EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES: USERS SURVEY

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RESEARCH PROGRAMS

Erosion and Sediment Control Best Management Practices: Users Survey

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16. Abstract

The Erosion and Sediment Control Manual and Training Program Users Survey Report was developed to aid in the development of a construction erosion and sediment control BMP manual and training program. A survey of the Montana Department of Transportations (DOTs) personnel and other erosion and sediment control manual users was conducted to determine the following: design sources currently used; the choices of type of manuals; BMPs presently used with their efficiencies and inefficiencies; information that should be included in the manual and training program; as well as suggestions of how to restructure the present organization to incorporate personnel responsible for erosion and control tasks. The results of the survey are summarized and discussed in this report.

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Section 1
Introduction

1.1 Survey Background

Camp Dresser & McKee Inc. (CDM) conducted a survey of the Montana Department of Transportation (MDT) erosion and sediment control (E&SC) manual and training program users as part of a project to provide a construction E&SC Best Management Practices (BMPs) manual and training program. The manual and training program users surveyed included MDT staff, contractors, and consultants, as well as Montana regulatory agencies (MRA). The objective of this report is to compile and analyze survey results with respect to the E&SC construction manual format, funding/cost issues, obstacles, preferences, and field experiences. The survey was conducted under the guidance of a Technical Review Panel that consists primarily of experts from various divisions within MDT. Individuals from Canadian Provinces, the Montana Contractors Association (MCA), the Montana Department of Environmental Quality (DEQ), The Federal Highway Administration (FHWA), and the United States Corps of Engineers (US COE) are also part of the Technical Review Panel.

The survey questionnaire used during this project was divided into the following sections: General Information; Process/Implementation of E&SC Devices; Current E&SC Manual; New E&SC Manual; Training Programs; and MDT/Regulatory Interaction. The blank survey questionnaire is included in Appendix A and a compilation of the survey results is included in Appendix B.

1.2 Response to Survey

CDM received forty-five responses of the survey questionnaire distributed by MDT. The questionnaire was distributed to MDT employees, contractors, consultants, and Montana regulatory agencies. The following columns list the sources of the 45 survey responses that were received. Numbers after a category indicate the number of responses received from each category.

Survey Respondents

Consultants [8]
Contractors [3]
MDT Construction-Billings [1]
MDT Construction-Butte [2]
MDT Construction-Glendive [2]
MDT Construction-Great Falls [1]
MDT Construction-Missoula [2]
MDT Construction [2]
MDT Consultant Design [2]
MDT Engineering Division [1]
MDT Engineering-Missoula [2]
MDT Engineering Oversight [4]

Survey Respondents

MDT Erosion Control & Construction Permitting Section [2]
MDT Hydraulics [1]
MDT Maintenance-Billings [1]
MDT Maintenance-Butte [1]
MDT Maintenance-Great Falls [1]
MDT Maintenance [1]
MDT Road Design [4]
MRA-COE [1]
MRA-DEQ [1]
MRA-FHWA [1]
MRA-Tribal [1]

Section 2
Erosion & Sediment Control Manual

One objective of the Users Survey was to compile and analyze survey results with respect to the E&SC construction manual format. Section 2 summarizes the survey results.

2.1 Current MDT Erosion and Sediment Control Resources

Figure 2.1-1 shows that MDT's detailed drawings are the primary resource of information used for E&SC, but other sources are also used. Although, MDT personnel are aware of the existence of an Erosion Control Manual, the existing Erosion Control Manual was not mentioned in the responses.

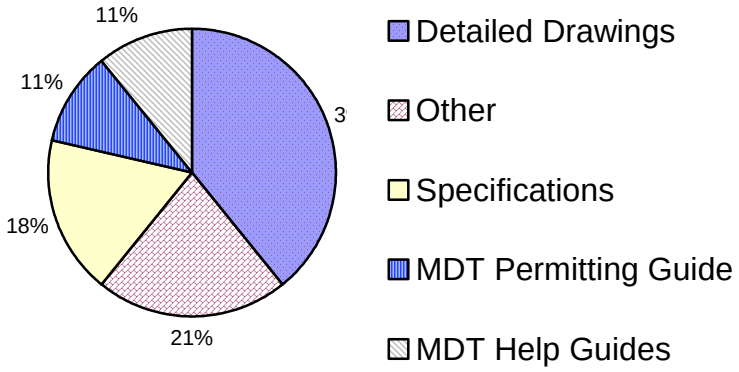

Figure 2.1-1 Current MDT Erosion and Sediment Control Resources

The detailed drawings were mentioned as the main resource currently used by MDT for E&SC. The respondents identified the following issues with the resource: no guidance on which BMP to use; when and where the BMPs should be used; the permitting guide is hard to read and confusing; the documents are outdated; and, while liked, the BMP portion of the detailed drawings need major revisions.

Other resources used by MDT include the California, Colorado, and Washington Departments of Transportation manuals, and the Water Quality BMP's for Montana Forests.

2.2 New Erosion & Sediment Control Manual

The new E&SC manual will improve the existing E&SC program. The survey sought to identify the best layout of the manual to meet MDT's needs. The following sub-sections summarize the survey findings.

2.2.1 Design Manual Preferences

Two options were provided in the survey for an E&SC design manual - a single concise manual covering all aspects of an E&SC program or a multiple volume manual that breaks the E&SC program into separate components. Figure 2.2.1-1 shows the breakdown of surveyed responses. It is apparent that the respondents prefer a singe manual, as well as an E&SC field manual.

Table 2.2.1-1 shows the reasons for the respondents' manual preferences. The main reason for preferring a single manual is that currently MDT requires the use of several manuals; respondents would rather have one concise manual for E&SC.

The survey respondents welcomed the field manual suggestion. Supporting comments included the use of a small book instead of large manual in the field. The field manual should include the most important BMPs for quick field referencing.

2.2.2 Erosion and Sediment Control Manual Ties with Other Design Aids

Responders stated that the new E&SC manual should match available specifications or reference existing specifications, design aids, and detailed drawings. One responder stated that if the new manual is in hardcopy format, all cross-reference should be inserted with the applicable provision either in the text itself or at the end of a particular section, not as a supplement and not at the end of the manual. If an electronic format is used, links should be provided to each specific reference.

2.2.3 Foreseen Obstacles with New Manual Implementation

The main obstacle foreseen with a new E&SC manual is that it must be concise while still providing all of the necessary information. One concern expressed in the survey was that the contractors and MDT construction crews need more specific guidance to make decisions related to E&SC. The information should be easy to find; otherwise, the manual will not be used. Another obstacle mentioned in the survey was the need for well-trained staff available to address E&SC manual implementation issues, especially new ideas or methods presented in the new manual.

As Figure 2.2.3-1 shows, the majority of respondents did not perceive funding/cost to be a significant obstacle in the implementation of the new manual. However, one responder stated that MDT should not let funding be a limiting factor. On-going manual updates will be required if the E&SC program is to be successful.

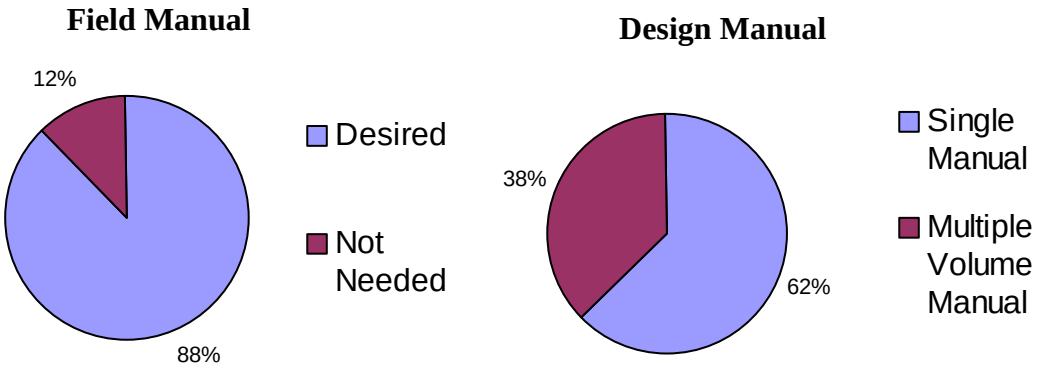

Figure 2.2.1-1 Design and Field Manual Preferences

Table 2.2.1-1 Design and Field Manual Preferences

Single Manual	Multiple Volume Manual	E & SC Field Manual
Cover all aspects in a binder with guide specifications available for electronic downloading (2 responses).	The volumes should include the following material: 1) Planning & Design; 2) Construction & Contractors Maintenance; and 3) Monitoring and Removal.	Field manual would offer insights to enable better performance of field duties.
Put all information in one location.	Create a multiple volume manual oriented with specific relevant information for each section.	Information on-hand in field for foremen, inspectors, contractors, etc. (3 responses).
Contractors need one manual that covers all activities for which they are responsible.	Break into two volumes: 1) Planning & Design; and 2) All other subjects.	Would make information easily accessible (2 responses).
Keep it simple (2 responses).	Break into three volumes: 1) Pre-construction; 2) Construction; and 3) Post-construction.	Include most important BMP data for quick reference guide (4 responses).
A single manual is needed for field personnel.	Multiple volumes should include: Construction; Contractors; Maintenance; Monitoring; and Removal.	Field guide should reference main manual where appropriate.
A single manual is preferred because there are already too many manuals to use.	One volume for Design and a second volume for Implementation & Maintenance.	Would be nice to have a small book to carry instead of large manual (4 responses).
One manual will ensure that everyone follows the same rules (3 responses).	Include field guides.	Could be used as a reminder after initial training.
Multiple volumes include too much information.	Format needs to be “updateable”.	A field manual would not be good because there are too many updates to be made.
Use single manual as long as it doesn’t get too long (2 responses).	Multiple volumes should include: 1) Planning & Design; 2) Construction; 3) Maintenance & Stabilization; 4) Procedure & Monitoring.	Field manual would be user friendly.
Format needs to be “updateable” (2 responses).	Include a section on plan sheet of delineated wetlands.	Needs to be specific to maintenance concerns and operations.
Use a single manual that is concise.	Provide crossover for each section.	Make it a three-ring binder so that updated sheets could be added as required.
		Include pictures of showing proper and improper BMPs.

