32	10	11	2	0	364.1	194.3	81.2	300.1	191.9	0	364.1	194.3	81.2	300.1	191.9	0
3050207	42	55	16	18	3	0	623.8	333.3	139.6	516.1	330.6	0	623.8	333.3	139.6	516.1	330.6	0
3050208	229	301	90	99	17	2	3490.3	1841.5	747.6	2761.6	1731.6	395	3490.3	1841.5	747.6	2761.6	1731.6	395
3060101	107	139	39	45	8	1	1529.7	1136.2	584	1797.5	1014.1	196.5	1529.7	1136.2	445.9	1664.4	955.1	185.2
3060102	77	100	29	32	6	1	1089.2	964.2	734.3	1737.8	1044.4	252.3	1089.2	964.2	415.6	1512.6	910.2	215.6

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
3060103	107	140	42	46	9	1	1546.7	834.8	520.3	1391.8	911.7	242.1	1546.7	834.8	359	1326.4	868.4	230
3060104	99	129	38	42	8	1	1421.2	766.7	746	1386.1	916.1	256.3	1421.2	766.7	330.1	1217.6	804.3	225.1
3060105	37	48	14	16	3	0	527.2	284.4	276.7	514.2	339.8	0	527.2	284.4	122.5	451.7	298.4	0
3060106	200	262	78	86	16	2	2895	1560.5	1043.5	2624.3	1718.2	461.2	2895	1560.5	669.5	2473.2	1618.1	432.9
3060107	23	30	9	10	2	0	332.2	179.3	77.1	285	185.7	0	332.2	179.3	77.1	285	185.7	0
3060108	60	78	23	26	5	1	864.7	466.2	453.7	842.2	556.1	157.2	864.7	466.2	200.6	739.8	488.2	138
3060109	100	131	39	43	7	1	1530.6	804.4	610.8	1318	826.7	305	1530.6	804.4	328	1216.1	762.1	276.3
3060201	38	50	15	16	3	0	550.2	296.8	288.8	536.6	354.6	0	550.2	296.8	127.8	471.3	311.4	0
3060202	102	133	40	43	8	1	1529.3	808	789.8	1413	900	358.7	1529.3	808	335.4	1244.2	791.6	315.5
3060203	72	94	28	31	6	1	1063.3	565.2	551.4	999.8	645	227.3	1063.3	565.2	237.5	879.6	567	199.8
3060204	248	321	96	105	18	2	3255.5	1623.4	1577.9	2759.4	1670.4	643.5	3255.5	1623.4	642.5	2430.8	1469.5	565.7
3070101	397	519	155	171	32	4	5730.8	3091.7	3008.2	5589.2	3693.9	1033.6	5730.8	3091.7	1331.2	4909.8	3243.2	907.5
3070102	132	172	51	57	11	1	1902.6	1026.4	998.7	1855.6	1226.4	343.2	1902.6	1026.4	442	1630.1	1076.8	301.3
3070103	977	1277	381	420	79	9	14097.7	7605.5	7400.2	13749.5	9087.1	2542.7	14097.7	7605.5	3274.8	12078.1	7978.3	2232.6
3070104	151	197	59	65	12	1	2177.7	1174.8	1143.1	2123.9	1403.7	392.8	2177.7	1174.8	505.9	1865.7	1232.4	344.9
3070105	23	30	9	10	2	0	332.4	179.3	174.5	324.2	214.2	0	332.4	179.3	77.2	284.8	188.1	0
3070106	111	144	43	48	9	1	1249.6	597.6	573.9	1022.9	612.2	127.6	1249.6	597.6	233.8	898.9	537.4	111.6
3070107	52	67	20	22	4	0	744.3	401.4	390.5	725.5	479.3	0	744.3	401.4	172.8	637.3	420.8	0
3070201	173	224	67	75	13	1	1991	964.6	927.7	1662.7	1008.1	216.6	1991	964.6	381.9	1461	884.9	189.6
3070202	36	46	14	15	3	0	368.3	167.3	159.6	279.7	159.2	0	368.3	167.3	62.6	245.8	139.7	0
3070203	90	116	35	38	7	1	1084.6	523.5	506.2	881.5	520.7	172.8	1084.6	523.5	202.6	776.2	457.9	151.7
3070204	114	148	44	49	9	1	1071.8	473.1	285.5	693.8	420.5	61.5	1071.8	473.1	170.8	655.8	400.1	59.6
3070205	38	49	15	16	3	0	350.4	157.9	57.9	214.6	143.4	0	350.4	157.9	57.9	214.6	143.4	0
3080101	527	689	204	227	43	4	4718.5	2054.2	720.4	2665.1	1782	346.9	4718.5	2054.2	720.4	2665.1	1782	346.9
3080102	415	542	161	179	34	3	3862.3	1740.5	638	2366	1581.2	299.1	3862.3	1740.5	638	2366	1581.2	299.1
3080103	523	684	203	225	43	4	4873.7	2196.3	805.1	2985.5	1995.3	377.4	4873.7	2196.3	805.1	2985.5	1995.3	377.4
3080201	303	396	118	130	25	2	2819.1	1270.4	465.7	1726.9	1154.1	218.3	2819.1	1270.4	465.7	1726.9	1154.1	218.3
3080202	107	140	42	46	9	1	947.3	407.5	140.6	519.8	347.6	68.4	947.3	407.5	140.6	519.8	347.6	68.4
3080203	170	222	66	73	14	1	1247.5	432.8	100.2	359.8	242	63.5	1247.5	432.8	100.2	359.8	242	63.5
3090101	353	462	137	152	29	3	3284	1477.9	540.9	2005.5	1340.3	253.8	3284	1477.9	540.9	2005.5	1340.3	253.8
3090102	48	63	19	21	4	0	386	149.9	44	161.1	107.9	0	386	149.9	44	161.1	107.9	0
3090103	52	68	20	23	4	0	447.5	186.2	61.3	225.9	151.2	0	447.5	186.2	61.3	225.9	151.2	0
3090202	623	816	241	268	51	5	4578.7	1588.9	367.8	1321.3	888.7	233.1	4578.7	1588.9	367.8	1321.3	888.7	233.1
3090203	47	62	18	20	4	0	348.3	120.8	28	100.4	67.6	0	348.3	120.8	28	100.4	67.6	0
3090204	503	658	195	216	41	4	3691.7	1280.9	296.4	1064.7	716.1	187.9	3691.7	1280.9	296.4	1064.7	716.1	187.9

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
3090205	215	281	83	92	18	2	1576.7	547.1	126.6	454.7	305.8	80.2	1576.7	547.1	126.6	454.7	305.8	80.2
3100101	245	320	95	105	20	2	2228.3	984.3	351.9	1303	871.1	167.5	2228.3	984.3	351.9	1303	871.1	167.5
3100102	50	65	19	21	4	0	461.9	208.1	76.3	282.9	189.1	0	461.9	208.1	76.3	282.9	189.1	0
3100201	182	238	71	78	15	1	1696.2	764.4	280.2	1039.1	694.4	131.3	1696.2	764.4	280.2	1039.1	694.4	131.3
3100202	57	75	22	25	5	0	533.6	240.4	88.1	326.8	218.4	0	533.6	240.4	88.1	326.8	218.4	0
3100203	35	46	14	15	3	0	326.5	147.1	53.9	200	133.7	0	326.5	147.1	53.9	200	133.7	0
3100204	224	293	87	96	18	2	2086.4	940.2	344.7	1278.1	854.2	161.6	2086.4	940.2	344.7	1278.1	854.2	161.6
3100205	185	241	72	80	15	2	1720.1	775.1	284.1	1053.7	704.2	133.2	1720.1	775.1	284.1	1053.7	704.2	133.2
3100206	124	162	48	53	10	1	1154.7	520.4	190.7	707.3	472.7	89.4	1154.7	520.4	190.7	707.3	472.7	89.4
3100207	294	385	114	127	24	2	2739.5	1234.5	452.5	1678.1	1121.5	212.1	2739.5	1234.5	452.5	1678.1	1121.5	212.1
3100208	387	505	150	166	32	3	3599.5	1622.1	594.6	2205	1473.6	278.7	3599.5	1622.1	594.6	2205	1473.6	278.7
3110101	45	59	18	20	4	0	422.1	190.2	69.7	258.5	172.8	0	422.1	190.2	69.7	258.5	172.8	0
3110102	57	75	22	25	5	0	533.9	240.7	88.3	327.4	218.8	0	533.9	240.7	88.3	327.4	218.8	0
3110103	40	52	16	17	3	0	487.8	248.1	138.8	394.2	267	0	487.8	248.1	102.3	379.4	257.2	0
3110201	54	69	21	23	4	0	545.4	248.3	180.6	391.4	231.8	0	545.4	248.3	93.1	362.3	216.1	0
3110202	110	143	43	47	9	1	1571.9	845.2	794	1515.9	1002.5	278.8	1571.9	845.2	363.3	1341.9	887.3	246.7
3110203	137	178	53	59	11	1	1968.2	1060.9	933	1881.5	1253.4	350.5	1968.2	1060.9	457.2	1688.8	1125.5	314.7
3110204	60	78	23	26	5	1	859.6	463.8	451.2	838.4	554.1	155	859.6	463.8	199.7	736.5	486.5	136.1
3110205	92	120	36	40	8	1	987.7	477.3	188.2	699.1	475.6	110	987.7	477.3	188.2	699.1	475.6	110
3110206	165	215	64	71	14	1	1678.5	792.6	305.4	1133.9	767.2	167.7	1678.5	792.6	305.4	1133.9	767.2	167.7
3120001	141	185	55	61	12	1	1587	782.6	367.3	1187.6	805.7	194.9	1587	782.6	314.2	1166.1	791.4	190.9
3120002	62	81	24	27	5	1	894	482.3	469.3	871.9	576.3	161.2	894	482.3	207.7	765.9	505.9	141.6
3120003	94	122	36	40	8	1	1073.2	533.7	274	824.3	557.9	137.4	1073.2	533.7	215.9	800.7	542.2	133
3130001	701	916	273	302	57	7	10017.3	6656	6384.9	12673.8	8398.6	2420.1	10017.3	6656	3029.2	10948.3	7251.2	2086.7
3130002	613	801	239	264	50	6	8864.9	5452.1	5135.3	9217.9	6049.6	1757.7	8864.9	5452.1	2058.6	7581.6	5058.4	1461.1
3130003	112	147	44	48	9	1	1630	1208.9	1092.5	1868.7	1213.9	371.7	1630	1208.9	377.4	1386.6	940.8	285.7
3130004	21	27	8	9	2	0	300.3	218.3	184.6	335.6	219.6	0	300.3	218.3	69.6	256.2	174.8	0
3130005	516	675	201	222	42	5	7450	4019.2	3910.6	7266	4802.1	1343.7	7450	4019.2	1730.6	6382.7	4216.2	1179.8
3130006	78	102	30	33	6	1	1123.2	606	589.6	1095.5	724	202.6	1123.2	606	260.9	962.3	635.7	177.9
3130007	62	81	24	27	5	1	894	482.3	469.3	871.9	576.3	161.2	894	482.3	207.7	765.9	505.9	141.6
3130008	63	82	24	27	5	1	905.5	488.5	475.3	883.1	583.6	163.3	905.5	488.5	210.3	775.7	512.4	143.4
3130009	25	33	10	11	2	0	366.8	197.9	192.5	357.7	236.4	0	366.8	197.9	85.2	314.2	207.6	0
3130010	26	34	10	11	2	0	378.2	204.1	198.5	368.9	243.8	0	378.2	204.1	87.9	324	214.1	0
3130011	40	53	16	17	3	0	421.3	201.1	83.9	292.9	198.1	0	421.3	201.1	78.3	290.7	196.6	0
3130012	69	90	27	30	6	1	857.8	518.4	296.8	769.2	516.6	143	857.8	518.4	183	677.6	466.9	126.8

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
3130013	3	4	1	1	0	0	31.9	14.4	5.3	19.5	0	0	31.9	14.4	5.3	19.5	0	0
3140101	109	143	42	47	9	1	1039.6	474.3	176.3	653.8	438.5	86.6	1039.6	474.3	176.3	653.8	438.5	86.6
3140102	35	45	13	15	3	0	355.2	168.4	65.1	241.8	163.8	0	355.2	168.4	65.1	241.8	163.8	0
3140103	52	68	20	22	4	0	684.2	468.7	312.3	686.5	455.5	0	684.2	468.7	150.6	556.4	384.9	0
3140104	103	134	40	44	9	1	1415.8	845.7	458.7	1303.1	886.7	252.6	1415.8	845.7	321.5	1192.7	826.8	233.1
3140105	29	38	11	13	2	0	270.8	122	44.7	165.9	110.8	0	270.8	122	44.7	165.9	110.8	0
3140106	19	25	7	8	2	0	270.1	221.1	172.3	309.1	196.1	0	270.1	221.1	60	220.4	149.5	0
3140107	14	19	5	6	1	0	149.5	95.4	57.3	105.3	49.9	0	149.5	95.4	23	83.9	44	0
3140201	48	63	19	21	4	1	699.4	654.7	566.5	916.9	588.2	191.5	699.4	654.7	161.4	590.9	411.2	134
3140202	19	25	7	8	2	0	279.4	253.8	215.1	357.7	230.4	0	279.4	253.8	64.5	236.5	164.6	0
3140203	56	72	22	24	5	0	691.3	380	184.5	577.2	393.2	0	691.3	380	147.4	547.4	377	0
3140301	14	19	6	6	1	0	209.8	196.4	169.9	275.1	176.5	0	209.8	196.4	48.4	177.3	123.4	0
3140302	7	9	3	3	1	0	104.9	98.2	85	137.5	88.2	0	104.9	98.2	24.2	88.6	61.7	0
3140303	26	34	10	11	2	0	384.7	360.1	311.6	504.3	323.5	0	384.7	360.1	88.8	325	226.2	0
3140304	7	9	3	3	1	0	104.9	97.8	84.4	137.1	88	0	104.9	97.8	24.2	88.6	61.7	0
3140305	78	102	31	34	7	1	1107.4	805.8	565.7	1186.3	785.6	238.5	1107.4	805.8	253.3	935	649.2	194.2
3150101	172	225	67	74	14	2	2399.2	2449.7	2114.7	4889.2	3242.6	946.6	2399.2	2449.7	1205.9	4240.3	2810	816
3150102	74	97	29	32	6	1	1036.1	1058	993	2168.3	1442	431.4	1036.1	1058	520.6	1831	1217.1	363.5
3150103	42	55	16	18	3	0	585.6	598	561.3	1225.5	815	0	585.6	598	294.3	1034.9	687.9	0
3150104	570	744	222	245	46	6	8015.7	7023.2	6636.5	14078.5	9353	2768.1	8015.7	7023.2	3376	11968.6	7947.2	2348.1
3150105	138	181	54	60	11	1	1945.8	2668.7	2337.3	4609.5	2843.6	778.5	1945.8	2668.7	965.5	3408.2	2196.1	604.5
3150106	240	315	93	104	19	2	3421	5717.8	4820.1	8913.3	5203.8	1321.3	3421	5717.8	1679.2	5947.1	3726.7	945.3
3150107	88	115	34	38	7	1	1252.3	2046	1726.1	3179.9	1861.4	476.5	1252.3	2046	598	2119.8	1332.1	340.6
3150108	179	234	70	77	14	2	2559	2786.5	2449.1	4555.3	2810.4	773.7	2559	2786.5	927.4	3321.4	2152.7	593.7
3150109	28	37	11	12	2	0	403.8	578.4	490.4	882.2	525	0	403.8	578.4	164.1	584.7	374.1	0
3150110	75	98	29	32	6	1	1094.9	1067.1	921.2	1509.7	959.9	306.3	1094.9	1067.1	267.6	976.4	672.6	214.6
3150201	93	122	37	40	8	1	1358.7	1517	1300.2	2212.9	1369.5	409.6	1358.7	1517	400.3	1445.9	966.1	288.6
3150202	87	114	34	38	7	1	1242.3	1956.8	1653	3026.3	1779.2	461.5	1242.3	1956.8	567.5	2014.3	1271.8	329.5
3150203	29	38	11	12	2	0	419.7	392.8	339.9	550.1	352.9	0	419.7	392.8	96.8	354.5	246.7	0
3150204	3	4	1	1	0	0	45	41.2	35	55.9	0	0	45	41.2	9.9	36.1	0	0
3160101	67	87	26	29	5	1	981.6	953.7	809.6	1357.4	819.6	234.7	981.6	953.7	235.8	878.3	574.4	164.5
3160102	79	102	31	34	6	1	1156.8	1072.9	917	1522.9	935.5	270.5	1156.8	1072.9	261.1	981.5	654.2	189.2
3160103	37	46	13	14	2	0	526.2	818.3	657.6	1196.3	626.3	0	526.2	818.3	227.2	797.3	448	0
3160104	53	69	21	23	4	1	782.9	726.1	620.6	1030.7	633.1	183.1	782.9	726.1	176.7	664.3	442.7	128.1
3160105	26	34	10	11	2	0	369.4	548.8	461.8	838.4	489.3	0	369.4	548.8	156.3	556.7	349.2	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
3160106	8	10	3	3	1	0	116.2	130	111.1	190.2	116.7	0	116.2	130	34.3	124.3	82.4	0
3160107	31	40	12	13	2	0	437.4	677	572.3	1044.5	615.4	0	437.4	677	195.6	694.8	439.7	0
3160108	14	19	6	6	1	0	210.3	195.2	167.1	276.7	170.7	0	210.3	195.2	47.6	178.3	119.4	0
3160109	112	147	43	49	9	1	1595.7	2667	2248.3	4157.5	2427.3	616.3	1595.7	2667	783.2	2774	1738.3	440.9
3160110	50	65	19	22	4	0	711.8	1189.6	1002.8	1854.4	1082.7	0	711.8	1189.6	349.4	1237.3	775.4	0
3160111	227	298	88	99	18	2	3237.4	5410.8	4561.3	8434.7	4924.4	1250.4	3237.4	5410.8	1589	5627.8	3526.6	894.5
3160112	101	132	39	44	8	1	1436.2	2342.3	1976.3	3639.7	2131	545.8	1436.2	2342.3	684.4	2426.1	1525	390.2
3160113	29	38	11	12	2	0	417.8	478.7	409.8	702	432.5	0	417.8	478.7	127.4	459.5	305.4	0
3160201	25	32	10	11	2	0	361.4	338.2	292.6	473.8	303.8	0	361.4	338.2	83.4	305.3	212.4	0
3160202	24	31	9	10	2	0	350.2	326	280	460.3	287.7	0	350.2	326	79.7	296.7	201.1	0
3160203	35	46	14	15	3	0	503.2	465.8	399.4	642.1	405.2	0	503.2	465.8	113.1	413.8	283.3	0
3160204	22	28	8	9	1	0	246.6	200.6	152.2	220.8	102.8	0	246.6	200.6	39.5	142.5	71.8	0
3160205	80	101	28	32	4	0	816.7	620.9	436.4	585.1	191.2	0	816.7	620.9	106.1	377.9	133.4	0
3170001	41	54	16	18	3	0	607.6	563.6	481.7	799.9	491.4	0	607.6	563.6	137.2	515.6	343.6	0
3170002	33	42	13	14	3	0	479	444.5	380.1	630.5	388.1	0	479	444.5	108.2	406.4	271.4	0
3170003	13	17	5	6	1	0	187	173.4	148.2	246.1	151.2	0	187	173.4	42.2	158.6	105.7	0
3170004	52	67	20	22	4	1	759.5	704.4	602.1	999.9	614.2	177.6	759.5	704.4	171.4	644.4	429.5	124.2
3170005	68	88	26	29	6	1	993.2	921.2	787.3	1307.6	803.2	232.2	993.2	921.2	224.2	842.7	561.7	162.5
3170006	25	31	9	10	1	0	304.9	261.4	214.6	335	171.2	0	304.9	261.4	58.3	216.1	119.7	0
3170007	51	66	20	22	4	0	744.1	688.4	587.6	974.1	595.6	0	744.1	688.4	167.1	627.8	416.5	0
3170008	59	76	23	25	4	1	804.5	727.1	613.2	978.6	585.8	181.6	804.5	727.1	171.6	630.8	409.5	127
3170009	197	247	72	82	11	1	2395.6	2065.2	1681.7	2636.8	1320.9	359.8	2395.6	2065.2	459.9	1703.2	924.6	252
3180001	40	52	15	17	3	0	584.3	541.9	463.1	769.2	472.5	0	584.3	541.9	131.9	495.7	330.4	0
3180002	119	155	46	51	10	1	2403.9	3117.1	2635.8	5258.2	3095.8	764.5	2403.9	3117.1	917.7	3469.2	2199.4	543
3180003	23	30	9	10	2	0	453.7	569.3	481.9	947.7	559.7	0	453.7	569.3	165.2	624.2	397.1	0
3180004	52	69	20	23	4	0	884.9	995.9	726.7	1575.7	902.3	0	884.9	995.9	275.8	1032.1	637.7	0
3180005	43	56	16	18	3	0	1435.3	2417.6	1843.2	4459.1	2547.8	0	1435.3	2417.6	789.2	2972.7	1823.9	0
4010101	5	6	2	2	0	0	50.8	83.2	70	138.8	0	0	50.8	83.2	25.6	92.6	0	0
4010102	16	20	6	7	1	0	159.7	261.6	220	436.3	260.7	0	159.7	261.6	80.5	291.1	186.8	0
4010201	33	44	13	15	3	0	341.1	558.8	469.9	934.8	558.6	0	341.1	558.8	172	621.8	398.9	0
4010202	16	21	6	7	1	0	166.9	273.5	230	456.1	272.6	0	166.9	273.5	84.2	304.3	195.3	0
4010301	15	19	6	6	1	0	152.2	249.6	208.6	472	280.3	0	152.2	249.6	76.4	276.2	176.1	0
4010302	3	4	1	1	0	0	29	47.5	39.7	90.9	0	0	29	47.5	14.5	52.6	0	0
4020101	1	1	0	0	0	0	7.3	11.9	0	0	0	0	7.3	11.9	0	0	0	0
4020102	1	1	0	0	0	0	7.3	11.9	0	0	0	0	7.3	11.9	0	0	0	0

