New Meadows River Lower Watershed Survey Report

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New Meadows River
Lower Watershed Survey Report

Prepared by
Cumberland County Soil and Water Conservation District
Maine Department of Environmental Protection
New Meadows River Watershed Project

March 2003
Acknowledgments

The following people were instrumental in the New Meadows River Lower Watershed Survey Project and deserve special recognition for their efforts:

Watershed Survey Volunteers

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<th>Name</th>
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<tbody>
<tr>
<td>David Chipman</td>
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# Table of Contents

Summary 4

Introduction 5

Figure 1: New Meadows River Watershed 6
Figure 2: New Meadows River Lower Watershed 7

Purpose of the Watershed Survey 9

Watershed Survey Methods 10

Summary of Watershed Survey Findings 10
  Residential 12
  Driveways 13
  Private Roads 14
  Town and State Roads 15
  Water Access 16
  Commercial 17

Site Ranking 18

Important Points 18

Where Do We Go From Here? 19

Permitting ABC’s 21

Glossary of Common Conservation Practices 22

Where to Go for More Information 23

Watershed Survey Sector Maps and Spreadsheets Appendix
Summary

The New Meadows River watershed covers 23 square miles in Cumberland and Sagadahoc counties, and is located in portions of the towns of Bath, Brunswick, Harpswell, Phippsburg, and West Bath. The New Meadows River drains south into Casco Bay. The New Meadows is a significant recreational and economical resource to the region.

In 2000, the New Meadows River Watershed Project conducted a survey of nonpoint sources of pollution in the upper portion of the watershed, located in Bath, Brunswick, and West Bath. In October 2002, the survey of the entire New Meadows River Watershed was completed. The lower watershed survey covered an approximately 12.15 square mile area in portions of Harpswell and Phippsburg. Volunteers from the watershed, Cumberland County Soil and Water Conservation District staff, the Maine Department of Environmental Protection, Maine Department of Marine Resources, and the Environmental Protection Agency documented sites where soil and sediment erosion was occurring.

Surveyors identified 72 sites that were impacting or have the potential to impact water quality of the New Meadows River. Twenty-five sites were located in Harpswell, while 47 were located in Phippsburg. When categorized by land use, identified sites were associated with residential areas (12), driveways (10), private roads (22), town and state roads (14), water access points (9), and commercial sites (5). Survey sites were evaluated according to impact on the New Meadows River, the technical level of planning and cost necessary to correct the problems.

The goal of the survey was to identify, prioritize, and raise awareness of existing sources of polluted runoff in the New Meadows River Watershed. Ideally, this information will be used to spur the watershed community to take future actions that will protect the quality of the New Meadows River for future generations to enjoy.
Introduction

The New Meadows River watershed is located in Cumberland and Sagadahoc counties, and covers the towns of Bath, Brunswick, Harpswell, Phippsburg, and West Bath. The 23 square mile watershed is covered by a variety of land uses including forested, developed, agricultural, and wetland. The New Meadows River drains south into Casco Bay.

Surprisingly, the New Meadows River is not a river at all. In fact, it has very little fresh water. Rather, the New Meadows River is a long, narrow embayment; an off-shoot of Casco Bay.

The New Meadows River is a significant recreational and economical resource to the region. A public boat launch and a marina are two examples of public access to the River, and locations such as the Basin in Phippsburg are considered havens for boaters. The River supports an extensive finfish, shellfish, and lobster fisheries. This high productivity is evident in the production from the New Meadows River flats over the past four years, which accounted for 7.5% of the total soft-shell clam production for Maine.

The New Meadows River is listed as a priority coastal water by the Maine Department of Environmental Protection (DEP). Additionally, Casco Bay Estuary, and therefore the New Meadows River, has been designated an estuary of national significance by the U.S. Environmental Protection Agency, as a nationally significant estuary threatened by pollution, development, or overuse.

Does the New Meadows River have a water quality problem?

One of the biggest pollution culprits in Maine’s water is polluted stormwater runoff from rain and snowmelt. Runoff occurs during and after storm events when soil with attached nutrients (such as phosphorus and nitrogen) and debris are washed into rivers and streams. Since it cannot be traced back to one particular source, this type of pollution is also called nonpoint source pollution or NPS.

In an undeveloped, forested watershed, storm water runoff is slowed and filtered by trees, shrubs, and other vegetation. The forest canopy decreases the impact of the rain, while the forest floor slows and filters runoff with its uneven ground and leafy debris. In a developed watershed, there is less tree canopy to protect the ground from raindrop impact. The uneven ground, its vegetation, and leaf litter have been altered or removed as well. In addition, storm water velocity and volume increase on impervious surfaces like rooftops, compacted soil, gravel camp roads and pavement, and does not always receive the filtering treatment the forest once
provided. Remember, fast water is hungry water. The faster water travels, the greater its potential to erode and carry away soil material and debris.

In the New Meadows River, the nutrient of concern is nitrogen. In marine waters, nitrogen acts like a fertilizer. Excess nitrogen leads to a rapid increase in algal production and possibly an algae bloom. As the algae dies it decomposes, which utilizes oxygen in the water. The resulting oxygen depletion may eventually lead to fish and shellfish death. Such an event ultimately results in habitat damage and an ecological imbalance. Microbial activity in the “deep hole” also appears to be releasing large quantities of nitrogen that may be indirectly affecting not only the “lakes,” but a portion of the upper river. In addition to a loss in aesthetic and recreational value, the stressed environment creates favorable condition for invasive plants.

Many of the issues that have occurred in the New Meadows River have been located in the upper portion of the river, and particularly in the “lake”, north of Route 1. Once fully tidal, this area has experienced periodic low levels of oxygen, and occasional algal blooms due to limited tidal flushing. These times of low oxygen may be tied to the sporadic fish kills, such as the pogie kill of the early 1990s. The “lake” also experiences clam flat closures due to rain, and the resulting runoff. Other flats are closed in portions of the river due to high bacterial counts or nearby faulty/failing septic systems.

While localized problems do exist, the New Meadows River remains a generally healthy waterbody. Still, development in the watershed, and along the coast of Maine in general, continues at a high rate. The population in the watershed has roughly doubled in the past 50 years! In order to maintain the health of this unique waterbody, it is vital that existing problems be located and addressed, and that potential problems be recognized and prevented from becoming an issue in the future. Remember, a healthy watershed yields good water quality.

**What is being done to protect the New Meadows River?**

Water quality data in the New Meadows River has been monitored since 1973. The Department of Marine Resources (DMR) regularly monitors stations along the river as part of its Shellfish Sanitation Program.

The Casco Bay Estuary Project (CBEP) has received a grant to establish a sustainable shellfisheries program. This project works to prioritize clam flats, remove or correct sources of bacterial contamination, and has developed a shellfish resource management plan. Additionally, the CBEP recently completed a five year project that examined the existence of toxic metals and chemicals in lobsters, mussels, and sediments.

Individual towns have remained actively involved in water quality sampling to assist DMR in ensuring compliance of open shellfish areas with national requirements. Towns have also worked to replace failing septic systems and overboard discharge systems, which are possible sources of bacterial contamination to the River and its clam flats.

Recognizing the fact that the New Meadows River does not conform to political boundaries, the New Meadows River Watershed Project was formed to address issues faced by the communities bordering the New Meadows River.
Two years ago, the New Meadows River Watershed Project, the DEP and DMR took the next step in protecting the river by conducting a watershed survey. That watershed survey was conducted in the upper portion of the watershed, in the Towns of Bath, Brunswick, and West Bath. Volunteers from the watershed documented sites where soil and sediment erosion occurred. Volunteer watershed surveys have been found to be one of the most effective ways to protect water quality by getting local residents involved in identifying existing and potential sources of polluted runoff.