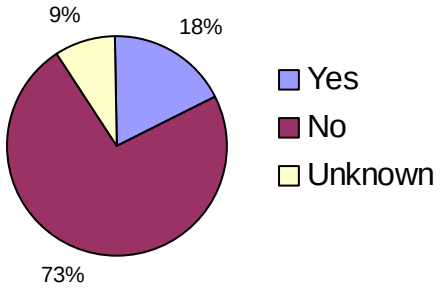

Figure 2.2.3-1 Funding/Cost Obstacles with Implementation of New Manual

2.3 Effectiveness of BMPs

As part of the survey, the respondents were asked which BMPs they deemed effective and which ones they deemed ineffective. From the information obtained within the survey responses, a discussion of the effectiveness and ineffectiveness of each BMP was created to highlight key advantages and disadvantages. BMPs that were mentioned, but did not have comments, were grouped into miscellaneous sections covering either effective or ineffective BMPs. This evaluation of MDT's experiences with BMPs will be used during the generation of the new E&SC manual.

2.3.1 Seeding and Vegetative Cover

The use of seeding and mulching are effective means of erosion control on construction sites. Respondents stated that replanting and seeding slopes as soon as possible reduced the effects of erosion reduced considerably; therefore, minimizing the installation of sediment control devices. Seeding and mulching provide a ground cover that does not need to be removed and requires minimal maintenance under suitable climatic conditions.

Seeding and vegetative cover are sometimes ineffective in arid climates, areas primarily east of the Continental Divide, especially during summer months, when the temperatures are high and the precipitation is low. Under these conditions, other BMPs should be considered.

Many of the respondents mentioned that seeding and vegetative covers were an effective measure of erosion control under favorable climatic conditions. In many cases, these measures were also used for final erosion and sediment controls. Under unfavorable conditions, the measures were not as effective due to the required growth period.

2.3.2 Straw Bales

The survey results revealed that depending on site conditions, MDT had success with straw bales as an effective BMP. The straw bales have been proven to be a good sediment control device for short periods of time. The straw bales are biodegradable; therefore, they are not required to be removed. However, straw bales have been shown to be ineffective in many situations. The respondents mentioned numerous problems with the use of straw bales in a variety of different situations. Due to the size of straw bales, they are usually improperly installed, allowing for sediments to pass by the device. The overall effectiveness of straw bales dramatically decreases over time as they become saturated and filled with sediment. Vigorous maintenance is required to maintain the devices as effective sediment transport control. Additionally, open range animals dig into, eat, and tear straw bales, reducing their effectiveness.

From the information obtained in the survey it is apparent that straw bales can be used for short-term sediment control, but for sites requiring erosion and sediment control over longer periods of time, other BMPs should be selected.

2.3.3 Silt Fence

Silt fences are one of MDT's most widely used BMPs for sediment control. This product has proven to be effective in or near water. Silt fences are effective over long periods of time due to their durability, requiring less maintenance than other devices. The cost of installation of silt fences is considerable lower than other sediment control products available on the market.

Improper installation and lack of maintenance can cause silt fences to become very ineffective, especially around drop inlets and culvert structures. As sediment builds up, the water is diverted away from the drainage structures causing problems. Silt fences have also shown to be ineffective in flowing water,

heavy rains, and windy areas. Wind and snow often overturn silt fences, requiring additional maintenance; therefore, increasing cost. Some respondents mentioned that silt fences are overused. For aesthetic reasons, the installation of silt fences in certain locations should also be reconsidered, and other BMPs should be selected.

2.3.4 Sediment Basins and Ponds

Sediment basins are used as an effective measure for sediment retention in many construction sites around Montana. If properly installed and maintained, the basins retain and slow down storm water, allowing sediment to settle. No disadvantages were mentioned in the survey regarding sediment basins and ponds.

2.3.5 Erosion Matting

Erosion matting has proven effective in reducing erosion and sedimentation on steep slopes of sandy or silty soils. The matting helps to trap moisture, promoting plant growth; consequently, reducing erosion. Erosion matting also filters out sediment, and slows down and disperses water flow. Some erosion matting is biodegradable; therefore, it is not required to be removed, reducing overall maintenance costs. In some cases, rolled erosion matting is used for check dams and berms by embedding one edge.

Overall, erosion matting is a viable option for a variety of applications. On the other hand, this product can be ineffective if installed improperly, or the wrong type is selected.

2.3.6 Gravel Berms

Gravel berms filter out sediment from runoff, reducing erosion. Erosion control is achieved by using gravel berms to slow down and disperse overland flow. Gravel materials are durable and require little maintenance if minimal sediment is present. Gravel berms are also very versatile and can be constructed to suit many situations. Another positive feature of gravel berms is that once they are no longer needed, the gravel berms can be knocked down and spread out. The gravel continues to slow down runoff after being spread out. Also, gravel berms need to be installed flat enough not to cause errant vehicles to vault over.

On sites that have a large amount of sediment transport, the berms will fill with sediment. Once filled, the berms must be cleaned or they will become sediment basins, and eventually fill completely. In high flow areas, the berms can be breached easily. Under these circumstances, other BMPs are more effective.

Gravel berms are a versatile tool for erosion and sediment control. With minimal construction costs and proper maintenance they are effective against low flows and low sediment transport situations.

2.3.7 Ditch Blocks

The use of ditch blocks has proved very successful on MDT projects. The ditch blocks become ineffective if they are undersized for the conditions. By ensuring proper sizing, MDT can use ditch blocks as an effective erosion and sediment control tool.

2.3.8 Miscellaneous Effective BMPs

The survey respondents listed the following additional BMPs as being effective:

- Slope drains,
- Check dams,
- Inlet/outlet protection,
- Slope roughening,
- Frequent cross drains or carry out ditches to control water speed and volume in the ditch,
- Lead out culverts to keep ditches from draining directly into the stream course, and

- Rock piles.

2.3.9 Miscellaneous Ineffective BMPs

The survey respondents listed the following additional BMPs as being ineffective:

- Drain rock,
- Straw Logs,
- Sporadic inspections and maintenance, and
- Coir (fabric) logs.

2.3.10 BMP Survey Summary

Most of the BMPs currently used by MDT are effective if installed correctly and properly maintained. All of the BMPs are effective when used in the correct situation. If good erosion control measures are in place and working as designed, actual sediment control becomes less necessary. A Montana regulatory agency noted that by using the most effective BMPs for the site, the department would save money on claims; therefore, diverting funds for other tasks.

2.4 Procedure to Increase Efficiency of BMP Implementation

Implementation of construction BMPs is the crucial step for translating the information from the drawings to the final installation in the field. MDT's current procedures accomplish this task, but as the respondents noted, the efficiency of BMP implementation can be increased. In order to increase efficiency, several respondents mentioned the need for E&SC inspectors in each of the district offices. Each of these inspectors would require proper training in all aspects of E&SC BMP, from the BMP design phase through removal phase. These individuals would be able to provide quick on-site assistance for problem areas and would be a point of contact for both the contractor and the project manager.

Revision of the payment method was also mentioned in the survey as a possible option to increase the efficiency of BMP implementation. The BMP unit cost bid item method would be a viable option for bidding BMPs. Under this option, the contractor would know where all of the BMPs would be placed and the type and quantity of each BMP. A partial payment method could be used for maintenance, where the contractor bid one price for maintenance. MDT could disperse payment as the inspector saw fit and once final construction was completed and the Maintenance Division was satisfied with all BMPs, the final payment would be made for BMP maintenance.

Several of the respondents suggested increasing the contractor's responsibility to maximize BMP success. Some respondents went as far as to say that the contractor should be responsible for acquiring all permits and paying for all violations. Other responses mentioned the need for contractor training and understanding of BMPs to ensure proper installation and maintenance. Optionally, the contractor could be required to have a certified E&SC specialist monitor the site on the contractor's behalf.

2.5 BMP Field Inspection

The survey results identified the critical nature of field inspections for ensuring that BMPs on construction sites continue to function as designed. BMP inspections are both a long and short-term preventative measure used for evaluating if BMPs are performing as designed. Excess sediment buildup or erosive activities can cause a breakdown of the device and alter its long-term effectiveness. Short-term effectiveness needs to be monitored to ensure that the device has not been damaged by a piece of equipment, eaten by animals, or rendered ineffective by a storm event. The survey also revealed that short-term effectiveness could also be hampered by an improperly installed BMP.