							Baseline (tons)						Options 2 and 4 (tons)					
HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
4020103	13	18	5	6	1	0	137.9	225.6	190	374.4	223.4	0	137.9	225.6	69.6	249.8	160	0
4020105	4	6	2	2	0	0	43.6	71.2	60	118.2	0	0	43.6	71.2	22	78.9	0	0
4020201	7	9	3	3	1	0	72.6	118.7	100	197.1	117.6	0	72.6	118.7	36.6	131.5	84.2	0
4020203	7	9	3	3	1	0	72.6	118.7	100	197.1	117.6	0	72.6	118.7	36.6	131.5	84.2	0
4020300	2	3	1	1	0	0	21.8	35.6	30	60.6	0	0	21.8	35.6	11	39.5	0	0
4030101	60	79	23	26	5	1	615.8	1010.2	843.2	1949.7	1156.8	310	615.8	1010.2	308.7	1116.8	711.3	190.2
4030102	12	16	5	5	1	0	123.2	202	168.6	389.9	231.4	0	123.2	202	61.7	223.4	142.3	0
4030103	41	54	16	18	3	0	420.2	689.3	575.3	1330.4	789.4	0	420.2	689.3	210.7	762.1	485.3	0
4030104	5	6	2	2	0	0	50.7	83.2	69.4	160.6	0	0	50.7	83.2	25.4	92	0	0
4030105	24	32	9	10	2	0	246.3	404.1	337.3	779.9	462.7	0	246.3	404.1	123.5	446.7	284.5	0
4030106	4	6	2	2	0	0	43.5	71.3	59.9	121.9	0	0	43.5	71.3	21.9	78.9	0	0
4030107	4	5	1	2	0	0	36.3	59.4	50	98.5	0	0	36.3	59.4	18.3	65.7	0	0
4030108	24	32	9	10	2	0	246.5	403.9	338.4	735.1	437.1	0	246.5	403.9	123.9	446.9	285.3	0
4030109	1	1	0	0	0	0	7.3	11.9	0	0	0	0	7.3	11.9	0	0	0	0
4030110	6	7	2	2	0	0	58.1	95	80	157.6	0	0	58.1	95	29.3	105.2	0	0
4030111	6	8	2	3	1	0	65.3	106.9	90	177.4	105.8	0	65.3	106.9	33	118.3	75.8	0
4030201	24	32	9	10	2	0	246.3	404.1	337.3	779.9	462.7	0	246.3	404.1	123.5	446.7	284.5	0
4030202	62	81	24	27	5	1	630.3	1034	863	1995.6	1184	317.3	630.3	1034	316	1143.1	728	194.7
4030203	30	40	12	13	2	0	311.5	511	426.5	986.3	585.2	0	311.5	511	156.2	565	359.8	0
4030204	108	141	42	47	8	1	1101.2	1806.5	1507.8	3486.5	2068.7	554.4	1101.2	1806.5	552	1997.2	1271.9	340.1
4040001	114	148	44	49	9	1	1145	1296.8	1175.2	2611.6	1675.6	457.3	1145	1296.8	586.4	2115	1381.1	377.7
4040002	82	108	32	35	7	1	838.2	1288.4	1089.2	2518.9	1512.6	403.7	838.2	1288.4	422.1	1525.7	976.2	259.7
4040003	67	88	26	29	5	1	688.3	1129.1	942.4	2179.1	1292.9	346.5	688.3	1129.1	345	1248.2	794.9	212.6
4050001	258	336	100	111	21	2	2617.8	3679.2	3185.2	6586.7	4053.1	1067.3	2617.8	3679.2	1329.8	4784.8	3092.6	816.8
4050002	81	106	31	35	6	1	827.6	1353.7	1139.9	2246.4	1340.5	342.8	827.6	1353.7	417.5	1499	960.2	245.4
4050003	150	196	58	65	12	1	1539	2517.4	2119.8	4177.6	2492.8	637.5	1539	2517.4	776.4	2787.6	1785.6	456.3
4050004	153	200	59	66	12	1	1568	2564.9	2159.8	4256.4	2539.9	649.5	1568	2564.9	791	2840.2	1819.3	464.9
4050005	8	10	3	3	1	0	79.9	130.6	110	216.8	129.3	0	79.9	130.6	40.3	144.6	92.6	0
4050006	195	255	76	84	15	2	1996.3	3265.5	2749.7	5419	3233.6	827	1996.3	3265.5	1007.1	3616	2316.2	591.9
4050007	97	127	38	42	8	1	994.5	1626.8	1369.9	2699.7	1610.9	412	994.5	1626.8	501.7	1801.4	1153.9	294.9
4060101	58	76	23	25	5	0	595.3	973.7	819.9	1615.9	964.2	0	595.3	973.7	300.3	1078.2	690.7	0
4060102	84	109	32	36	7	1	856.6	1401.2	1179.9	2325.3	1387.5	354.8	856.6	1401.2	432.1	1551.6	993.9	254
4060103	24	32	9	10	2	0	246.8	403.7	340	670	399.8	0	246.8	403.7	124.5	447.1	286.4	0
4060104	52	68	20	22	4	0	529.9	866.8	729.9	1438.5	858.4	0	529.9	866.8	267.3	959.9	614.9	0
4060105	51	67	20	22	4	0	522.7	855	719.9	1418.8	846.6	0	522.7	855	263.7	946.7	606.4	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
4060106	6	7	2	2	0	0	58.1	95	80	157.6	0	0	58.1	95	29.3	105.2	0	0
4060107	1	1	0	0	0	0	7.3	11.9	0	0	0	0	7.3	11.9	0	0	0	0
4060200	1	2	1	1	0	0	14.5	23.1	19.5	40.3	0	0	14.5	23.1	7.3	26.3	0	0
4070001	6	7	2	2	0	0	58.1	95	80	157.6	0	0	58.1	95	29.3	105.2	0	0
4070003	15	19	6	6	1	0	152.4	249.4	210	413.8	246.9	0	152.4	249.4	76.9	276.1	176.9	0
4070004	53	70	21	23	4	0	544.4	890.6	749.9	1477.9	881.9	0	544.4	890.6	274.7	986.2	631.7	0
4070005	4	6	2	2	0	0	43.6	71.2	60	118.2	0	0	43.6	71.2	22	78.9	0	0
4070006	18	24	7	8	1	0	188.7	308.7	260	512.3	305.7	0	188.7	308.7	95.2	341.9	219	0
4070007	33	43	13	14	3	0	333.9	546.2	460	906.5	540.9	0	333.9	546.2	168.5	604.9	387.4	0
4080101	27	35	10	12	2	0	275.9	451.2	380	748.8	446.8	0	275.9	451.2	139.2	499.7	320.1	0
4080102	24	32	9	10	2	0	246.8	403.7	340	670	399.8	0	246.8	403.7	124.5	447.1	286.4	0
4080103	11	15	4	5	1	0	116.1	190	160	315.3	188.1	0	116.1	190	58.6	210.4	134.8	0
4080104	4	6	2	2	0	0	43.6	71.2	60	118.2	0	0	43.6	71.2	22	78.9	0	0
4080201	53	69	20	23	4	0	537.2	878.7	739.9	1458.2	870.1	0	537.2	878.7	271	973	623.3	0
4080202	56	73	22	24	4	0	573.5	938.1	789.9	1556.7	928.9	0	573.5	938.1	289.3	1038.8	665.4	0
4080203	104	135	40	45	8	1	1059.8	1733.7	1459.8	2877	1716.8	439	1059.8	1733.7	534.7	1919.7	1229.7	314.3
4080204	141	184	55	61	11	1	1444.6	2363	1989.8	3921.4	2340	598.4	1444.6	2363	728.8	2616.6	1676.1	428.4
4080205	33	44	13	14	3	0	341.2	558.1	470	926.2	552.7	0	341.2	558.1	172.1	618	395.9	0
4080206	4	5	1	2	0	0	36.3	59.4	50	98.5	0	0	36.3	59.4	18.3	65.7	0	0
4090001	116	152	45	50	9	1	1190.5	1947.4	1639.8	3231.7	1928.4	493.2	1190.5	1947.4	600.6	2156.4	1381.3	353
4090002	26	34	10	11	2	0	268.6	439.4	370	729.1	435.1	0	268.6	439.4	135.5	486.5	311.6	0
4090003	228	298	89	98	18	2	2337.5	3823.6	3219.7	6345.2	3786.3	968.3	2337.5	3823.6	1179.2	4234	2712.1	693.1
4090004	129	169	50	56	10	1	1321.2	2161.1	1819.8	3586.4	2140.1	547.3	1321.2	2161.1	666.5	2393.1	1532.9	391.8
4090005	176	230	68	76	14	1	1800.3	2944.9	2479.7	4887	2916.1	745.8	1800.3	2944.9	908.2	3260.9	2088.8	533.8
4100001	87	114	34	38	7	1	889	1344	1147.6	2317	1401.9	355.9	889	1344	450.4	1617.5	1038.4	263.3
4100002	48	63	19	21	4	0	493.4	799.9	674.6	1333	796.7	0	493.4	799.9	249	894.1	572.9	0
4100003	50	66	20	22	4	0	507.8	580.3	524.7	1161.9	742.5	0	507.8	580.3	260.1	937.3	610.2	0
4100004	39	51	15	17	3	0	391.3	391.4	365.4	846.4	551.9	0	391.3	391.4	201.4	725.7	473	0
4100005	11	14	4	5	1	0	106.7	106.8	99.7	230.9	150.7	0	106.7	106.8	54.9	198	129.2	0
4100006	12	16	5	5	1	0	121.5	143.5	128.8	281.5	177.7	0	121.5	143.5	62.2	223.6	144.4	0
4100007	28	36	11	12	2	0	277	277.5	258.9	598.7	388.4	0	277	277.5	142.7	513.3	332.8	0
4100008	28	37	11	12	2	0	284	284.6	265.5	613.8	397.8	0	284	284.6	146.4	526.3	340.9	0
4100009	53	70	21	23	4	0	532.6	533.5	497.8	1150.8	746	0	532.6	533.5	274.5	986.8	639.2	0
4100010	77	101	30	33	6	1	774	775.4	723.4	1672.5	1084.1	265.7	774	775.4	398.9	1434.1	929	227.9
4100011	47	61	18	20	4	0	468.7	469.5	438	1012.7	656.4	0	468.7	469.5	241.5	868.3	562.5	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
4100012	39	51	15	17	3	0	390.6	391.3	365	843.9	547	0	390.6	391.3	201.3	723.6	468.8	0
4110001	142	186	55	61	11	1	1427.3	1429.9	1334	3084.2	1999.2	489.9	1427.3	1429.9	735.6	2644.5	1713.2	420.3
4110002	158	207	61	68	13	1	1583.5	1586.4	1480	3421.8	2218	543.5	1583.5	1586.4	816.1	2934	1900.7	466.3
4110003	48	63	19	21	4	0	483.2	488.5	449.9	1047.8	676.1	0	483.2	488.5	248.7	894.6	578	0
4110004	57	75	22	25	5	0	575.2	576.2	537.6	1242.9	805.6	0	575.2	576.2	296.4	1065.7	690.4	0
4120101	101	130	37	43	7	0	1018.9	1384	666.9	2393	1293.8	0	1018.9	1384	491.6	1838.5	1055.2	0
4120102	3	4	1	1	0	0	25.7	24.4	12	43.3	0	0	25.7	24.4	12	43.3	0	0
4120103	26	34	10	11	2	0	251.9	249.9	124.5	456.6	289.9	0	251.9	249.9	124.5	456.6	289.9	0
4120104	72	95	27	31	6	1	713.4	710.7	354.4	1302.4	825	241	713.4	710.7	354.4	1302.4	825	241
4120200	1	1	0	0	0	0	7.2	8.4	0	0	0	0	7.2	8.4	0	0	0	0
4130001	26	34	10	11	2	0	264.4	264.8	132.2	487	307.7	0	264.4	264.8	132.2	487	307.7	0
4130002	8	11	3	4	1	0	68.8	67.1	32.6	116	75.4	0	68.8	67.1	31.5	112.4	73.6	0
4130003	55	72	21	24	4	0	539.8	535.8	267	979.5	621.6	0	539.8	535.8	267	979.5	621.6	0
4140101	40	52	15	17	3	0	400.1	400.8	200.1	737.1	465.6	0	400.1	400.8	200.1	737.1	465.6	0
4140102	38	50	15	16	3	0	364.8	359	178.5	652.2	415.8	0	364.8	359	178.5	652.2	415.8	0
4140201	248	325	95	106	20	2	2321.8	2272.4	1128.3	4113.1	2629.5	757.1	2321.8	2272.4	1128.3	4113.1	2629.5	757.1
4140202	137	179	52	59	11	1	1327.1	1315.2	655.1	2401.4	1525.3	443.6	1327.1	1315.2	655.1	2401.4	1525.3	443.6
4140203	16	21	6	7	1	0	157.2	157.4	78.6	289.6	182.9	0	157.2	157.4	78.6	289.6	182.9	0
4150101	45	59	17	19	4	0	380.4	358.7	176.4	631.7	412.2	0	380.4	358.7	176.4	631.7	412.2	0
4150102	16	21	6	7	1	0	164.3	164.6	82.2	302.7	191.2	0	164.3	164.6	82.2	302.7	191.2	0
4150301	2	3	1	1	0	0	21.4	21.5	10.7	39.5	0	0	21.4	21.5	10.7	39.5	0	0
4150302	28	36	11	12	2	0	239.8	228.8	112.9	406.5	263.5	0	239.8	228.8	112.9	406.5	263.5	0
4150303	7	9	3	3	1	0	69.1	68.1	33.9	123.9	78.9	0	69.1	68.1	33.9	123.9	78.9	0
4150304	10	13	4	4	1	0	83	78.6	38.7	138.9	90.4	0	83	78.6	38.7	138.9	90.4	0
4150305	17	23	7	7	1	0	145.3	136.7	67.2	240.3	157	0	145.3	136.7	67.2	240.3	157	0
4150306	14	19	6	6	1	0	119.9	112.7	55.4	198.2	129.5	0	119.9	112.7	55.4	198.2	129.5	0
4150307	17	23	7	7	1	0	145.3	136.7	67.2	240.4	157.1	0	145.3	136.7	67.2	240.4	157.1	0
5010001	55	71	21	23	4	0	449.4	581.4	266.1	933.1	573.7	0	449.4	581.4	202	716	463.5	0
5010002	16	20	6	7	1	0	136.3	142.5	68.8	246.6	157	0	136.3	142.5	63.9	230	148.6	0
5010003	90	117	35	38	7	1	945	1515.4	675.9	2376.2	1382.4	306.7	945	1515.4	443.5	1582.6	988.7	219
5010004	67	85	25	28	4	0	675.8	1047.8	469	1748.1	882.1	0	675.8	1047.8	318.4	1203.1	651.5	0
5010005	45	59	17	19	4	0	460	733.7	327.4	1138.2	681.1	0	460	733.7	214.7	757.5	487	0
5010006	114	149	44	49	9	1	1565.9	2604.5	1165	4044.1	2426.3	616.9	1565.9	2604.5	765.8	2697.8	1737.3	441.3
5010007	124	163	48	54	10	1	1771.3	2958.9	1323.9	4594.9	2757.4	700.1	1771.3	2958.9	870.5	3065.9	1974.7	500.9
5010008	57	75	22	25	5	0	816.6	1364.2	610.4	2118.4	1271.3	0	816.6	1364.2	401.3	1413.5	910.4	0