This year’s survey focused on the lower watershed; an approximately 12.15 square mile area covering portions of Phippsburg and Harpswell. This survey completes the entire New Meadows River Watershed survey that began in 2000. This report contains a summary of the survey findings and recommendations for the lower watershed.

Local citizen participation was essential in completing the watershed survey. Ideally, this involvement will only increase. Through the leadership of the New Meadows River Project Steering Committee and assistance from groups and agencies concerned with the health of the New Meadows, the opportunities for watershed advocacy and education are numerous. Hopefully, this information will spur the watershed community to take further action that will protect the quality of the New Meadows River for future generations to enjoy.

**Purpose of the Watershed Survey**

The primary purpose of the watershed survey was to identify and prioritize existing sources of polluted runoff, particularly soil erosion sites, in the New Meadows River watershed. However, it was equally important to:

- Inform watershed residents that bare eroding soil is a primary source of water pollution. Nitrogen carried by this soil can cause over-fertilization of coastal embayments.
- Raise awareness about the connection between land use and water quality, and the impacts of polluted runoff.
- Make general recommendations to landowners for fixing erosion problems.
- Inspire people to become active stewards of land and water resources.
- Use the information gathered as one component of a long term river protection strategy.

Local citizen participation was essential in completing the watershed survey and will be even more important in upcoming years. Through the leadership of the New Meadows River Watershed Project Steering Committee and assistance from groups and agencies concerned with water quality, the opportunities for watershed stewardship and education are numerous.
Watershed Survey Methods

As with other watershed surveys in Maine, the New Meadows River survey used volunteers to identify erosion sites in the watersheds. Town leaders from Phippsburg and Harpswell and the Education Subcommittee of the NMR steering committee coordinated and publicized the project with help from the DEP and Cumberland County Soil & Water Conservation District (CCSWCD).

In October 2002, twelve volunteers attended a half-day training to learn about polluted runoff issues and how to identify and document problem areas. After the morning classroom session, volunteers divided into nine teams. Technical staff served as sector leaders, and provided guidance in the field.

Volunteers documented each erosion site by completing survey forms and site sketches, taking photographs and marking site numbers on tax maps. The majority of the survey was completed during the training, and teams surveyed the remaining areas over the following weeks.

Throughout the fall, a student from Bowdoin College and the CCSWCD organized the survey data, entered information into MS Excel spreadsheets and created the maps for the report, which was prepared by the CCSWCD.

Volunteers documented areas of active soil erosion. Signs of soil erosion include bare soil, rills or gullies (channels carved in the soil), exposed roots, road ruts and sediment deltas.

Volunteers and technical staff identified 72 sites that were impacting or have the potential to impact water quality of the New Meadows River. Sites were rated according to their relative impact to water quality, and their costs and technical level to fix based on the guidelines below. Identified sites were associated with residential areas, driveways, roads, water access, and commercial sites. Descriptions of these sites are on the following pages.
Key Findings from the Survey

- There is a manageable number of problems—most can be fixed with low to medium technical experience and cost.
- Most of the problems were found on residential properties, driveways, and private roads.
- In addition to the surveyed sites, numerous waterfront properties were observed to have little or no vegetated buffer at the water's edge. It is important to note that buffers of shrubs and trees do a much more effective job than bare ground or grass to keep polluted runoff from entering the New Meadows River!

## Potential Impact of Problems

There were similar numbers of sites with low, medium and high impacts. Attention should be paid to all of the sites, since it’s the cumulative impact of all the sites that causes water quality to decline.

![Potential Impact of Problems](chart.png)

- Low—eroding site with limited transport off site, or small site with no evidence of rills or gullies
- Medium—sediment transported off site but does not reach high magnitude
- High—large area with significant erosion and direct flow to stream, ditch or river

## Technical Level Needed to Correct Problem

- Low—property owner can accomplish the fix with or without proper reference materials
- Medium—technical person should visit the site & make recommendations
- High—site requires an engineered design

![Technical Level Needed to Correct Problem](chart.png)

## Cost to Implement Recommendations

- Low—less than $500
- Medium—$500 to $2,500
- High—more than $2,500

![Cost to Implement Recommendations](chart.png)
Residential Sites

Of the 12 sites associated with residential areas, 6 were low impact, 2 were medium impact, and 4 were high impact. Six of the sites can be fixed with little technical expertise and low cost.

Common Problems Identified:
- Slight or moderate surface erosion
- Bare and sparsely vegetated soil
- Lack of vegetated buffer along shoreline
- Direct flow of runoff to river
- Unstable construction site

Recommended Solutions:
- Seed and mulch bare soil
- Establish or enhance vegetated buffer
- Limit foot traffic in eroding areas
- Stop mowing the buffer
- Install silt fence around construction sites
- Install open-top culvert, waterbar, or other diverter

Residential sites make up a large portion of problem sites with sources of polluted runoff to the New Meadows River. These seemingly small problems can pose a significant threat to water quality. Fortunately, almost all of these sites can be corrected with easy, low cost fixes.

*It's the cumulative impact of all the sites that causes water quality to decline.*
Driveway Sites

The 10 driveway sites ranged from 50 to 400 feet in length. Three were low impact, and 7 were medium impact. There were no high impact sites. All of the sites could be fixed with low to medium cost and technical expertise.

Common Problems Identified:
- Slight to moderate erosion in ditch
- Unstable culvert inlet/outlet
- Poor shaping
- Moderate surface erosion
- Direct flow to a stream or the New Meadows River

Recommended Solutions:
- Reshape ditch and stabilize with grass or stone
- Reshape or crown driveway so that water flows to either side
- Install runoff diverters such as waterbars, open top culverts, broad-based dip, or rubber razors to get water off driveway
- Stabilize culvert, add plunge pool

Problems
- Moderate surface erosion
- Poor driveway shaping and ruts cause water to concentrate and erode the surface
- Direct flow of sediment to New Meadows River

Solutions
- Build up driveway with new surface material
- Reshape and crown driveway so water moves quickly from the surface to either side
- Install diverters such as waterbars, open top culverts or rubber razors to get water off driveway

Preserve water quality and save time, money, and wear and tear on your vehicle by having a well crowned driveway. Use adequate surface material and add diverters to direct runoff into vegetated buffers.

It's great for watershed residents and it's great for the water!
## Private Roads

Of the 22 private road sites, 8 were high impact, 9 were medium impact and 5 were low impact. Proper construction and maintenance of private roads can help eliminate severe erosion problems and avoid the need for costly solutions.

### Common Problems Identified:
- Slight to severe surface erosion
- Shoulder and ditch erosion
- Poor shaping
- Bare soil
- Unstable culvert inlet and outlet
- Direct flow to New Meadows River

### Recommended Solutions:
- Install diverters such as waterbars, open top culverts or rubber razors to get water off road
- Crown road so that water flows to either side
- Install new culverts and armor inlets/outlets with stone
- Remove grader berms to allow proper drainage
- Install plunge pool or detention basin to trap sediment

---

Private Roads are the highest source (by number of sites) of NPS pollution to the New Meadows River.

*While a one time fix may cost more up front, it will reduce overall maintenance costs on your road, ditches and vehicle.*
## Town and State Roads

Eleven town road problems and 3 state road problems were identified. Of these, 3 were high impact, 8 were medium impact and 3 were low impact.