The respondents noted that the engineering project manager oversees all the construction projects with project specific day-to-day inspections conducted by the District Construction Engineer. The Construction Engineer inspects BMPs with the contractor to ensure proper installation and performs weekly visual inspections, as well as before and after storm events. MDT's Environmental Services Bureau spot-checks projects in addition to construction inspections.

Once the construction contract is closed out, MDT's Maintenance Division assumes responsibility for the inspection of BMPs by performing monthly or random visual inspection. In addition to the monthly inspections, the Maintenance Division also visually inspects BMPs after significant storm events.

The survey participants were asked to provide their suggestions for improving the BMP inspection process. Two of the most reoccurring comments were the need for more training and additional personnel to assist with BMP inspection on construction sites across Montana. Some of the respondents recommended having individuals who were solely responsible for BMP inspections and that these individuals need to be well trained and/or certified. Other respondents stated that each project, or projects located close together, should have a dedicated person for BMP inspections. One response suggested the use of contractors who are certified in BMP placement.

Another respondent suggested the use of inspection checklists. The use of these checklists would allow for consistent data collection for sites all around the state. The checklists could contain inspection guidelines and submittal information. Along the same lines, one of the Montana regulatory agencies recommended the use of a labeling system that would identify each BMP installed. Each BMP would have a unique identification number, code, or label that would contain the project number and station. The construction plans would then show the BMP labels. This labeling process could be useful for feedback to designers and others with regard to monitoring, maintenance, and the overall success or failure of that particular BMP.

2.6 Proactive Implementation and Maintenance of BMPs

The following items are suggestions provided by the respondents for procedures MDT could follow to be proactive rather than reactive in the implementation and maintenance of BMPs:

- Include the areas and types of BMPs to be installed on plans;
- Provide more accurate plans in the design phase;
- Have more consistency in the interpretation of the BMP requirements;
- Have more trained BMP inspectors;
- Establish mechanism for the contractor to be responsible for fines;
- More training for MDT and contractors, including how to properly install BMPs;
- Establish higher standards;
- Establish a certification program for employees;
- Do not allow contractor to proceed until BMP's are in place;
- Shut down contractor if BMPs are not maintained;
- Engineering Project Manager and contractor weekly inspections;
- Require trained erosion specialist on contractor's work force;
- Have more MDT trained E&SC specialists; and
- Provide a monthly list of active projects.

2.7 BMP Monitoring and Removal

Respondent suggestions for what processes could be implemented to monitor BMPs and determine when they should be removed included:

- Have timely Environmental Services final project review;
- Increase Environmental Services staffing;
- Have Maintenance be responsible for removal of BMPs;
- Have Construction monitor vegetative growth;
- Inspection at critical stages of the project;
- Use a term contract for BMP removal;
- Use District Environmental staff to monitor or use consultants;
- Training of maintenance staff on what is required when they take over projects;
- Let Maintenance know whom to contact for inspection and acceptance;
- Develop a tracking system from start to finish;
- Follow NPDES and MPDES permits; and
- Provide semi-annual reviews by Environmental Services.

Section 3
Training Programs

3.1 Module/All-Inclusive Training Program

The surveyed were asked to choose between a module training program and an all-inclusive training program. Mixed results were received. As shown in Figure 3.1-1, a majority of the respondents preferred module training.

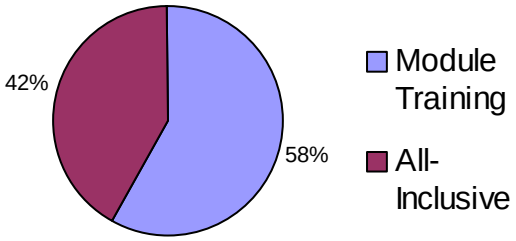

Figure 3.1-1 Module Verses All-inclusive Training Program

Since it appears that the percentages of responses on the training type are similar, the responder's comments are listed in Table 3.1-1 to assist MDT to select the type of training.

Table 3.1-1 Module Verses All-inclusive Training Program

Training Program Format	
Module Training	All-inclusive Training
More efficient use of time.	Would provide exposure to all aspects of erosion and sediment control.
All information is not beneficial to everyone; therefore, module training is preferred (4 responses).	Save time (5 responses).
Use short sessions so people don't lose interest (3 responses).	Give a better picture of what is expected.
Use a combination of module and all-inclusive (4 responses).	All aspects of sediment control would be covered (2 responses).
Use separate modules with emphasis on the applicable volumes and brief overview of other volumes.	Keep everyone on the same page (3 responses).
Construction needs their own training for working on projects.	Need to know the total package (2 responses).
Train specific units involved (2 responses).	Would bring new employees up to speed and would serve as a refresher for current employees.
	Less costly.
	More overlap between subjects.

3.2 Hands-on Training

As shown in Figure 3.2-1, the majority of the survey respondents preferred hands-on training. Demonstrations of proper BMP installations were recommended.

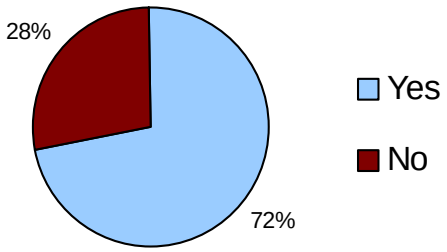

Figure 3.2-1 Hands-on Training Preference

3.3 Training Booklet

The majority of respondents preferred a training booklet during the training sessions as shown in Figure 3.3-1. In the booklet, notes for future reference can be made.

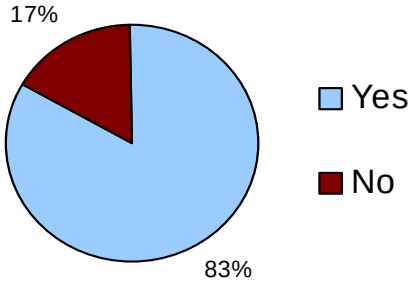

Figure 3.3-1 Training Booklet Preference

3.4 Training Presentation

Figure 3.4-1 shows that the majority of respondents prefer both a projected presentation and a paper-copied presentation.

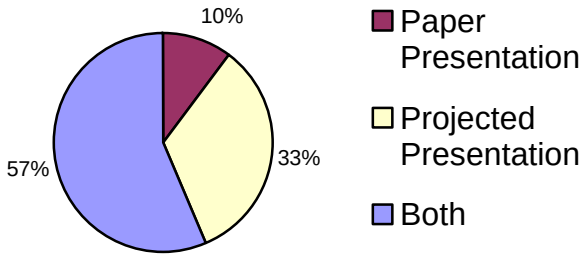

Figure 3.4-1 Training Presentation Preference

3.5 Training Session Attendees

As shown in Figure 3.5-1, the majority of respondents preferred breaking the training into different disciplines. However, those respondents that proposed the same training for all employees strongly express their opinions to why the same training should be provided to all employees.

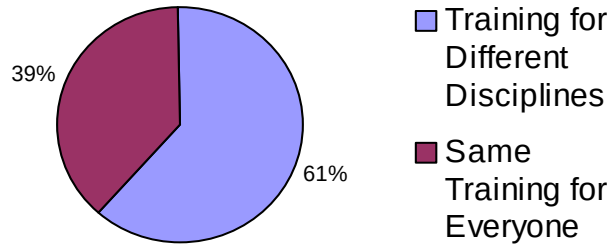

Figure 3.5-1 Training for Different Disciplines Verses Same Training for All

3.6 Training Section within the Manual

The survey respondents had divided opinion regarding the need for a training section that would be incorporated into the manual. The results are shown in Figure 3.6-1.

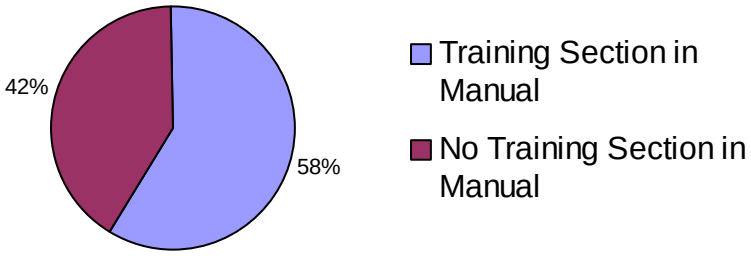

Figure 3.6-1 Manual Training Section Preference

3.7 Training Implementation Obstacles

Figure 3.7-1 shows that the majority of respondents do not foresee funding as a cost obstacle to the implementation of a new training program.

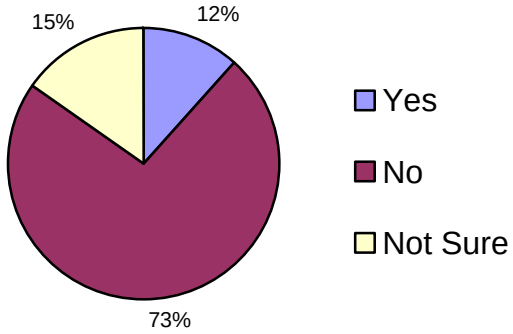

Figure 3.7-1 Training Implementation Funding Obstacles

Section 4
MDT/Regulatory Agency Interaction

As part of the Montana E&SC Users Survey, CDM looked into interactions between MDT and the different regulatory agencies across the state. This section discusses a variety of issues dealing with regulatory compliance. The first portion of this section looks at storm water runoff non-compliance issues. The second portion of this section looks at communications and interactions between MDT and the regulatory agencies to determine if there is adequate interaction. The final portion of this section looks at areas that could be improved for E&SC permitting, selection, implementation, monitoring, maintenance, and removal.