							Baseline (tons)						Options 2 and 4 (tons)					
HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
5010009	107	140	41	46	9	1	1518.2	2536.2	1134.7	3938.4	2363.5	600.1	1518.2	2536.2	746.1	2627.9	1692.6	429.3
5020001	104	136	41	45	8	1	1451.2	1482.5	735.3	2579.9	1651.7	450.2	1451.2	1482.5	735.3	2579.9	1651.7	450.2
5020002	96	125	38	42	8	1	1338.7	1367.6	678.3	2379.9	1523.7	415.3	1338.7	1367.6	678.3	2379.9	1523.7	415.3
5020003	86	113	34	38	7	1	1204.1	1241.3	614.2	2154.7	1377.7	375	1204.1	1241.3	609.8	2139.8	1370.1	373.1
5020004	57	74	22	25	5	1	788.7	840.9	413	1446.6	920.5	249.1	788.7	840.9	398.8	1399.5	896.3	243
5020005	160	210	62	69	13	1	2273.6	3690.8	1659.5	5763	3470.2	884.6	2273.6	3690.8	1119.9	3943.2	2538.6	647.5
5020006	160	209	62	69	13	1	2278.8	3741.3	2032.9	6068.9	3626.6	678.1	2278.8	3741.3	1116.3	3928.4	2516.1	492.3
5030101	253	331	99	109	20	2	3476.9	4712.1	2857.9	8148.8	5079.2	1278.9	3476.9	4712.1	1735	6121.7	3973.2	1002.2
5030102	119	153	44	50	8	0	1214.7	1765.9	935.2	3079.4	1631.7	0	1214.7	1765.9	584.2	2181	1229.1	0
5030103	79	104	31	34	6	1	797.3	823.4	736.1	1743.3	1113.4	259.8	797.3	823.4	409	1474	946.5	222.8
5030104	18	23	7	8	1	0	250.8	418.7	187.3	650.8	389.4	0	250.8	418.7	123.2	434.3	278.9	0
5030105	93	122	36	40	7	1	1289.4	2147.3	960.3	3351.8	1983.1	469.8	1289.4	2147.3	631.4	2236.5	1420.2	336.1
5030106	55	72	22	24	4	0	768.9	894.1	577.7	1611.7	1027.5	0	768.9	894.1	386.9	1361.3	883.6	0
5030201	47	61	18	20	4	0	652.7	666.7	472	1263.5	821.5	0	652.7	666.7	330.6	1162.5	754.8	0
5030202	131	171	52	57	11	1	1823.2	1862.1	1342.7	3547.1	2308	600.7	1823.2	1862.1	923.3	3247.4	2110.2	552.2
5030203	48	63	19	21	4	0	675	689.5	342	1199.9	768.2	0	675	689.5	342	1199.9	768.2	0
5030204	62	81	24	27	5	0	808.1	822.4	776.3	1714.3	1127.2	0	808.1	822.4	410.3	1451.6	954.2	0
5040001	233	304	91	100	19	2	2927.1	2973.2	2802.5	6224.1	4085	1016.2	2927.1	2973.2	1489.1	5278.9	3463.4	864.1
5040002	51	67	20	22	4	0	526.6	528.8	494.1	1135.1	737.2	0	526.6	528.8	270.9	971.6	630.7	0
5040003	46	60	18	20	4	0	531.5	537.3	504.6	1136.8	742.8	0	531.5	537.3	271.7	968	632.2	0
5040004	66	86	26	28	5	0	901.7	920	870	1907.2	1256.9	0	901.7	920	456.7	1611.7	1061.9	0
5040005	37	49	15	16	3	0	517.9	528.8	500.4	1094.4	721.8	0	517.9	528.8	262.1	924.3	609.4	0
5040006	71	93	28	31	6	1	776.1	782	732.8	1665.7	1085.3	267.7	776.1	782	397.8	1421.8	925.9	228.8
5050001	106	138	41	45	8	0	1485.1	1766.1	1097.1	2933	1704.9	0	1485.1	1766.1	747.7	2596.3	1555.5	0
5050002	56	73	22	24	4	0	776.4	792.9	395.5	1370.2	858.2	0	776.4	792.9	395.5	1370.2	858.2	0
5050003	9	12	3	4	1	0	123.7	126.4	62.7	220	140.8	0	123.7	126.4	62.7	220	140.8	0
5050004	60	78	23	26	5	1	832.5	850.4	421.8	1479.9	947.5	258.3	832.5	850.4	421.8	1479.9	947.5	258.3
5050005	48	63	19	21	4	0	675	689.5	342	1199.9	768.2	0	675	689.5	342	1199.9	768.2	0
5050006	43	56	17	19	3	0	596.2	609.1	302.1	1059.9	678.6	0	596.2	609.1	302.1	1059.9	678.6	0
5050007	50	65	20	22	4	0	697.5	712.5	353.4	1239.9	793.9	0	697.5	712.5	353.4	1239.9	793.9	0
5050008	82	107	32	36	7	1	1147.5	1172.2	581.4	2039.9	1306	356	1147.5	1172.2	581.4	2039.9	1306	356
5050009	70	92	28	30	6	1	978.7	999.8	495.9	1739.9	1114	303.6	978.7	999.8	495.9	1739.9	1114	303.6
5060001	390	510	152	168	31	3	3905.6	3912.6	3650.2	8439.4	5470.3	1340.6	3905.6	3912.6	2012.8	7236.2	4687.8	1150.1
5060002	82	107	32	35	7	1	1050.9	1068.8	1008.3	2231.6	1466.2	365.2	1050.9	1068.8	534	1890.9	1242	310.3
5060003	57	75	22	25	5	0	621.5	625.8	586.1	1335.3	869.4	0	621.5	625.8	318.8	1140.4	742.2	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
5070101	19	24	7	8	1	0	258.7	264.3	131.1	460	294.5	0	258.7	264.3	131.1	460	294.5	0
5070102	36	47	14	16	3	0	506.2	517.2	256.5	900	576.2	0	506.2	517.2	256.5	900	576.2	0
5070201	35	45	14	15	3	0	483.7	494.5	312.4	858.9	547.8	0	483.7	494.5	245	858.9	547.8	0
5070202	30	39	12	13	2	0	416.3	425.4	270.6	733.2	455.9	0	416.3	425.4	212.2	733.2	455.9	0
5070203	32	41	12	14	3	0	438.4	449.1	422.2	780.3	499.6	0	438.4	449.1	221.4	780.3	499.6	0
5070204	6	7	2	2	0	0	78.7	80.6	69.3	140	0	0	78.7	80.6	39.8	140	0	0
5080001	87	114	34	38	7	1	873.5	875	816.3	1887.5	1223.7	300.5	873.5	875	450.1	1618.4	1048.6	257.8
5080002	125	164	49	54	10	1	1295.7	1300.4	1215	2792.3	1812.3	441	1295.7	1300.4	666.2	2390.3	1550.6	377.9
5080003	45	58	18	19	4	0	452.1	451.7	422	978.3	641.4	0	452.1	451.7	232.4	838.5	549.6	0
5090101	80	105	32	35	6	1	1114.5	1138	999.5	2298.6	1510.2	382.1	1114.5	1138	564.2	1987.8	1304.9	331.8
5090102	16	21	6	7	1	0	225	229.8	114	400	256.1	0	225	229.8	114	400	256.1	0
5090103	60	78	23	26	5	0	832.6	851.3	803.3	1642.6	1071.3	0	832.6	851.3	421	1484.2	966.7	0
5090104	19	25	8	8	2	0	269.8	276.4	259.8	480.2	307.5	0	269.8	276.4	136.2	480.2	307.5	0
5090201	111	145	43	48	9	1	1539.5	1573.7	1485.6	3072.4	2007.6	508.8	1539.5	1573.7	778.7	2745.1	1791.5	455.9
5090202	175	229	68	75	14	1	2043.7	2067.3	1942.7	4366.8	2855.2	707.1	2043.7	2067.3	1043.7	3716	2428.6	602.9
5090203	154	199	59	66	12	1	2051.8	2081.7	1956.8	4104.3	2597.6	367.2	2051.8	2081.7	1031.4	3636.2	2302.9	338.9
5100101	123	161	48	53	10	1	1708.8	1750.4	1645.5	3041.1	1947.3	507.9	1708.8	1750.4	862.9	3041.1	1947.3	507.9
5100102	44	58	17	19	4	0	618.3	633.4	595.4	1100.4	704.6	0	618.3	633.4	312.2	1100.4	704.6	0
5100201	36	47	14	15	3	0	494.7	506.7	476.3	880.3	563.7	0	494.7	506.7	249.8	880.3	563.7	0
5100202	6	7	2	2	0	0	78.7	80.6	75.8	140.1	0	0	78.7	80.6	39.7	140.1	0	0
5100203	20	26	8	9	2	0	281.1	287.9	270.6	500.2	320.3	0	281.1	287.9	141.9	500.2	320.3	0
5100204	22	29	8	9	2	0	303.5	310.9	292.3	540.2	345.9	0	303.5	310.9	153.3	540.2	345.9	0
5100205	284	371	110	123	23	2	3946	4042.1	3799.9	7022.5	4496.8	1172.8	3946	4042.1	1992.6	7022.5	4496.8	1172.8
5110001	104	137	41	45	8	1	1450.3	1485.6	1396.5	2580.9	1652.7	431	1450.3	1485.6	732.3	2580.9	1652.7	431
5110002	159	208	62	69	13	1	2215.8	2268.2	1942.2	3938.7	2531.2	654.4	2215.8	2268.2	1118.2	3938.7	2531.2	654.4
5110003	34	44	13	15	3	0	465.3	477	447.9	829.9	527.2	0	465.3	477	235.2	829.9	527.2	0
5110004	14	19	6	6	1	0	200.2	205.2	192.7	356.8	227.1	0	200.2	205.2	101.1	356.8	227.1	0
5110005	16	22	6	7	1	0	174.5	183.1	165.4	333	161.7	0	174.5	183.1	90.5	333	161.7	0
5110006	18	24	7	8	1	0	221.1	229	211.3	406.4	230.4	0	221.1	229	113	406.4	230.4	0
5120101	45	59	18	20	4	0	456	455.6	425.5	987.1	646.8	0	456	455.6	234.6	846.4	554.3	0
5120102	5	6	2	2	0	0	49.9	49.8	46.6	108.1	0	0	49.9	49.8	25.7	92.7	0	0
5120103	13	17	5	6	1	0	128.3	128.2	119.7	277.8	182.3	0	128.3	128.2	66	238.2	156.2	0
5120104	26	34	10	11	2	0	263.8	263.4	246.1	571.2	375.1	0	263.8	263.4	135.6	489.8	321.4	0
5120105	6	8	2	3	1	0	64.2	64.1	59.9	139	91.2	0	64.2	64.1	33	119.1	78.2	0
5120106	49	64	19	21	4	0	491.9	491.3	458.9	1065.3	699.4	0	491.9	491.3	252.9	913.4	599.4	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
5120107	31	40	12	13	3	0	306.6	306.2	286	663.9	435.9	0	306.6	306.2	157.6	569.2	373.6	0
5120108	59	77	23	26	5	1	591.7	590.8	552.1	1281.3	841.1	232.9	591.7	590.8	304.3	1098.6	720.8	199.5
5120109	18	24	7	8	2	0	185.3	184.8	173.2	401	262.9	0	185.3	184.8	95.5	343.8	225.2	0
5120110	18	24	7	8	2	0	185.4	185.1	172.9	401.4	263.6	0	185.4	185.1	95.3	344.2	225.9	0
5120111	31	40	12	13	3	0	306.5	305.9	286.2	663.5	435.4	0	306.5	305.9	157.8	568.9	373	0
5120112	19	25	7	8	2	0	192.4	191.9	179.9	416.4	272.9	0	192.4	191.9	99.2	357	233.8	0
5120113	15	19	6	6	1	0	149.7	149.4	139.8	324	212.6	0	149.7	149.4	77.1	277.8	182.1	0
5120114	21	27	8	9	2	0	206.6	206.1	193.2	447.2	293.1	0	206.6	206.1	106.5	383.5	251.1	0
5120115	4	6	2	2	0	0	42.7	42.6	40	92.5	0	0	42.7	42.6	22	79.3	0	0
5120201	325	424	127	141	27	3	3307.4	3305	3088.2	7145.7	4676.8	1242.8	3307.4	3305	1697.9	6122.1	4005.4	1064.6
5120202	33	42	13	14	3	0	366.3	367.4	343.9	779.3	499.4	0	366.3	367.4	186	664.4	425.8	0
5120203	5	6	2	2	0	0	49.9	49.8	46.6	108.1	0	0	49.9	49.8	25.7	92.7	0	0
5120204	83	109	33	36	7	1	841.8	841	785.7	1821.1	1193.9	325.3	841.8	841	432.5	1560.8	1022.8	278.7
5120205	15	19	6	6	1	0	149.7	149.5	139.7	324.2	212.9	0	149.7	149.5	77	278	182.4	0
5120206	24	31	9	10	2	0	240.4	240.2	224.5	519.2	339.7	0	240.4	240.2	123.4	444.8	290.9	0
5120207	19	25	7	8	2	0	221.2	221.9	207.8	469.4	299.9	0	221.2	221.9	112.1	399.9	255.5	0
5120208	71	91	27	30	5	0	955.3	963.7	904.7	1981.7	1224.6	0	955.3	963.7	476.6	1675.6	1035.8	0
5120209	14	18	5	6	1	0	159.2	159.9	149.8	336.5	213.8	0	159.2	159.9	80.5	286.3	181.9	0
5130101	112	146	43	48	9	1	1552	1588.9	1387.6	2759.4	1771.7	458.4	1552	1588.9	783.3	2759.4	1771.7	458.4
5130102	13	17	5	6	1	0	179.9	184.3	173.2	320.1	205	0	179.9	184.3	90.8	320.1	205	0
5130103	69	90	27	30	6	1	955.6	978.8	911.1	1700.5	1089.3	283.8	955.6	978.8	482.5	1700.5	1089.3	283.8
5130104	53	69	20	23	4	0	732.1	748	464.2	1297.1	842	0	732.1	748	368.8	1297.1	842	0
5130105	23	31	9	10	2	0	326.7	333.7	190.3	578.5	376.3	0	326.7	333.7	164.5	578.5	376.3	0
5130106	24	32	9	10	2	0	338.1	345.1	170.2	598	390.3	0	338.1	345.1	170.2	598	390.3	0
5130107	32	41	12	14	3	0	439.5	448.6	221.2	777.4	507.4	0	439.5	448.6	221.2	777.4	507.4	0
5130108	71	93	28	31	6	1	991.8	1012.3	499.1	1754.2	1144.9	285	991.8	1012.3	499.1	1754.2	1144.9	285
5130201	140	183	55	60	11	1	1949.8	1990.1	981.3	3448.6	2250.8	560.2	1949.8	1990.1	981.3	3448.6	2250.8	560.2
5130202	142	186	56	61	12	1	1983.6	2024.6	998.3	3508.4	2289.8	569.9	1983.6	2024.6	998.3	3508.4	2289.8	569.9
5130203	281	367	109	121	23	2	3910.8	3991.7	1968.2	6917.1	4514.6	1123.6	3910.8	3991.7	1968.2	6917.1	4514.6	1123.6
5130204	132	172	51	57	11	1	1837.1	1875.1	924.5	3249.2	2120.7	527.8	1837.1	1875.1	924.5	3249.2	2120.7	527.8
5130205	109	143	43	47	9	1	1510.7	1546.1	1155.4	2686.7	1722.4	433.5	1510.7	1546.1	762.3	2686.7	1722.4	433.5
5130206	98	128	38	42	8	1	1362.2	1392.6	970.3	2416	1563.3	397.5	1362.2	1392.6	686.6	2416	1563.3	397.5
5140101	118	152	45	50	9	1	1622.8	1649.6	1549.8	3131.8	1963.1	244.5	1622.8	1649.6	813.7	2862	1797.2	242.8
5140102	265	347	103	114	21	2	3687.5	3777.3	3550.9	6562.4	4202.1	1095.9	3687.5	3777.3	1862	6562.4	4202.1	1095.9
5140103	47	61	18	20	4	0	652.1	667.9	627.9	1160.4	743.1	0	652.1	667.9	329.3	1160.4	743.1	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
5140104	83	106	31	35	6	0	1144.9	1161.7	1091.4	2253.3	1402.5	0	1144.9	1161.7	572.5	2011.3	1254.1	0
5140201	45	58	17	19	3	0	527.8	534.7	499.1	1069.8	664.2	0	527.8	534.7	267.8	955.4	591.4	0
5140202	36	47	14	15	2	0	355.5	364.8	333.1	734.9	411.1	0	355.5	364.8	184.3	676	372.4	0
5140203	6	8	2	3	0	0	64.7	66.1	60.8	133.3	0	0	64.7	66.1	33.5	122	0	0
5140204	7	9	3	3	1	0	71.2	71.1	66.6	154.2	101.1	0	71.2	71.1	36.7	132.2	86.6	0
5140205	14	19	6	6	1	0	180.9	186.9	173.1	330.6	191.6	0	180.9	186.9	92.2	330.6	191.6	0
5140206	30	40	12	13	2	0	343.9	363.5	323.2	767	359.5	0	343.9	363.5	180.4	704.5	318.3	0
6010101	8	11	3	3	1	0	112.6	114.9	57.6	197.4	121.3	0	112.6	114.9	57.6	197.4	121.3	0
6010102	96	126	38	41	8	1	1340.2	1368.1	680.5	2359.5	1491.8	304.1	1340.2	1368.1	680.5	2359.4	1491.8	304.1
6010103	110	144	43	47	9	1	1542.3	1807.7	1094	3029.9	1852.1	433.6	1542.3	1807.7	767.7	2715.5	1712.6	406.7
6010104	116	151	45	50	9	1	1611.7	1645	811.1	2850.6	1860.5	463.1	1611.7	1645	811.1	2850.6	1860.5	463.1
6010105	171	223	64	73	12	1	2422.8	3845.9	3087.2	6060.1	3216.5	639.1	2422.8	3845.9	1169.1	4211.9	2396.6	481.1
6010106	21	28	8	9	2	0	299.2	455.9	355.4	723.8	391.6	0	299.2	455.9	145.1	521.2	301.7	0
6010107	91	118	35	39	7	1	1262.3	1288.7	635.7	2233.1	1457.3	362.7	1262.3	1288.7	635.3	2232.6	1457.1	362.6
6010108	93	122	36	40	7	1	1308.3	1634.6	1065.6	2701	1602.2	363.7	1308.3	1634.6	647.6	2298.1	1423.4	329.3
6010201	236	309	92	102	19	2	3291	3360.2	1657.9	5822.3	3799.5	945.5	3291	3360.2	1656.2	5820.7	3798.8	945.4
6010202	24	32	9	10	2	0	346.6	562	467.2	889	468.9	0	346.6	562	166.8	602	340.1	0
6010203	26	34	10	11	2	0	370.3	614.5	508.3	960.9	500.1	0	370.3	614.5	177.8	642.4	358.8	0
6010204	23	30	9	10	2	0	317.7	377.3	232	630.5	383.1	0	317.7	377.3	158	559.2	351.4	0
6010205	74	96	29	31	6	0	1024.7	1046	521.3	1802.1	1131.2	0	1024.7	1046	521.3	1802.1	1131.2	0
6010206	34	44	13	14	3	0	473	482.8	241.9	832.4	524.7	0	473	482.8	240.3	832.4	524.7	0
6010207	180	235	70	77	15	1	2502	2553.8	1259.2	4425.3	2888.3	718.9	2502	2553.8	1259.2	4425.3	2888.3	718.9
6010208	49	64	19	21	4	0	687.5	701.7	346	1216	793.6	0	687.5	701.7	346	1216	793.6	0
6020001	257	336	100	111	21	2	3585.2	3731.7	2439	6814.1	4458	1192.6	3585.2	3731.7	1802	6335.9	4155.3	1103.5
6020002	153	200	59	66	12	1	2146.9	2609.9	1851.6	4481.9	2712	657	2146.9	2609.9	1064.9	3774.3	2365.9	579.8
6020003	27	35	10	11	2	0	372	387	308.3	746.5	489.7	0	372	387	186.8	657.3	432.4	0
6020004	8	11	3	3	1	0	112.7	115	56.7	199.3	130.1	0	112.7	115	56.7	199.3	130.1	0
6030001	100	131	39	43	8	1	1419.1	2219	1790.5	3503.6	2074.5	525.9	1419.1	2219	699.5	2474.1	1561.4	395.2
6030002	485	635	188	210	38	4	6890.7	11208.2	9279.3	17556.4	10307.7	2614.5	6890.7	11208.2	3388.1	11993	7537.2	1909.2
6030003	25	33	10	11	2	0	349.4	356.6	175.8	618	403.3	0	349.4	356.6	175.8	618	403.3	0
6030004	43	56	17	18	3	0	600.4	722.2	454.4	1202.6	754.7	0	600.4	722.2	300.1	1056.8	682.2	0
6030005	156	203	60	67	12	1	2211	3148.5	2442	4963.4	2954	752.8	2211	3148.5	1029.2	3644.8	2300.9	584.7
6030006	28	35	10	11	2	0	395.3	630.5	514.5	941.4	511.5	0	395.3	630.5	178.4	627.7	366.1	0
6040001	59	74	22	25	4	0	832.8	766.8	391.3	1341.1	805.3	0	832.8	766.8	380.4	1332.1	800.7	0
6040002	64	83	25	28	5	0	890.4	908.8	448.1	1574.8	1027.8	0	890.4	908.8	448.1	1574.8	1027.8	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
6040003	64	83	25	28	5	0	890.4	908.8	448.1	1574.8	1027.8	0	890.4	908.8	448.1	1574.8	1027.8	0
6040004	23	31	9	10	2	0	326.8	333.6	164.5	578.1	377.3	0	326.8	333.6	164.5	578.1	377.3	0
6040005	83	108	32	36	7	1	1268.7	1317.2	767.1	2368.6	1447.5	377.9	1268.7	1317.2	655.3	2368.6	1447.5	377.9
6040006	39	55	14	18	1	0	1100.1	1350.7	1032.6	2987.5	216.8	0	1100.1	1350.7	610.6	2987.5	216.8	0
7010101	29	38	11	13	2	0	297.5	487.5	410	813	485.9	0	297.5	487.5	150.1	542.5	348.1	0
7010102	18	24	7	8	1	0	188.7	309.1	260	515.6	308.1	0	188.7	309.1	95.2	344	220.7	0
7010103	4	5	1	2	0	0	36.3	59.5	50	99.2	0	0	36.3	59.5	18.3	66.2	0	0
7010104	32	42	12	14	3	0	326.6	535.1	450	892.4	533.3	0	326.6	535.1	164.7	595.4	382	0
7010105	4	5	1	2	0	0	36.3	59.5	50	99.2	0	0	36.3	59.5	18.3	66.2	0	0
7010106	31	41	12	14	2	0	319.3	523.2	440	872.5	521.5	0	319.3	523.2	161.1	582.2	373.5	0
7010107	5	6	2	2	0	0	50.8	83.2	70	138.8	0	0	50.8	83.2	25.6	92.6	0	0
7010108	16	21	6	7	1	0	166.9	273.5	230	456.1	272.6	0	166.9	273.5	84.2	304.3	195.3	0
7010201	15	19	6	6	1	0	152.4	249.7	210	416.4	248.9	0	152.4	249.7	76.9	277.9	178.3	0
7010202	22	29	9	10	2	0	225	368.6	310	614.7	367.4	0	225	368.6	113.5	410.2	263.2	0
7010203	131	171	51	57	10	1	1335.3	2187.8	1840	3648.7	2180.7	584.2	1335.3	2187.8	673.6	2434.6	1562	417.7
7010204	41	53	16	18	3	0	432.9	709.2	598.5	1184.5	699.8	0	432.9	709.2	219.6	790.3	501.3	0
7010205	15	20	6	6	1	0	234.6	384.2	331.9	648.3	352.7	0	234.6	384.2	123.8	432.3	252.8	0
7010206	472	616	183	205	37	4	5001.5	8194	6910.8	13682.6	8100.1	1995.3	5001.5	8194	2535.2	9128.8	5802.4	1426.6
7010207	94	122	36	41	7	1	957.9	1569.5	1320	2617.6	1564.4	419.1	957.9	1569.5	483.3	1746.5	1120.6	299.6
7020001	12	16	5	5	1	0	122.1	149.9	131.5	264.1	166.1	0	122.1	149.9	61	223.4	145.4	0
7020002	4	5	1	2	0	0	36.3	59.5	50	99.2	0	0	36.3	59.5	18.3	66.2	0	0
7020003	3	4	1	1	0	0	28.9	41.8	35.8	71.3	0	0	28.9	41.8	14.5	52.8	0	0
7020004	3	4	1	1	0	0	40.3	66	56.7	111.1	0	0	40.3	66	21.1	74.1	0	0
7020005	4	5	1	2	0	0	38.9	63.7	53.9	106.5	0	0	38.9	63.7	19.8	71	0	0
7020006	4	6	2	2	0	0	55.5	90.9	77.7	152.7	0	0	55.5	90.9	28.8	101.9	0	0
7020007	9	12	4	4	1	0	156.1	255.5	221.5	431.8	232	0	156.1	255.5	82.8	287.9	166.3	0
7020008	4	5	1	2	0	0	58.9	96.5	83.6	163	0	0	58.9	96.5	31.2	108.7	0	0
7020009	5	7	2	2	0	0	86.4	129.6	106.3	223.5	0	0	86.4	129.6	45.7	160.7	0	0
7020010	2	3	1	1	0	0	37.2	60.9	52.9	103	0	0	37.2	60.9	19.8	68.7	0	0
7020011	3	4	1	1	0	0	48.9	80	69.4	135.3	0	0	48.9	80	26	90.2	0	0
7020012	145	189	56	62	10	1	1888	3091.9	2645	5195.1	2929.4	388.7	1888	3091.9	979.8	3465	2099.1	277.9
7030001	18	23	7	8	1	0	181.2	297.2	248.5	552.4	328.3	0	181.2	297.2	91	329.1	210	0
7030002	12	16	5	5	1	0	123.2	202	168.6	389.9	231.4	0	123.2	202	61.7	223.4	142.3	0
7030003	4	6	2	2	0	0	43.5	71.3	60	119	0	0	43.5	71.3	22	79.4	0	0
7030004	6	8	2	3	1	0	65.3	107	90	178.5	106.7	0	65.3	107	32.9	119.1	76.4	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
7030005	150	196	58	65	12	1	1623.5	2661	2227.4	4907.7	2914.5	669.5	1623.5	2661	817.9	2962	1888.4	433.6
7040001	142	185	54	61	10	0	2377.6	3890.3	3302.3	7083.3	4039.5	0	2377.6	3890.3	1233.9	4419.8	2699.9	0
7040002	33	43	13	14	2	0	495.7	811.6	700	1368.6	749.5	0	495.7	811.6	260.7	912.6	537.2	0
7040003	14	19	5	6	1	0	247.9	405.6	343.8	744.8	425.7	0	247.9	405.6	128.6	461.5	282.5	0
7040004	44	57	17	19	3	0	756.7	1238.8	1075.6	2095.1	1119.3	0	756.7	1238.8	402.4	1396.9	802.4	0
7040005	8	10	3	3	1	0	136.2	222.8	184.7	438.5	263.4	0	136.2	222.8	69.1	255.6	165.1	0
7040006	24	32	9	11	2	0	417.4	682.6	569.8	1316.7	780.1	0	417.4	682.6	213	780.9	496.6	0
7040007	9	12	4	4	1	0	112.6	184.4	153.5	358.8	213.9	0	112.6	184.4	56.7	206.9	132.5	0
7040008	7	9	3	3	0	0	124	202.8	176	343.1	0	0	124	202.8	66	229	0	0
7050001	4	6	2	2	0	0	43.5	71.3	59.5	137.6	0	0	43.5	71.3	21.8	78.8	0	0
7050002	9	12	4	4	1	0	94.2	154.5	129	298.2	176.9	0	94.2	154.5	47.2	170.8	108.8	0
7050003	9	12	4	4	1	0	94.2	154.5	129	298.2	176.9	0	94.2	154.5	47.2	170.8	108.8	0
7050004	1	2	1	1	0	0	14.5	23.8	19.8	45.9	0	0	14.5	23.8	7.3	26.3	0	0
7050005	36	46	14	15	3	0	460.6	754.3	627.5	1470.7	878.3	0	460.6	754.3	232.2	850.2	545.4	0
7050006	12	16	5	5	1	0	136.3	223.4	186.2	433.2	257.8	0	136.3	223.4	68.5	249.2	159.2	0
7050007	47	61	18	20	4	0	511.9	839.3	699.8	1624.9	966.1	0	511.9	839.3	257.1	933.4	595.8	0
7060001	10	13	4	4	1	0	171.9	237.4	177.7	453.9	273.2	0	171.9	237.4	88.6	324.3	205.4	0
7060002	2	3	1	1	0	0	36.5	41.3	26	76.5	0	0	36.5	41.3	19.1	69.3	0	0
7060003	11	14	4	5	1	0	184.6	267.1	205.1	523.5	318.3	0	184.6	267.1	94.3	348.2	224.1	0
7060004	1	1	0	0	0	0	12.1	12	0	0	0	0	12.1	12	0	0	0	0
7060005	8	12	2	3	0	0	135.9	155.2	78.9	218.1	0	0	135.9	155.2	47.6	174.8	0	0
7060006	19	24	7	8	1	0	315.1	313	163.8	602.2	384.2	0	315.1	313	163.8	602.2	384.2	0
7070001	31	41	12	13	2	0	318.8	522.9	436.5	1006.6	597.3	0	318.8	522.9	159.8	578.1	368.2	0
7070002	57	74	22	24	4	1	579.6	950.8	793.6	1835	1088.8	291.8	579.6	950.8	290.6	1051.1	669.4	179
7070003	33	43	13	14	3	0	342.8	562.2	469.1	1086.6	645.2	0	342.8	562.2	172	623.2	397.2	0
7070004	4	6	2	2	0	0	73	119.4	99	235	0	0	73	119.4	37	136.9	0	0
7070005	44	57	16	19	3	0	710.1	1161.5	963.7	2282.3	1369.6	0	710.1	1161.5	359.6	1328.3	856.9	0
7070006	1	1	0	0	0	0	12.4	20.3	0	0	0	0	12.4	20.3	0	0	0	0
7080101	39	53	15	16	3	0	531	532.1	343	1005.7	649.2	0	531	532.1	258.9	943.9	608.5	0
7080102	5	7	2	2	0	0	84.8	84.7	44.8	162.8	0	0	84.8	84.7	44.1	162.1	0	0
7080103	9	11	3	4	1	0	145.4	144.4	75.6	277.9	177.3	0	145.4	144.4	75.6	277.9	177.3	0
7080104	16	22	6	7	1	0	182.3	186	140.1	355.4	231.5	0	182.3	186	87.5	316.7	206	0
7080105	24	32	9	10	2	0	412	409.3	214.3	787.5	502.4	0	412	409.3	214.3	787.5	502.4	0
7080106	1	1	0	0	0	0	12.1	12	0	0	0	0	12.1	12	0	0	0	0
7080107	6	8	2	3	0	0	107.8	107.4	55.7	204.6	0	0	107.8	107.4	55.7	204.6	0	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
7080201	13	17	5	6	1	0	220.3	279.5	199.5	501.9	293.1	0	220.3	279.5	115.7	414.9	253.7	0
7080202	9	11	3	4	1	0	146.2	166.6	105.9	307.9	186.9	0	146.2	166.6	76.4	277.3	173	0
7080204	4	5	1	2	0	0	60.6	60.2	31.5	115.8	0	0	60.6	60.2	31.5	115.8	0	0
7080205	26	33	10	11	2	0	436.2	433.3	226.9	833.9	532	0	436.2	433.3	226.9	833.9	532	0
7080206	36	47	14	15	3	0	605.9	601.9	315.1	1158.2	738.8	0	605.9	601.9	315.1	1158.2	738.8	0
7080207	3	4	1	1	0	0	48.5	48.1	25.2	92.7	0	0	48.5	48.1	25.2	92.7	0	0
7080208	19	24	7	8	1	0	315.1	313	163.8	602.2	384.2	0	315.1	313	163.8	602.2	384.2	0
7080209	44	58	17	19	3	0	751.3	746.3	390.7	1436.1	916.2	0	751.3	746.3	390.7	1436.1	916.2	0
7090001	222	291	86	96	17	2	2274.7	3723.9	3109.3	7190	4267.6	1143.6	2274.7	3723.9	1140.5	4125.9	2628	702.6
7090002	4	6	2	2	0	0	43.5	71.3	59.5	137.6	0	0	43.5	71.3	21.8	78.8	0	0
7090003	21	28	8	9	2	0	287.5	417.4	355.4	836.3	511.5	0	287.5	417.4	146.3	535.8	346.9	0
7090004	11	14	4	5	1	0	112	177.1	148.8	344.8	206.2	0	112	177.1	56.3	204	130.4	0
7090005	102	132	40	44	8	1	1018.9	1021.5	956.3	2213.6	1449.3	375.7	1018.9	1021.5	525.2	1890.7	1238	321.3
7090006	75	97	29	32	6	1	748.4	759.5	708.6	1640.3	1071.1	277.9	748.4	759.5	385.6	1388.1	908.4	235.9
7090007	6	7	2	2	0	0	57	56.8	53.3	123.4	0	0	57	56.8	29.4	105.8	0	0
7100001	5	7	2	2	0	0	80.4	131.7	113.9	222.4	0	0	80.4	131.7	42.5	148.3	0	0
7100003	4	5	1	2	0	0	60.8	66.8	40.5	124.7	0	0	60.8	66.8	31.7	115.6	0	0
7100004	40	52	15	17	3	0	678.6	674.1	352.9	1297.1	827.5	0	678.6	674.1	352.9	1297.1	827.5	0
7100005	5	7	2	2	0	0	84.8	84.3	44.1	162.1	0	0	84.8	84.3	44.1	162.1	0	0
7100006	51	66	19	22	4	0	860.3	854.6	447.4	1644.6	1049.1	0	860.3	854.6	447.4	1644.6	1049.1	0
7100007	11	15	4	5	1	0	193.9	192.6	100.8	370.6	236.4	0	193.9	192.6	100.8	370.6	236.4	0
7100008	44	57	17	19	3	0	739.2	734.3	384.4	1413	901.4	0	739.2	734.3	384.4	1413	901.4	0
7100009	9	12	3	4	1	0	147.2	149.6	75.8	273.7	173.6	0	147.2	149.6	73.7	270.6	172.1	0
7110001	14	18	5	6	1	0	173.5	224.8	180.2	446.5	267.2	0	173.5	224.8	89.1	322.9	202.5	0
7110002	1	2	1	1	0	0	23.6	37	30.4	73.1	0	0	23.6	37	12.2	44.6	0	0
7110004	31	41	12	13	2	0	374	513.9	447	1034.3	617.2	0	374	513.9	191.7	692.3	435.6	0
7110005	1	2	1	1	0	0	23.3	38.2	32.2	75.5	0	0	23.3	38.2	12	44	0	0
7110006	2	3	1	1	0	0	35.8	58.6	49.5	116.3	0	0	35.8	58.6	18.4	67.8	0	0
7110007	1	2	1	1	0	0	19.2	31.5	26.5	61.2	0	0	19.2	31.5	9.8	35.4	0	0
7110008	31	41	12	13	2	0	490.2	803.7	677.4	1583.7	936.9	0	490.2	803.7	252	921.2	585.3	0
7110009	109	142	42	46	8	0	1106	1473	1283.6	2909.1	1621.9	0	1106	1473	561.1	1990.9	1177.9	0
7120001	124	162	49	54	10	1	1247.4	1247.3	1165.9	2702.7	1773.2	484	1247.4	1247.3	641.9	2315.8	1518.8	414.6
7120002	9	12	4	4	1	0	92.6	92.4	86.5	200.6	131.6	0	92.6	92.4	47.7	172	112.7	0
7120003	119	155	46	51	10	1	1189.9	1187	1112.3	2575.6	1688.6	441.5	1189.9	1187	613.3	2208.5	1446.7	378.7
7120004	431	561	167	185	35	4	4324.2	4572.5	4218.6	9763.9	6320.5	1644.4	4324.2	4572.5	2223.6	8008.3	5231.3	1361.1

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
7120005	55	71	21	24	5	0	548.6	547.2	513	1187.4	778.3	0	548.6	547.2	282.8	1018.1	666.8	0
7120006	234	306	91	101	19	2	2375.1	3298	2848.1	6587.9	4033.9	1069.3	2375.1	3298	1203.9	4346.9	2799.4	739.6
7120007	117	153	46	50	10	1	1175.6	1172.5	1099.2	2544.4	1667.8	432.1	1175.6	1172.5	606.1	2181.7	1428.8	370.7
7130001	50	66	20	22	4	0	505.8	504.5	473	1094.9	717.6	0	505.8	504.5	260.8	938.8	614.8	0
7130002	6	8	2	3	1	0	64.1	64	60	138.8	91	0	64.1	64	33.1	119	77.9	0
7130003	11	15	4	5	1	0	114	113.7	106.6	246.7	161.7	0	114	113.7	58.8	211.6	138.5	0
7130004	21	27	8	9	2	0	206.6	206.1	193.2	447.2	293.1	0	206.6	206.1	106.5	383.5	251.1	0
7130005	12	16	5	5	1	0	121.1	120.8	113.2	262.2	171.8	0	121.1	120.8	62.4	224.8	147.2	0
7130006	50	65	19	21	4	0	498.7	497.4	466.3	1079.4	707.5	0	498.7	497.4	257.1	925.6	606.2	0
7130007	32	42	12	14	3	0	320.6	319.8	299.8	693.9	454.8	0	320.6	319.8	165.3	595	389.7	0
7130008	16	20	6	7	1	0	156.7	156.3	146.6	339.3	222.4	0	156.7	156.3	80.8	290.9	190.5	0
7130009	57	74	22	24	5	0	570	568.5	532.9	1233.6	808.6	0	570	568.5	293.8	1057.8	692.7	0
7130010	9	12	4	4	1	0	92.6	92.4	86.6	200.5	131.4	0	92.6	92.4	47.8	171.9	112.6	0
7130011	6	8	2	3	1	0	64.1	64	60	138.8	91	0	64.1	64	33.1	119	77.9	0
7130012	7	9	3	3	1	0	71.2	71.1	66.6	154.2	101.1	0	71.2	71.1	36.7	132.2	86.6	0
7140101	113	147	44	48	9	1	1238.5	1642.1	1436.3	3295.2	1926.6	344.6	1238.5	1642.1	632.4	2266.8	1396.5	267
7140102	143	187	56	61	11	1	2298.7	3769.4	3178.7	7449.8	4446.2	1076.3	2298.7	3769.4	1183.6	4336.9	2779.4	673.2
7140103	30	39	12	13	2	0	470.9	772	650.8	1522.3	902.2	0	470.9	772	242.1	885.6	563.7	0
7140104	44	57	17	19	3	0	707.5	1160.2	978.6	2295	1373.1	0	707.5	1160.2	364.5	1336.3	858.5	0
7140105	15	20	6	6	1	0	198.7	289.2	242.6	573.7	318.4	0	198.7	289.2	100	368.5	218.1	0
7140106	50	66	20	22	4	0	505.8	504.5	473	1094.9	717.6	0	505.8	504.5	260.8	938.8	614.8	0
7140107	29	38	11	12	2	0	500.1	822.3	667.4	1614.9	879.7	0	500.1	822.3	249.8	944.7	552.5	0
7140108	3	4	1	1	0	0	33.1	33	30.9	71.5	0	0	33.1	33	17	61.4	0	0
7140201	26	34	10	11	2	0	263.6	262.9	246.5	570.6	374	0	263.6	262.9	135.9	489.2	320.4	0
7140202	33	43	13	14	3	0	334.9	334	313.1	724.8	475.1	0	334.9	334	172.6	621.5	407	0
7140203	11	14	4	5	1	0	106.9	106.6	99.9	231.3	151.6	0	106.9	106.6	55.1	198.3	129.9	0
7140204	43	56	17	19	4	0	434.6	433.5	406.4	940.7	616.6	0	434.6	433.5	224.1	806.6	528.2	0
8010100	10	13	4	4	1	0	365.4	442.8	273.7	922.1	451.9	0	365.4	442.8	209.7	841.1	419.2	0
8010201	13	19	5	7	0	0	491.6	622.6	467.7	1417.7	0	0	491.6	622.6	275.4	1417.7	0	0
8010202	16	21	6	7	1	0	584.3	651.4	370.6	1370.1	720	0	584.3	651.4	346.9	1370.1	720	0
8010203	51	67	20	22	4	0	1623.8	1769	954.4	3619.1	2192.9	0	1623.8	1769	954.4	3619.1	2192.9	0
8010204	37	49	14	16	3	0	1299.4	1421.8	771.4	2937.8	1772.6	0	1299.4	1421.8	771.4	2937.8	1772.6	0
8010205	20	27	8	9	2	0	556.9	601.8	321.2	1208.1	738	0	556.9	601.8	321.2	1208.1	738	0
8010206	1	2	1	1	0	0	54	59.2	32.2	123.2	0	0	54	59.2	32.2	123.2	0	0
8010207	43	55	16	18	3	0	613.4	597.3	423.8	900.1	544.2	0	613.4	597.3	197.8	713.2	453	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
8010208	46	61	18	20	3	0	1536	1679.4	909.3	3440.9	2073.2	0	1536	1679.4	904.7	3437	2073.2	0
8010209	66	87	25	29	5	0	2481.9	2723.8	1483.3	5665.4	3408.7	0	2481.9	2723.8	1483.3	5665.4	3408.7	0
8010210	164	214	62	71	12	1	5843.8	7376.2	4840.6	14624.6	8652.4	2499.3	5843.8	7376.2	3388	12908	7813.7	2309.2
8010211	142	186	54	62	10	1	5349.6	7125.1	4858.5	14107	8327.8	2326.6	5349.6	7125.1	3163	12050	7317.9	2101.2
8020100	3	4	1	1	0	0	109.7	158.8	117.8	308.4	0	0	109.7	158.8	65.8	245.3	0	0
8020201	13	16	4	5	1	0	500.6	831.7	601.1	1659.8	753.5	0	500.6	831.7	231.8	994	486.5	0
8020202	10	13	4	4	1	0	173.7	284.9	240.5	566.9	345.1	0	173.7	284.9	89.7	330.6	216.1	0
8020203	110	143	42	46	7	1	4110.6	4849.6	2917.9	10007	5917.3	1862.9	4110.6	4849.6	2457.9	9183.3	5581.4	1857.3
8020204	44	55	13	16	2	0	1708.5	2672	1881.5	5360.1	2549.1	0	1708.5	2672	837.7	3478	1794.1	0
8020205	8	10	3	3	1	0	296.2	324.2	184.1	675	421.8	0	296.2	324.2	184.1	675	421.8	0
8020301	32	42	13	14	2	0	1002.1	1080.1	607.2	2221.3	1386.2	0	1002.1	1080.1	607.2	2221.3	1386.2	0
8020302	31	41	12	13	2	0	1160.8	1289.7	740.8	2680.1	1655.6	0	1160.8	1289.7	715.9	2635.2	1637.6	0
8020303	9	11	3	4	1	0	323.1	353.8	200.9	736.4	460.2	0	323.1	353.8	200.8	736.3	460.1	0
8020304	9	11	3	4	1	0	323.1	353.7	200.8	736.3	460.1	0	323.1	353.7	200.8	736.3	460.1	0
8020401	4	5	1	2	0	0	134.6	147.4	83.7	306.8	0	0	134.6	147.4	83.7	306.8	0	0
8020402	73	95	29	31	5	1	2493.9	2711.8	1533	5615.8	3507.2	1265.6	2493.9	2711.8	1533	5615.8	3507.2	1265.6
8030100	1	1	0	0	0	0	27.6	42.9	0	0	0	0	27.6	42.9	0	0	0	0
8030201	63	82	24	27	5	0	1555.5	2303.1	1940.9	4077.3	2374.5	0	1555.5	2303.1	714.7	2705.6	1694	0
8030202	21	27	8	9	2	0	809	1427.7	1198.6	2662.7	1533.2	0	809	1427.7	468.8	1777.3	1098.5	0
8030203	20	27	8	9	2	0	570.6	896.6	754.6	1617.7	938.2	0	570.6	896.6	284	1075.9	670.4	0
8030204	118	154	45	51	9	1	4547.4	8024.4	6736.7	14966	8617.5	1931.7	4547.4	8024.4	2635.1	9989.9	6174.5	1386.4
8030205	26	34	10	11	2	0	651.1	969.6	817	1719.7	1001.1	0	651.1	969.6	301.5	1141.4	714.3	0
8030206	23	30	9	10	2	0	892.7	1575.3	1322.5	2938.1	1691.8	0	892.7	1575.3	517.3	1961.2	1212.2	0
8030207	46	60	17	20	4	0	1757.6	3101.4	2603.7	5784.3	3330.7	0	1757.6	3101.4	1018.5	3861.1	2386.5	0
8030208	13	17	5	6	1	0	502.2	886.1	740.9	1652.8	951.6	0	502.2	886.1	291.1	1103.3	681.8	0
8030209	15	20	6	7	1	0	585.8	1033.5	864.5	1927.7	1109.9	0	585.8	1033.5	339.6	1287.1	795.5	0
8040101	56	74	22	24	4	0	957.6	954.3	508.6	1834.3	1136.4	0	957.6	954.3	508.6	1834.3	1136.4	0
8040102	18	23	7	8	1	0	303	302	160.9	580.5	359.6	0	303	302	160.9	580.5	359.6	0
8040103	11	14	4	5	1	0	181.8	181.2	96.6	348.3	215.8	0	181.8	181.2	96.6	348.3	215.8	0
8040201	18	23	7	8	1	0	303	302	160.9	580.5	359.6	0	303	302	160.9	580.5	359.6	0
8040202	14	19	5	6	1	0	246.4	321.1	153	575.3	308.4	0	246.4	321.1	123.3	463.7	263.1	0
8040203	23	30	9	10	2	0	387.9	386.6	206	743	460.3	0	387.9	386.6	206	743	460.3	0
8040204	25	33	10	11	2	0	424.2	422.8	225.3	812.7	503.5	0	424.2	422.8	225.3	812.7	503.5	0
8040205	9	11	3	4	1	0	190	207.3	111.5	407.4	248	0	190	207.3	107.3	392	241.4	0
8040206	41	53	15	17	3	0	709	1054.2	478.4	1833.9	915.1	0	709	1054.2	342	1320.4	707	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
8040207	14	18	5	6	1	0	313.8	528.3	250.9	945.6	492.3	0	313.8	528.3	164.9	630.9	352.8	0
8040301	9	12	4	4	1	0	333.1	583.9	298	1093.9	615.4	0	333.1	583.9	196	730.2	441	0
8040302	4	5	1	2	0	0	62.6	101.6	44.7	173.6	0	0	62.6	101.6	29.4	115.7	0	0
8040303	12	15	4	5	1	0	200.5	325	143.2	555.4	264.4	0	200.5	325	94	370.4	189.5	0
8040304	12	15	4	5	1	0	223.5	368.2	167.7	642.2	318.5	0	223.5	368.2	110.2	428.4	228.2	0
8040306	1	2	1	1	0	0	55.7	98.1	50.6	184.9	0	0	55.7	98.1	33.2	123.4	0	0
8050001	35	45	14	15	3	0	1262	1985.5	1036.7	3802.6	2191.9	0	1262	1985.5	755.6	2801.3	1710.9	0
8050002	16	21	6	7	1	0	602	856.5	458.9	1680.4	994.2	0	602	856.5	366.9	1353.8	836	0
8050003	4	5	1	2	0	0	139.1	245.3	126.4	462.3	0	0	139.1	245.3	83.1	308.6	0	0
8060100	8	10	3	3	1	0	306.6	540.7	382	1012.9	580	0	306.6	540.7	179.9	676.1	415.6	0
8060201	10	13	4	4	1	0	170.4	184.6	156.9	287.1	172.3	0	170.4	184.6	49.7	187.4	121.5	0
8060202	79	102	30	34	6	0	2997.4	5279.8	4432.7	9842.5	5668	0	2997.4	5279.8	1732.9	6569.6	4061	0
8060203	9	12	4	4	1	0	362.7	640	537.3	1193.6	687.3	0	362.7	640	210.2	796.7	492.4	0
8060204	13	17	5	6	1	0	502.1	886.1	739.3	1652.9	951.5	0	502.1	886.1	291.1	1103.3	681.8	0
8060205	5	7	2	2	0	0	195.3	344.6	289.3	642.7	0	0	195.3	344.6	113.2	429	0	0
8060206	2	3	1	1	0	0	83.7	147.7	123.9	275.5	0	0	83.7	147.7	48.5	183.9	0	0
8070100	4	5	1	2	0	0	139.1	245.3	126.4	462.3	0	0	139.1	245.3	83.1	308.6	0	0
8070201	9	12	4	4	1	0	362	638.2	377.3	1200	683.8	0	362	638.2	214.7	801.1	490	0
8070202	57	74	22	25	4	0	2200.1	3879.5	2385.9	7288.6	4157.4	0	2200.1	3879.5	1302	4865.5	2979.3	0
8070203	28	37	11	12	2	0	1085.5	1913.7	1041.9	3603.6	2049.4	0	1085.5	1913.7	646.6	2405.6	1468.7	0
8070204	66	86	26	28	5	0	2532.3	4463.9	2299.9	8413.7	4779.2	0	2532.3	4463.9	1512.5	5616.6	3425.1	0
8070205	41	53	16	18	3	0	1196.2	1914.5	1249.4	3487.1	1969.1	0	1196.2	1914.5	622	2321.3	1408.1	0
8070300	36	47	14	16	3	0	1391.4	2452.7	1263.7	4622.9	2625.9	0	1391.4	2452.7	831.1	3086.1	1881.9	0
8080101	8	10	3	3	1	0	306.1	539.6	278	1017	577.7	0	306.1	539.6	182.8	678.9	414	0
8080102	59	76	23	25	4	0	1961	3422.8	1734.4	6382.9	3564.5	0	1961	3422.8	1140.5	4260.5	2554.5	0
8080103	55	71	22	24	4	0	2114.9	3728.1	1920.8	7026.8	3991.4	0	2114.9	3728.1	1263.2	4690.8	2860.5	0
8080201	12	15	5	5	1	0	443.1	780.9	402.1	1471.4	835.4	0	443.1	780.9	264.5	982.2	598.7	0
8080202	38	49	15	16	3	0	1447	2550.8	1314.2	4807.8	2730.9	0	1447	2550.8	864.3	3209.5	1957.2	0
8080203	12	16	5	5	1	0	361.9	625.1	311	1152.1	631.2	0	361.9	625.1	204.5	768.9	452.4	0
8080204	12	16	4	5	1	0	229.6	376.5	169.8	652.7	320	0	229.6	376.5	111.5	435.3	229.3	0
8080205	18	23	7	8	1	0	683.5	1203.4	618.8	2265.4	1284.2	0	683.5	1203.4	407	1512.2	920.4	0
8080206	22	28	8	9	2	0	834.8	1471.6	758.2	2773.7	1575.5	0	834.8	1471.6	498.6	1851.6	1129.2	0
8090100	15	19	6	6	1	0	556.6	981.1	505.5	1849.2	1050.4	0	556.6	981.1	332.4	1234.4	752.8	0
8090201	34	45	12	15	2	0	569.7	646.4	286.7	1026.6	532.8	0	569.7	646.4	184.6	673.5	376.7	0
8090203	29	38	11	12	2	0	1113.1	1962.2	1010.9	3698.3	2100.7	0	1113.1	1962.2	664.8	2468.8	1505.5	0