<table>
<thead>
<tr>
<th>Common Problems Identified:</th>
<th>Recommended Solutions:</th>
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<tbody>
<tr>
<td>• Direct flow of runoff to New Meadows River or tributaries</td>
<td>• Install a catch basin/plunge pool at outlet of culvert to catch sediments</td>
</tr>
<tr>
<td>• Unstable culverts</td>
<td>• Stabilize inlet/outlet of culvert with stone</td>
</tr>
<tr>
<td>• Eroding road shoulder</td>
<td>• Establish vegetated buffer</td>
</tr>
<tr>
<td>• Winter road sand build up</td>
<td>• Proper shaping of ditches and backslopes</td>
</tr>
<tr>
<td>• Lack of/eroding/ improperly shaped ditch</td>
<td>• Install turnouts to divert runoff to vegetated areas</td>
</tr>
<tr>
<td></td>
<td>• Remove grader berms, and crown/reshape road surface</td>
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</table>

**Problems:**

- Unstable and eroding culvert
- Eroding road shoulder
- Stormwater from road runs directly to tributary

**Solutions:**

- Vegetate road shoulder
- Stabilize and maintain culvert inlet/outlet
- Reroute stormwater from road shoulder to buffer on either side of culvert with ditching

Town and state roads sites identified in this watershed survey tended to discharge sediment directly to the New Meadows River or tributaries.

*Working with the Towns of Phippsburg and Harpswell and Maine Department of Transportation to fix and maintain priority road sites will save money and improve water quality.*
Water Access Sites

Nine water access sites (beach and boat access) were identified. Four sites were low impact, three were medium impact, and two were high impact sites.

**Common Problems Identified:**
- Moderate surface erosion
- Moderate to severe road shoulder and ditch erosion
- Bare soil
- Unstable access point
- Direct flow to a stream or the New Meadows River

**Recommended Solutions:**
- Build up road surface and crown
- Reshape ditch/shoulder and seed or riprap
- Install runoff diverters such as open-top culverts and waterbars
- Use infiltration pavers (tri-lock blocks) to stabilize access point
- Extend or establish vegetative buffer

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**Problems:**
- Severe surface erosion on road
- Severe ditch erosion
- Direct flow of runoff and sediment to New Meadows River

**Solutions:**
- Use a more cohesive/less erodible surface material
- Install waterbars to divert runoff into wooded areas
- Regrade the road away from the water to encourage infiltration in established buffer.

*Remember… It is the cumulative impact of all small, medium, and large sites that causes problems in the watershed!*
Commercial Sites

Five commercial sites were identified in the watershed survey; three were medium impact sites, and two were low impact.

**Common Problems Identified:**
- Slight to moderate erosion in ditch
- Unstable culvert inlet/outlet
- Poor shaping
- Moderate surface erosion
- Direct flow to a stream or the New Meadows River

**Recommended Solutions:**
- Reshape ditch and stabilize with grass or stone
- Reshape or crown road so that water flows to either side
- Install runoff diverters such as waterbars, open top culverts, broad-based dip, or rubber razors to get water off road
- Stabilize culvert, add plunge pool

**Problems:**
- Moderate road surface erosion
- Runoff and sediment travel directly into cove
- Erosion occurring around culvert outlet

**Solutions:**
- Add new surface material and grade away from the cove
- Install runoff diverters, such as waterbars or open top culvert
- Stabilize culvert inlet/outlet
- Add vegetation with strong/extensive root system to hold soil in place

*Protecting the quality of the New Meadows River makes good business sense!*
Site Rankings

Sites in the spreadsheet were ranked according to three criteria:

- **Technical level to install** describes the degree of technical expertise needed to address a problem. A “low” tech level requires little or no specific technical assistance. For example, seeding and mulching an area that is relatively stable, but which requires vegetative cover to prevent additional soil loss from occurring. Sites with a “medium” tech level need to be visited by a technical expert who can make recommendations. A “high” tech level requires an engineered design.

- **Impact** was assigned by considering factors such as the size of disturbed area, slope, soil type, amount of soil that’s eroding, proximity to water or vegetated buffer, and size of vegetated buffer. “Low” impact eroding sites are those with limited transport off-site even if the site is large or a small site with no evidence of rills or gullies (channels cut into the soil). At “medium” impact sites, sediment is transported off-site, but the erosion does not reach a high magnitude. Large sites where there is significant erosion that flows directly into a stream, lake or ditch, were rated “high” impact.

- **Cost** is an important factor in planning for restoration. “Low” cost sites were estimated to cost less than $500 to fix. An estimate of $500 to $2,500 was rated “medium”. If the estimated cost to fix a site exceeded $2,500, a “high” rating was assigned.

## Important Points!

Summaries of the NPS sites identified in the survey are listed in the Appendix. Sites are grouped in alphabetical order by land use or type. Each listing shows the map site number, the type of problem(s) encountered, location, and size or area, and recommended fix.

In addition to the surveyed sites, numerous waterfront properties were observed to have little or no vegetated buffer at the water’s edge. Not all of these sites were included in the survey results, but it is important to note that buffers of shrubs and trees do a much more effective job than bare ground or grass to keep NPS pollution from entering the New Meadows River.

This watershed survey was conducted from a land-based perspective. To fully round out an examination of the health of the watershed, this information should be used in conjunction with a water-based survey. A buffer tour or shoreline survey conducted from a boat would complement the information obtained from the watershed survey by gathering information about the health/existence of vegetated buffers, existence of gray water discharges, and/or septic system failures that would not be detected from the shore.

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**VEGETATED BUFFER**

Areas of vegetation, left undisturbed or planted between a developed area and a waterbody that are used to capture pollutants being transported in surface water. Buffer vegetation can include trees, shrubs, and ground cover plants that are planted, transplanted, or growing naturally.
Where Do We Go From Here?

With the completion of the watershed survey, a big hurdle has been crossed in gaining control over the polluted runoff that is impacting the new Meadows River. This survey, in combination with survey for the upper portion of the watershed, can now be used for planning and implementation purposes.

Education should remain a priority in the watershed. Only when residents of the watershed understand and take ownership of their actions, both positively and negatively, will they take personal responsibility of protecting the health of the river.

Fixing the erosion sites identified in this survey will require efforts by individuals, MDOT, road associations, municipal officials in Phippsburg and Harpswell and the New Meadows River Watershed Project. To successfully protect the health of the entire New Meadows River, proactive steps need to be taken by all five communities in the watershed.

**Individual Citizens**

- Prevent runoff from washing sediment into the river. Detain runoff in depressions or divert flow to vegetated areas. Call the Cumberland County SWCD, Androscoggin Valley SWCD, or DEP for free technical assistance.
- Minimize the amount of cleared land and road surfaces on your property.
- Stop mowing and let lawn revert back to natural plants. Deep shrub and tree roots help hold the shoreline.
- Avoid exposing bare soil. Seed and mulch bare areas.
- Call your local Code Enforcement Officer before cutting vegetation within 250’ of the shore.
- Maintain septic systems properly. Pump septic tanks (every 2-3 years for year round residences and 4-5 years for seasonal residences) and upgrade marginal systems.
- Assist the DMR in conducting shoreline surveys to open clam flats and maintain those that are currently open.
- Visit [http://academic.bowdoin.edu/new_meadows/](http://academic.bowdoin.edu/new_meadows/) to learn more about what is going on in the watershed to protect the river, and how to get involved.