4.1 Erosion & Sediment Non-Compliance Response Time

MDT is very cognizant of response time problems between themselves and the regulatory agencies in dealing with E&SC non-compliance issues. Nearly everyone that responded from MDT stated that communication is a key aspect in avoiding non-compliance issues in a timely manner. The responses that discussed communication indicate that more communication with the regulatory agencies is desired. The field crews voiced concern for the need of an individual that they could contact at all times for compliance issues.

Another issue mentioned by the MDT is that both MDT and the regulatory agencies are understaffed when it comes to personnel that can deal with compliance issues. Additional E&SC staff could eliminate or at least reduce some of the compliance issues. One respondent suggested having a regulatory agency office in each of the MDT districts. The theory behind having district offices is that the regulatory agencies would be closer to the sites and therefore provide better service.

The regulatory agencies also indicated that better communication could eliminate most of the issues related to non-compliance. By avoiding the compliance issues before they occur, the regulatory agencies could dedicate more time reviewing projects and processing permits.

Regulatory agencies require storm water permits that are established and fixed in the statutes, rules, and general permits. The operator (permittees) and the regulatory community could improve their knowledge of the general permit requirements. Specifically, improve self-monitoring to ensure that BMP improvements and maintenance are conducted as required and as soon as possible. Following these guidelines would minimize compliance issues.

4.2 Communications Between MDT and Regulatory Agencies

Almost unanimously, MDT and the regulatory agencies agree that the current communications between the parties could be improved. Figure 4.2-1 shows that 64% of the respondents stated that communications are not adequate. One respondent from MDT mentioned that it is not clear what regulatory agency is responsible for ES&C compliance issues and to whom MDT should answer. A contact list with telephone numbers would be beneficial to MDT field personnel. Several of the MDT staff members mentioned that personnel are afraid to notify the regulatory agencies when there is a problem. However, if problems are caught early, all parties save time and money.

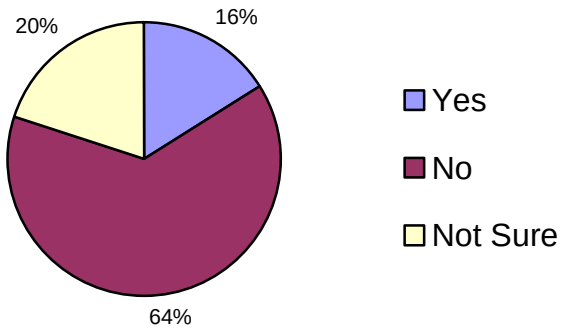

Figure 4.2-1 Communications/Interaction Between MDT and MRAs

4.3 Improvements to Erosion and Sediment Control Permitting

The survey addressed a variety of approaches to improve E&SC permitting, selection, implementation, monitoring, maintenance, and removal. The three most prevalent answers mentioned by MDT staff are training, staffing, and communication. With proper training, MDT designers can learn about the newest available erosion controls measures. Proper staffing will provide E&SC professionals the time needed to participate in key aspects of E&SC. Communication will allow for smooth interface with other staff and the regulatory agencies.

The regulatory agencies suggested a labeling program for BMP installation to clearly identify BMP on the construction plans. They also stressed the importance of relaying the cost (money, time, and loss of resources) and the loss of public and regulatory credibility when poor E&SC practices are implemented.

Section 5
MDT Erosion & Sediment Control Organizational Structure

E&SC organizational structures of other state Departments of Transportation (DOTs) were analyzed and compared to MDT's E&SC organizational structure as part of a previous task. The *Erosion and Sediment Control Best Management Practices: Organizational Structure Survey* (CDM, 2003) provides recommendations for possible improvements to MDT's E&SC organizational structure. Questions relating to MDT's organizational structure were presented in this survey to compare those recommendations presented in the Organizational Structure Survey Report to the opinions of the surveyed MDT staff.

5.1 Erosion and Sediment Control Planning

E&SC planning includes field reviews of projects to identify reclamation and erosion control needs and potential strategies. Planning also entails the generation of Erosion Control Plans (Storm Water Pollution Prevention Plans) as well as the evaluation of the overall success of the E&SC program (i.e., what is working and what is not). Figure 5.1-1 shows the survey results for E&SC planning.

The responses revealed that Environmental Services or Preconstruction Bureaus (or both) currently have, or should have, responsibility for planning activities. The recommendation in the Organizational Structure Survey Report suggested that MDT consider creating an E&SC Planning and Design Section within the Department, which could be added as a separate entity within the planning and design of projects. This recommendation is consistent with the survey results in that the new section could be placed within the Environmental Services Bureau or could be placed elsewhere within the Engineering Division, such as the Preconstruction Bureau.

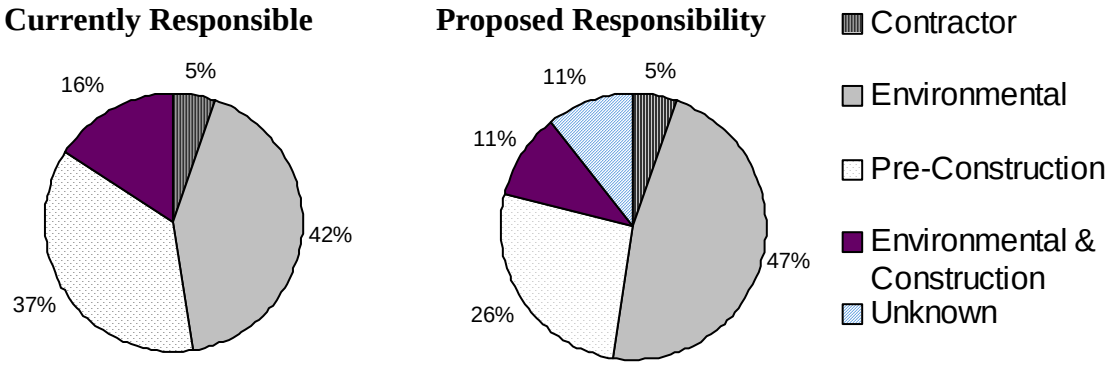

Figure 5.1-1 Erosion and Sediment Control Planning Responsibility

5.2 Erosion and Sediment Control Design

E&SC design is currently a combined effort between the Environmental Services and Preconstruction Bureaus. Road Design prepares draft Erosion Control Plan sheets that contain the pre- and post-construction contours. These drawing sheets are then transferred to Environmental Services where they are marked up with erosion control features and returned to Road Design for final drafting.

Environmental Services completes all applications and written documents with regard to E&SC. Figure 5.2-1 shows the survey results for E&SC planning.

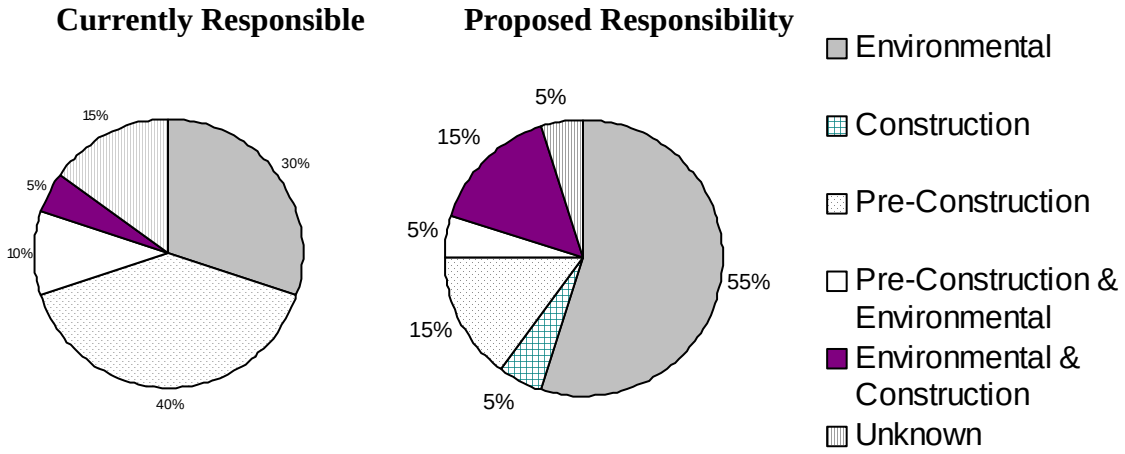

Figure 5.2-1 Erosion and Sediment Control Design Responsibility

The majority of responses indicate that Environmental Services should have responsibility for E&SC design. One survey respondent noted that a separate section for erosion control should be responsible for E&SC. Another respondent noted that the design of E&SC is a valid engineering activity; therefore, a special design unit for erosion control and associated engineering is necessary. Again, these comments agree with the recommendations in the Organizational Structure Survey Report suggesting that MDT consider creating an E&SC Planning and Design Section within the Department.

5.3 Erosion and Sediment Control BMP Implementation

As shown in Figure 5.3-1, the majority of respondents identified the Construction Bureau as currently responsible for E&SC BMP implementation. While the majority of respondents stated that the Construction Bureau should be responsible for BMP implementation, some respondents suggested that Environmental Services or the contractor should have more responsibility.