							Baseline (tons)						Options 2 and 4 (tons)					
HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
8090301	84	108	33	36	6	0	3200.2	5641.2	2906.4	10632.7	6039.6	0	3200.2	5641.2	1911.4	7097.9	4328.4	0
8090302	63	82	25	27	5	0	2421	4267.7	2198.8	8043.9	4569.1	0	2421	4267.7	1446	5369.7	3274.5	0
9010001	2	3	1	1	0	0	16.7	28.5	22	57.6	0	0	16.7	28.5	8	32.8	0	0
9010002	3	5	1	2	0	0	33.2	56.7	44	114.9	0	0	33.2	56.7	16.1	65.7	0	0
9010004	9	13	3	5	0	0	98	167.6	130.4	340	0	0	98	167.6	47.7	194.6	0	0
9010005	5	7	2	2	0	0	49	83.8	65.2	170	0	0	49	83.8	23.9	97.3	0	0
9020101	1	2	1	1	0	0	14.3	20.8	17.5	37.1	0	0	14.3	20.8	7.2	26.6	0	0
9020102	4	5	1	2	0	0	36.3	59.5	50	99.2	0	0	36.3	59.5	18.3	66.2	0	0
9020103	36	47	14	16	3	0	370.1	606.4	510	1011.3	604.4	0	370.1	606.4	186.7	674.8	432.9	0
9020104	25	34	10	11	2	0	259	428.7	354	752.8	382.2	0	259	428.7	129.6	482.2	268	0
9020105	7	9	2	3	0	0	70.2	113.8	89.7	229.3	0	0	70.2	113.8	34.2	138	0	0
9020106	16	20	6	7	1	0	159.7	261.6	220	436.3	260.7	0	159.7	261.6	80.5	291.1	186.8	0
9020107	2	3	1	1	0	0	21.3	35.8	28.7	68.1	0	0	21.3	35.8	10.5	41	0	0
9020108	3	4	1	1	0	0	29	47.6	40	79.3	0	0	29	47.6	14.6	52.9	0	0
9020109	2	3	1	1	0	0	21	35.9	27.9	72.8	0	0	21	35.9	10.2	41.7	0	0
9020201	13	18	5	6	0	0	133	227.4	177	461.4	0	0	133	227.4	64.7	264.1	0	0
9020202	7	10	3	4	0	0	69.4	118.6	91.9	240	0	0	69.4	118.6	33.6	137.1	0	0
9020204	12	16	4	6	0	0	119	203.5	158.3	412.8	0	0	119	203.5	57.9	236.3	0	0
9020205	5	7	2	2	0	0	49	83.8	65.2	170	0	0	49	83.8	23.9	97.3	0	0
9020301	6	8	2	3	0	0	64.2	107.4	87	197.9	0	0	64.2	107.4	31.8	122	0	0
9020302	4	6	2	2	0	0	43.5	71.3	60	119	0	0	43.5	71.3	22	79.4	0	0
9020303	6	8	2	3	1	0	65.3	107	90	178.5	106.7	0	65.3	107	32.9	119.1	76.4	0
9020304	1	1	0	0	0	0	7.3	11.9	0	0	0	0	7.3	11.9	0	0	0	0
9020305	1	1	0	0	0	0	7.3	11.9	0	0	0	0	7.3	11.9	0	0	0	0
9020307	4	6	1	2	0	0	42	71.8	55.9	145.7	0	0	42	71.8	20.4	83.4	0	0
9020310	1	2	0	1	0	0	14	23.9	0	48.6	0	0	14	23.9	0	27.8	0	0
9020311	1	2	1	1	0	0	14.4	23.8	19.6	42.2	0	0	14.4	23.8	7.2	26.8	0	0
9020312	2	3	1	1	0	0	21.8	35.7	30	59.5	0	0	21.8	35.7	11	39.7	0	0
9020313	3	5	1	2	0	0	35	59.8	46.6	121.4	0	0	35	59.8	17	69.5	0	0
9020314	2	3	1	1	0	0	21.8	35.7	30	59.5	0	0	21.8	35.7	11	39.7	0	0
9030001	4	5	1	2	0	0	36.3	59.5	50	99.2	0	0	36.3	59.5	18.3	66.2	0	0
9030002	9	11	3	4	1	0	87.1	142.7	120	238	142.2	0	87.1	142.7	43.9	158.8	101.9	0
9030003	1	1	0	0	0	0	7.3	11.9	0	0	0	0	7.3	11.9	0	0	0	0
9030006	1	2	1	1	0	0	14.5	23.8	20	39.7	0	0	14.5	23.8	7.3	26.5	0	0
9030008	1	2	1	1	0	0	14.5	23.8	20	39.7	0	0	14.5	23.8	7.3	26.5	0	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
9030009	3	4	1	1	0	0	29	47.6	40	79.3	0	0	29	47.6	14.6	52.9	0	0
10020002	11	14	4	5	1	0	41.5	67.9	56.8	126.2	76.3	0	41.5	67.9	20.5	69	44.7	0
10020003	1	1	0	0	0	0	2.4	4	0	0	0	0	2.4	4	0	0	0	0
10020004	9	12	4	4	1	0	36.6	59.9	50.1	111.3	67.3	0	36.6	59.9	18.1	60.9	39.5	0
10020005	23	30	9	10	2	0	87.8	143.8	120.3	267.3	161.6	0	87.8	143.8	43.5	146.2	94.7	0
10020007	6	7	2	2	0	0	21.3	35.3	28.7	66.6	0	0	21.3	35.3	10.4	36.5	0	0
10020008	13	17	5	6	1	0	51	83.7	69.7	155.9	92.3	0	51	83.7	25.2	85.3	54.1	0
10030101	31	41	12	13	2	0	119.6	195.7	163.7	363.8	219.9	0	119.6	195.7	59.2	199	128.9	0
10030102	2	2	1	1	0	0	7.3	12	10	22.3	0	0	7.3	12	3.6	12.2	0	0
10030104	16	21	6	7	1	0	61	99.9	83.5	185.6	112.2	0	61	99.9	30.2	101.5	65.8	0
10030202	6	8	2	3	1	0	24.4	39.9	33.4	74.3	44.9	0	24.4	39.9	12.1	40.6	26.3	0
10030203	2	2	1	1	0	0	7.3	12	10	22.3	0	0	7.3	12	3.6	12.2	0	0
10030205	1	2	0	1	0	0	4.9	8	0	14.9	0	0	4.9	8	0	8.1	0	0
10040101	2	2	1	1	0	0	7.3	12	10	22.3	0	0	7.3	12	3.6	12.2	0	0
10040102	13	17	5	5	1	0	48.8	79.9	66.8	148.5	89.8	0	48.8	79.9	24.2	81.2	52.6	0
10040103	9	12	4	4	1	0	36.6	59.9	50.1	111.4	67.3	0	36.6	59.9	18.1	60.9	39.5	0
10040201	3	3	1	1	0	0	9.8	16	13.4	29.7	0	0	9.8	16	4.8	16.2	0	0
10040202	5	7	2	2	0	0	19.5	32	26.7	59.4	0	0	19.5	32	9.7	32.5	0	0
10050004	5	7	2	2	0	0	19.5	32	26.7	59.4	0	0	19.5	32	9.7	32.5	0	0
10050008	19	25	7	8	2	0	73.2	119.8	100.2	222.8	134.7	0	73.2	119.8	36.3	121.8	78.9	0
10060001	2	2	1	1	0	0	7.3	12	10	22.3	0	0	7.3	12	3.6	12.2	0	0
10060002	4	6	2	2	0	0	17.1	28	23.4	52	0	0	17.1	28	8.5	28.4	0	0
10060005	6	7	2	2	0	0	22	36	29.8	67.2	0	0	22	36	10.8	36.7	0	0
10060007	3	3	1	1	0	0	9.7	16.2	12.4	30.9	0	0	9.7	16.2	4.5	16.9	0	0
10070004	14	18	5	6	1	0	53.7	87.9	73.5	163.4	98.7	0	53.7	87.9	26.6	89.3	57.9	0
10070006	5	6	2	2	0	0	15.3	25.1	20.1	47.6	0	0	15.3	25.1	7.2	25.9	0	0
10070007	6	8	2	3	1	0	24.4	39.9	33.4	74.3	44.9	0	24.4	39.9	12.1	40.6	26.3	0
10070008	11	15	4	5	1	0	43.9	71.9	60.1	133.7	80.8	0	43.9	71.9	21.8	73.1	47.4	0
10080001	9	11	3	4	0	0	20.5	33.7	25.1	66.3	0	0	20.5	33.7	9	35.6	0	0
10080005	3	4	1	1	0	0	3.1	4	3.3	7.4	0	0	3.1	4	1.1	3.5	0	0
10080006	1	1	0	0	0	0	0.7	0.9	0	0	0	0	0.7	0.9	0	0	0	0
10080007	6	7	2	2	0	0	5.8	7.9	6.3	14.8	0	0	5.8	7.9	2.1	7.1	0	0
10080010	6	8	2	3	0	0	11.1	17.2	13.8	32.4	0	0	11.1	17.2	4.9	17	0	0
10080014	12	14	4	5	1	0	13.3	18.3	15.1	33.9	13.2	0	13.3	18.3	5.1	16.6	7.1	0
10080016	1	1	0	0	0	0	2.4	3.9	0	0	0	0	2.4	3.9	0	0	0	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
10090101	14	19	5	6	1	0	54	91.2	70.5	177	64.7	0	54	91.2	25.5	96.9	37.8	0
10090102	5	7	2	2	0	0	19.5	32	26.7	59.4	0	0	19.5	32	9.7	32.5	0	0
10090202	1	1	0	0	0	0	2.1	3.7	0	0	0	0	2.1	3.7	0	0	0	0
10090206	2	3	1	1	0	0	8.6	14.8	10.8	29.4	0	0	8.6	14.8	3.9	16.1	0	0
10090209	1	1	0	0	0	0	2.4	4	0	0	0	0	2.4	4	0	0	0	0
10100001	6	8	2	3	1	0	24.4	39.9	33.4	74.3	44.9	0	24.4	39.9	12.1	40.6	26.3	0
10100004	16	21	6	7	1	0	61	100.2	82.1	187.5	102.8	0	61	100.2	29.7	102.6	60.2	0
10100005	4	5	1	2	0	0	14.6	24	20	44.6	0	0	14.6	24	7.3	24.4	0	0
10110101	11	14	4	5	0	0	41.5	70	50.2	136.1	0	0	41.5	70	18.2	74.6	0	0
10110201	4	6	2	2	0	0	16.6	25.8	20.8	48.6	0	0	16.6	25.8	8	28.8	0	0
10110203	3	4	1	1	0	0	12.1	20.4	14.7	39.7	0	0	12.1	20.4	5.3	21.7	0	0
10110204	5	7	2	2	0	0	19.5	32.3	25.2	61.4	0	0	19.5	32.3	9.1	33.6	0	0
10120101	1	1	0	0	0	0	2.1	3.7	0	0	0	0	2.1	3.7	0	0	0	0
10120102	4	5	1	2	0	0	15	25.8	19	51.4	0	0	15	25.8	6.9	28.2	0	0
10120104	4	5	1	2	0	0	15	25.8	19	51.4	0	0	15	25.8	6.9	28.2	0	0
10120106	5	6	2	2	0	0	18.3	21.8	18.4	39.6	0	0	18.3	21.8	9	32.6	0	0
10120107	1	1	0	0	0	0	2.2	3.3	0	0	0	0	2.2	3.3	0	0	0	0
10120109	6	8	2	3	0	0	24.1	24.4	22.2	42.1	0	0	24.1	24.4	12	42.1	0	0
10120110	64	85	24	28	5	0	243.1	246.8	223.7	424.8	240.3	0	243.1	246.8	121.5	424.8	240.3	0
10120111	28	37	11	12	2	0	105.9	107.5	97.5	185.1	104.7	0	105.9	107.5	52.9	185.1	104.7	0
10120113	1	1	0	0	0	0	2.4	2.4	0	0	0	0	2.4	2.4	0	0	0	0
10120201	3	5	1	2	0	0	12.9	22.1	16.3	44.1	0	0	12.9	22.1	5.9	24.1	0	0
10120202	28	37	11	12	2	0	106.8	119.1	103.9	211.4	105.5	0	106.8	119.1	52.8	188.1	99.2	0
10120203	11	15	4	5	1	0	43.3	58	46.7	109	38.8	0	43.3	58	20.8	78.2	32.3	0
10130101	1	2	0	1	0	0	4.9	8.2	0	15.9	0	0	4.9	8.2	0	8.7	0	0
10130102	17	22	6	7	1	0	72.8	95.8	76.5	179.4	67.4	0	72.8	95.8	34.4	130.2	56.8	0
10130103	31	42	11	14	1	0	129.1	217.8	157.4	425.1	99.8	0	129.1	217.8	57.2	233.9	58.4	0
10130104	1	1	0	0	0	0	2.4	4.1	0	0	0	0	2.4	4.1	0	0	0	0
10130105	5	6	2	2	0	0	29.7	29.7	27	53.6	0	0	29.7	29.7	14.8	53.6	0	0
10130106	3	5	1	2	0	0	31.7	35.8	31.1	67.9	0	0	31.7	35.8	15.6	58.7	0	0
10130201	4	5	1	2	0	0	14.6	24.5	17.6	47.7	0	0	14.6	24.5	6.4	26.1	0	0
10130202	8	10	3	3	0	0	29.1	49.1	35.2	95.5	0	0	29.1	49.1	12.8	52.3	0	0
10130203	1	1	0	0	0	0	2.4	4.1	0	0	0	0	2.4	4.1	0	0	0	0
10130204	4	6	2	2	0	0	17	28.6	20.5	55.7	0	0	17	28.6	7.5	30.5	0	0
10130205	4	6	2	2	0	0	17	28	20.3	54.3	0	0	17	28	7.5	30.4	0	0