**New Meadows River Watershed Project Steering Committee/Interested Parties**

- Continue to utilize groups and contacts within and outside of the steering committee to bolster public support for watershed projects.
- Participate in the planning and implementation of a long-term watershed management plan for the watershed.
- Provide educational materials and guidance to residents of the watershed. Most of the identified erosion sites in this survey require minimal to moderate time, money, and expertise to fix. Holding a workshop has proven to be a positive way to share this knowledge. Workshops are an effective way to broaden citizens’ understanding of their impact to the river. Additionally, by involving local citizens, participants can take home the knowledge and confidence to implement erosion control methods at home.
• Develop long term educational outreach program, both in schools and the communities.
• Develop implementation projects to install conservation measures (BMPs) and apply for federal funds to complete the projects.

**Road Associations (or private roads without associations)**

• Minimize road runoff by doing regular, comprehensive maintenance. Form a road association if one does not already exist.
• Get a copy of “Camp Road Maintenance Manual – A Guide for Landowners.” It is a must for anyone managing a gravel road. (Call the DEP to order a free copy.)
• For more extensive problems, seek free technical help. Contact the Cumberland County SWCD, Androscoggin Valley SWCD or DEP to request technical assistance.

**Municipal Officials**

• Enforce shoreland zoning ordinance to assure full protection of the New Meadows River.
• Conduct regular maintenance on town roads in the watershed, and fix town road problems identified in this survey.
• Participate in and support long-term watershed management projects.
• Promote training for road crews, planning boards and conservation commissions.
• Work with DMR and DEP to remove sources of bacterial contamination along the shore.
• Request a workshop from the Nonpoint Education for Municipal Officials (NEMO) program.

**With a few exceptions, virtually all of the sites identified in the survey are significant to one degree or another. The cumulative effect of many “low” and “medium” impact sites can exceed that of any one “high” impact site. This should be considered when a strategy is developed to address problems in the watershed.**

*Remember, the long term health of the watershed depends on you!*
Permitting ABC’s

The protection of the New Meadows River is ensured through the good will of residents along the shore and through laws and ordinances created and enforced by the State and Town. In some cases, landowners will need to obtain permits prior to implementing some of the BMP’s suggested in this report.

How do you know when you need a permit?

- As a general rule of thumb, a permit is required from the Maine Department of Environmental Protection when soil is disturbed or vegetation is cut within 75 feet of a protected natural resource (i.e. lake, stream, or river) in an area where dirt or soil can wash into the water.

To ensure that permits for projects that will not result in significant disturbance are processed swiftly, the DEP has established a streamlined permit process called Permit by Rule. These one page forms (shown below) are simple to fill out and allow the DEP to quickly review the project.

The project partners encourage you to contact the DEP and Town Code Enforcement Officer if you have any plans to construct or relocate a structure, clear vegetation, create a new path or driveway, stabilize a shoreline or otherwise disturb the soil on your property. Even if projects are planned with the intent of enhancing the environment—such as installing some of the practices mentioned in this report—contact the DEP and Town to be sure.

The Natural Resources Protection Act seeks to establish reasonable regulation in order to assure responsible development that does not harm Maine’s precious natural systems.

~from Protecting Maine’s Natural Resources~Volume 1, DEP 1996

How to apply for Permit by Rule with DEP:

1. Fill out a notification form. Forms are available from your town code enforcement officer or the Maine DEP office in Portland or Augusta.

2. Permit by Rule requires that you follow certain standards such as installing silt fence. It is important that you obtain a copy of the standards so you will be familiar with the law’s requirements.

3. The permit will be reviewed within 14 days. If you do not hear from DEP within 14 days, you can assume your permit is valid. If you bring the permit directly to a DEP office, you may be able to get your permit approved immediately.
Glossary of Common Conservation Measures

Crown—High point that runs lengthwise along the center of a camp road or driveway. The high point slopes gently away from the center toward the outer edge of the road, allowing water to drain off the road and preventing erosion of the road surface.

Dripline Trench—Rock-filled trench beneath the roof edge drip line that collects and stores roof runoff until it soaks into the ground. Helps control erosion and reduce wear on the house by preventing backsplash. A typical trench is 6-8” deep and 12-18” wide and filled with 3/4” stone. Can also be used along the edges of driveways to encourage infiltration of runoff.

Open Top Culvert—Box-like structure that collects and diverts road surface runoff away from a sloped driveway or camp road. They are seldom recommended for year-round roads due to the likelihood of plow damage. Install at a 30º angle to the road and direct the outlet into a stable buffer. Clean out leaves and debris periodically.

Rubber Bar or Razor Blade—Structure that protrudes above the road surface high enough to intercept and collect water, while allowing traffic to pass over it. It is generally used on seasonal roads and driveways because of the likelihood of plow damage. Install at a 30º angle to the road and direct the outlet into a stable buffer. The rubber conveyor belt can be purchased at some hardware stores or Augusta Rubber (582-6200).

Turnout—A conservation practice used to direct runoff from a ditch (or road ruts) into a vegetated buffer. The turnout should have a flared end section that is level and lined with rock to spread out the flow.

Waterbar—Ridge (like a speed bump) that runs diagonally across a camp road, driveway or path, typically at a 30º angle. Stops water from running down the road and diverts it to the side. Easy to construct and most appropriate for roads with low traffic volume. Needs to be rebuilt periodically.
Where Do I Get More Information?

Contacts

**New Meadows River Watershed Project**
c/o Planning & Development Department  
Town of Brunswick  
28 Federal Street  
Brunswick, ME  04011  
(207) 725-6660  
http://academic.bowdoin.edu/new_meadows/  
Provides educational materials and directs individuals with specific concerns related to the New Meadows River to appropriate agencies.

**Androscoggin Valley Soil and Water Conservation District**  
PO Box 1938  
Lewiston, ME  04241  
(207) 753-9400  
Offers assistance with watershed planning and surveys, environmental education, engineering support, seminars and training sessions, and education on the use of conservation practices.

**Cumberland County Soil and Water Conservation District**  
381 Main Street, Suite 3, Gorham, ME  04086  
(207) 839-7839  
Offers assistance with watershed planning and surveys, environmental education, engineering support, seminars and training sessions, and education on the use of conservation practices.

**Maine Department of Environmental Protection**  
312 Canco Road  
Portland, ME  04103  
Toll Free (888) 769-1036 or (207) 822-6300  
17 State House Station  
Augusta, ME  04333  
Toll Free (800) 452-1942 or (207) 287-7688  
Provides permit applications and assistance, numerous reference materials, technical assistance, environmental education, project funding opportunities, and stewardship activities for lakes, streams, and rivers.

**Maine Department of Marine Resources**  
PO Box 8  
West Boothbay Harbor, ME  04575  
(207) 633-9500  
Provides information on the clam flat closures and general shellfish information; also impacts of septic systems and overboard discharges.

**Town of Phippsburg**  
1042 Main Road
Phippsburg, ME  04562  
(207) 389-2653  

Phippsburg’s Code Enforcement Officer provides information on Shoreland Zoning regulations.

**Town of Harpswell**  
Mountain Road  
PO Box 39  
Harpswell, ME  04079  
(207) 833-5771  

Harpswell’s Code Enforcement Officer provides information on Shoreland Zoning regulations.