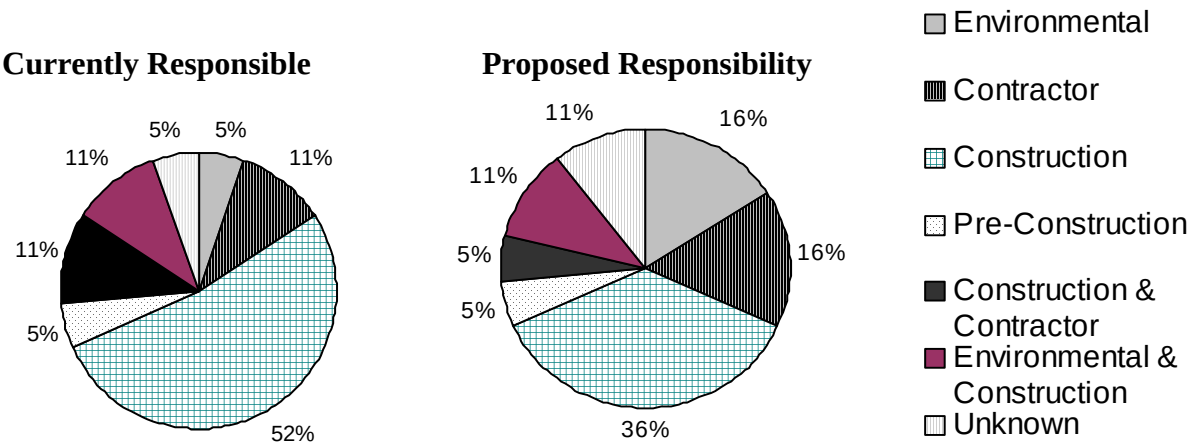

Figure 5.3-1 Erosion and Sediment Control BMP Implementation Responsibility

5.4 Erosion and Sediment Control BMP Construction Oversight

E&SC BMP construction oversight is currently a combined effort between the Environmental Services and Construction Bureaus. As shown in Figure 5.4-1, the respondents did not propose any significant changes with regard to construction oversight responsibilities. A couple of respondents suggested that the contractor be responsible, or partially responsible, for construction oversight of BMP installation.

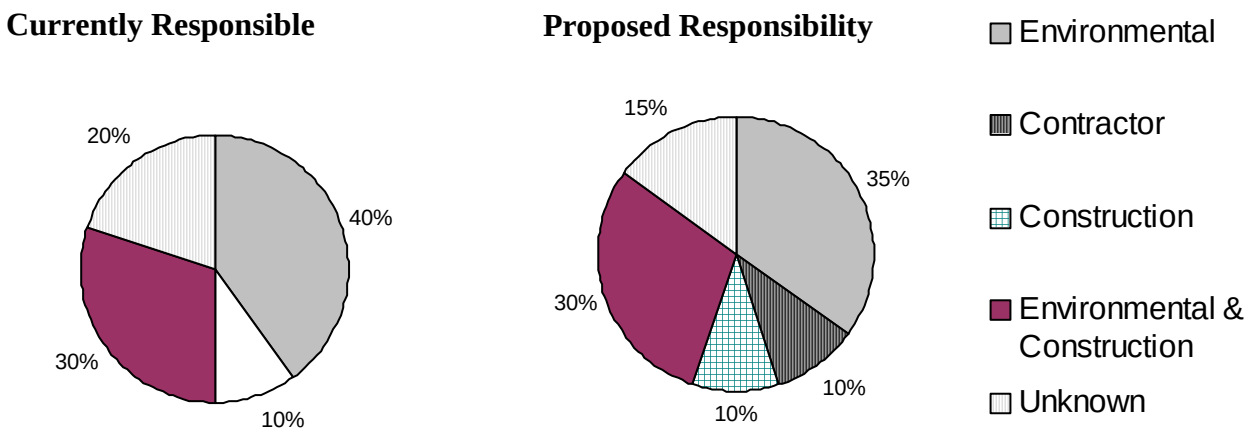

Figure 5.4-1 Erosion and Sediment Control BMP Construction Oversight Responsibility

5.5 Erosion and Sediment Control BMP Maintenance

While the respondents suggested little changes for E&SC BMP maintenance responsibilities, a small percentage of respondents suggested that Environmental Services should have more responsibility in this area. Figure 5.5-1 shows the survey results for E&SC BMP maintenance.

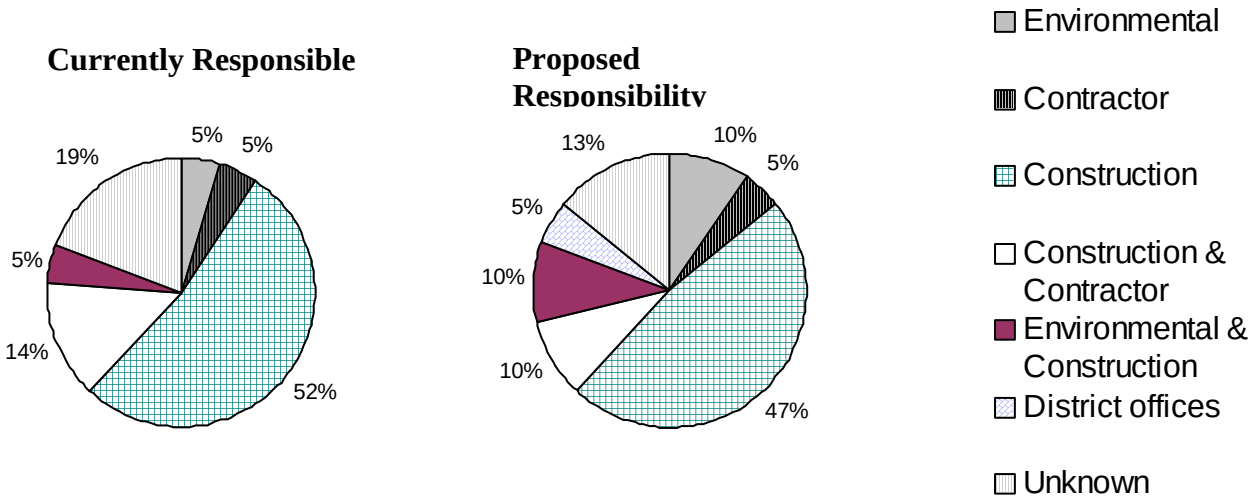

Figure 5.5-1 Erosion and Sediment Control BMP Maintenance Responsibility

5.6 Erosion and Sediment Control BMP Monitoring

Figure 5.6-1 shows the current and proposed responsibilities for E&SC BMP monitoring. The results indicate that the area(s) responsible for BMP monitoring is not widely understood. The figures also indicate that there is not a strong agreement as to what area(s) should be responsible. Inefficiencies can occur when there is not a clear understanding of who is responsible for the monitoring of a project; therefore, MDT should establish responsibilities for each aspect of monitoring. In general, it appears that Environmental Services and Construction Bureaus should continue with the monitoring.

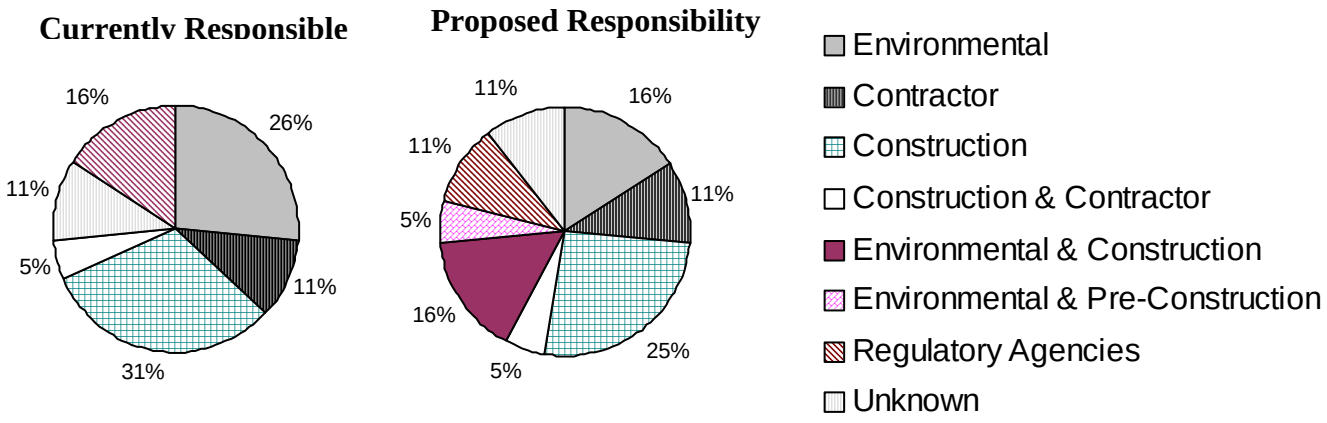

Figure 5.6-1 Erosion and Sediment Control BMP Monitoring Responsibility

The Organizational Structure Survey Report suggested that MDT should consider adding additional positions or modifying the organizational structure to accommodate new positions for BMP maintenance, monitoring, and removal. Developing a program that is structured to accurately monitor the success of the BMPs, and determine where improvements and/or modifications can be made, can minimize non-compliance issues and save MDT money. The E&SC Planning and Design Section that was proposed in the Organizational Structure Survey Report can include a Monitoring/ Maintenance/Removal unit that would be separate from the Design unit and/or Permitting units and could be staffed to provide monitoring maintenance and removal duties for each of the districts.