							Baseline (tons)						Options 2 and 4 (tons)					
HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
10130301	2	3	1	1	0	0	7.3	10.3	7.9	19.4	0	0	7.3	10.3	3.4	12.9	0	0
10130302	2	3	1	1	0	0	7.2	7.3	6.6	12.6	0	0	7.2	7.3	3.6	12.6	0	0
10130303	12	16	5	5	1	0	45.8	48.7	43.1	85	44.5	0	45.8	48.7	22.7	80.1	43.4	0
10130304	3	3	1	1	0	0	9.6	9.8	8.9	16.8	0	0	9.6	9.8	4.8	16.8	0	0
10140101	17	22	6	7	1	0	166.4	164.9	150.4	305	199.8	0	166.4	164.9	82.7	305	199.8	0
10140102	1	1	0	0	0	0	2.9	2.9	0	0	0	0	2.9	2.9	0	0	0	0
10140103	1	1	0	0	0	0	7	7	0	0	0	0	7	7	0	0	0	0
10140105	1	1	0	0	0	0	7.1	7.1	0	0	0	0	7.1	7.1	0	0	0	0
10140201	4	5	1	2	0	0	13.2	14.5	10.5	22.5	0	0	13.2	14.5	5.9	20.1	0	0
10140203	1	1	0	0	0	0	3.2	3.2	0	0	0	0	3.2	3.2	0	0	0	0
10140204	5	6	2	2	0	0	46.6	46.2	42.1	85.3	0	0	46.6	46.2	23.1	85.3	0	0
10150001	1	2	1	1	0	0	14.1	18.2	11.4	35.5	0	0	14.1	18.2	6.8	26.3	0	0
10150002	3	4	1	1	0	0	9.4	13.5	7.5	21.4	0	0	9.4	13.5	3.3	11.6	0	0
10150003	1	2	0	0	0	0	2.4	3.1	0	0	0	0	2.4	3.1	0	0	0	0
10150004	2	3	1	1	0	0	5.6	7.8	3	12.4	0	0	5.6	7.8	1.9	7.2	0	0
10150007	2	3	1	1	0	0	21	34.4	14.7	69.2	0	0	21	34.4	9.6	39.7	0	0
10160001	8	11	3	4	0	0	78.7	134.5	104.4	272.5	0	0	78.7	134.5	38.2	155.8	0	0
10160002	1	1	0	0	0	0	6.6	11.3	0	0	0	0	6.6	11.3	0	0	0	0
10160003	11	15	4	5	1	0	111.3	162.7	131.6	323.2	116.6	0	111.3	162.7	54.5	215.2	89.8	0
10160004	1	1	0	0	0	0	6.8	10	0	0	0	0	6.8	10	0	0	0	0
10160005	14	18	5	6	1	0	142.7	141.4	128.9	261.8	171.8	0	142.7	141.4	70.9	261.8	171.8	0
10160006	11	15	4	5	1	0	114.2	113.1	103.1	209.4	137.4	0	114.2	113.1	56.7	209.4	137.4	0
10160008	2	3	1	1	0	0	21.4	21.2	19.3	39.3	0	0	21.4	21.2	10.6	39.3	0	0
10160009	2	3	1	1	0	0	21.4	21.2	19.3	39.3	0	0	21.4	21.2	10.6	39.3	0	0
10160010	3	4	1	1	0	0	28.5	28.3	25.8	52.4	0	0	28.5	28.3	14.2	52.4	0	0
10160011	11	14	4	5	1	0	107	106	96.7	196.4	128.9	0	107	106	53.2	196.4	128.9	0
10170101	17	22	6	8	1	0	186.8	253.9	147.1	496.4	121.7	0	186.8	253.9	88.9	348	112.4	0
10170102	16	21	6	7	1	0	164.1	162.6	148.3	301.1	197.6	0	164.1	162.6	81.5	301.1	197.6	0
10170103	1	2	1	1	0	0	14.3	14.1	12.9	26.2	0	0	14.3	14.1	7.1	26.2	0	0
10170201	4	6	2	2	0	0	42.8	42.4	38.7	78.5	0	0	42.8	42.4	21.3	78.5	0	0
10170202	19	24	7	8	1	0	185.6	186.5	169.6	344.1	225.2	0	185.6	186.5	92.2	340.4	223.3	0
10170203	79	105	29	33	6	0	864.9	955.1	749.2	1645.1	1053.2	0	864.9	955.1	415	1526	992.5	0
10170204	1	1	0	0	0	0	8.7	12	0	0	0	0	8.7	12	0	0	0	0
10180001	2	2	1	1	0	0	1.3	1.6	1.4	2.7	0	0	1.3	1.6	0.4	1.2	0	0
10180007	9	11	3	4	0	0	15.4	24.1	18.3	47	0	0	15.4	24.1	6.4	24.6	0	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
10180008	14	19	5	6	1	0	42.8	72.2	53.4	143.1	33.4	0	42.8	72.2	19.2	77.7	19.2	0
10180009	8	9	2	3	0	0	17.8	22.7	11.4	32.1	0	0	17.8	22.7	5.4	17.1	0	0
10180010	7	8	2	3	0	0	5.2	6.4	5.4	11.4	0	0	5.2	6.4	1.7	5	0	0
10180011	14	17	5	6	0	0	24.2	31	26.8	61.1	0	0	24.2	31	9.2	31.6	0	0
10180012	6	6	2	2	0	0	14.4	14.4	14.3	28.7	0	0	14.4	14.4	5	15.3	0	0
10180013	6	7	1	2	0	0	12.6	17	5.5	19.9	0	0	12.6	17	3.4	10.6	0	0
10180014	2	2	0	0	0	0	2.6	3.2	0	0	0	0	2.6	3.2	0	0	0	0
10190001	15	20	6	7	1	0	12.1	15.4	13	26	15.5	0	12.1	15.4	4.1	11.4	7.3	0
10190002	125	164	49	55	10	1	122.1	156.9	132.2	272.4	156.8	50.3	122.1	156.9	42.6	127.3	78.3	25.5
10190003	243	322	93	108	16	2	539.7	710.4	596.5	1325.4	705	288.9	539.7	710.4	207.3	707.1	404.8	167.6
10190004	33	43	13	14	3	0	37.4	48.3	40.7	85.5	48.2	0	37.4	48.3	13.4	41.5	25	0
10190005	65	86	25	29	5	1	96.5	125.8	105.8	228.5	125.2	47	96.5	125.8	35.7	116.3	68.3	26.1
10190006	34	45	13	15	3	0	44.8	58.2	49	104.7	58	0	44.8	58.2	16.4	52.3	31	0
10190007	11	15	4	5	1	0	17.7	22.9	19.3	41.8	22.1	0	17.7	22.9	6.5	21.4	12.2	0
10190009	5	6	2	2	0	0	11	13.2	11.9	25.4	0	0	11	13.2	4.1	13.5	0	0
10190010	20	27	8	9	1	0	44.9	59	49.6	110.2	58.6	0	44.9	59	17.2	58.8	33.6	0
10190011	6	8	2	3	0	0	9.3	12.2	10.2	22.3	0	0	9.3	12.2	3.5	11.5	0	0
10190012	15	20	6	7	1	0	34.5	45.5	37.4	83.9	43.6	0	34.5	45.5	13.1	44.8	25.1	0
10190013	27	35	10	12	2	0	51.9	68.2	57.3	126.3	67.7	0	51.9	68.2	19.8	66.6	38.4	0
10190015	1	2	0	1	0	0	3.6	3.7	0	7.2	0	0	3.6	3.7	0	3.8	0	0
10190016	6	7	1	2	0	0	12.7	16.6	6.6	21.1	0	0	12.7	16.6	3.6	11.2	0	0
10190017	2	2	0	1	0	0	3.7	4.9	0	6.5	0	0	3.7	4.9	0	3.5	0	0
10190018	7	8	2	2	0	0	13.5	17.9	6.2	21.3	0	0	13.5	17.9	3.6	11.2	0	0
10200101	12	15	4	4	0	0	142.8	229.3	98.8	441.8	0	0	142.8	229.3	64.9	257	0	0
10200103	26	34	9	11	2	0	455.1	737.9	321.6	1441.8	686.3	0	455.1	737.9	211.3	840.9	430.1	0
10200201	9	11	3	4	0	0	148.2	240.3	104.7	470	0	0	148.2	240.3	68.8	273.9	0	0
10200202	21	26	7	9	1	0	354	573.9	250.1	1121.4	533.8	0	354	573.9	164.4	654	334.5	0
10200203	27	35	9	11	2	0	467.7	758.4	330.5	1481.9	705.4	0	467.7	758.4	217.2	864.2	442.1	0
10210002	2	2	0	0	0	0	2.2	2.5	0	0	0	0	2.2	2.5	0	0	0	0
10210003	2	3	1	1	0	0	30.3	48.9	21.2	94.9	0	0	30.3	48.9	13.9	55.3	0	0
10210004	1	1	0	0	0	0	8.9	14.3	0	0	0	0	8.9	14.3	0	0	0	0
10210007	1	2	0	0	0	0	17.1	27.6	0	0	0	0	17.1	27.6	0	0	0	0
10210008	1	1	0	0	0	0	0.7	0.8	0	0	0	0	0.7	0.8	0	0	0	0
10210009	6	8	2	2	0	0	89.3	144.1	62.5	279.8	0	0	89.3	144.1	41	163	0	0
10210010	4	5	1	1	0	0	28	44.1	18.6	82.6	0	0	28	44.1	12.2	47.8	0	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
10220001	22	27	6	7	0	0	122.5	194.3	79.8	372.9	0	0	122.5	194.3	52.5	212.1	0	0
10220002	5	7	2	2	0	0	56	91.8	39.1	184.6	0	0	56	91.8	25.7	105.8	0	0
10220003	21	27	7	9	1	0	329.5	535.1	232.4	1049.9	427.5	0	329.5	535.1	152.7	610.7	267.9	0
10220004	2	3	1	1	0	0	25.7	41.9	18	83.4	0	0	25.7	41.9	11.8	48.1	0	0
10230001	25	33	9	11	2	0	433	564.4	265.1	1096.4	589.7	0	433	564.4	213.2	814	469.3	0
10230002	6	7	2	2	0	0	96.9	96.3	50.4	185.3	0	0	96.9	96.3	50.4	185.3	0	0
10230003	9	12	4	4	1	0	157.9	168.4	98.3	317.3	197.3	0	157.9	168.4	82.4	300.7	189.8	0
10230004	4	5	1	2	0	0	60.6	60.2	31.5	115.8	0	0	60.6	60.2	31.5	115.8	0	0
10230005	2	3	1	1	0	0	36.4	36.1	18.9	69.5	0	0	36.4	36.1	18.9	69.5	0	0
10230006	118	153	43	50	8	0	2012.7	2568.2	1215.8	4985.7	2715.9	0	2012.7	2568.2	996.2	3789.5	2205.9	0
10230007	6	8	2	3	0	0	109.1	108.3	56.7	208.5	0	0	109.1	108.3	56.7	208.5	0	0
10240001	9	11	3	4	1	0	148.6	196.8	93.8	382.6	205.2	0	148.6	196.8	73.1	279.2	160.6	0
10240002	2	3	1	1	0	0	36.4	36.1	18.9	69.5	0	0	36.4	36.1	18.9	69.5	0	0
10240003	1	1	0	0	0	0	12.1	12	0	0	0	0	12.1	12	0	0	0	0
10240005	4	6	2	2	0	0	74	112.1	85.6	214.5	0	0	74	112.1	37.9	139.9	0	0
10240006	10	13	4	4	1	0	177	287	125.1	560.7	266.9	0	177	287	82.2	327	167.3	0
10240008	9	11	3	4	1	0	150.7	244.7	125.5	467.2	233.9	0	150.7	244.7	71.4	279	150.9	0
10240009	2	3	1	1	0	0	36.4	36.1	18.9	69.5	0	0	36.4	36.1	18.9	69.5	0	0
10240010	1	1	0	0	0	0	12.3	16.8	0	0	0	0	12.3	16.8	0	0	0	0
10240011	35	46	14	15	3	0	615.1	1007.1	851.9	1871.1	1150.4	0	615.1	1007.1	317.6	1160.8	766.8	0
10240012	43	56	17	19	3	0	740.2	1103.4	877.2	2184.7	1339.5	0	740.2	1103.4	383.1	1410.5	916.7	0
10240013	2	3	1	1	0	0	36.8	48.6	35.3	95.6	0	0	36.8	48.6	19.1	70.2	0	0
10250002	2	2	1	1	0	0	4.5	6.2	4.4	11.3	0	0	4.5	6.2	1.8	6.2	0	0
10250003	7	10	3	3	0	0	20.2	28.3	23.2	50.8	0	0	20.2	28.3	8.3	29.6	0	0
10250004	3	4	1	1	0	0	40	64.4	30.8	122.4	0	0	40	64.4	18.5	72.3	0	0
10250009	1	1	0	0	0	0	12.3	20	0	0	0	0	12.3	20	0	0	0	0
10250015	4	6	2	2	0	0	69.5	113.4	93.9	195.6	0	0	69.5	113.4	35.6	129.6	0	0
10250016	2	3	1	1	0	0	37.5	61	34	114.9	0	0	37.5	61	18	69.6	0	0
10250017	5	6	2	2	0	0	85.4	139.5	118.2	239.3	0	0	85.4	139.5	44	159.6	0	0
10260001	4	5	1	2	0	0	13.7	20.5	16.7	35.1	0	0	13.7	20.5	6	22.4	0	0
10260003	2	3	1	1	0	0	31.2	50.9	43	87.1	0	0	31.2	50.9	16	58.1	0	0
10260004	3	4	1	1	0	0	13.7	21.1	17.3	36	0	0	13.7	21.1	6.3	23.5	0	0
10260005	4	6	2	2	0	0	49.4	79.9	67.2	136.6	0	0	49.4	79.9	24.9	91	0	0
10260006	4	5	1	2	0	0	61	99.6	84.4	170.9	0	0	61	99.6	31.5	114	0	0
10260007	8	11	3	4	1	0	146.1	238.7	202.3	409.5	254.8	0	146.1	238.7	75.4	273.1	182.5	0

							Baseline (tons)						Options 2 and 4 (tons)					
HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
10260008	14	18	6	6	1	0	243.9	398.5	337.8	683.7	425.5	0	243.9	398.5	125.8	455.9	304.7	0
10260012	8	11	3	4	1	0	146.4	239.1	202.6	410.3	255.3	0	146.4	239.1	75.5	273.6	182.8	0
10260014	2	3	1	1	0	0	36.6	59.8	50.7	102.6	0	0	36.6	59.8	18.9	68.4	0	0
10260015	4	6	2	2	0	0	73.2	119.6	101.3	205.1	0	0	73.2	119.6	37.7	136.8	0	0
10270101	5	6	2	2	0	0	85.4	139.5	118.2	239.3	0	0	85.4	139.5	44	159.6	0	0
10270102	51	66	20	22	4	0	878.1	1434.7	1216.1	2461.5	1531.9	0	878.1	1434.7	453	1641.3	1097	0
10270104	110	143	43	47	9	1	1902.7	3108.9	2635	5337.4	3321.3	693.9	1902.7	3108.9	981.5	3556.8	2376.9	497.4
10270201	4	5	1	2	0	0	63.2	102.5	44.7	200.3	0	0	63.2	102.5	29.3	116.8	0	0
10270202	18	24	6	8	1	0	316	512.4	223.3	1001.3	476.6	0	316	512.4	146.7	583.9	298.7	0
10270203	10	12	3	4	1	0	164.3	266.5	116.1	520.7	247.8	0	164.3	266.5	76.3	303.6	155.3	0
10270204	1	2	1	1	0	0	25.3	41	17.9	80.1	0	0	25.3	41	11.7	46.7	0	0
10270205	7	9	3	3	1	0	122.4	199.8	161.5	347.4	210.7	0	122.4	199.8	62.5	228.5	149.3	0
10270206	14	18	5	6	1	0	240.2	389.4	170.3	760.6	362.4	0	240.2	389.4	111.6	443.8	227.2	0
10270207	2	3	1	1	0	0	37.1	60.4	42.3	108.7	0	0	37.1	60.4	18.4	69	0	0
10280101	23	30	9	10	2	0	395.5	610.4	496.5	1210.9	740.5	0	395.5	610.4	204.6	753.5	490.6	0
10280102	7	9	3	3	1	0	122.6	162.2	117.8	318.9	197.5	0	122.6	162.2	63.6	233.9	151.1	0
10280103	1	1	0	0	0	0	12.4	19.9	0	0	0	0	12.4	19.9	0	0	0	0
10280201	3	4	1	1	0	0	48.9	59.2	39.7	115.7	0	0	48.9	59.2	25.4	93.3	0	0
10280202	8	10	3	3	1	0	136.4	223.8	189	445.4	271.1	0	136.4	223.8	70.5	259.8	169.8	0
10280203	5	7	2	2	0	0	86.8	142.4	120.3	283.4	0	0	86.8	142.4	44.9	165.3	0	0
10290101	17	22	7	7	1	0	292.7	478.2	405.4	820.5	510.6	0	292.7	478.2	151	547.1	365.7	0
10290102	15	19	6	6	1	0	257.4	421.1	356.5	758.1	468.3	0	257.4	421.1	132.9	483.9	321.2	0
10290103	3	4	1	1	0	0	49.1	80.3	67.9	145	0	0	49.1	80.3	25.3	92.3	0	0
10290104	7	9	3	3	1	0	122.9	201.3	170.3	371.7	228.7	0	122.9	201.3	63.5	231.8	153.3	0
10290105	14	18	5	6	1	0	235.7	386.6	326.4	769.3	468.3	0	235.7	386.6	121.8	448.7	293.2	0
10290106	39	51	15	17	3	0	669.8	1098.7	927.7	2186.5	1331	0	669.8	1098.7	346.1	1275.2	833.4	0
10290107	11	15	4	5	1	0	198.5	325.5	274.9	647.8	394.4	0	198.5	325.5	102.6	377.8	246.9	0
10290108	81	106	32	35	7	1	1401.3	2298.5	1940.9	4565.6	2780.1	734.9	1401.3	2298.5	724.2	2667.2	1743.6	460.3
10290109	57	75	22	25	5	1	992.3	1627.7	1374.4	3239.2	1971.9	522.6	992.3	1627.7	512.8	1889.2	1234.6	326.8
10290110	10	13	4	4	1	0	173.7	284.9	240.5	566.9	345.1	0	173.7	284.9	89.7	330.6	216.1	0
10290111	13	17	5	6	1	0	223.3	366.2	309.2	728.8	443.7	0	223.3	366.2	115.4	425.1	277.8	0
10290201	26	35	10	11	2	0	458.9	752.8	635.7	1498.1	912	0	458.9	752.8	237.2	873.8	571	0
10290202	10	13	4	4	1	0	173.7	284.9	240.5	566.9	345.1	0	173.7	284.9	89.7	330.6	216.1	0
10290203	17	23	7	7	1	0	297.7	488.3	412.3	971.8	591.6	0	297.7	488.3	153.8	566.8	370.4	0
10300101	193	253	75	84	16	2	3345.4	5486.2	4633.5	10821.6	6595.9	1726.9	3345.4	5486.2	1728.6	6361.6	4163.3	1087.3

							Baseline (tons)						Options 2 and 4 (tons)					
HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
10300102	119	157	47	52	10	1	2071.5	3397.9	2869	6761.9	4116.4	1090.9	2071.5	3397.9	1070.5	3943.7	2577.2	682.3
10300103	10	13	4	4	1	0	173.7	284.9	240.5	566.9	345.1	0	173.7	284.9	89.7	330.6	216.1	0
10300104	52	68	20	22	4	0	893.1	1464.9	1237	2915.3	1774.7	0	893.1	1464.9	461.5	1700.3	1111.1	0
10300200	101	132	39	42	7	0	1267	2075	1741.2	3989.9	2187.5	0	1267	2075	643	2305.3	1357.9	0
11010001	74	97	29	32	6	1	1265.3	1393	847.2	2700.5	1665.8	358.3	1265.3	1393	669.1	2421.4	1513.4	317.8
11010002	68	89	26	29	6	1	1178.4	1932.9	1632.1	3846.6	2341.6	620.6	1178.4	1932.9	609	2243.4	1466.1	388.1
11010003	64	84	25	28	5	1	1105.9	1524.4	1147.5	3003.1	1837.5	451.6	1105.9	1524.4	577.9	2110.7	1350.1	322.3
11010004	39	51	15	17	3	0	687	688.2	368.2	1329.4	824	0	687	688.2	368.2	1329.4	824	0
11010005	5	7	2	2	0	0	84.8	84.6	45.1	162.5	0	0	84.8	84.6	45.1	162.5	0	0
11010006	26	34	10	11	2	0	444.2	663.9	529.4	1314.4	802.2	0	444.2	663.9	231	846.9	546.9	0
11010007	21	27	8	9	2	0	474.1	741.9	578.4	1484.8	838.9	0	474.1	741.9	245.3	939.9	566.8	0
11010008	29	38	11	12	2	0	532.4	854.6	704.2	1703.9	1021.2	0	532.4	854.6	276.6	1028.1	658.6	0
11010009	5	7	2	2	0	0	132	148.4	89.1	301.6	0	0	132	148.4	77.6	283.5	0	0
11010010	16	22	6	7	1	0	282.5	356.4	249.3	698.2	428.5	0	282.5	356.4	148.5	540.4	342.3	0
11010011	39	52	15	17	3	0	680.2	1054.6	860.9	2092.3	1275.7	0	680.2	1054.6	352.9	1296.4	841	0
11010012	8	10	3	3	1	0	137.9	138.2	74	267.1	165.6	0	137.9	138.2	74	267.1	165.6	0
11010013	24	31	9	10	2	0	792.9	860.2	485.6	1778.3	1110.4	0	792.9	860.2	485.6	1778.3	1110.4	0
11010014	23	30	9	10	2	0	406.7	408.7	219.1	791.6	490.8	0	406.7	408.7	219.1	791.6	490.8	0
11020001	9	11	3	4	1	0	7	8.9	7.5	15.1	9	0	7	8.9	2.4	6.6	4.2	0
11020002	37	49	15	16	3	0	30	38.2	32.2	64.3	38.2	0	30	38.2	10.1	28.2	18	0
11020003	28	36	11	12	2	0	22.3	28.4	24	47.9	28.5	0	22.3	28.4	7.5	21	13.4	0
11020004	53	70	21	23	4	1	68.3	88.6	74.5	158.8	88.3	31.7	68.3	88.6	24.8	78.9	46.9	17.2
11020006	1	1	0	0	0	0	0.6	0.8	0	0	0	0	0.6	0.8	0	0	0	0
11020009	19	25	8	9	1	0	23	29.8	25	52.9	29.4	0	23	29.8	8.3	26	15.4	0
11020010	4	5	2	2	0	0	3.2	4	3.3	6.7	0	0	3.2	4	1.1	3	0	0
11020011	2	3	1	1	0	0	3.2	4.1	3.5	7.4	0	0	3.2	4.1	1.2	3.7	0	0
11020013	1	1	0	0	0	0	1.1	1.5	0	0	0	0	1.1	1.5	0	0	0	0
11030001	11	15	4	5	0	0	24.5	35.3	27.1	57.7	0	0	24.5	35.3	9.4	38.1	0	0
11030002	2	3	1	1	0	0	5.4	7.6	6	12.8	0	0	5.4	7.6	2.1	8	0	0
11030003	22	29	8	10	0	0	134.5	213.1	176.4	361.2	0	0	134.5	213.1	64.8	240.5	0	0
11030005	9	12	3	4	0	0	102	165.2	139.2	282.6	0	0	102	165.2	51.6	188.3	0	0
11030006	9	12	4	4	1	0	157.5	257.3	218.1	441.4	274.5	0	157.5	257.3	81.2	294.3	196.5	0
11030007	1	1	0	0	0	0	7.2	11.7	0	0	0	0	7.2	11.7	0	0	0	0
11030008	3	4	1	1	0	0	48.8	79.7	67.6	136.7	0	0	48.8	79.7	25.2	91.2	0	0
11030009	1	2	1	1	0	0	24.4	39.9	33.8	68.4	0	0	24.4	39.9	12.6	45.6	0	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
11030010	6	7	2	2	0	0	97.6	159.4	135.1	273.5	0	0	97.6	159.4	50.3	182.4	0	0
11030011	8	11	3	4	1	0	146.4	239.1	202.7	410.2	255.3	0	146.4	239.1	75.5	273.6	182.8	0
11030012	19	25	7	8	2	0	329.3	538	456	923.1	574.5	0	329.3	538	169.9	615.5	411.4	0
11030013	56	73	22	24	5	0	975.7	1594.2	1351.2	2735	1702.1	0	975.7	1594.2	503.3	1823.7	1218.9	0
11030014	11	14	4	5	1	0	182.9	298.9	253.3	512.8	319.1	0	182.9	298.9	94.4	341.9	228.5	0
11030015	1	1	0	0	0	0	12.2	19.9	0	0	0	0	12.2	19.9	0	0	0	0
11030016	1	2	1	1	0	0	24.4	39.9	33.8	68.4	0	0	24.4	39.9	12.6	45.6	0	0
11030017	12	16	5	5	1	0	207.3	338.8	287.1	581.2	361.7	0	207.3	338.8	106.9	387.5	259	0
11030018	83	108	33	36	7	0	1439.1	2351.4	1993	4034.1	2510.6	0	1439.1	2351.4	742.3	2690	1797.8	0
11040002	2	3	1	1	0	0	4.4	4.9	3.8	8.7	0	0	4.4	4.9	1.8	6	0	0
11040003	3	4	1	1	0	0	7.3	10.1	8	17.4	0	0	7.3	10.1	2.8	10.6	0	0
11040006	6	8	2	3	0	0	12.6	16.9	12.8	27.8	0	0	12.6	16.9	4.9	19.1	0	0
11040007	4	5	1	2	0	0	29.7	47.5	39.7	80.9	0	0	29.7	47.5	14.6	53.9	0	0
11050001	4	5	2	2	0	0	67.1	67.1	35.7	129.4	0	0	67.1	67.1	35.6	129.3	0	0
11050002	68	89	26	29	5	1	1147.8	1146.4	609.2	2215.2	1434.2	404.1	1147.8	1146.4	609.2	2215.2	1434.2	404.1
11050003	33	44	13	14	3	0	567.9	567.2	301.4	1095.9	709.5	0	567.9	567.2	301.4	1095.9	709.5	0
11060001	11	14	4	5	1	0	182.1	242.6	178.3	435	274.9	0	182.1	242.6	95.2	345.7	227.5	0
11060002	1	2	1	1	0	0	17.1	18.5	11	34.8	0	0	17.1	18.5	9	32.6	0	0
11060005	6	7	2	2	0	0	96.8	146.8	118.8	255.7	0	0	96.8	146.8	50.2	182	0	0
11060006	13	17	5	6	1	0	217.5	217.2	115.4	419.7	271.7	0	217.5	217.2	115.4	419.7	271.7	0
11070101	3	4	1	1	0	0	48.8	79.7	67.6	136.7	0	0	48.8	79.7	25.2	91.2	0	0
11070102	8	10	3	3	1	0	134.2	219.2	185.8	376.1	234	0	134.2	219.2	69.2	250.8	167.6	0
11070103	21	28	8	9	2	0	364	470.6	337.1	849.7	538.3	0	364	470.6	190.7	692.3	454.8	0
11070104	2	3	1	1	0	0	36.6	59.8	50.7	102.6	0	0	36.6	59.8	18.9	68.4	0	0
11070105	48	62	19	21	4	0	809.5	808.5	429.7	1562.3	1011.5	0	809.5	808.5	429.7	1562.3	1011.5	0
11070106	16	21	6	7	1	0	279	356.9	253.3	646.1	409.6	0	279	356.9	146.3	531	348.6	0
11070107	67	88	26	29	5	1	1135.7	1134.3	602.8	2191.9	1419.1	399.9	1135.7	1134.3	602.8	2191.9	1419.1	399.9
11070201	6	7	2	2	0	0	97.6	159.4	135.1	273.5	0	0	97.6	159.4	50.3	182.4	0	0
11070203	1	2	1	1	0	0	24.4	39.9	33.8	68.4	0	0	24.4	39.9	12.6	45.6	0	0
11070204	10	13	4	4	1	0	170.7	279	236.5	478.6	297.9	0	170.7	279	88.1	319.1	213.3	0
11070205	1	1	0	0	0	0	12.2	19.9	0	0	0	0	12.2	19.9	0	0	0	0
11070206	15	20	6	6	1	0	254.7	282.1	172.2	544	347.2	0	254.7	282.1	134.6	489.9	317.8	0
11070207	79	104	31	34	6	1	1371.6	2215.9	1856.5	4304.4	2632.8	676.3	1371.6	2215.9	709.3	2604.7	1707.9	437.3
11070208	56	73	22	24	5	0	961.9	1427.5	1132.7	2825.4	1727.3	0	961.9	1427.5	500.4	1834.7	1186.3	0
11070209	25	33	10	11	2	0	423	422.4	224.5	815.9	526.8	0	423	422.4	224.5	815.9	526.8	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
11080002	6	8	2	2	0	0	4.5	3.5	1.5	4.1	0	0	4.5	3.5	1.5	4.1	0	0
11080003	10	13	4	4	1	0	7.7	6	2.6	7	3.9	0	7.7	6	2.6	7	3.9	0
11080004	2	2	1	1	0	0	1.3	1	0.4	1.2	0	0	1.3	1	0.4	1.2	0	0
11080006	9	12	3	4	1	0	7.1	5.5	2.4	6.4	3.6	0	7.1	5.5	2.4	6.4	3.6	0
11080008	2	2	1	1	0	0	1.6	1.2	0.6	1.6	0	0	1.6	1.2	0.6	1.6	0	0
11090101	2	3	1	1	0	0	2.4	1.9	0.8	2.5	0	0	2.4	1.9	0.8	2.5	0	0
11090103	23	30	9	10	2	0	35.6	27.8	13.5	43.3	25.5	0	35.6	27.8	13.5	43.3	25.5	0
11090104	1	1	0	0	0	0	1.1	0.9	0	0	0	0	1.1	0.9	0	0	0	0
11090105	37	49	15	16	2	0	49.5	38.4	18.2	57.9	32.5	0	49.5	38.4	18.2	57.9	32.5	0
11090106	33	43	13	14	2	0	46	37.5	18	58.3	33.2	0	46	37.5	18	58.3	33.2	0
11090202	69	90	27	30	6	1	1172	1170.5	622	2261.8	1464.4	412.6	1172	1170.5	622	2261.8	1464.4	412.6
11090203	46	60	18	20	4	0	773.3	772.3	410.4	1492.4	966.2	0	773.3	772.3	410.4	1492.4	966.2	0
11090204	26	34	10	11	2	0	447	446.5	237.3	862.8	558.6	0	447	446.5	237.3	862.8	558.6	0
11100101	3	4	1	1	0	0	5.9	4.2	2.5	7.7	0	0	5.9	4.2	2.5	7.7	0	0
11100102	4	5	1	1	0	0	8	5.6	3.6	10.5	0	0	8	5.6	3.5	10.5	0	0
11100103	3	4	1	1	0	0	7	5.4	2.8	9.2	0	0	7	5.4	2.8	9.2	0	0
11100104	23	30	9	10	2	0	50.4	39.2	19.8	66.2	37.8	0	50.4	39.2	19.8	66.2	37.8	0
11100201	15	20	6	6	0	0	30	23.3	13.1	41.4	0	0	30	23.3	13.1	41.4	0	0
11100202	1	1	0	0	0	0	1.3	1.1	0	0	0	0	1.3	1.1	0	0	0	0
11100203	2	3	1	1	0	0	9.1	8.7	4.6	16.2	0	0	9.1	8.7	4.6	16.2	0	0
11100301	40	52	16	17	3	0	669.4	668.5	355.2	1291.5	836	0	669.4	668.5	355.2	1291.5	836	0
11100302	144	188	56	62	12	1	2440.6	2437.6	1295.4	4710.2	3049.5	859.3	2440.6	2437.6	1295.4	4710.2	3049.5	859.3
11100303	135	177	53	59	11	1	2295.6	2292.8	1218.4	4430.4	2868.4	808.3	2295.6	2292.8	1218.4	4430.4	2868.4	808.3
11110101	203	266	79	88	16	2	3443.5	3439.2	1827.6	6645.6	4302.6	1212.4	3443.5	3439.2	1827.6	6645.6	4302.6	1212.4
11110102	30	39	12	13	2	0	507.5	506.8	269.3	979.4	634.1	0	507.5	506.8	269.3	979.4	634.1	0
11110103	72	94	28	31	6	1	1222.1	1219.4	648.8	2350.7	1492.8	367.1	1222.1	1219.4	648.8	2350.7	1492.8	367.1
11110104	51	66	20	22	4	0	858.4	857	455.7	1654.2	1062	0	858.4	857	455.7	1654.2	1062	0
11110105	35	46	14	15	3	0	592.6	591.5	314.6	1141.2	729.9	0	592.6	591.5	314.6	1141.2	729.9	0
11110201	64	83	25	27	5	0	1078.8	1075.1	573	2066.5	1280.3	0	1078.8	1075.1	573	2066.5	1280.3	0
11110202	36	47	14	15	3	0	606.1	604	321.9	1161	719.3	0	606.1	604	321.9	1161	719.3	0
11110203	56	74	22	24	4	0	957.6	954.3	508.6	1834.3	1136.4	0	957.6	954.3	508.6	1834.3	1136.4	0
11110204	11	14	4	5	1	0	181.8	181.2	96.6	348.3	215.8	0	181.8	181.2	96.6	348.3	215.8	0
11110205	30	39	12	13	2	0	509.1	507.3	270.4	975.2	604.2	0	509.1	507.3	270.4	975.2	604.2	0
11110206	11	15	5	5	1	0	193.9	193.3	103	371.5	230.2	0	193.9	193.3	103	371.5	230.2	0
11110207	168	220	66	73	13	1	3975.9	4163.3	2296.8	8360.7	5204.6	1539.5	3975.9	4163.3	2296.8	8360.7	5204.6	1539.5