**Publications**


<table>
<thead>
<tr>
<th>Map ID</th>
<th>Survey Site</th>
<th>Tax Map Code</th>
<th>Land Use</th>
<th>Location</th>
<th>Site Description</th>
<th>Area</th>
<th>Recommendations</th>
<th>Tech Level</th>
<th>Impact</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>WA-1</td>
<td>9-1</td>
<td>Phippsburg-27-5</td>
<td>Beach Access, Private Road</td>
<td>Bailey Beach @ Flat Point Road</td>
<td>Direct flow to New Meadows River, moderate road shoulder erosion</td>
<td>6’x6’</td>
<td>Build up road, reshape shoulder, add rip rap (minimal amount may be needed)</td>
<td>Low</td>
<td>Low</td>
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<tr>
<td>WA-2</td>
<td>1-3</td>
<td>Harpswell-51-150</td>
<td>Boat Access</td>
<td>Eggemoggin-Long Island North Assoc.</td>
<td>Direct flow to New Meadows River, Moderate Surface erosion</td>
<td>50’x25’</td>
<td>Install waterbar on path, add rip rap</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
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<tr>
<td>WA-3</td>
<td>3-3</td>
<td>Harpswell-61-1</td>
<td>Boat Access</td>
<td>End of Rand Road (at water)</td>
<td>Direct flow to New Meadows River, moderate surface erosion, unstable boat access</td>
<td>30’x10’</td>
<td>Install runoff diverters (open top culvert)</td>
<td>Low</td>
<td>Low</td>
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<tr>
<td>WA-4</td>
<td>3-6</td>
<td>Harpswell-62-146</td>
<td>Boat Access</td>
<td>End of Sailor Way</td>
<td>Road material deposited too near shore, covering rip rap</td>
<td>22’x15’</td>
<td>Infiltration pavers (tri-lock blocks)</td>
<td>Medium</td>
<td>Low</td>
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<tr>
<td>WA-5</td>
<td>6-5</td>
<td>Phippsburg-34-1</td>
<td>Boat Access</td>
<td>Basic Road primitive boat launch site</td>
<td>Direct flow to New Meadows River, bare soil, shoreline erosion, slight surface erosion, unstable boat access</td>
<td>20’x10’</td>
<td>Establish vegetative buffer, seed and mulch</td>
<td>Low</td>
<td>Medium</td>
<td>Low</td>
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<tr>
<td>WA-6</td>
<td>8-4</td>
<td>Phippsburg-27-43</td>
<td>Boat Access, Beach Access</td>
<td>Wallace Circle Public Beach Access</td>
<td>Direct flow to New Meadows River, moderate road shoulder erosion, moderate surface erosion</td>
<td>100’x25’</td>
<td>Install ditch, waterbar</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
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<tr>
<td>WA-7</td>
<td>2-7</td>
<td>Harpswell-58-74</td>
<td>Boat Access, Commercial, Driveway</td>
<td>Dingley Island Road</td>
<td>Direct flow to New Meadows River, moderate to severe road shoulder erosion, dirt road deeply eroded, eroded soil flows to small cove</td>
<td>50’x10’</td>
<td>Add new surface material, build up road, install runoff diverters</td>
<td>High</td>
<td>High</td>
<td>High</td>
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<tr>
<td>WA-8</td>
<td>7-1</td>
<td>Phippsburg-31-62</td>
<td>Boat Access, Commercial, Driveway</td>
<td>Black Landing Road #75</td>
<td>Direct flow to New Meadows River, Moderate Surface erosion</td>
<td>50’x10’</td>
<td>Add new surface material, Install runoff diverter (broad-based dip)</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
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<tr>
<td>WA-9</td>
<td>7-2</td>
<td>Phippsburg-31-60</td>
<td>Boat Access, Town Road</td>
<td>Baker's Wharf Road</td>
<td>Direct flow to New Meadows River, Severe Surface erosion, Severe Ditch erosion</td>
<td>300’x15’</td>
<td>Different type of surface material, Install Waterbar</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
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<tr>
<td>C-1</td>
<td>8-3</td>
<td>Phippsburg-27-?</td>
<td>Commercial</td>
<td>General Store, Wallace Circle</td>
<td>Direct flow to New Meadows River, slight surface erosion</td>
<td>6’x50’</td>
<td>Extend buffer, plant trees and shrubs, terrace back yard to catch sediment</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
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<tr>
<td>C-2</td>
<td>10-1</td>
<td>Phippsburg-24-31</td>
<td>Commercial, Private Road</td>
<td>Hermit Island Road</td>
<td>Moderate surface erosion, direct flow to small cove</td>
<td>150’x3’ + 210’x2’</td>
<td>Add new surface material (shape and regrade to create monoline), Reshape road, Install runoff diverters (low maintenance option), Detention basin</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
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<tr>
<td>C-3</td>
<td>10-2</td>
<td>Phippsburg-24-31</td>
<td>Commercial, Private Road</td>
<td>Hermit Island Road</td>
<td>Direct flow to wetland area, slight and moderate surface erosion</td>
<td>54’x6’</td>
<td>Add rubber razor or rock crossing</td>
<td>Medium</td>
<td>Medium</td>
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<td>Tech Level</td>
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<td>Cost</td>
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<tr>
<td>C-4</td>
<td>Phippsburg-24-31</td>
<td>10-3</td>
<td>Commercial, Private Road</td>
<td>Hermit Island Road</td>
<td>Direct flow to Cape Small Harbor</td>
<td>Unk.</td>
<td>Stabilize inlet and/or outlet</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
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<tr>
<td>C-5</td>
<td>Phippsburg-29-11</td>
<td>7-4</td>
<td>Commercial, Private Road</td>
<td>Fairway Dr near intersect w/ Round Cove Rd</td>
<td>Bare spots in soil, slight surface erosion</td>
<td>50'x15'</td>
<td>Seed and mulch</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
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<tr>
<td>D-1</td>
<td>Harpswell-59-59</td>
<td>3-1</td>
<td>Driveway</td>
<td>Cundy's Harbor Road</td>
<td>Unstable culvert, moderate ditch erosion, moderate road shoulder erosion, bare soil, moderate surface erosion, unstable construction site</td>
<td>180'x15'</td>
<td>Install plunge pool, stabilize culvert, armor ditch with grass, reshape ditch, install runoff diverters, seed and mulch ditch</td>
<td>Medium</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>D-2</td>
<td>Phippsburg-38-5(?)</td>
<td>4-1</td>
<td>Driveway</td>
<td>End of Perry Cove Drive</td>
<td>Direct flow to New Meadows River, has buffer but close to river, slight erosion in ditch</td>
<td>150' Ditch</td>
<td>Armor with stone or grass</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
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<tr>
<td>D-3</td>
<td>Phippsburg-38-30</td>
<td>4-2</td>
<td>Driveway</td>
<td>Fred Brigham Rd, just past Rhodes Rd</td>
<td>Direct flow to New Meadows River, Moderate erosion in ditch</td>
<td>200'x12'</td>
<td>Reshape or crown road, install runoff diverters</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>D-4</td>
<td>Phippsburg-41-41</td>
<td>4-6</td>
<td>Driveway</td>
<td>Stoney Brook Road</td>
<td>Unstable culvert, direct flow to stream, moderate erosion in ditch, stockpiled soil</td>
<td>?</td>
<td>Stabilize culvert, armor ditch with stone or grass</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>D-5</td>
<td>Phippsburg-35-13</td>
<td>5-7</td>
<td>Driveway</td>
<td>Off Pasture Road</td>
<td>Direct flow to ditch that goes to river, moderate surface erosion</td>
<td>25'x50'</td>
<td>Add new surface material to road, pave (?)</td>
<td>Low</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>D-6</td>