5.7 Erosion and Sediment Control Regulatory Compliance

E&SC regulatory compliance responsibilities are shown in Figure 5.7-1. E&SC responsibilities are listed as currently being shared between Environmental Services and the Construction Bureaus. A majority of respondents proposed that Environmental Services handle regulatory compliance issues with the regulatory agencies for MDT.

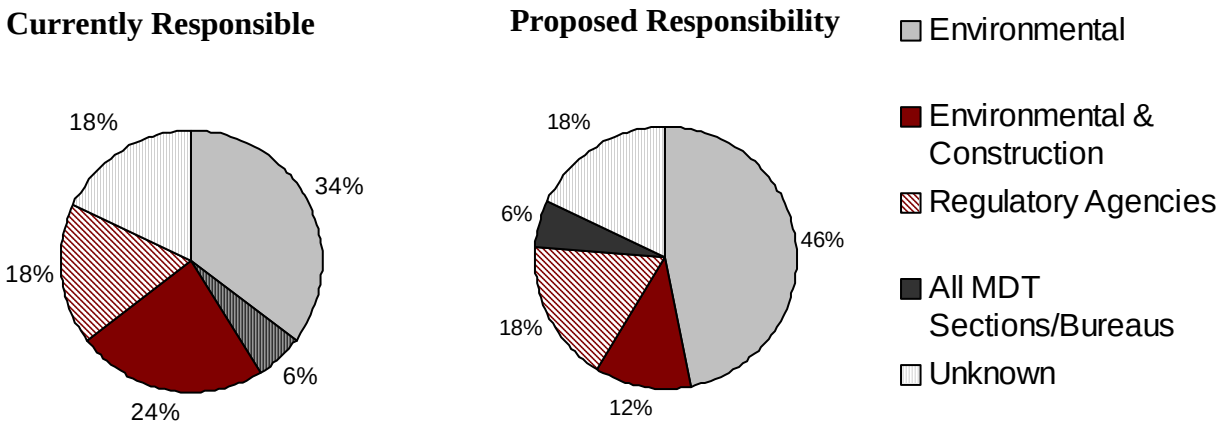

Figure 5.7-1 Erosion and Sediment Control Regulatory Compliance Responsibility

5.8 Summary of MDT Organizational Structure Comments

The survey responses related to E&SC organizational structure can be summarized with the same recommendation provided in the Organizational Structure Survey Report: Create an E&SC Planning and Design Section within MDT that is properly staffed and funded. The respondents stated that the design of erosion control is a valid engineering activity and, as such, a special design unit for erosion and associated engineering is necessary. The whole E&SC process needs to be streamlined and E&SC design needs to be completed by experienced E&SC designers. Currently, the road designers (or consultants) draft the initial Erosion Control plans and submit them to Environmental Services for review and edits. The Organizational Structure Survey Report suggestion to have each district represented in the E&SC Planning and Design Section was also mentioned in this survey. In conclusion, it is apparent from the survey that addressing the E&SC organizational structure is an important step in the process of strengthening MDT's E&SC goals of protecting the state waters.

Section 6
Summary

CDM conducted a survey of the MDT erosion and control manual and training program users to aid in the development of an Erosion and Sediment Control manual and training program. The surveyed individuals included MDT staff, contractors, and consultants.

It appears that currently the primary source of information for E&SC is the detailed drawings, but other sources are also used. If a new manual is developed, the respondents would prefer a concise manual with all the relevant information and a smaller version to be used in the field. This manual should cross-reference available specifications and references.

The survey provided information regarding the effectiveness and ineffectiveness of the currently used BMPs. The respondents suggested procedures to increase the effectiveness of BMP implementation. The suggestions included the need for inspectors, the revision of the payment method, and the increase of contractor's responsibilities.

The respondents were also questioned regarding their preference for type of training programs. The percentages of respondents preferring modules versus all-inclusive training programs were similar; although, the majority of respondents favored hands-on training and a training booklet. When asked regarding the training presentation, most respondents preferred to have a combination of paper and projected presentation that should be tailored to different disciplines. Funding was not foreseen as a training implementation obstacle.

CDM also looked into the interaction between MDT and the regulatory agencies. The majority of respondents indicated that compliance issues could be minimized if communication between the agencies is improved. With improved communication, the response time for non-compliance issues could be reduced; therefore, freeing time and resources for other tasks. Suggestions to improve E&SC permitting, selection, and implementation included having a regulatory agency office in each MDT district, increased staff with knowledgeable in all phases of E&SC, and increase training.

The survey also suggest that the present organizational structure should be reorganized to include a E&SC Planning and Design Section that is solely responsible for E&SC related issues.

Appendix A
Blank Survey Questionnaire

The Montana Department of Transportation (MDT) has acquired Camp Dresser & McKee (CDM) to review MDT's current Erosion and Sediment Control Process and provide a new Erosion and Sediment Control Manual and Training Program.

Survey Background

As part of MDT's manual, CDM is performing a survey of MDT; Montana based regulatory agencies, contractors and consultants to gain an understanding of opinions on current policies and procedures for erosion and sediment control. Additionally, this survey will inquire about individual comments and concerns about the new erosion and sediment control manual and training program.

Instructions

This survey has been created for participants to voice their opinions on MDT's current policies and procedures as well as future policies and procedures regarding erosion and sediment control.

To minimize the length of the survey, questions have been combined to target specific groups. These specific groups consist of the Montana Department of Transportation **(MDT)**, Montana-based Regulatory Agencies **(MRA)**, contractors **(CONT),** and consultants **(CONSULT)**. The parentheses at the beginning of each question indicate which group(s) the question is directed to. However, please feel free to provide input to questions not directed to your group.

It is our intent that the survey questions will be answered honestly and thoroughly, as the results will be incorporated into a report summarizing this survey and may impact the erosion and sediment control procedures for MDT.

Please type all survey responses in the yellow highlighted areas on the following pages.

Question 35 is a general comments question. Please provide any additional comments on erosion and sediment control policies and procedures. This area can also be used to expand on other questions answered within the survey.

This survey contains 35 questions:
MDT personnel should complete all survey questions with the exception of question 17 (34 questions total).
Montana Regulator Agencies should complete the following **24 questions**: 1, 2, 4, 6, 7, 8, 13, 14, 15, 16, 17, 18, 23, 24, 25, 26, 27, 28, 30, 31, 32, 33, 34, and 35.
Contractors should answer the following **18 questions**: 1, 4, 7, 8, 13, 14, 15, 16, 17, 18, 19, 23, 24, 25, 26, 27, 28, and 35.
Consultants should answer the following **16 questions**: 1, 4, 7, 8, 13, 14, 15, 16, 17, 18, 23, 25, 26, 27, 28, and 35.

Participants Confidentiality

CDM is committed to obtaining unbiased results for the survey and for this reason MDT will not be provided the name or contact number of the individual taking the survey. The name and contact number will only be used by CDM to address follow-up questions or clarification of answers. Upon review of the survey results by CDM, all personal information will be destroyed. CDM hopes that by protecting identity of the individuals participating in this survey, results will express the genuine views and concerns of the participants.

Submitting Survey

Completed surveys can be e-mailed to jonesjw@cdm.com. If e-mail is not available in your area, the results can be faxed to Jeff Jones at (406) 449-6768. If you have any question or comments, please contact Mr. Jones at (406) 449-2121.

Contact Information:

Name:	
Phone:	
Department/Section:	
Title:	

(MDT, MRA, CONT, CONSULT) General Information:

1. Identify with which group **(MDT, MRA, CONT, or CONSULT)** you are associated.

2. If you are with **MDT** please provide your section or bureau.

Process/Implementation of Erosion and Sediment Control Devices

3. **(MDT)** Below is a list of associated sections for an Erosion & Sediment Control Manual. Which section or bureau in MDT is currently responsible for erosion and sediment control for each of the following? Who do you feel should be responsible for each section? Do you suggest any additional sections? If so, please list them and describe their contents. Could some of the sections listed be combined or eliminated? If so, please indicate which ones and how you would do this.

	Current Responsibility	Proposed Responsibility
Planning		
Design		
Implementation		
Oversight		
Maintenance		
Monitoring		
Regulatory Compliance		
Recommendations for Additional sections not listed above?		
Recommendations for deleting or combining sections listed above?		

4. **(MDT, MRA, CONT, CONSULT)** What is your perceived roll in construction erosion and sediment control Best Management Practice (BMP) implementation?

5. **(MDT)** How does MDT currently inspect BMPs in the field?

6. **(MDT, MRA)** What could be done to improve the BMP inspection process?

7. **(MDT, MRA, CONT, CONSULT)** What BMPs have you found to be effective in Montana and why?

8. **(MDT, MRA, CONT, CONSULT)** What BMPs have you found to be ineffective in Montana and why?

9. **(MDT)** MDT is a co-permittee with contractors for erosion and sediment control. What procedure(s) will increase MDT's efficiency in getting the BMPs properly installed, maintained, and re-established within the permit requirements?

10. **(MDT)** What procedures could MDT follow to be proactive rather than reactive on implementation and maintenance of BMPs?

11. **(MDT)** What process could be implemented to monitor BMPs and determine when they should be removed?

12. **(MDT)** Does MDT experience any problems in successfully operating the Erosion & Sediment Control Program that may be due to your current organizational structure? If so, what are possible solutions?