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
11120101	11	14	4	5	1	0	24.6	19.3	9.6	32.2	20	0	24.6	19.3	9.6	32.2	20	0
11120102	8	10	3	3	1	0	16.8	13.2	6.6	22.2	13.6	0	16.8	13.2	6.6	22.2	13.6	0
11120103	65	85	25	28	5	0	113.8	88.8	43.4	143.1	84.7	0	113.8	88.8	43.4	143.1	84.7	0
11120104	3	3	1	1	0	0	5.6	4.4	2.2	7.4	0	0	5.6	4.4	2.2	7.4	0	0
11120105	6	8	2	3	0	0	36.9	36	18.8	67.6	0	0	36.9	36	18.8	67.6	0	0
11120201	3	4	1	1	0	0	3.6	2.8	1.3	4	0	0	3.6	2.8	1.3	4	0	0
11120301	1	1	0	0	0	0	1.5	1.1	0	0	0	0	1.5	1.1	0	0	0	0
11120302	20	26	8	9	2	0	311.2	310.4	164.5	599	387.1	0	311.2	310.4	164.5	599	387.1	0
11120303	9	11	3	4	1	0	145	144.8	77	279.8	181.2	0	145	144.8	77	279.8	181.2	0
11130101	4	5	1	2	0	0	58.2	58	30.7	112.1	0	0	58.2	58	30.7	112.1	0	0
11130102	1	1	0	0	0	0	12.1	12.1	0	0	0	0	12.1	12.1	0	0	0	0
11130103	4	5	2	2	0	0	9.6	8.4	4.2	14.5	0	0	9.6	8.4	4.2	14.5	0	0
11130104	3	4	1	1	0	0	3.7	2.8	1.3	4	0	0	3.7	2.8	1.3	4	0	0
11130201	11	14	4	5	1	0	181.4	181.2	96.1	350.1	226.5	0	181.4	181.2	96.1	350.1	226.5	0
11130202	11	14	4	5	1	0	181.2	181	96.2	349.8	226.5	0	181.2	181	96.2	349.8	226.5	0
11130203	36	48	14	16	3	0	616.2	615.4	327.1	1189.2	769.9	0	616.2	615.4	327.1	1189.2	769.9	0
11130206	60	78	23	26	5	0	1018	1016.4	537.1	1963.9	1268.5	0	1018	1016.4	537.1	1963.9	1268.5	0
11130208	19	25	8	8	2	0	326.2	325.8	173.1	629.6	407.6	0	326.2	325.8	173.1	629.6	407.6	0
11130209	10	13	4	4	1	0	169.7	169.4	89.5	327.3	211.4	0	169.7	169.4	89.5	327.3	211.4	0
11130210	50	65	19	22	4	0	846.9	845.7	448.3	1634.2	1056.9	0	846.9	845.7	448.3	1634.2	1056.9	0
11130301	2	3	1	1	0	0	17.9	17.6	9.4	33.7	0	0	17.9	17.6	9.4	33.7	0	0
11130302	17	22	7	7	1	0	287.9	287.5	152.8	555.6	359.6	0	287.9	287.5	152.8	555.6	359.6	0
11130303	9	11	3	4	1	0	145	144.8	77	279.8	181.2	0	145	144.8	77	279.8	181.2	0
11130304	14	18	5	6	1	0	229.6	229.3	121.8	443	286.8	0	229.6	229.3	121.8	443	286.8	0
11140101	67	88	26	29	5	1	1138.3	1136.6	601.5	2196.1	1419.4	374.9	1138.3	1136.6	601.5	2196.1	1419.4	374.9
11140103	9	12	4	4	1	0	157.1	156.9	83.4	303.1	196.3	0	157.1	156.9	83.4	303.1	196.3	0
11140105	3	4	1	1	0	0	48.3	48.3	25.7	93.3	0	0	48.3	48.3	25.7	93.3	0	0
11140106	15	20	6	6	1	0	254.3	253.8	134.5	490.1	314.8	0	254.3	253.8	134.5	490.1	314.8	0
11140108	9	11	3	4	1	0	145.1	144.8	77	279.5	178.8	0	145.1	144.8	77	279.5	178.8	0
11140109	5	7	2	2	0	0	84.8	84.5	45	162.6	0	0	84.8	84.5	45	162.6	0	0
11140201	7	9	3	3	1	0	121.5	126.1	66	239.6	145.4	0	121.5	126.1	64	232.2	142.4	0
11140203	31	40	12	13	2	0	531.4	726.2	339.9	1287	672.3	0	531.4	726.2	262.7	996.7	554.7	0
11140204	9	12	3	4	1	0	162.9	264.1	116.3	451.2	214.8	0	162.9	264.1	76.4	300.9	153.9	0
11140205	2	3	1	1	0	0	36.8	45.8	22.2	82.9	0	0	36.8	45.8	18.7	69.6	0	0
11140206	9	12	3	4	1	0	162.9	263.9	116.3	451	214.8	0	162.9	263.9	76.4	300.9	154	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
11140207	23	29	8	9	1	0	388.4	629.7	277.4	1076	512.3	0	388.4	629.7	182.2	717.6	367.1	0
11140208	6	8	2	2	0	0	100.2	162.5	71.6	277.7	0	0	100.2	162.5	47	185.2	0	0
11140209	4	5	1	2	0	0	62.6	101.6	44.7	173.6	0	0	62.6	101.6	29.4	115.7	0	0
11140301	10	13	4	4	1	0	169.7	169.4	89.5	327.3	211.4	0	169.7	169.4	89.5	327.3	211.4	0
11140302	59	77	23	25	5	0	993.8	992	524.7	1915.9	1232.9	0	993.8	992	524.7	1915.9	1232.9	0
11140303	24	31	9	10	2	0	399.9	399.3	211	771.5	498.3	0	399.9	399.3	211	771.5	498.3	0
11140304	16	21	6	7	1	0	272	374.2	174.4	663	349.4	0	272	374.2	134	511	287.8	0
11140305	25	33	10	11	2	0	424.2	423.5	223.8	818.3	528.6	0	424.2	423.5	223.8	818.3	528.6	0
11140306	15	20	6	6	1	0	255.3	269	138.9	511.6	319.7	0	255.3	269	133.3	490.6	311.2	0
11140307	24	31	9	10	2	0	399.9	399.3	211	771.5	498.3	0	399.9	399.3	211	771.5	498.3	0
12010001	49	64	19	21	4	0	836.2	834.9	441.2	1613.2	1042	0	836.2	834.9	441.2	1613.2	1042	0
12010002	195	255	76	84	16	2	3310.3	3338.1	1756.5	6430.7	4128.7	1046.1	3310.3	3338.1	1743.5	6381.6	4108.9	1046.1
12010003	19	24	7	8	1	0	315.1	314.6	166.3	607.9	392.6	0	315.1	314.6	166.3	607.9	392.6	0
12010004	58	75	22	25	4	0	984.5	1267.6	604.7	2283.7	1260.1	0	984.5	1267.6	492.6	1861.9	1089.2	0
12010005	108	141	41	46	8	1	2918	3839	1979.3	7348.5	4335.1	840.2	2918	3839	1658.7	6177.9	3812.8	782.8
12020001	61	80	24	27	5	0	1042.3	1040.6	549.9	2010.6	1298.7	0	1042.3	1040.6	549.9	2010.6	1298.7	0
12020002	56	74	22	24	5	0	957.4	955.9	505.2	1847	1193	0	957.4	955.9	505.2	1847	1193	0
12020003	49	65	19	21	4	0	1194.4	1250.7	684.4	2508.7	1628.8	0	1194.4	1250.7	684.4	2508.7	1628.8	0
12020004	53	69	21	23	4	0	896.8	895.4	473.2	1730.1	1117.5	0	896.8	895.4	473.2	1730.1	1117.5	0
12020005	74	96	29	32	6	1	1248.3	1246.3	658.6	2408.1	1555.4	400.9	1248.3	1246.3	658.6	2408.1	1555.4	400.9
12020006	19	24	7	8	2	0	362.7	369.9	198.6	726.9	470.6	0	362.7	369.9	198.6	726.9	470.6	0
12020007	61	80	24	26	5	1	1987.6	2140.1	1193.7	4381.2	2852.2	728.4	1987.6	2140.1	1193.7	4381.2	2852.2	728.4
12030101	50	65	19	22	4	0	848.4	847	447.6	1636.6	1057.1	0	848.4	847	447.6	1636.6	1057.1	0
12030102	259	339	101	112	21	2	4399.3	4392.2	2321.1	8486.8	5481.8	1413	4399.3	4392.2	2321.1	8486.8	5481.8	1413
12030103	151	198	59	65	12	1	2569.3	2565.1	1355.6	4956.5	3201.5	825.2	2569.3	2565.1	1355.6	4956.5	3201.5	825.2
12030104	123	161	48	53	10	1	2084.5	2081.1	1099.8	4021.3	2597.4	669.5	2084.5	2081.1	1099.8	4021.3	2597.4	669.5
12030105	171	224	67	74	14	1	2908.7	2903.9	1534.6	5611.1	3624.3	934.2	2908.7	2903.9	1534.6	5611.1	3624.3	934.2
12030106	154	201	60	66	12	1	2605.7	2601.4	1374.8	5026.6	3246.8	836.9	2605.7	2601.4	1374.8	5026.6	3246.8	836.9
12030107	51	67	20	22	4	0	872.6	871.2	460.4	1683.3	1087.3	0	872.6	871.2	460.4	1683.3	1087.3	0
12030108	14	19	6	6	1	0	242.4	242	127.9	467.6	302	0	242.4	242	127.9	467.6	302	0
12030109	59	77	23	25	5	0	993.8	992.2	524.3	1917.1	1238.3	0	993.8	992.2	524.3	1917.1	1238.3	0
12030201	27	36	11	12	2	0	460.5	459.8	243	888.4	573.9	0	460.5	459.8	243	888.4	573.9	0
12030202	73	95	28	31	6	1	1236.2	1234.2	652.2	2384.7	1540.3	397	1236.2	1234.2	652.2	2384.7	1540.3	397
12030203	26	34	10	11	2	0	827.3	889.6	495.7	1819.3	1184.2	0	827.3	889.6	495.7	1819.3	1184.2	0
12040101	44	58	17	19	4	0	830.8	842.4	450.4	1648	1066.4	0	830.8	842.4	450.4	1648	1066.4	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
12040102	64	83	25	27	5	1	1547.8	1621.6	887.7	3253.9	2112.7	541.2	1547.8	1621.6	887.7	3253.9	2112.7	541.2
12040103	50	65	19	22	4	0	911.1	919.8	490.2	1793.4	1159.9	0	911.1	919.8	490.2	1793.4	1159.9	0
12040104	420	547	164	179	34	4	15703.8	17080.7	9592.2	35220.9	22950.8	5854.3	15703.8	17080.7	9592.2	35220.9	22950.8	5854.3
12040201	102	132	40	43	8	1	3807.6	4463.5	2467.6	9054.8	5767.8	1418	3807.6	4463.5	2319.3	8527.9	5512.7	1368.2
12040202	9	12	4	4	1	0	349.6	380.2	213.5	784	510.9	0	349.6	380.2	213.5	784	510.9	0
12040203	42	55	17	18	3	0	1586.5	1725.6	969.1	3558.3	2318.7	0	1586.5	1725.6	969.1	3558.3	2318.7	0
12040204	188	244	73	80	15	2	7018.3	7633.7	4286.9	15740.9	10257.1	2616.4	7018.3	7633.7	4286.9	15740.9	10257.1	2616.4
12040205	27	35	10	11	2	0	994.9	1082.2	607.7	2231.5	1454.1	0	994.9	1082.2	607.7	2231.5	1454.1	0
12050001	70	92	28	30	6	0	158.4	124.1	62.1	206.5	129.7	0	158.4	124.1	62.1	206.5	129.7	0
12050002	26	34	10	11	2	0	58.3	45.7	22.8	76.6	47.1	0	58.3	45.7	22.8	76.6	47.1	0
12050003	64	84	25	27	5	0	129.2	101.1	50	167.1	100.8	0	129.2	101.1	50	167.1	100.8	0
12050004	11	14	4	4	1	0	40.7	37.5	19.3	68.6	43.2	0	40.7	37.5	19.3	68.6	43.2	0
12050005	26	34	10	11	2	0	58.4	45.8	22.8	76.6	47.2	0	58.4	45.8	22.8	76.6	47.2	0
12050006	10	13	4	4	1	0	21.6	16.9	8.4	28.3	17.2	0	21.6	16.9	8.4	28.3	17.2	0
12050007	1	1	0	0	0	0	0.8	0.6	0	0	0	0	0.8	0.6	0	0	0	0
12060101	6	8	2	3	0	0	79.1	78.7	41.5	151.5	0	0	79.1	78.7	41.5	151.5	0	0
12060102	46	61	18	20	4	0	787.8	786.5	415.6	1519.7	981.6	0	787.8	786.5	415.6	1519.7	981.6	0
12060103	4	6	2	2	0	0	72.7	72.6	38.4	140.3	0	0	72.7	72.6	38.4	140.3	0	0
12060104	4	6	2	2	0	0	72.7	72.6	38.4	140.3	0	0	72.7	72.6	38.4	140.3	0	0
12060105	10	13	4	4	1	0	169.7	169.4	89.5	327.3	211.4	0	169.7	169.4	89.5	327.3	211.4	0
12060201	70	92	27	30	6	1	1187.7	1185.8	626.6	2291.2	1479.9	381.5	1187.7	1185.8	626.6	2291.2	1479.9	381.5
12060202	109	142	42	47	9	1	1842.2	1839.1	971.9	3553.7	2295.4	591.7	1842.2	1839.1	971.9	3553.7	2295.4	591.7
12060204	1	2	1	1	0	0	24.2	24.2	12.8	46.8	0	0	24.2	24.2	12.8	46.8	0	0
12070101	79	104	31	34	6	1	1345.3	1343.1	709.8	2595.1	1676.3	432.1	1345.3	1343.1	709.8	2595.1	1676.3	432.1
12070102	25	33	10	11	2	0	424.2	423.5	223.8	818.3	528.6	0	424.2	423.5	223.8	818.3	528.6	0
12070103	39	51	15	17	3	0	666.6	665.5	351.7	1285.9	830.6	0	666.6	665.5	351.7	1285.9	830.6	0
12070104	87	113	34	37	7	1	2384.9	2530.3	1397.4	5125.3	3331.9	852.3	2384.9	2530.3	1397.4	5125.3	3331.9	852.3
12070201	83	108	32	36	7	1	1459.7	1414	753	2756.5	1775.5	442.2	1459.7	1414	753	2756.5	1775.5	442.2
12070203	60	78	23	25	5	0	1216.7	1056.8	579.6	2130.9	1358.3	0	1216.7	1056.8	579.6	2130.9	1358.3	0
12070204	25	33	10	11	2	0	424.2	423.5	223.8	818.3	528.6	0	424.2	423.5	223.8	818.3	528.6	0
12070205	99	130	39	43	8	1	1876.4	1727.2	932.4	3419.7	2192.1	512.9	1876.4	1727.2	932.4	3419.7	2192.1	512.9
12080002	13	17	5	5	1	0	155.1	152.9	80.6	293.6	189.2	0	155.1	152.9	80.6	293.6	189.2	0
12080003	40	52	16	17	3	0	89.3	70	35	116.7	72.9	0	89.3	70	35	116.7	72.9	0
12080004	31	40	12	13	2	0	71.6	56.7	28.4	95.7	58.9	0	71.6	56.7	28.4	95.7	58.9	0
12080005	118	155	46	51	9	1	265.8	208.3	103.9	350	213.7	49.7	265.8	208.3	103.9	350	213.7	49.7

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
12080006	13	16	5	5	1	0	28.2	22.1	11	37	22.8	0	28.2	22.1	11	37	22.8	0
12080008	5	7	2	2	0	0	84.8	84.7	44.8	163.7	0	0	84.8	84.7	44.8	163.7	0	0
12090102	22	29	9	10	2	0	327.3	312.9	166.7	609.2	391.7	0	327.3	312.9	166.7	609.2	391.7	0
12090103	5	6	2	2	0	0	34.4	32.9	17.2	62.1	0	0	34.4	32.9	17.2	62.1	0	0
12090104	7	9	3	3	1	0	113.7	113.2	59.8	218.5	141.1	0	113.7	113.2	59.8	218.5	141.1	0
12090105	7	9	3	3	1	0	122.7	117.3	62.7	229.6	147.7	0	122.7	117.3	62.7	229.6	147.7	0
12090106	9	11	3	4	1	0	146.1	145.6	77	281.6	181.8	0	146.1	145.6	77	281.6	181.8	0
12090107	11	14	4	5	1	0	184.8	183.4	97.1	355	229.1	0	184.8	183.4	97.1	355	229.1	0
12090110	10	13	4	4	1	0	198.7	178.2	96.9	355.6	227.4	0	198.7	178.2	96.9	355.6	227.4	0
12090201	24	31	9	10	2	0	490	422.9	232.4	854.5	544.3	0	490	422.9	232.4	854.5	544.3	0
12090203	2	2	1	1	0	0	37.7	32.5	17.9	65.8	0	0	37.7	32.5	17.9	65.8	0	0
12090204	8	11	3	4	1	0	169.7	146.5	80.5	295.9	188.5	0	169.7	146.5	80.5	295.9	188.5	0
12090205	208	271	80	89	17	2	4195.9	3673.9	2010.5	7388.6	4713.2	1031.3	4195.9	3673.9	2010.5	7388.6	4713.2	1031.3
12090206	70	92	27	30	6	1	1451.9	1253	688.5	2531.7	1612.7	345.7	1451.9	1253	688.5	2531.7	1612.7	345.7
12090301	131	172	51	57	11	1	2230	2226.3	1176.6	4301.8	2778.7	716.2	2230	2226.3	1176.6	4301.8	2778.7	716.2
12090302	7	9	3	3	1	0	227	243.9	135.8	498.4	324.4	0	227	243.9	135.8	498.4	324.4	0
12090401	38	50	15	16	3	0	1210.6	1301.1	724.8	2660	1731.4	0	1210.6	1301.1	724.8	2660	1731.4	0
12090402	35	45	14	15	3	0	1290.7	1403.9	788.4	2894.9	1886.4	0	1290.7	1403.9	788.4	2894.9	1886.4	0
12100101	19	24	7	8	2	0	385.2	396	213.9	783.2	507.5	0	385.2	396	213.9	783.2	507.5	0
12100102	5	7	2	2	0	0	134	141.7	78.1	286.5	0	0	134	141.7	78.1	286.5	0	0
12100201	80	104	31	34	6	1	1640.5	1415.8	777.9	2860.5	1822.1	390.6	1640.5	1415.8	777.9	2860.5	1822.1	390.6
12100202	26	34	10	11	2	0	449.7	443.9	235.3	860.6	555.3	0	449.7	443.9	235.3	860.6	555.3	0
12100203	47	62	18	20	4	0	878.3	819.6	440.8	1615.9	1037.2	0	878.3	819.6	440.8	1615.9	1037.2	0
12100204	27	35	10	11	2	0	662.3	695.9	381.8	1399.7	909.1	0	662.3	695.9	381.8	1399.7	909.1	0
12100301	111	144	43	48	9	1	1954.2	1890.2	1007.1	3686.6	2374.3	590.3	1954.2	1890.2	1007.1	3686.6	2374.3	590.3
12100302	223	291	86	96	18	2	4154.1	3667.7	2000.5	7344.8	4688.2	1039.7	4154.1	3667.7	2000.5	7344.8	4688.2	1039.7
12100303	9	11	3	4	1	0	163.5	166.2	89	325.8	210.8	0	163.5	166.2	89	325.8	210.8	0
12100304	101	132	39	44	8	1	1844.5	1744.2	934.8	3424.9	2201	532.7	1844.5	1744.2	934.8	3424.9	2201	532.7
12100401	12	15	5	5	1	0	430.2	468	262.8	965	628.8	0	430.2	468	262.8	965	628.8	0
12100402	26	34	10	11	2	0	950.4	1032.4	579.3	2126.9	1385.8	0	950.4	1032.4	579.3	2126.9	1385.8	0
12100403	12	16	5	5	1	0	457.1	497.2	279.2	1025.3	668.1	0	457.1	497.2	279.2	1025.3	668.1	0
12100405	26	34	10	11	2	0	968	1052.9	591.3	2171.2	1414.8	0	968	1052.9	591.3	2171.2	1414.8	0
12100406	6	8	3	3	1	0	188.3	200.9	111.4	408.6	265.8	0	188.3	200.9	111.4	408.6	265.8	0
12100407	29	38	12	13	2	0	971.5	1047.1	584.5	2145.2	1396.7	0	971.5	1047.1	584.5	2145.2	1396.7	0
12110103	6	8	2	3	0	0	23.1	19	10	35.2	0	0	23.1	19	10	35.2	0	0

							Baseline (tons)						Options 2 and 4 (tons)					
HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
12110104	11	14	4	5	1	0	67.2	56.5	30.2	108.9	68.7	0	67.2	56.5	30.2	108.9	68.7	0
12110106	31	40	12	13	2	0	406.2	348.3	190.3	696.3	442.6	0	406.2	348.3	190.3	696.3	442.6	0
12110109	21	27	8	9	2	0	52	41.3	20.8	71.1	43.7	0	52	41.3	20.8	71.1	43.7	0
12110110	33	43	13	14	3	0	383.7	377.2	198.7	723.5	466.1	0	383.7	377.2	198.7	723.5	466.1	0
12110111	37	48	14	16	3	0	541.2	559.2	305.5	1115.8	722.8	0	541.2	559.2	305.5	1115.8	722.8	0
12110201	1	2	1	1	0	0	53.8	58.5	32.9	120.6	0	0	53.8	58.5	32.9	120.6	0	0
12110202	83	108	32	35	7	1	3092.4	3363.5	1888.9	6935.6	4519.4	1152.8	3092.4	3363.5	1888.9	6935.6	4519.4	1152.8
12110203	4	5	1	2	0	0	134.5	146.2	82.1	301.5	0	0	134.5	146.2	82.1	301.5	0	0
12110204	47	62	18	20	4	0	707.5	748.9	417.2	1524	989.4	0	707.5	748.9	417.2	1524	989.4	0
12110205	28	37	11	12	2	0	775.4	837.7	469.6	1721.9	1121.1	0	775.4	837.7	469.6	1721.9	1121.1	0
12110206	3	4	1	1	0	0	22.1	22.1	12.1	43.6	0	0	22.1	22.1	12.1	43.6	0	0
12110208	251	327	98	108	20	2	3332.6	3507.3	1950.5	7116.5	4616.4	1170.6	3332.6	3507.3	1950.5	7116.5	4616.4	1170.6
13010001	1	1	0	0	0	0	0.7	0.8	0	0	0	0	0.7	0.8	0	0	0	0
13010002	9	12	4	4	1	0	16	20.8	17.4	38.1	20.6	0	16	20.8	6	20.1	11.7	0
13010003	3	4	1	1	0	0	5.3	7	5.9	12.8	0	0	5.3	7	2	6.6	0	0
13010005	1	1	0	0	0	0	1	1.2	0	0	0	0	1	1.2	0	0	0	0
13020101	128	169	50	54	9	1	209.1	169.8	88.3	267.9	165	38.6	209.1	169.8	80	254.5	158.5	36
13020102	16	21	6	6	1	0	17.9	14.1	6.8	20	12	0	17.9	14.1	6.6	19.6	11.8	0
13020201	104	137	41	44	8	1	427.3	349.9	180	662.9	365.5	33.8	427.3	349.9	180	662.9	365.5	33.8
13020202	2	2	1	1	0	0	2.4	1.9	0.9	2.8	0	0	2.4	1.9	0.9	2.8	0	0
13020203	572	744	223	244	45	4	2462.3	2011.2	1034.7	3816.8	2112.5	218.8	2462.3	2011.2	1034.7	3816.8	2112.5	218.8
13020204	5	7	2	2	0	0	22.7	18.6	9.6	35.3	0	0	22.7	18.6	9.6	35.3	0	0
13020207	41	54	16	18	3	0	349.3	291.2	152.1	585.8	308.6	0	349.3	291.2	152.1	585.8	308.6	0
13030101	4	5	1	2	0	0	48.1	40.4	21.2	83	0	0	48.1	40.4	21.2	83	0	0
13030102	202	261	79	86	15	2	471.3	373	183.6	648.5	359.6	53.7	471.3	373	183.6	648.5	359.6	53.7
13030202	51	65	20	22	4	1	224.6	184.2	94.1	355.1	187.7	12.4	224.6	184.2	94.1	355.1	187.7	12.4
13040100	41	52	14	17	2	0	48	34.6	15	44.9	21.4	0	48	34.6	15	44.9	21.4	0
13040208	4	5	1	2	0	0	4.7	3.4	1.5	4.4	0	0	4.7	3.4	1.5	4.4	0	0
13040210	1	1	0	0	0	0	1.4	1	0	0	0	0	1.4	1	0	0	0	0
13050001	39	51	15	17	3	0	215.6	177.7	92.1	345.7	188.2	0	215.6	177.7	92.1	345.7	188.2	0
13050003	86	111	33	37	6	1	354.8	289.9	148.1	552.2	297.3	24.8	354.8	289.9	148.1	552.2	297.3	24.8
13050004	2	2	1	1	0	0	8.6	7	3.6	13.6	0	0	8.6	7	3.6	13.6	0	0
13060001	43	56	17	18	3	0	68.4	53.5	26.1	82.8	51.8	0	68.4	53.5	26.1	82.8	51.8	0
13060003	13	17	5	5	1	0	22.8	17.7	8.7	27.9	17.7	0	22.8	17.7	8.7	27.9	17.7	0
13060004	1	1	0	0	0	0	1.5	1.2	0	0	0	0	1.5	1.2	0	0	0	0