<td>Phippsburg-35-1</td>
<td>5-9</td>
<td>Driveway</td>
<td>Meadowbrook Road near Basin Road</td>
<td>Unstable culvert inlet/outlet, direct flow to stream, slight surface erosion, culverts all over property, suspect that landowner is trying to control stream away from driveway, large areas of standing water in driveway</td>
<td>20'x20'</td>
<td>Clean out culvert, stabilize inlet and/or outlet, add new surface material to road/driveway</td>
<td>Low</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>D-7</td>
<td>Phippsburg-33-2</td>
<td>6-13</td>
<td>Driveway, Beach Access</td>
<td>Harrington Road and Home (end of road)</td>
<td>Direct flow to New Meadows River, slight ditch erosion, bare soil, stockpile soil, lack of buffer, moderate surface erosion, sand delta at shore</td>
<td>400'x12'</td>
<td>Rubber razor, extend buffer by shore and house, seed and mulch gravel pit</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
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<tr>
<td>D-8</td>
<td>Phippsburg-32-7.02</td>
<td>6-14</td>
<td>Driveway, Residential</td>
<td>Last house on Bartlett Drive</td>
<td>Direct flow to New Meadows River, moderate surface erosion, rills and gullies in driveway</td>
<td>150'x10'</td>
<td>Reshape or crown road, broad-based dip, establish buffer along shore</td>
<td>Low</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>D-9</td>
<td>Harpswell-52-78 (new house)</td>
<td>2-2</td>
<td>Driveway, Town Road</td>
<td>Perry Lane</td>
<td>Direct flow to ditch, moderate road shoulder erosion, driveway eroding flows to road 100' of eroding gullies in road</td>
<td>100'x15'</td>
<td>Add new surface material to road and driveway, reshape or crown road, pave driveway, install runoff diverters</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
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<tr>
<td>D-10</td>
<td>Harpswell-52-156(?)</td>
<td>2-4</td>
<td>Driveway, Town Road</td>
<td>#88 Laurel Cove Road</td>
<td>Direct flow to New Meadows River, moderate erosion in ditch, moderate road shoulder erosion, shoreline erosion, moderate surface erosion</td>
<td>100'x250'</td>
<td>Add new road surface material, install runoff diverters</td>
<td>Medium</td>
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<td>Tax Map Code</td>
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<tr>
<td>PR-1</td>
<td>1-4</td>
<td>Harpswell-51-73</td>
<td>Private Road</td>
<td>Sebascodegan</td>
<td>Unstable culvert inlet, direct flow to stream, moderate to severe road shoulder erosion</td>
<td>500'x6'</td>
<td>needs to be engineered: high ground on both sides and large wetland area to stream</td>
<td>High</td>
<td>High</td>
<td>High</td>
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<tr>
<td>PR-2</td>
<td>1-5</td>
<td>Harpswell-51-29</td>
<td>Private Road</td>
<td>Hidden Pond Road</td>
<td>Unstable culvert outlet, direct flow to stream, severe road shoulder erosion</td>
<td>20'x4'</td>
<td>Stabilize culvert outlet, seems like snow plow leaves piles at this low spot in road- need to find a better place</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
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<tr>
<td>PR-3</td>
<td>2-3</td>
<td>Harpswell-52-104</td>
<td>Private Road</td>
<td>Laurel Point Circle</td>
<td>Direct flow to New Meadows River, moderate road shoulder erosion, lack of buffer on shoreline, shoreline erosion, moderate surface erosion, road not crowned, gullies in road, sediment washing into cove</td>
<td>12'x100'</td>
<td>Reshape crown, install runoff diverters</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
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<tr>
<td>PR-4</td>
<td>2-5</td>
<td>Harpswell-53-43</td>
<td>Private Road</td>
<td>Wallace Shore Road</td>
<td>Direct flow to stream, narrow road with unstable culvert, localized severe ditch erosion overall moderate ditch erosion, moderate road shoulder erosion</td>
<td>10'x15'</td>
<td>Enlarge culvert, reshape shoulder, reshape crown, pave widen and stabilize road surface</td>
<td>High</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>PR-5</td>
<td>2-6</td>
<td>Harpswell-56-1</td>
<td>Private Road</td>
<td>Dirt road off Winding Way</td>
<td>Direct flow to New Meadows River, shortline erosion, gravel turnaround with low log berm, stormwater flows down steep slope to river</td>
<td>15'x30'</td>
<td>Reshape/veg shoulder, install runoff diverters</td>
<td>Medium</td>
<td>Medium</td>
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<tr>
<td>PR-6</td>
<td>3-11</td>
<td>Harpswell-63-117</td>
<td>Private Road</td>
<td>Watson's General Store, Watson Road</td>
<td>Direct flow to New Meadows River, sever road shoulder erosion, lack of shoreline buffer, severe surface erosion, ledge with little space to work with and steep paved slope</td>
<td>190'x15'</td>
<td>Pave road, establish buffer, needs a solution from an engineer</td>
<td>High</td>
<td>High</td>
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<td>PR-7</td>
<td>3-5</td>
<td>Harpswell-62-138</td>
<td>Private Road</td>
<td>Intersection of Hoskins Island Road, Sailor Way, and Prosper Road</td>
<td>Direct flow to New Meadows River, moderate road shoulder erosion, moderate surface erosion</td>
<td>320'x8'</td>
<td>Clean out culvert, install ditch, install turnout</td>
<td>High</td>
<td>High</td>
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<tr>
<td>PR-8</td>
<td>4-3</td>
<td>Phippsburg-37-26</td>
<td>Private Road</td>
<td>Near Libby Lane, on Cutting Road</td>
<td>Direct flow to New Meadows River, Moderate road and road shoulder erosion</td>
<td>100'</td>
<td>Add new surface material, Reshape or crown road, Pave, install runoff diverters</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
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<tr>
<td>PR-9</td>
<td>5-2</td>
<td>Phippsburg-37-19</td>
<td>Private Road</td>
<td>Hutchins Ice Pond Lane</td>
<td>Direct flow to stream, severe surface erosion</td>
<td>10'x3'</td>
<td>Install turnout in driveway, reshape or crown driveway, plant trees and shrubs, add rip rap on bank of stream if can't hold vegetation</td>
<td>Low</td>
<td>Medium</td>
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<td>PR-10</td>
<td>5-4</td>
<td>Phippsburg-36-24</td>
<td>Private Road</td>
<td>Uncle Sam Road at sharp turn near end</td>
<td>Direct flow to New Meadows River, lack of shoreline buffer, slight surface erosion</td>
<td>50'x12'</td>
<td>Add new surface material to road, reshape or crown road, rubber razor, establish vegetative buffer</td>
<td>Low</td>
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<td>PR-11</td>
<td>5-5</td>
<td>Phippsburg-36-29</td>
<td>Private Road</td>
<td>Uncle Sam Road</td>
<td>Slight road shoulder erosion, moderate surface erosion</td>
<td>15'x3'</td>
<td>Add new road surface material, build up road, reshape or crown road, add rubber razor, stabilize bank (Note: erosion may worsen when 4 large trees, that are dead, are removed from area)</td>
<td>Low</td>
<td>Low</td>
<td>Medium</td>
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<td>PR-12</td>
<td>5-6</td>
<td>Phippsburg-35-13</td>
<td>Private Road</td>
<td>Off Pasture Road</td>
<td>Direct flow to New Meadows River, severe ditch erosion, severe road shoulder erosion</td>
<td>150'x3'</td>
<td>Armor ditch with stone or grass, install ditch, install turnout, add new road surface material, build up road, reshape or crown road</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