(MDT, MRA, CONT, CONSULT) Current Erosion and Sediment Control Manual

13. Do you currently use any of MDT's erosion and sediment control manuals, help guides, specifications, etc.?

14. Which portions of the current MDT erosion and sediment control documents do you like?

15. Which portions of the current MDT erosion and sediment control documents do you dislike?

16. Do you use other state, or local agencies erosion and sediment control manuals, help guides, etc.? If so, which one?

New Erosion and Sediment Control Manual

17. **(MRA, CONT, CONSULT)** Will a new Erosion and Sediment Control Manual have a significant impact on your group for implementation and training of employees?

18. **(MDT, MRA, CONT, CONSULT)** Two options are being considered for the Erosion and Sediment Control Manual. Option one would be a single concise manual covering all aspects of an erosion and sediment control program. Option two would be a multiple volume manual that would cover planning, design, construction, contractors, maintenance,

monitoring, and removal of erosion and sediment control devices. Please list your recommendations below for either a single or multiple volume manual. If you would prefer a multiple manual, please specify what material should be covered in each volume.

19. **(MDT, CONT)** Would a small, pocket sized, erosion and sediment control field manual for contractors and inspectors be beneficial and why?

20. **(MDT)** How should the new manual tie into specifications, detail drawings, and other design aids?

21. **(MDT)** What obstacles do you foresee in the attempt to consolidate erosion and sediment control planning, design, implementation, monitoring and maintenance into a manual?

22. **(MDT)** Do you foresee any funding/cost obstacles in the implementation of a new erosion and sediment control manual within your section or bureau?

Training Programs

23. **(MDT, MRA, CONT, CONSULT)** Would module training or one all-inclusive training program work better for your group and why?

24. **(MDT, MRA, CONT)** Would your group benefit from hands-on training? If so, what would be the key feature?

25. **(MDT, MRA, CONT, CONSULT)** Would a training booklet be beneficial during the training and why?

26. **(MDT, MRA, CONT, CONSULT)** Does your group learn best from a projected presentation or a paper copied presentation?

27. **(MDT, MRA, CONT, CONSULT)** Should training sessions be divided into different disciplines, i.e. designers, field crews, contractors?

28. **(MDT, MRA, CONT, CONSULT)** Would a training section in the manual be beneficial to your group and why?

29. **(MDT)** Do you foresee any funding/cost obstacles in the implementation of a new erosion and sediment control training program within your section or bureau?

MDT/ Regulatory Agency Interaction

30. **(MDT, MRA)** What could be done to minimize response time problems between MDT and MRA when there is a problem with erosion and sediment control non-compliance?

31. **(MDT, MRA)** Are communications/interactions between MDT and MRA's adequate?

32. **(MDT, MRA)** If communications/interactions between MDT and MRA's are adequate, list reasons.

33. **(MDT, MRA)** If communications/interactions between MDT and MRA's are not adequate, list reasons.

34. **(MDT, MRA)** Please list areas that can be improved to ensure proper erosion and sediment control permitting, selection, implementation, monitoring, maintenance, and removal.

35. **(MDT, MRA, CONT, CONSULT)** Please provide any general comments about erosion and sediment control issues that may not have been covered in this survey or expand on questions listed above.

Appendix B
Compilation of the Survey Results

(MDT, MRA, CONT, CONSULT) General Information:

1. Identify with which group **(MDT, MRA, CONT, or CONSULT)** you are associated.
    - Consultant 8 Responses
    - Contractor 3 Responses
    - MDT (District Offices) 7 Responses
    - MDT (Construction Bureau) 2 Responses
    - MDT (Preconstruction Bureau) 6 Responses
    - MDT (Engineering Division)
    - MDT (District Offices) 2 Responses
    - MDT (Engineering Oversight Bureau) 4 Responses
    - MDT (Environmental Services) 2 Responses
    - MDT (Maintenance Division) 3 Responses
    - MRA 3 Responses
2. If you are with MDT please provide your section or bureau.
    - See Question 1

Process/Implementation of Erosion and Sediment Control Devices

3. **(MDT)** Below is a list of associated sections for an Erosion & Sediment Control Manual. Which section or bureau in MDT is currently responsible for erosion and sediment control for each of the following? Who do you feel should be responsible for each section? Do you suggest any additional sections? If so, please list them and describe their contents. Could some of the sections listed be combined or eliminated? If so, please indicate which ones and how you would do this.
    a. Planning (Currently Responsible/Proposed Responsible)
        - (MDT - District Offices) Unknown/Project Designers
        - (MDT - District Offices) Contractor/Environmental-EPM
        - (MDT - District Offices) Environmental

- (MDT - District Offices) Environmental/Environmental
- (MDT - District Offices) Environmental-MDT/Environmental-MDT
- (MDT - District Offices) MDT-Helena/MDT-Helena and Field crew
- (MDT - District Offices) Pre-Construction/Same
- (MDT - District Offices) Road Design/Environmental
- (MDT - Engineering Division) Design Bureau/District Design
- (MDT - Engineering Oversight Bureau) Preconstruction/Same
- (MDT - Engineering Oversight Bureau) Design/Design
- (MDT - Engineering Oversight Bureau) N/A /Environmental and Construction
- (MDT - Environmental Services) Environmental Services/Same
- (MDT - Environmental Services) Pre-construction/Engineering, Pre-Construction, Environmental Services
- (MDT - Maintenance Division) Environmental/Environmental
- (MDT - Preconstruction Bureau) Environmental/Environmental
- (MDT - Preconstruction Bureau) Environmental/Environmental
- (MDT - Preconstruction Bureau) Road Design/Environmental
- (MDT - Preconstruction Bureau) Environmental/Same

b. Design (Currently Responsible/Proposed Responsible)

- (MDT - District Offices) Designers Produce/Environmental Check
- (MDT - District Offices) Environmental
- (MDT - District Offices) Environmental/Environmental
- (MDT - District Offices) MDT
- (MDT - District Offices) Road or Bridge Design/Same
- (MDT - District Offices) Environmental (MDT) & Contractor/Environmental (MDT) & Contractor
- (MDT - District Offices) MDT-Helena/MDT-Helena and field crew
- (MDT - District Offices) Road Design/Environmental
- (MDT - Engineering Division) Road Design/Road Design
- (MDT - Engineering Oversight Bureau) Preconstruction/Same

- (MDT - Engineering Oversight Bureau) Design and Environmental/Design and Environmental
- (MDT - Engineering Oversight Bureau) N/A /Environmental and Construction
- (MDT - Environmental Services) Preconstruction/Engineering, Pre-Construction, Environmental Services
- (MDT - Environmental Services) Road Design and Environmental Services/Environmental Services
- (MDT - Maintenance) Regulatory Agency/Regulatory Agency
- (MDT - Preconstruction Bureau) Designer/Environmental
- (MDT - Preconstruction Bureau) Environmental/Environmental
- (MDT - Preconstruction Bureau) Environmental/Environmental
- (MDT - Preconstruction Bureau) Environmental/Environmental
- (MDT - Preconstruction Bureau) Road Design/Environmental
- (MDT - Preconstruction Bureau) Environmental/Same

c. Implementation (Currently Responsible/Proposed Responsible)

- (MDT - District Offices) Construction Staff-District & Contractor/Contractor
- (MDT - District Offices) Construction/Construction
- (MDT - District Offices) Contractor - EPM
- (MDT - District Offices) Contractor/Contractor
- (MDT - District Offices) Environmental Section/Field Construction/Same
- (MDT - District Offices) MDT Construction & Contractor MDT/Construction & Contractor
- (MDT - District Offices) Preconstruction Bureau/Preconstruction Bureau
- (MDT - District Offices) MDT-Field Crews / N/A
- (MDT - Engineering Division) Construction/Construction
- (MDT - Engineering Oversight Bureau) Construction Bureau/Environmental Services/MDT Project Personnel/Contractors
- (MDT - Engineering Oversight Bureau) Construction/Construction
- (MDT - Engineering Oversight Bureau) N/A / Environmental
- (MDT - Environmental Services) Construction and Environmental Services/Same

- (MDT - Environmental Services) Construction/Construction
- (MDT - Maintenance) Construction/Construction
- (MDT - Preconstruction Bureau) Construction/Construction
- (MDT - Preconstruction Bureau) Construction/Environmental
- (MDT - Preconstruction Bureau) Environmental/Environmental
- (MDT - Preconstruction Bureau) Construction/Same

d. Oversight (Currently Responsible/Proposed Responsible)

- (MDT - District Offices) Construction and Environmental/Construction
- (MDT - District Offices) Environmental/Contractor
- (MDT - District Offices) Environmental/Environmental
- (MDT - District Offices) Field Construction / Environmental Section/Same
- (MDT - District Offices) Field Crews/Field crews
- (MDT - District Offices) MDT
- (MDT - District Offices) MDT - Construction & Environmental, DEQ/MDT - Construction & Environmental, DEQ
- (MDT - District Offices) MDT-Environmental / N/A
- (MDT - Engineering Division) Environmental and Construction/Environmental and Construction
- (MDT - Engineering Oversight Bureau) Construction Bureau, Environmental Services, Engineering Oversight, MDT Project Personnel/same - Plus Contractors.
- (MDT - Engineering Oversight Bureau) Environmental/Environmental
- (MDT - Engineering Oversight Bureau) N/A /Environmental, Construction and Engineering Oversight
- (MDT - Environmental Services) Construction Review, Environmental Construction Review, Oversight Review/Construction Review, Environmental Construction Review, Oversight Review
- (MDT - Environmental Services) Environmental Services/Same
- (MDT - Maintenance) Environmental/Environmental or Maintenance
- (MDT - Preconstruction Bureau) Construction/Construction
- (MDT - Preconstruction Bureau) Engineering/Environmental