							Baseline (tons)						Options 2 and 4 (tons)					
HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
13060007	25	32	10	11	2	0	39.3	29.8	14.2	44.8	28.3	0	39.3	29.8	14.2	44.8	28.3	0
13060008	33	42	12	14	2	0	443.9	373.4	195.7	769.5	393.6	0	443.9	373.4	195.7	769.5	393.6	0
13060009	15	19	6	6	1	0	112.4	93.6	48.6	187.9	97.3	0	112.4	93.6	48.6	187.9	97.3	0
13060010	6	8	2	3	0	0	95.7	80.7	42.4	167.1	0	0	95.7	80.7	42.4	167.1	0	0
13060011	70	91	27	30	5	1	425.4	352.6	182.7	696.7	369.4	21.6	425.4	352.6	182.7	696.7	369.4	21.6
13070001	5	7	2	2	0	0	6.3	4.6	2	6	0	0	6.3	4.6	2	6	0	0
13070006	38	47	13	15	2	0	43.9	31.7	13.8	41.1	19.6	0	43.9	31.7	13.8	41.1	19.6	0
13070007	13	17	5	6	1	0	28.9	22.6	11.2	37.4	23.2	0	28.9	22.6	11.2	37.4	23.2	0
13070008	17	22	6	7	1	0	22.9	16.9	7.7	23.8	12.4	0	22.9	16.9	7.7	23.8	12.4	0
13070010	1	1	0	0	0	0	1.4	1	0	0	0	0	1.4	1	0	0	0	0
13080001	46	60	18	20	3	0	370.9	314.6	170	616.9	390.3	0	370.9	314.6	170	616.9	390.3	0
13080002	94	123	37	41	7	1	211.5	165.8	82.6	278.5	170.1	39.6	211.5	165.8	82.6	278.5	170.1	39.6
13080003	8	11	3	4	1	0	18.7	14.7	7.3	24.6	15.1	0	18.7	14.7	7.3	24.6	15.1	0
13090001	24	32	9	10	2	0	54.3	42.5	21.2	71.5	43.7	0	54.3	42.5	21.2	71.5	43.7	0
13090002	12	15	5	5	1	0	40.3	36.2	19.1	67.1	42.4	0	40.3	36.2	19.1	67.1	42.4	0
14010001	4	5	2	2	0	0	3.2	4.1	3.4	6.8	0	0	3.2	4.1	1.1	3	0	0
14010002	12	16	5	5	1	0	9.6	12.2	10.3	20.5	12.2	0	9.6	12.2	3.2	9	5.7	0
14010003	6	7	2	2	0	0	4.5	5.7	4.8	9.6	0	0	4.5	5.7	1.5	4.2	0	0
14010004	42	55	17	18	3	0	33.8	43	36.3	72.6	43.1	0	33.8	43	11.4	31.9	20.3	0
14010005	43	56	17	19	3	0	34.5	43.7	36.8	73.6	43.8	0	34.5	43.7	11.6	32.4	20.7	0
14020002	1	1	0	0	0	0	0.6	0.8	0	0	0	0	0.6	0.8	0	0	0	0
14020004	1	1	0	0	0	0	0.6	0.8	0	0	0	0	0.6	0.8	0	0	0	0
14020005	10	12	4	4	1	0	7.7	9.7	8.2	16.4	9.8	0	7.7	9.7	2.6	7.2	4.6	0
14020006	22	29	9	10	2	0	17.9	22.7	19.2	38.3	22.8	0	17.9	22.7	6	16.8	10.7	0
14030003	2	2	1	1	0	0	1.3	1.6	1.4	2.7	0	0	1.3	1.6	0.4	1.2	0	0
14030005	3	4	1	1	0	0	2.6	1.9	0.9	2.3	0	0	2.6	1.9	0.9	2.3	0	0
14040101	8	11	3	4	0	0	16.4	26.2	19.8	51.3	0	0	16.4	26.2	7	27.1	0	0
14040102	4	5	2	2	0	0	7.7	12	9.1	23.4	0	0	7.7	12	3.2	12.3	0	0
14040106	2	3	1	1	0	0	3.1	2.9	2	5	0	0	3.1	2.9	1.2	3.6	0	0
14040107	81	100	29	36	4	0	95.6	117	91.9	217.6	66	0	95.6	117	35	116.5	40.4	0
14050001	2	3	1	1	0	0	1.9	2.4	2.1	4.1	0	0	1.9	2.4	0.6	1.8	0	0
14050003	1	1	0	0	0	0	0.6	0.8	0	0	0	0	0.6	0.8	0	0	0	0
14060002	5	6	2	2	0	0	5.3	4.1	2.1	5.8	0	0	5.3	4.1	1.9	5.6	0	0
14060003	7	9	3	3	1	0	10	7.7	3.9	11.9	7.8	0	10	7.7	3.9	11.9	7.8	0
14060007	6	8	2	3	0	0	7.9	6.1	3	9.2	0	0	7.9	6.1	3	9.2	0	0

							Baseline (tons)						Options 2 and 4 (tons)					
HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
14060009	2	2	1	1	0	0	1.8	1.4	0.7	2	0	0	1.8	1.4	0.7	2	0	0
14070003	2	2	1	1	0	0	2	1.5	0.7	2.1	0	0	2	1.5	0.7	2.1	0	0
14070005	1	1	0	0	0	0	0.8	0.6	0	0	0	0	0.8	0.6	0	0	0	0
14080101	42	55	17	18	3	0	61.6	58.6	38.1	97.5	58.7	0	61.6	58.6	23.1	73.3	45.8	0
14080104	21	28	8	9	2	0	30.5	35.3	27.5	62.4	35.6	0	30.5	35.3	11.3	36.4	22.1	0
14080105	31	41	12	13	2	0	159.9	140.8	82.3	265.8	155.6	0	159.9	140.8	71.5	248.6	147.3	0
14080106	23	30	9	10	2	0	84.7	68.6	35.2	126.4	72.7	0	84.7	68.6	35.2	126.4	72.7	0
14080202	6	8	3	3	1	0	6.6	8.2	6.7	14.1	8.1	0	6.6	8.2	2.3	7	4.3	0
14080203	2	2	1	1	0	0	1.3	1.2	0.7	1.7	0	0	1.3	1.2	0.4	1.2	0	0
14080204	22	28	8	8	1	0	96.2	78.7	41.2	144.6	82.8	0	96.2	78.7	41.2	144.6	82.8	0
15010003	6	7	1	1	0	0	18	14.6	7.5	25.3	0	0	18	14.6	7.5	25.3	0	0
15010004	9	11	4	4	1	0	91.8	78.2	43.8	150.4	90.2	0	91.8	78.2	43.8	150.4	90.2	0
15010007	11	15	4	5	1	0	17.2	12.9	6	19.1	11.4	0	17.2	12.9	6	19.1	11.4	0
15010008	53	68	21	23	4	0	55	41.1	19.9	56.6	36.7	0	55	41.1	19.9	56.6	36.7	0
15010009	3	4	1	1	0	0	5.3	3.9	1.7	5.7	0	0	5.3	3.9	1.7	5.7	0	0
15010010	3	3	1	1	0	0	3.3	2.4	1.1	3.1	0	0	3.3	2.4	1.1	3.1	0	0
15010011	4	6	2	2	0	0	5.2	3.8	1.6	4.4	0	0	5.2	3.8	1.6	4.4	0	0
15010012	2	3	1	1	0	0	2.2	1.6	0.7	1.9	0	0	2.2	1.6	0.7	1.9	0	0
15010013	2	3	1	1	0	0	2.2	1.6	0.7	1.9	0	0	2.2	1.6	0.7	1.9	0	0
15010015	17	23	7	7	1	0	20.2	14.6	6.2	16.8	6.8	0	20.2	14.6	6.2	16.8	6.8	0
15020001	6	8	3	3	0	0	132.1	113.8	64.4	223.7	0	0	132.1	113.8	64.4	223.7	0	0
15020002	4	5	1	1	0	0	36.1	30.7	17.2	59.1	0	0	36.1	30.7	17.2	59.1	0	0
15020004	27	35	10	12	2	0	172.8	143	74.1	281.9	149.9	0	172.8	143	74.1	281.9	149.9	0
15020005	3	4	1	1	0	0	42	36.1	20.5	70.2	0	0	42	36.1	20.5	70.2	0	0
15020006	3	3	1	1	0	0	15.4	12.7	6.7	24.6	0	0	15.4	12.7	6.7	24.6	0	0
15020008	44	58	18	19	3	0	358.4	303.2	168.1	576.5	344.4	0	358.4	303.2	168.1	576.5	344.4	0
15020011	13	17	5	5	1	0	38.4	30.7	15.7	53.4	30.8	0	38.4	30.7	15.7	53.4	30.8	0
15020012	1	1	0	0	0	0	1.9	1.5	0	0	0	0	1.9	1.5	0	0	0	0
15020015	41	53	16	17	3	0	714.7	615.4	349.3	1199.5	723.1	0	714.7	615.4	349.3	1199.5	723.1	0
15020018	5	7	2	2	0	0	11.6	9	4.3	14.8	0	0	11.6	9	4.3	14.8	0	0
15030101	5	7	2	2	0	0	6	5.5	3.5	6.6	0	0	6	5.5	1.9	5.5	0	0
15030103	1	1	0	0	0	0	0.8	0.6	0	0	0	0	0.8	0.6	0	0	0	0
15030105	1	1	0	0	0	0	0.7	0.5	0	0	0	0	0.7	0.5	0	0	0	0
15030106	8	10	3	3	1	0	9	6.5	2.9	8.5	5.5	0	9	6.5	2.9	8.5	5.5	0
15030107	4	5	2	2	0	0	4.5	4.9	3.7	5.8	0	0	4.5	4.9	1.4	4.3	0	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
15030108	25	33	10	11	2	0	29.2	21.3	9.4	27.7	17.8	0	29.2	21.3	9.4	27.7	17.8	0
15030201	7	9	3	3	0	0	35.2	29.3	15.9	54	0	0	35.2	29.3	15.9	54	0	0
15030203	2	3	1	1	0	0	15.9	13.5	7.5	25.7	0	0	15.9	13.5	7.5	25.7	0	0
15040002	19	24	7	8	1	0	253.4	213.4	112.5	437.6	226.7	0	253.4	213.4	112.5	437.6	226.7	0
15040004	4	5	1	2	0	0	75.2	64	34.6	130.5	0	0	75.2	64	34.6	130.5	0	0
15040005	18	24	7	8	1	0	120.3	101.7	56.5	191.6	116.2	0	120.3	101.7	56.5	191.6	116.2	0
15040006	6	8	3	3	0	0	7.5	5.5	2.4	7.1	0	0	7.5	5.5	2.4	7.1	0	0
15040007	2	3	1	1	0	0	22.7	19.4	10.9	37.3	0	0	22.7	19.4	10.9	37.3	0	0
15050100	80	104	31	35	6	1	260.2	213.4	113.8	377.9	231.1	20.8	260.2	213.4	113.8	377.9	231.1	20.8
15050201	10	13	4	4	1	0	11.2	8.2	3.6	10.7	6.9	0	11.2	8.2	3.6	10.7	6.9	0
15050203	3	3	1	1	0	0	3	2.2	1	2.8	0	0	3	2.2	1	2.8	0	0
15050301	122	158	48	53	9	2	141.5	103	45.6	134.4	86.4	35.6	141.5	103	45.6	134.4	86.4	35.6
15050302	19	24	7	8	1	0	21.7	15.8	7	20.6	13.3	0	21.7	15.8	7	20.6	13.3	0
15050303	15	19	6	6	1	0	17.2	12.5	5.6	16.4	10.5	0	17.2	12.5	5.6	16.4	10.5	0
15050304	10	13	4	4	1	0	11.2	8.2	3.6	10.7	6.9	0	11.2	8.2	3.6	10.7	6.9	0
15050306	1	1	0	0	0	0	0.7	0.5	0	0	0	0	0.7	0.5	0	0	0	0
15060103	7	10	3	3	1	0	150.9	130.3	74.1	254.7	153.7	0	150.9	130.3	74.1	254.7	153.7	0
15060104	1	1	0	0	0	0	18.9	16.3	0	0	0	0	18.9	16.3	0	0	0	0
15060105	22	29	9	9	2	0	452.9	390.8	222.4	764	461.1	0	452.9	390.8	222.4	764	461.1	0
15060106	95	124	38	41	7	1	904.4	771.9	433.5	1479.1	895	15.9	904.4	771.9	433.5	1479.1	895	15.9
15060201	12	16	5	5	1	0	135.4	115.6	64.8	222.5	133.5	0	135.4	115.6	64.8	222.5	133.5	0
15060202	33	43	13	14	2	0	662.3	571.3	325.1	1116.5	673.7	0	662.3	571.3	325.1	1116.5	673.7	0
15060203	1	1	0	0	0	0	17.3	14.9	0	0	0	0	17.3	14.9	0	0	0	0
15070101	1	2	1	1	0	0	1.5	1.1	0.5	1.4	0	0	1.5	1.1	0.5	1.4	0	0
15070102	138	180	55	58	10	1	1700	1457.8	823.4	2817.5	1702.9	17.2	1700	1457.8	823.4	2817.5	1702.9	17.2
15070104	2	3	1	1	0	0	2.2	1.6	0.7	2.1	0	0	2.2	1.6	0.7	2.1	0	0
15070201	28	37	11	12	2	0	33	24	10.6	31.3	20.1	0	33	24	10.6	31.3	20.1	0
15080101	6	8	3	3	0	0	7.5	5.5	2.4	7.1	0	0	7.5	5.5	2.4	7.1	0	0
15080301	2	3	1	1	0	0	2.2	1.6	0.7	2.1	0	0	2.2	1.6	0.7	2.1	0	0
15080302	1	2	1	1	0	0	1.5	1.1	0.5	1.4	0	0	1.5	1.1	0.5	1.4	0	0
16010101	15	19	6	6	1	0	17.6	15.9	10.8	26.6	11.8	0	17.6	15.9	6.4	19.2	10.1	0
16010201	5	6	2	2	0	0	5.9	4.8	2.3	7	0	0	5.9	4.8	2.3	7	0	0
16010202	2	2	1	1	0	0	2	1.4	0.6	1.6	0	0	2	1.4	0.6	1.6	0	0
16010203	30	39	12	13	2	0	57.6	45.1	22.6	71.1	48.1	0	57.6	45.1	22.6	71.1	48.1	0
16010204	3	4	1	1	0	0	3.6	2.6	1.1	3	0	0	3.6	2.6	1.1	3	0	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
16020101	24	31	9	10	2	0	50.3	39.6	20.4	65	42.8	0	50.3	39.6	20.2	64.7	42.8	0
16020102	123	163	49	52	10	0	240.2	188.2	94.4	297.8	201.1	0	240.2	188.2	94.4	297.8	201.1	0
16020201	18	24	7	8	2	0	26.6	20.6	9.8	28.9	20.3	0	26.6	20.6	9.8	28.9	20.3	0
16020202	70	92	28	30	5	0	150.1	118	60.1	192.6	128.9	0	150.1	118	60.1	192.6	128.9	0
16020203	18	23	7	8	1	0	39.5	31.1	15.9	51.2	34.2	0	39.5	31.1	15.9	51.2	34.2	0
16020204	193	261	80	84	17	0	292.1	226	107.3	318.5	223.1	0	292.1	226	107.3	318.5	223.1	0
16020301	6	8	2	2	0	0	6.6	5	2.1	5.8	0	0	6.6	5	2.1	5.8	0	0
16020304	8	11	3	4	1	0	9.5	7.2	3.2	8.6	6.4	0	9.5	7.2	3.2	8.6	6.4	0
16020308	1	1	0	0	0	0	0.7	0.6	0	0	0	0	0.7	0.6	0	0	0	0
16020309	1	1	0	0	0	0	0.7	0.5	0	0	0	0	0.7	0.5	0	0	0	0
16030001	1	1	0	0	0	0	1.3	1	0	0	0	0	1.3	1	0	0	0	0
16030003	2	2	1	1	0	0	3	2.3	1.2	3.7	0	0	3	2.3	1.2	3.7	0	0
16030004	8	10	3	3	1	0	15.3	12	6	19	12.8	0	15.3	12	6	19	12.8	0
16030005	1	1	0	0	0	0	0.9	0.7	0	0	0	0	0.9	0.7	0	0	0	0
16030006	6	9	3	3	1	0	8.2	6.3	2.9	8	5.7	0	8.2	6.3	2.9	8	5.7	0
16030007	4	6	2	2	0	0	5.5	4.2	1.9	5.2	0	0	5.5	4.2	1.9	5.2	0	0
16040101	15	19	6	6	1	0	17.2	12.4	5.2	14.3	5.8	0	17.2	12.4	5.2	14.3	5.8	0
16040105	8	11	3	3	0	0	9.7	7	2.9	8.1	0	0	9.7	7	2.9	8.1	0	0
16050101	31	40	12	13	2	0	96	102.9	83.8	177.3	89.5	0	96	102.9	35.7	126.3	63.7	0
16050102	40	52	15	17	2	0	92.3	92.7	70.1	151.7	75.5	0	92.3	92.7	33	112.4	55.5	0
16050103	1	1	0	0	0	0	0.7	0.5	0	0	0	0	0.7	0.5	0	0	0	0
16050104	5	7	2	2	0	0	6	4.3	1.8	5	0	0	6	4.3	1.8	5	0	0
16050201	31	40	12	13	2	0	76.1	79.2	61.7	130.4	67.1	0	76.1	79.2	27.4	94.4	48.8	0
16050202	9	12	3	4	0	0	10.5	7.6	3.2	8.7	0	0	10.5	7.6	3.2	8.7	0	0
16050203	17	23	7	7	1	0	20.2	14.6	6.2	16.8	6.8	0	20.2	14.6	6.2	16.8	6.8	0
16050301	1	1	0	0	0	0	0.9	0.9	0	0	0	0	0.9	0.9	0	0	0	0
16050302	9	12	4	4	1	0	14.6	14.8	10.7	21	11.7	0	14.6	14.8	4.8	15.5	8.9	0
16050303	12	16	5	5	0	0	14.2	10.3	4.3	11.8	0	0	14.2	10.3	4.3	11.8	0	0
16060004	2	3	1	1	0	0	2.2	1.6	0.7	1.9	0	0	2.2	1.6	0.7	1.9	0	0
16060008	2	3	1	1	0	0	2.2	1.6	0.7	1.9	0	0	2.2	1.6	0.7	1.9	0	0
16060010	3	3	1	1	0	0	3	2.3	1.1	2.7	0	0	3	2.3	0.9	2.5	0	0
16060011	1	1	0	0	0	0	0.7	0.5	0	0	0	0	0.7	0.5	0	0	0	0
16060015	18	23	7	7	1	0	21.1	18.6	11.2	21.4	10.7	0	21.1	18.6	6.5	18.2	9	0
17010101	15	19	6	6	1	0	56.2	90.8	75.5	168.6	101.8	0	56.2	90.8	27.8	93.4	60.3	0
17010104	1	2	0	1	0	0	5	5	0	8.7	0	0	5	5	0	8.2	0	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
17010201	11	14	4	5	1	0	41.5	67.9	56.8	126.2	76.3	0	41.5	67.9	20.5	69	44.7	0
17010203	2	2	1	1	0	0	7.3	12	10	22.3	0	0	7.3	12	3.6	12.2	0	0
17010204	34	44	13	14	3	0	129.3	211.6	176.9	393.3	237.7	0	129.3	211.6	64.1	215.3	139.4	0
17010205	40	52	15	17	3	0	153.7	250.9	209.5	466.2	281.8	0	153.7	250.9	76.1	255.9	165.6	0
17010206	1	2	0	1	0	0	4.9	8	0	14.9	0	0	4.9	8	0	8.1	0	0
17010208	61	80	24	26	5	0	236.7	387.4	324.1	720.2	435.4	0	236.7	387.4	117.2	394	255.2	0
17010210	37	49	14	16	3	0	144	235.6	197.1	438.1	264.8	0	144	235.6	71.3	239.6	155.2	0
17010211	3	3	1	1	0	0	9.8	16	13.4	29.7	0	0	9.8	16	4.8	16.2	0	0
17010212	16	21	6	7	1	0	61	99.9	83.5	185.6	112.2	0	61	99.9	30.2	101.5	65.8	0
17010213	6	8	2	3	0	0	24.5	38.5	31.5	71.3	0	0	24.5	38.5	12.1	40.7	0	0
17010214	27	33	10	11	2	0	100.5	98.8	54	171.4	96.1	0	100.5	98.8	49.5	164.9	93.1	0
17010215	9	11	3	4	1	0	32.5	35.4	22.7	62.9	34.4	0	32.5	35.4	16.3	53.7	30.1	0
17010216	4	5	2	2	0	0	14.7	23.8	22	45.2	0	0	14.7	23.8	8	24.9	0	0
17010302	3	4	1	1	0	0	12.6	12	6.2	20.7	0	0	12.6	12	6.2	20.6	0	0
17010303	43	54	16	18	3	0	130.9	125.6	63.7	210.7	118.7	0	130.9	125.6	63	209.7	118.2	0
17010304	2	2	1	1	0	0	7.5	7.2	3.7	12.4	0	0	7.5	7.2	3.7	12.4	0	0
17010305	58	74	22	24	4	0	106.8	123	76.9	198	108.5	0	106.8	123	49.2	159.7	89.7	0
17010306	45	58	17	19	3	0	59.2	78.9	54.9	121.6	66.7	0	59.2	78.9	25.7	82.3	46.8	0
17010307	13	17	5	6	1	0	27.1	44.8	40.2	80	41.4	0	27.1	44.8	13.7	42.5	23.6	0
17010308	68	89	28	29	4	0	236.8	379.9	347.8	714.5	364.9	0	236.8	379.9	127.4	396.1	217.3	0
17020001	3	4	1	1	0	0	8.5	13.8	12.7	25.8	0	0	8.5	13.8	4.5	14	0	0
17020002	1	2	1	1	0	0	4.2	6.9	6.3	12.8	0	0	4.2	6.9	2.2	6.9	0	0
17020003	17	22	7	7	1	0	63.9	103.9	96.5	197.3	100.3	0	63.9	103.9	34.8	108	59.1	0
17020005	19	25	7	8	1	0	25.2	41.1	35	68.7	36.1	0	25.2	41.1	11.1	35.4	19.9	0
17020006	5	7	2	2	0	0	7.5	11.7	9.9	20.2	0	0	7.5	11.7	3.2	10.7	0	0
17020009	2	2	1	1	0	0	5.6	6.8	5.7	14	0	0	5.6	6.8	2.1	8.3	0	0
17020010	1	1	0	0	0	0	1.3	1.9	0	0	0	0	1.3	1.9	0	0	0	0
17020011	4	5	1	2	0	0	11	13.4	11.1	27.6	0	0	11	13.4	4.2	16.4	0	0
17020013	1	1	0	0	0	0	0.9	1.5	0	0	0	0	0.9	1.5	0	0	0	0
17020014	2	2	1	1	0	0	1.7	3	2.4	4.5	0	0	1.7	3	0.7	2.2	0	0
17020015	41	54	16	18	3	0	39.6	67.9	55.8	103.4	56.1	0	39.6	67.9	16.1	50	29	0
17020016	82	107	31	36	6	1	78.4	134.2	110.4	204.6	110.9	22.1	78.4	134.2	31.8	98.9	57.4	11.4
17030001	11	14	4	5	1	0	21.2	28.2	23.4	53.2	25.2	0	21.2	28.2	8.2	29.9	15.2	0
17030002	9	12	3	4	0	0	17.4	21.9	18.5	42.2	0	0	17.4	21.9	6.6	23.5	0	0
17030003	246	323	93	109	16	1	242.4	399.8	332.2	618	288.3	57.4	242.4	399.8	96.7	297.1	149.3	29.7