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<tr>
<td>PR-13</td>
<td>5-8</td>
<td>Phippsburg-35-1</td>
<td>Private Road</td>
<td>Meadowbrook Road near Basin Road</td>
<td>Unstable culvert inlet/outlet, severe ditch erosion, moderate road shoulder erosion, bare soil, long steep hill with unstable ditching</td>
<td>400'x4' + 220'x3' + 10'x2'</td>
<td>Install plunge pool, stabilize inlet and/or outlet, armor ditch with stone or grass</td>
<td>Low</td>
<td>Medium</td>
<td>Low</td>
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<tr>
<td>PR-14</td>
<td>6-11</td>
<td>Phippsburg-32-13</td>
<td>Private Road</td>
<td>Pigtail Trail off Henry Loop</td>
<td>Direct flow to New Meadows River, moderate surface erosion, bare soil where road meets ocean</td>
<td>325'x12'</td>
<td>Install ditch, reshape or crown road, open top culvert, establish buffer</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>PR-15</td>
<td>6-2</td>
<td>Phippsburg-45-19</td>
<td>Private Road</td>
<td>Pride Rock Road Northeast side of Road pole#1642</td>
<td>Direct flow to stream (uphill of stream), moderate erosion, and sever road shoulder erosion on bank, unstable culvert outlet</td>
<td>1/8 mile</td>
<td>Install plunge pool at culvert, install ditch, reshape or crown road, and plant trees and shrubs on eroding banks</td>
<td>Medium</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>PR-16</td>
<td>6-4</td>
<td>Phippsburg-34-1</td>
<td>Private Road</td>
<td>Basin Road near boat ramp</td>
<td>Direct flow to New Meadows River, Slight road shoulder erosion, slight surface erosion</td>
<td>100'xwidth of road</td>
<td>Broad-based dip run-off diverter</td>
<td>Low</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>PR-17</td>
<td>6-7</td>
<td>Phippsburg-34-1</td>
<td>Private Road</td>
<td>Basin Road</td>
<td>Direct flow to New Meadows River, erosion around culvert outlet</td>
<td>8'x20'</td>
<td>Install plunge pool</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>PR-18</td>
<td>6-8</td>
<td>Phippsburg-34-1</td>
<td>Private Road</td>
<td>Basin Road corner</td>
<td>Unstable culvert inlet and outlet</td>
<td>8'x4' + 6'x4'</td>
<td>Lengthen culvert, stabilize inlet and outlet</td>
<td>Low</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>PR-19</td>
<td>2-1</td>
<td>Harpswell-52-84</td>
<td>Private Road</td>
<td>(new, dirt) End of Perry Land</td>
<td>Clogged culvert, direct flow to New Meadows River, severe erosion in ditches on both sides, moderate road shoulder erosion, unstable construction road, collapsed silt fence</td>
<td>200'x30'</td>
<td>Clean out culvert, stabilize inlet and outlet, erosion control (silt fence), stabilize road surface (divert runoff), runoff diverters</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>PR-20</td>
<td>6-6</td>
<td>Phippsburg-34-1</td>
<td>Private Road</td>
<td>Beach Access near boat ramp</td>
<td>Direct flow to New Meadows river, bare soil, shoreline erosion, at least 3 locations where vehicles and ATVs drive to water's edge</td>
<td>3x(10'x20')</td>
<td>Establish vegetative buffer, seed and mulch</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>PR-21</td>
<td>2-8</td>
<td>Harpswell-58-66</td>
<td>Private Road</td>
<td>Town Road Spruce Cove Road, Dingley Island Road</td>
<td>Direct flow to New Meadows River, moderate ditch erosion, moderate road surface erosion, Spruce Cove Road runoff flowing down Dingley Island Road (Note: Dingley Island Road to be rebuilt summer 2003)</td>
<td>150'x5'</td>
<td>Repair/Add New Surface Material to road, install runoff diverters</td>
<td>Low</td>
<td>Medium</td>
<td>Low</td>
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<tr>
<td>Map ID</td>
<td>Survey Site</td>
<td>Tax Map Code</td>
<td>Land Use</td>
<td>Location</td>
<td>Site Description</td>
<td>Area</td>
<td>Recommendations</td>
<td>Tech Level</td>
<td>Impact</td>
<td>Cost</td>
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<tr>
<td>PR-22</td>
<td>5-3</td>
<td>Phippsburg-37-18</td>
<td>Private Road, Town Road Meadowbrook Road</td>
<td>Direct flow to ditch, severe ditch erosion, bare soil</td>
<td>60'x20' + 20'x20'</td>
<td>Stabilize inlet and/or outlet, armor ditch with stone or grass, reshape ditch, seed and mulch, add rip rap to stabilize bank</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
<td></td>
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<tr>
<td>R-1</td>
<td>3-2</td>
<td>Harpswell-61-1</td>
<td>Residential</td>
<td>End of Rand Road</td>
<td>Roof runoff, bare soil, slight surface erosion</td>
<td>24'x2'</td>
<td>Install stone filled dripline trench, mulch</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>R-2</td>
<td>3-4</td>
<td>Harpswell-62-136</td>
<td>Residential</td>
<td>136 Haskins Island Road</td>
<td>Direct flow to New Meadows River, roof runoff, soil bare spots, lack of buffer on shoreline, slight surface erosion</td>
<td>35'x15'</td>
<td>Install dry well at gutter spout, establish buffer, seed and mulch</td>
<td>Low</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>R-3</td>
<td>3-9</td>
<td>Harpswell-63-71</td>
<td>Residential</td>
<td>48 Field Road</td>
<td>Direct flow to New Meadows River, Bare soil (unstable fill)</td>
<td>6'x4'</td>
<td>Seed and mulch</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>R-4</td>
<td>8-1</td>
<td>Phippsburg-27-18</td>
<td>Residential</td>
<td>Newbery Pt Road</td>
<td>Direct flow to stream, unstable culvert inlet/outlet, slight road shoulder erosion, slight surface erosion, construction site</td>
<td>30'x50'</td>
<td>Stabilize inlet and/or outlet, fix silt fence to make it effective, add new surface material, waterbar in driveway, plant trees and shrubs, rip-rap</td>
<td>Medium</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>R-5</td>
<td>8-2</td>
<td>Phippsburg-27-18</td>
<td>Residential</td>
<td>Newbery Pt Road</td>
<td>Roof runoff, bare soil, moderate surface erosion, unstable construction site, some runoff from driveway</td>
<td>100'x100'</td>
<td>Add erosion controls, waterbar, new surface materials, plant trees and shrubs, seed and mulch, infiltration trench</td>
<td>Medium</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>R-6</td>
<td>8-6</td>
<td>Phippsburg-27-86</td>
<td>Residential</td>
<td>Green house to the right of the Seahorse Lobster Pound, along beach</td>
<td>Direct flow to New Meadows River, moderate ditch erosion, bare soil, shoreline erosion, moderate surface erosion, beach access</td>
<td>30'x30'</td>
<td>Establish vegetative buffer, plant trees and shrubs</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>R-7</td>
<td>8-8</td>
<td>Phippsburg-28-20</td>
<td>Residential</td>
<td>Water Cove Road</td>
<td>Culvert draining wetland goes under house water flowing around culvert not through the culvert, unstable culvert inlet/outlet, direct flow to New Meadows River, bare soil, moderate surface erosion</td>
<td>30'x30'</td>
<td>Stabilize inlet and or outlet, add rip rap to stabilize bare soil under house</td>
<td>Low</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>R-8</td>
<td>9-2</td>
<td>Phippsburg-24-12</td>
<td>Residential</td>
<td>between Club Road and Hyde Road on Rt 216</td>
<td>No soil leaving site, but open soil with no ESC</td>
<td>50'x150'</td>
<td>Erosion Control and mulch where possible</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>R-9</td>
<td>4-4</td>
<td>Phippsburg-37-27</td>
<td>Residential, Construction Site</td>
<td>Cutting Road, just after Libby's Lane</td>
<td>Bare Soil</td>
<td>perimeter:10' wide around house And waterfront: 100'x50'</td>
<td>Erosion control (silt fence)</td>
<td>Low</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>R-10</td>
<td>4-5</td>
<td>Phippsburg-41-41</td>
<td>Residential, Construction Site</td>
<td>Stoney Brook Road</td>
<td>Direct flow to stream, Bare Soil</td>
<td>100'x100'</td>
<td>Erosion control</td>
<td>Medium</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
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<td>Site Description</td>
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<td>Recommendations</td>
<td>Tech Level</td>
<td>Impact</td>
<td>Cost</td>
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<tr>
<td>R-11</td>
<td>6-12</td>
<td>Phippsburg- 33-4</td>
<td>Residential, Construction Site, Driveway</td>
<td>Harrington Rd 2nd house (grey with white trim)</td>
<td>Bare soil, stockpiled soil, shoreline erosion, lack of shoreline buffer, severe surface erosion</td>
<td>250'x10' +cleared areas + piles of soil</td>
<td>Silt fence, open top culvert and rubber razor on driveway, establish buffer, extend buffer, plant trees and shrubs, and seed and mulch, shoreline rip rap, cover soil piles</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>R-12</td>
<td>8-9</td>
<td>Phippsburg- 27-29</td>
<td>Residential, with trail or path on it</td>
<td>268 West Point Road</td>
<td>Direct flow to New Meadows River, bare soil, shoreline erosion, lack of shoreline buffer, severe surface erosion</td>
<td>20'x20'</td>
<td>Establish buffer, establish new slope, add rip rap</td>
<td>Medium</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>SR-1</td>
<td>6-1</td>
<td>Phippsburg- 45-15</td>
<td>State Road</td>
<td>Rt 209 culvert, opposite Pride Rock Way</td>
<td>Bare soil above and to side of unstable culvert inlet, direct flow to stream and to marsh</td>
<td>25'x10'</td>
<td>Vegetate nearby, armor top, and stabilize inlet, plant trees and shrubs</td>
<td>Medium</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>SR-2</td>
<td>7-3</td>
<td>Phippsburg- 30-1</td>
<td>State Road, Town Road</td>
<td>Sebasco Rd next to Wat-tuh Lake</td>
<td>Direct Flow from lake to New Meadows River, Moderate Road Shoulder erosion</td>
<td>6'x15' (x2)</td>
<td>Install check dam</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>SR-3</td>
<td>1-1</td>
<td>Harpswell- 52-N/A</td>
<td>State Road, Trail or path</td>
<td>Rt 24 Bridge (Gurnet Bridge)</td>
<td>Direct flow to New Meadows River, Severe Surface erosion</td>
<td>30'x3'</td>
<td>Define path for foot traffic and install stairs</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>TR-1</td>
<td>1-2</td>
<td>Harpswell- 50-116</td>
<td>State Road</td>
<td>Indian Rest Road - just after bus turnaround</td>
<td>Direct flow to New Meadows River, Moderate to Severe road shoulder erosion</td>
<td>100'x6'</td>
<td>Reshape veg shoulder, seed and mulch veg, install waterbar, add rip rap</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>TR-2</td>
<td>3-10</td>
<td>Harpswell- 63-65</td>
<td>Town Road</td>
<td>Field Street</td>
<td>Direct flow to New Meadows River, severe road shoulder erosion, bare soil, road sand build up</td>
<td>45'x2' And 25'x20'</td>
<td>Install ditch, plant trees and shrubs, level spreader at deposit area</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>TR-3</td>
<td>3-12</td>
<td>Harpswell- 64-48</td>
<td>Town Road</td>
<td>Cundy's Harbor Road</td>
<td>Direct flow to New Meadows River, Severe road shoulder erosion</td>
<td>210'x5'</td>
<td>Enhance existing turnout, plant trees and shrubs</td>
<td>Low</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>TR-4</td>
<td>3-7</td>
<td>Harpswell- 62-155</td>
<td>Town Road</td>
<td>Holbrook town landing</td>
<td>Direct flow to New Meadows River, clogged culvert, moderate ditch erosion, moderate road shoulder erosion, moderate surface erosion</td>
<td>200'x9'</td>
<td>Install plunge pool, replace culvert, additional culvert, armor ditch with stone, reshape/veg road shoulder</td>
<td>High</td>
<td>High</td>
<td>High</td>
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<tr>
<td>TR-5</td>
<td>3-8</td>
<td>Harpswell- 62-208</td>
<td>Town Road</td>
<td>next to: 12 Holbrook Street</td>
<td>Direct flow to stream, moderate road shoulder erosion, severe surface erosion, winter sand build-up</td>
<td>125'x4' And 15'x6'</td>
<td>Install road turnouts, remove grader berms, remove winter sand, add rip rap to shoulder above culvert outlet</td>
<td>Low</td>
<td>Medium</td>
<td>Low</td>
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<tr>
<td>TR-6</td>
<td>5-1</td>
<td>Phippsburg- 37-18</td>
<td>Town Road</td>
<td>Meadow Brook Road</td>
<td>Direct flow to stream, moderate ditch erosion, slight road shoulder erosion, moderate surface erosion, sediment being transported to stream along road on both sides and ditches</td>
<td>400'x4' + 220'x3' + 10'x2'</td>
<td>Armor ditch with stone or grass, install turnout, reshape ditch, remove winter sand, check dams on ditch on left side headed east</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
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<tr>
<td>TR-7</td>
<td>6-10</td>
<td>Phippsburg- 34-1</td>
<td>Town Road</td>
<td>Intersection of Hatch and Basin Road</td>
<td>Direct flow to stream, moderate ditch erosion</td>
<td>80'x4'</td>
<td>Armor with stone or grass, reshape/veg shoulder</td>
<td>Low</td>
<td>Medium</td>
<td>Medium</td>
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<td>TR-8</td>
<td>6-3</td>
<td>Phippsburg-34-1</td>
<td>Town Road</td>
<td>Meadow Brook Road by Falls Brook</td>
<td>Direct flow to stream, 2 unstable culvert outlets (large one rusted out on bottom), bare soil on shoulder, severe road shoulder erosion, shoulder too steep</td>
<td>20'x50'+ (goes into sector 5)</td>
<td>Install plunge pool on large culvert, replace large culvert, armor with stone, install ditch, install turnout, reshape or crown road</td>
<td>High</td>
<td>High</td>
<td>High</td>
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<tr>
<td>TR-9</td>
<td>6-9</td>
<td>Phippsburg-34-1</td>
<td>Town Road</td>
<td>on Basin Road near intersection with Hatch Road</td>
<td>Unstable culvert outlet, direct flow to stream, slight ditch erosion, slight road shoulder erosion</td>
<td>100'xroad and steep bank by culvert</td>
<td>stabilize culvert outlet, remove grader berm, reshape/veg shoulder</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
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<td>TR-10</td>
<td>8-5</td>
<td>Phippsburg-27-road (near 49)</td>
<td>Town Road</td>
<td>Wallace Circle next to West Point General Store</td>
<td>Direct flow to New Meadows River, unstable culvert inlet/outlet</td>
<td>100'x25'</td>
<td>Install plunge pool, establish buffer</td>
<td>High</td>
<td>Medium</td>
<td>High</td>
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<tr>
<td>TR-11</td>
<td>8-7</td>
<td>Phippsburg-27-road near 29+30</td>
<td>Town Road</td>
<td>West Point Road near mailbox 268</td>
<td>Direct flow to stream, moderate road shoulder erosion, bare soil, large amount of unstable loose soil (along length of entire road, freshly paved road with loose soil left behind on shoulders)</td>
<td>100'x12'</td>
<td>Install turnaround, reshape/veg shoulder, seed and mulch, rip-rap</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
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</tbody>
</table>