							Baseline (tons)						Options 2 and 4 (tons)					
HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
17040101	2	2	1	1	0	0	6.4	11.1	8.1	22	0	0	6.4	11.1	2.9	12.1	0	0
17040103	7	9	2	3	0	0	25.7	44.3	32.5	88.1	0	0	25.7	44.3	11.8	48.3	0	0
17040104	1	1	0	0	0	0	2.4	2.5	0	0	0	0	2.4	2.5	0	0	0	0
17040105	9	11	3	4	0	0	31.1	42.1	27.8	79.9	0	0	31.1	42.1	14.6	54.5	0	0
17040201	23	30	9	10	2	0	19.8	15.5	7	19.7	11.7	0	19.8	15.5	7	19.7	11.7	0
17040202	3	3	1	1	0	0	9.6	9.4	5	16.2	0	0	9.6	9.4	4.7	15.7	0	0
17040203	1	2	1	1	0	0	2.7	3.5	2.3	6.3	0	0	2.7	3.5	1.2	4.2	0	0
17040204	6	8	2	3	0	0	10.4	12.3	7.7	21.8	0	0	10.4	12.3	4.5	15.8	0	0
17040205	1	1	0	0	0	0	1.1	0.9	0	0	0	0	1.1	0.9	0	0	0	0
17040206	11	15	4	5	1	0	9.7	7.3	3.2	8.7	4.3	0	9.7	7.3	3.2	8.7	4.3	0
17040207	2	2	1	1	0	0	2.9	2.2	1	3.1	0	0	2.9	2.2	1	3.1	0	0
17040208	12	14	3	4	0	0	13.9	9.4	3.8	10.1	0	0	13.9	9.4	3.8	10.1	0	0
17040209	15	19	6	6	1	0	12.3	9.3	4.1	11.3	6.2	0	12.3	9.3	4.1	11.3	6.2	0
17040210	1	2	0	0	0	0	1.4	1	0	0	0	0	1.4	1	0	0	0	0
17040211	2	2	1	1	0	0	2.1	1.5	0.6	1.7	0	0	2.1	1.5	0.6	1.7	0	0
17040212	37	49	15	16	3	0	30	22.9	10.1	27.9	16.4	0	30	22.9	10.1	27.9	16.4	0
17040214	2	2	1	1	0	0	2.7	2.4	1.2	3.9	0	0	2.7	2.4	1.2	3.8	0	0
17040218	2	3	1	1	0	0	5.1	4.7	2.4	7.8	0	0	5.1	4.7	2.4	7.8	0	0
17040219	10	12	4	4	1	0	20.5	18.8	9.4	30.8	17.5	0	20.5	18.8	9.4	30.8	17.5	0
17040221	8	10	3	3	1	0	10.8	9.4	4.6	14.3	8.2	0	10.8	9.4	4.6	14.3	8.2	0
17050101	22	29	9	10	2	0	17.8	13.6	6.1	16.7	10.1	0	17.8	13.6	6.1	16.7	10.1	0
17050103	33	43	13	14	2	0	26	21.5	10.6	26.3	13	0	26	21.5	8.7	23.6	13	0
17050104	1	2	1	1	0	0	1.2	0.9	0.4	1.1	0	0	1.2	0.9	0.4	1.1	0	0
17050108	6	8	2	2	0	0	4.6	4.7	2.8	5.7	0	0	4.6	4.7	1.4	3.7	0	0
17050112	21	27	8	9	1	0	56.8	52.9	26.9	88.6	50.3	0	56.8	52.9	26.9	88.6	50.3	0
17050114	265	348	104	114	19	2	210.5	161.2	71.8	197.7	119.2	34.6	210.5	161.2	71.8	197.7	119.2	34.6
17050115	6	7	2	2	0	0	4.6	4.7	2.8	5.7	0	0	4.6	4.7	1.4	3.7	0	0
17050117	1	1	0	0	0	0	0.5	0.7	0	0	0	0	0.5	0.7	0	0	0	0
17050119	1	2	0	0	0	0	1.9	2.8	0	0	0	0	1.9	2.8	0	0	0	0
17050120	13	16	5	5	1	0	47.8	45.5	23.4	78.3	44.3	0	47.8	45.5	23.4	78.3	44.3	0
17050121	13	16	5	5	1	0	47.8	45.5	23.4	78.3	44.3	0	47.8	45.5	23.4	78.3	44.3	0
17050122	25	32	10	11	2	0	32.3	27.7	13.4	41.5	24	0	32.3	27.7	13.4	41.5	24	0
17050123	8	10	3	3	1	0	30.2	28.7	14.8	49.4	28	0	30.2	28.7	14.8	49.4	28	0
17050124	1	2	1	1	0	0	3.6	3.3	1.7	5.5	0	0	3.6	3.3	1.7	5.5	0	0
17050201	2	2	1	1	0	0	5.4	6.6	3.9	13	0	0	5.4	6.6	2.3	9.1	0	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
17050203	2	2	0	1	0	0	6.6	10.3	0	23.4	0	0	6.6	10.3	0	12.8	0	0
17060103	23	30	9	10	1	0	48.4	69.5	53.6	125.2	53.7	0	48.4	69.5	22.6	76.9	35.7	0
17060105	4	5	1	2	0	0	15.4	24	15.5	54.6	0	0	15.4	24	5.5	29.8	0	0
17060106	1	1	0	0	0	0	2.3	3.6	0	0	0	0	2.3	3.6	0	0	0	0
17060108	17	22	6	7	1	0	19.2	27.9	20.7	42.6	23.2	0	19.2	27.9	8.1	25.6	14.6	0
17060109	1	1	0	0	0	0	0.9	1.5	0	0	0	0	0.9	1.5	0	0	0	0
17060110	1	1	0	0	0	0	0.9	1.5	0	0	0	0	0.9	1.5	0	0	0	0
17060203	3	4	1	1	0	0	11.4	10.9	5.6	18.6	0	0	11.4	10.9	5.5	18.4	0	0
17060209	1	1	0	0	0	0	2.4	2.3	0	0	0	0	2.4	2.3	0	0	0	0
17060210	1	1	0	0	0	0	2.5	2.4	0	0	0	0	2.5	2.4	0	0	0	0
17060306	6	7	2	2	0	0	10.4	10.1	4.7	15.3	0	0	10.4	10.1	4.7	15.3	0	0
17060307	1	1	0	0	0	0	2.5	2.4	0	0	0	0	2.5	2.4	0	0	0	0
17060308	1	2	0	1	0	0	5	4.8	0	8.2	0	0	5	4.8	0	8.2	0	0
17070101	22	31	8	11	1	0	21.3	38.6	29.5	61.9	21.2	0	21.3	38.6	8.5	29.9	11	0
17070102	18	25	7	9	1	0	27.5	46.5	37	83.2	28.2	0	27.5	46.5	11.8	42.9	15.4	0
17070103	16	24	5	9	0	0	28.8	50.5	32.5	103	0	0	28.8	50.5	10.6	53.7	0	0
17070104	1	1	0	0	0	0	0.9	1.8	0	0	0	0	0.9	1.8	0	0	0	0
17070105	15	20	6	7	1	0	31.7	40.4	33.1	76.3	26.2	0	31.7	40.4	11.9	43	16.6	0
17070106	3	4	1	1	0	0	3.4	4.7	4	7.9	0	0	3.4	4.7	1.3	3.9	0	0
17070201	3	4	1	1	0	0	11	17.1	11	39	0	0	11	17.1	3.9	21.3	0	0
17070203	2	2	0	1	0	0	6.6	10.3	0	23.4	0	0	6.6	10.3	0	12.8	0	0
17070204	1	2	0	1	0	0	3	5	0	10.6	0	0	3	5	0	5.6	0	0
17070301	50	64	19	22	1	0	94.5	117.1	96.5	213.8	37.9	0	94.5	117.1	33.4	115.1	24.3	0
17070305	3	4	1	1	0	0	6.1	8.9	6	18.1	0	0	6.1	8.9	2.1	9.6	0	0
17080001	109	142	43	45	7	0	477.3	702.9	592.4	1385	732.2	0	477.3	702.9	224.3	810.5	460.2	0
17080002	71	91	27	30	5	0	276.4	387	325.1	793.5	419.3	0	276.4	387	123.5	466.7	264.7	0
17080003	9	13	4	4	1	0	68.9	116.7	95.2	223.5	102.9	0	68.9	116.7	35.9	130.7	64.5	0
17080004	4	5	1	2	0	0	11.3	13.6	11.2	28.1	0	0	11.3	13.6	4.3	16.8	0	0
17080005	20	26	8	9	1	0	105.2	167.3	141.3	339.1	189.2	0	105.2	167.3	53.5	197.5	118.5	0
17080006	5	7	2	2	0	0	40.2	68.1	55.4	127.4	0	0	40.2	68.1	20.9	74.8	0	0
17090002	15	19	6	6	1	0	59.4	84.3	70.2	160.6	80	0	59.4	84.3	26.6	94.2	50.4	0
17090003	48	64	19	20	3	0	319.9	529.5	443	1030.3	559	0	319.9	529.5	167.1	599.9	349.9	0
17090004	4	5	1	1	0	0	12.2	15.4	12.8	28.4	0	0	12.2	15.4	4.9	16.8	0	0
17090005	17	23	7	7	1	0	63.9	85.5	71.3	160.4	75.1	0	63.9	85.5	27	94.6	47.6	0
17090006	12	16	5	5	1	0	47.9	66.2	55.2	125.3	60.7	0	47.9	66.2	20.9	73.7	38.4	0

							Baseline (tons)						Options 2 and 4 (tons)					
HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
17090007	130	174	51	56	10	0	825.8	1395	1162.2	2758.7	1565.3	0	825.8	1395	439.2	1600.6	978.2	0
17090008	19	25	7	8	1	0	140.2	231.6	194.6	445.5	234	0	140.2	231.6	73.3	260	146.6	0
17090009	31	41	12	13	2	0	154.4	242.3	201.7	472.8	256.4	0	154.4	242.3	76.3	275.5	160.7	0
17090010	94	126	37	40	7	0	660.8	1099.5	921.1	2134.2	1151.2	0	660.8	1099.5	347.3	1243.3	720.7	0
17090011	32	42	13	13	2	0	119.1	160.7	133.9	302.1	143	0	119.1	160.7	50.8	178	90.5	0
17090012	44	58	17	19	3	0	287.6	482.9	403.2	948	527.5	0	287.6	482.9	152.2	550.9	329.9	0
17100101	4	7	2	2	0	0	34.2	60.9	46.7	113.8	0	0	34.2	60.9	17.6	66.8	0	0
17100103	26	36	10	12	2	0	176.8	302.3	250	598.9	308.8	0	176.8	302.3	94.4	348.4	192.9	0
17100104	11	15	4	5	1	0	80.5	142.1	112.5	271.9	112.7	0	80.5	142.1	42.5	158.9	70.6	0
17100105	1	1	0	0	0	0	6.3	11.5	0	0	0	0	6.3	11.5	0	0	0	0
17100106	10	16	4	5	1	0	89.5	162.6	124.3	302.7	100.2	0	89.5	162.6	46.9	177.6	62.9	0
17100202	3	4	1	1	0	0	27.6	44.7	37.8	83.9	0	0	27.6	44.7	14.2	49.3	0	0
17100203	10	14	4	4	1	0	89.6	145.3	122.9	272.8	133.1	0	89.6	145.3	46.2	160.1	83.7	0
17100204	25	33	10	10	2	0	213.7	346.6	293.1	650.6	317.5	0	213.7	346.6	110.1	381.8	199.5	0
17100205	6	9	3	3	0	0	55.2	89.4	75.6	167.9	0	0	55.2	89.4	28.4	98.5	0	0
17100206	2	2	1	1	0	0	13.6	22	18.6	41.4	0	0	13.6	22	7	24.3	0	0
17100207	6	7	2	2	0	0	48.3	78.3	66.2	146.9	0	0	48.3	78.3	24.9	86.2	0	0
17100301	1	1	0	0	0	0	2.5	3.3	0	0	0	0	2.5	3.3	0	0	0	0
17100302	30	40	12	12	2	0	163.6	245.1	206	457.2	224.5	0	163.6	245.1	77.4	268.4	141.2	0
17100303	7	9	3	3	0	0	55.7	90.5	76.3	171.7	0	0	55.7	90.5	28.7	100.5	0	0
17100305	4	5	2	2	0	0	34.5	55.9	47.3	104.9	0	0	34.5	55.9	17.8	61.6	0	0
17100307	16	21	6	6	1	0	48.9	59.1	48.8	103.2	55.5	0	48.9	59.1	18	60.3	34.8	0
17100308	41	54	16	16	3	0	124.3	151.8	124.5	258	167.8	0	124.3	151.8	44.9	148	103.8	0
17100309	13	17	5	5	1	0	40.6	50.5	41.6	86.4	54.5	0	40.6	50.5	15.1	50.4	34.2	0
17100310	34	45	13	14	2	0	202.9	310.1	260.8	571.9	295.1	0	202.9	310.1	97.3	334.3	184.8	0
17100311	15	21	6	6	1	0	111.2	175.6	147.5	325	161.6	0	111.2	175.6	55.2	192	102.2	0
17100312	2	2	1	1	0	0	13.8	22.4	18.9	41.9	0	0	13.8	22.4	7.1	24.7	0	0
17110002	79	104	31	34	6	1	492.7	823.4	700.6	1669.1	970.4	336.7	492.7	823.4	264.7	968	605.8	209.6
17110003	7	9	3	3	1	0	43.9	73.4	62.4	148.7	86.5	0	43.9	73.4	23.6	86.3	54	0
17110004	17	21	6	7	1	0	72.2	106.6	89.9	217.7	118.7	0	72.2	106.6	34.1	127.5	74.7	0
17110005	1	2	1	1	0	0	4.5	5.5	4.5	11.3	0	0	4.5	5.5	1.7	6.7	0	0
17110006	1	1	0	0	0	0	2.3	2.7	0	0	0	0	2.3	2.7	0	0	0	0
17110007	25	33	10	11	2	0	150.4	249	211.7	505	292.3	0	150.4	249	80	293.1	182.6	0
17110008	8	10	3	3	1	0	38.2	59.5	50.4	121.2	68.1	0	38.2	59.5	19.1	70.6	42.7	0
17110009	6	8	2	3	0	0	22.6	31.3	26.3	64.2	0	0	22.6	31.3	10	37.8	0	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
17110010	15	19	6	6	1	0	66.9	99.6	84	203.3	111.3	0	66.9	99.6	31.9	119	70	0
17110011	34	44	13	15	3	0	200.4	331.3	281.7	671.9	388.6	0	200.4	331.3	106.5	390	242.7	0
17110012	165	215	65	71	13	2	943.4	1538.2	1306.9	3122.8	1794.2	588.6	943.4	1538.2	494.1	1814.5	1121.5	366.4
17110013	25	32	10	11	2	0	120.3	184.7	156.2	376.3	209.6	0	120.3	184.7	59.2	219.7	131.5	0
17110014	163	210	63	70	11	1	657.8	934.8	786.3	1914.6	1020.9	208.8	657.8	934.8	298.5	1124.7	643.8	130
17110015	48	62	18	20	3	0	220.7	334	282.3	681.2	376.6	0	220.7	334	107	398.1	236.5	0
17110016	1	1	0	0	0	0	4.6	7.6	0	0	0	0	4.6	7.6	0	0	0	0
17110017	10	14	4	4	1	0	66	113.8	89	216.4	82.5	0	66	113.8	33.6	127	51.8	0
17110018	14	19	5	6	1	0	87.6	148.2	120	289.4	134.3	0	87.6	148.2	45.3	169	84.1	0
17110019	316	413	124	137	25	4	1960.9	3277.1	2788.7	6643.2	3862.5	1340	1960.9	3277.1	1053.7	3852.8	2411.1	834.1
17110020	26	36	10	12	2	0	155.4	258.7	203.1	495.4	192	0	155.4	258.7	76.8	291	120.8	0
17110021	4	7	2	2	0	0	37.9	68.8	52.6	128	0	0	37.9	68.8	19.8	75.1	0	0
17120005	3	3	1	1	0	0	2.4	2.9	2.3	4.1	0	0	2.4	2.9	0.7	1.8	0	0
17120009	1	1	0	0	0	0	0.5	0.6	0	0	0	0	0.5	0.6	0	0	0	0
18010101	46	61	17	20	3	0	393.5	638.3	507	1096.9	489.9	0	393.5	638.3	190.5	721.8	345.2	0
18010102	16	21	6	7	1	0	122.6	195.7	154.6	332	148.6	0	122.6	195.7	58	221.8	106.5	0
18010103	12	16	5	5	1	0	79.7	122.9	97.8	208.4	96.4	0	79.7	122.9	36.6	139.1	69	0
18010105	3	4	1	1	0	0	25.3	40.1	31.7	68.1	0	0	25.3	40.1	11.9	45.5	0	0
18010108	23	31	9	10	1	0	199.9	324.3	255.4	550.5	242.6	0	199.9	324.3	95.9	368	173.9	0
18010110	127	166	49	55	10	1	522.8	711.3	582.2	1202.3	627.8	96.9	522.8	711.3	214.7	798.8	448	68.9
18010111	13	17	5	6	1	0	49.7	65.4	53.9	110.4	59.6	0	49.7	65.4	19.8	73.3	42.5	0
18010201	4	6	2	2	0	0	6	7.1	6.3	12.1	0	0	6	7.1	2	5.9	0	0
18010204	12	16	5	5	0	0	12.2	15.6	13.4	20.7	0	0	12.2	15.6	4.2	11.5	0	0
18010205	1	1	0	0	0	0	1.3	1.5	0	0	0	0	1.3	1.5	0	0	0	0
18010206	1	1	0	0	0	0	2.7	3.4	0	0	0	0	2.7	3.4	0	0	0	0
18010208	1	1	0	0	0	0	3.5	4.3	0	0	0	0	3.5	4.3	0	0	0	0
18010209	1	1	0	0	0	0	6.9	11.1	0	0	0	0	6.9	11.1	0	0	0	0
18010212	2	3	1	1	0	0	8.8	12.3	10	20.9	0	0	8.8	12.3	3.7	13.9	0	0
18020001	4	5	2	2	0	0	4.2	5.3	4.6	7.8	0	0	4.2	5.3	1.4	4	0	0
18020002	16	22	6	7	1	0	15.2	20.3	17.1	22.1	7.3	0	15.2	20.3	5.4	14.6	5.2	0
18020005	50	66	20	22	4	0	154.6	183.8	155.5	309.4	184.4	0	154.6	183.8	56.4	204.4	131.1	0
18020101	46	60	18	20	4	0	140.7	167.3	141.5	281.4	167.7	0	140.7	167.3	51.4	185.9	119.3	0
18020103	25	32	10	11	2	0	55.5	66.5	56.2	103.6	62.2	0	55.5	66.5	19.6	68.4	44.2	0
18020104	6	8	2	3	0	0	10.3	12.4	10.5	17.8	0	0	10.3	12.4	3.5	11.7	0	0
18020105	8	10	3	3	1	0	12.9	15.6	13.1	21.6	13.1	0	12.9	15.6	4.3	14.3	9.3	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
18020106	36	46	14	15	3	0	65	78.3	66.2	113.7	68.8	0	65	78.3	22.3	75.1	48.9	0
18020107	2	2	1	1	0	0	4	4.8	4.1	7.7	0	0	4	4.8	1.4	5.1	0	0
18020108	1	1	0	0	0	0	1.6	1.9	0	0	0	0	1.6	1.9	0	0	0	0
18020109	108	141	42	47	9	1	141.4	172.7	145.6	212.5	131.1	35.5	141.4	172.7	45.6	140.3	93.1	25.1
18020111	67	88	26	29	5	1	111	134.2	113.3	187.1	113.7	30.1	111	134.2	37.5	123.6	80.8	21.4
18020115	8	11	3	4	1	0	25.7	30.5	25.8	51.3	30.6	0	25.7	30.5	9.4	33.9	21.8	0
18020116	12	16	5	5	1	0	40.4	49.5	41.6	83.4	48.3	0	40.4	49.5	15.1	55.2	34.4	0
18020117	19	25	7	8	2	0	58	68.9	58.3	116	69.2	0	58	68.9	21.2	76.7	49.2	0
18020121	6	8	2	3	1	0	19.3	23	19.4	38.7	23.1	0	19.3	23	7.1	25.6	16.4	0
18020123	21	28	8	9	2	0	64.1	76.2	64.5	127.6	76.1	0	64.1	76.2	23.3	84.3	54.1	0
18020124	1	1	0	0	0	0	3.2	3.8	0	0	0	0	3.2	3.8	0	0	0	0
18020125	49	64	19	21	4	0	151.4	179.9	152.3	302.9	180.6	0	151.4	179.9	55.3	200.2	128.4	0
18020126	31	41	12	14	3	0	96.6	114.9	97.2	193.4	115.3	0	96.6	114.9	35.3	127.8	82	0
18020127	4	5	2	2	0	0	12.9	15.3	13	25.8	0	0	12.9	15.3	4.7	17	0	0
18020128	24	31	9	10	2	0	73.8	87.8	74.3	147.7	88.1	0	73.8	87.8	27	97.6	62.6	0
18020129	84	109	33	36	7	1	257.6	306.3	259.2	515.7	307.3	79.2	257.6	306.3	94.1	340.7	218.6	56.3
18030003	51	67	20	22	4	0	833.1	1174.8	982.8	2089.3	1203.9	0	833.1	1174.8	376	1388.3	859.6	0
18030012	563	735	219	244	46	5	956	1157.4	976.8	1629.7	989.3	264	956	1157.4	325.4	1076.5	702.9	187.4
18040001	81	106	32	35	7	1	100.6	123.2	103.8	146.8	91	24.7	100.6	123.2	32.1	96.9	64.6	17.5
18040002	107	139	42	46	9	1	166.7	202	170.5	274.1	167.1	44.5	166.7	202	55.8	181	118.7	31.5
18040003	74	96	29	32	6	1	116.4	141	118.9	192.4	117.2	31.2	116.4	141	39	127.1	83.3	22.1
18040004	15	20	6	7	1	0	31.6	37.9	32	57.7	34.8	0	31.6	37.9	11.1	38.1	24.7	0
18040005	83	108	32	36	7	1	144.2	174.1	147	247.9	150.3	39.7	144.2	174.1	49.2	163.7	106.8	28.2
18040006	106	138	41	46	8	1	325.3	386.7	327.2	651	388	99.9	325.3	386.7	118.8	430.1	275.9	71
18040007	10	13	4	4	1	0	30.9	36.8	31.1	61.7	36.8	0	30.9	36.8	11.3	40.8	26.2	0
18040009	12	15	4	5	1	0	35.4	42.1	35.6	70.9	42.2	0	35.4	42.1	12.9	46.8	30	0
18040010	9	12	4	4	1	0	29	34.5	29.2	58	34.6	0	29	34.5	10.6	38.3	24.6	0
18040011	32	42	13	14	3	0	99.8	118.7	100.4	199.8	119.1	0	99.8	118.7	36.5	132	84.7	0
18040012	59	77	23	25	5	0	180.3	214.4	181.4	361	215.1	0	180.3	214.4	65.9	238.5	153	0
18040013	59	77	23	25	5	0	179.1	213	180.2	357.7	213.2	0	179.1	213	65.3	236.3	151.6	0
18050001	117	153	46	51	9	1	332.7	396.2	335.2	655.6	391.4	101	332.7	396.2	120.6	433.1	278.3	71.8
18050002	115	150	45	50	9	1	354.3	421.1	356.4	709	422.6	108.8	354.3	421.1	129.4	468.5	300.5	77.4
18050003	195	255	75	84	15	1	678	859.8	715.7	1450.3	811.3	170.2	678	859.8	261.8	960.9	577.9	121
18050004	112	147	44	48	9	1	376	467.8	391.3	788.6	449.5	100.8	376	467.8	142.8	522.1	320	71.6
18050005	5	7	2	2	0	0	16.1	19.1	16.2	32.2	0	0	16.1	19.1	5.9	21.3	0	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
18050006	4	5	2	2	0	0	33.3	53.6	42.3	91	0	0	33.3	53.6	15.9	60.8	0	0
18060001	62	83	23	27	4	0	470.7	748.3	591.8	1269.8	570.3	0	470.7	748.3	221.9	848.2	408.6	0
18060002	111	145	43	48	9	1	357.7	435.8	366.4	734.3	427.2	102.4	357.7	435.8	133.4	485.7	303.9	72.8
18060004	4	5	2	2	0	0	12.9	15.3	13	25.8	0	0	12.9	15.3	4.7	17	0	0
18060005	59	77	23	25	5	1	512.2	698.6	585.6	1230.7	713.4	280.9	512.2	698.6	222	816.9	509	201.3
18060006	85	111	33	36	7	1	809.6	1111.6	931.5	1962.3	1136.1	454.3	809.6	1111.6	353.8	1302.8	810.7	325.5
18060007	11	14	4	5	1	0	105.2	144.5	121.1	255.1	147.7	0	105.2	144.5	46	169.4	105.4	0
18060008	7	9	3	3	1	0	73.1	101	84.6	178.6	103.3	0	73.1	101	32.2	118.6	73.7	0
18060009	7	10	3	3	1	0	22.5	26.8	22.7	45.1	26.9	0	22.5	26.8	8.2	29.8	19.1	0
18060010	104	135	40	44	8	1	1037	1428.2	1196.6	2523.3	1460.1	587.9	1037	1428.2	454.9	1675.5	1042	421.3
18060011	22	29	9	9	2	0	67.6	80.4	68	135.4	80.7	0	67.6	80.4	24.7	89.4	57.4	0
18060012	14	18	5	6	1	0	280.1	397.5	332.4	708.4	407.7	0	280.1	397.5	127.4	470.8	291.2	0
18060013	10	13	4	4	1	0	113.8	158	132.3	279.8	161.7	0	113.8	158	50.4	185.8	115.4	0
18070101	6	8	2	3	0	0	71.4	99.4	83.2	176.2	0	0	71.4	99.4	31.7	117	0	0
18070102	64	83	25	27	5	1	1039.6	1465.5	1226.1	2606.8	1502.1	635.8	1039.6	1465.5	469.1	1732	1072.5	455.9
18070103	37	48	14	16	3	0	112.7	134	113.4	225.6	134.5	0	112.7	134	41.2	149.1	95.6	0
18070104	102	133	39	44	8	1	312.4	371.4	314.2	625.2	372.7	96	312.4	371.4	114.1	413.1	265	68.2
18070105	72	94	28	31	6	1	556	752.1	630.8	1321.6	767.2	296.4	556	752.1	238.5	877	547.3	212.2
18070106	31	41	12	13	2	0	279.8	382.8	320.8	674.9	391	0	279.8	382.8	121.7	448	279	0
18070202	49	63	19	21	4	0	253.3	329.5	277.1	572	334.6	0	253.3	329.5	103.6	379.1	238.4	0
18070203	154	201	59	66	12	1	1347.9	1840.4	1542.8	3243.2	1879.6	742.1	1347.9	1840.4	585	2152.9	1341.1	531.7
18070204	69	90	27	30	6	1	212.6	252.7	213.8	425.4	253.6	65.3	212.6	252.7	77.6	281.1	180.3	46.4
18070301	22	29	9	9	2	0	67.6	80.4	68	135.4	80.7	0	67.6	80.4	24.7	89.4	57.4	0
18070302	86	112	33	37	7	1	264.1	313.9	265.6	528.5	315	81.1	264.1	313.9	96.4	349.2	224	57.7
18070303	192	250	74	83	15	2	589.4	700.6	592.8	1179.6	703.1	181.1	589.4	700.6	215.2	779.4	500	128.7
18070304	176	230	68	76	14	1	541	643.2	544.3	1082.9	645.4	166.2	541	643.2	197.6	715.5	459	118.1
18070305	6	8	2	3	1	0	19.3	23	19.4	38.7	23.1	0	19.3	23	7.1	25.6	16.4	0
18080002	3	4	1	1	0	0	2.3	3.3	2.8	3.5	0	0	2.3	3.3	0.9	2.3	0	0
18080003	36	50	14	15	2	0	65.2	77.4	63.5	115.7	58.8	0	65.2	77.4	23.6	78.3	42.4	0
18090102	14	18	5	6	1	0	23.1	27.6	23.2	39	23.6	0	23.1	27.6	7.8	25.9	16.8	0
18090103	3	4	1	1	0	0	4.4	5.3	4.5	7.3	0	0	4.4	5.3	1.5	4.8	0	0
18090202	1	2	0	1	0	0	1.5	1.3	0	1.5	0	0	1.5	1.3	0	1.3	0	0
18090203	17	22	7	7	1	0	19.7	23.6	19.5	27.1	16.6	0	19.7	23.6	6.2	18.2	11.9	0
18090205	43	56	17	19	4	0	54.6	66.8	56.3	80.5	49.8	0	54.6	66.8	17.5	53.1	35.4	0
18090206	41	54	16	18	3	0	182.5	251.5	210.6	416.6	242.4	0	182.5	251.5	77.4	276.6	173	0

HUC	# 0.5 Acre Sites	# 3 Acre Sites	# 7.5 Acre Sites	# 25 Acre Sites	# 70 Acre Sites	# 200 Acre Sites	Baseline (tons)						Options 2 and 4 (tons)					
							Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites	Total Load 0.5 Acre Sites	Total Load 3 Acre Sites	Total Load 7.5 Acre Sites	Total Load 25 Acre Sites	Total Load 70 Acre Sites	Total Load 200 Acre Sites
18090207	3	3	1	1	0	0	3	3.7	3.1	4.3	0	0	3	3.7	1	2.8	0	0
18090208	162	211	63	70	13	1	434.3	583.1	488.9	902.6	531.1	204.3	434.3	583.1	173.1	598.7	378.6	146.2
18100100	24	31	9	10	2	0	35.2	44.6	37.5	57.9	35.1	0	35.2	44.6	12.1	38.3	25	0
18100200	198	258	77	85	16	2	497.2	652.2	547.7	1005.1	594.2	214	497.2	652.2	192.9	666.2	423.3	152.9
TOTALS	**86,896**	**113,494**	**33,650**	**37,336**	**6,725**	**546**	**1,054,619**	**1,132,025**	**784,955**	**2,013,562**	**1,205,137**	**203,650**	**1,054,619**	**1,132,025**	**446,011**	**1,620,143**	**1,007,885**	**172,235**

Table F-4. Assumed Seed/Mulch Application Period for Model Construction Sites

States with 28- or 30-Day Seeding Requirements		
Site size (acres)	Months in Construction Year without Surface Stabilization	Months in Construction Year with Surface Stabilization
0.5	1.5	10.5
3	1.5	10.5
7.5	2	10
25	2	10
70	2.5	9.5
200	2.5	9.5
States with 14-Day Seeding Requirement		
Site size (acres)	Months in Construction Year without Surface Stabilization	Months in Construction Year with Surface Stabilization
0.5	1	11
3	1	11
7.5	1.5	10.5
25	1.5	10.5
70	2	10
200	2	10