- (MDT - Preconstruction Bureau) Environmental/Environmental
- (MDT - Preconstruction Bureau) Environmental/Same

e. Maintenance (Currently Responsible/Proposed Responsible)

- (MDT - District Offices) Construction and Maintenance/Maintenance
- (MDT - District Offices) Contractor - MDT
- (MDT - District Offices) Contractor & District Maintenance/Contractor
- (MDT - District Offices) Contractor and MDT Maintenance/Contractor and MDT Maintenance
- (MDT - District Offices) Field Construction/Same
- (MDT - District Offices) MDT-Field crews / N/A
- (MDT - District Offices) Unknown/District Offices
- (MDT - District Offices) MDT Construction & Contractor, MDT- Maintenance when the construction project is closed/Contractor & MDT- Maintenance once the construction project is closed
- (MDT - Engineering Division) Construction and Maintenance/Construction and Maintenance
- (MDT - Engineering Oversight Bureau) Construction/Construction
- (MDT - Engineering Oversight Bureau) MDT (post construction only)/Construction Bureau/Environmental Services/Same -Plus Contractors.
- (MDT - Engineering Oversight Bureau) N/A /Environmental
- (MDT - Environmental Services) Construction and Maintenance/Same
- (MDT - Environmental Services) Maintenance - Environmental Construction Review/Maintenance - Environmental Construction Review
- (MDT - Maintenance Division) After completion of the project
- (MDT - Maintenance Division) Maintenance/Maintenance
- (MDT - Maintenance Division) Maintenance/Maintenance
- (MDT - Maintenance Division) Maintenance/Maintenance
- (MDT - Preconstruction Bureau) Environmental/Environmental
- (MDT - Preconstruction Bureau) Maintenance/Maintenance and Environmental
- (MDT - Preconstruction Bureau) Contractor/Construction
- (MDT - Preconstruction Bureau) Construction/Same

f. Monitoring (Currently Responsible/Proposed Responsible)

- (MDT - District Offices) Construction/Construction
- (MDT - District Offices) Environmental/Environmental
- (MDT - District Offices) Environmental/Regulatory Agencies
- (MDT - District Offices) Field Construction/Same
- (MDT - District Offices) Field Crew and Maintenance/Maintenance Only
- (MDT - District Offices) MDT
- (MDT - District Offices) MDT Construction & Contractor, MDT- Maintenance when the construction project is closed/MDT Construction & Contractor, MDT-Maintenance when the construction project is closed
- (MDT - District Offices) MDT-Field Crews/ N/A
- (MDT - Engineering Division) Environmental/Environmental and Design
- (MDT - Engineering Oversight Bureau) Contractors/MDT Project Personnel Same
- (MDT - Engineering Oversight Bureau) Construction/Construction
- (MDT - Engineering Oversight Bureau) N/A /Environmental, Construction and Engineering Oversight
- (MDT - Environmental Services) Construction, Maintenance, & Environmental Services/Same
- (MDT - Environmental Services) Construction, Maintenance, Construction Review. Environmental Construction Review, Oversight Review/Construction, Maintenance, and Construction Review. Environmental Construction Review, Oversight Review
- (MDT - Maintenance Division) Environmental/Regulatory Agency
- (MDT - Preconstruction Bureau) Environmental/Environmental
- (MDT - Preconstruction Bureau) Unknown/Environmental
- (MDT - Preconstruction Bureau) Contractor/Contractor
- (MDT - Preconstruction Bureau) Construction/Same

g. Regulatory Compliance (Currently Responsible/Proposed Responsible)

- (MDT - District Offices) DEQ
- (MDT - District Offices) DEQ/DEQ
- (MDT - District Offices) Environmental/Regulatory Agencies

- (MDT - District Offices) Field Construction/Environmental Section Same
- (MDT - District Offices) Field Crew and Environmental/Environmental
- (MDT - District Offices) MDT-Environmental/ N/A
- (MDT - District Offices) Unknown/Environmental
- (MDT - Engineering Division) Environmental and Construction/All
- (MDT - Engineering Oversight Bureau) Environmental Services/Same - plus contractors.
- (MDT - Engineering Oversight Bureau) N/A /Environmental
- (MDT - Environmental Services) Construction, Maintenance & Environmental Services/Same
- (MDT - Environmental Services) Construction, Maintenance, Construction Review. Environmental Construction Review, Oversight Review/Construction, Maintenance, and Construction Review. Environmental Construction Review, Oversight Review
- (MDT - Maintenance Division) Regulatory Agency/Regulatory Agency
- (MDT - Preconstruction Bureau) Environmental/Environmental
- (MDT - Preconstruction Bureau) Environmental/Environmental
- (MDT - Preconstruction Bureau) Environmental/Same
- (MDT - Preconstruction Bureau) MDT/MDT

h. Recommendations for Additional sections not listed above.

- (MDT - District Offices) Add review of erosion controls by environmental.
- (MDT - Engineering Division) I believe that unless we establish a separate section for erosion control/water quality, we will always be confused as to who is the lead on this important activity.
- (MDT - Environmental Services) Vegetative analysis, MPDES, NPDES, terminations. Several sections of the above duties need to be separated into the components of preconstruction, construction, post construction and maintenance responsibilities.

i. Recommendations for deleting or combining sections listed above.

- (MDT - District Offices) Regulatory Agencies have expertise in monitoring and compliance; they should be combined and taken from the MDT forces.
- (MDT - District Offices) The only people that can produce the actual plans are road design personnel. Environmental should still have oversight.
- (MDT - District Offices) This is an upper management decision.

- (MDT - District Offices) It would be nice to have the erosion control plan and permit in place prior to awarding the contract. Currently the job is awarded and then MDT gives the contractor a partially completed erosion control plan that they have to finish based on their planned operation. They then turn it in to DEQ for approval and we are co-permittees. Being co-permittees isn't a bad idea, but the erosion control plans are very vague to begin with, so it seems there should be a way to eliminate the requirement that the contractors include the specifics of their operation in the permit application. If the permits were changed to be more specific it would be difficult to make this change but the way it is currently being done it would not affect the quality of the erosion control being done on projects.

- (MDT - Engineering Division) I believe that design of erosion control is a valid engineering activity. As such, a special design unit for erosion control and associated engineering is necessary, but where to put it has been a question. I think it is part of hydraulics and should be located there with close ties to maintenance and construction.

4. **(MDT, MRA, CONT, CONSULT)** What is your perceived roll in construction erosion and sediment control Best Management Practice (BMP) implementation?

    - (Consultant) Create plans

    - (Consultant) Development of Plans/Specifications to implement BMP and compliance with permit requirements

    - (Consultant) I determine where erosion will occur in a given project and implement measures to prevent any erosion.

    - (Consultant) I prepare plans to obtain permits. BMP implementation is really the contactors responsibility.

    - (Consultant) One phase of my contract is to ensure MDT is in compliance with the Stream Protection Act conditions. SPA conditions include BMP's.

    - (Consultant) Preliminary BMP Placement Design.

    - (Consultant) Selecting, designing and locating Erosion Control devices, structures and writing Erosion Control plans, preparing drawings and specifications on a variety of projects for various clients. Monitoring installation and maintenance on projects where owners retain the firm for construction services.

    - (Consultant) Design

    - (Contractor) Get all groups involved in BMP will have a great impact on success of Erosion Control.

    - (Contractor) Installation of BMP's & maintenance during construction

    - (Contractor) We do the work that is listed on the permit.

    - (MDT - Construction) Periodic review during project visits.

    - (MDT - Construction) Correct placement and monitoring.

- (MDT - Construction) Make sure BMPs are installed correctly and maintained by the contractor during construction and they are placed in the proper location

- (MDT - District Offices) Installation - Maintenance

- (MDT - District Offices) Monitor the installation and maintenance of BMPs during construction.

- (MDT - District Offices) My design section prepares erosion control plans.

- (MDT - District Offices) Proper placement, installation, and maintenance during construction.

- (MDT - District Offices) To keep sediment within our project limits if at all possible, we must make the contractor more of a willing & active partner.

- (MDT - District Offices) We are responsible for oversight of the following: installation, maintenance, monitoring, contractor payments, and the contractor's compliance with the contract.

- (MDT - District Offices) Direction in initial BMP installation based on erosion control plans submitted by Helena and inspection of installed BMP's for acceptance and payments.

- (MDT - District Offices) MDT Construction takes the approved erosion control plan and makes it work with the contractor to make sure the proper BMP's are in place prior to beginning work and while any soil disturbances are present that need to be protected. We inspect the contractor's installation and monitor the BMP's to ensure the contractor in maintaining them properly. Because the plans are so general we are also responsible for determining proper BMPs, exact locations, and necessary modifications to fit field conditions.

- (MDT - District Offices) My field crew reviews the plan, makes suggestions on how to add additional items to better-fit field conditions, watches installation, and gets the blame when the original plan is faulty.

- (MDT - Engineering Division) We at MDT are responsible for short term and long term erosion control on our system.

- (MDT - Engineering Oversight Bureau) From an Engineering Oversight perspective, we should ensure suitable BMPs are installed by the contractors to adequately protect the resource(s) from their work and equipment.

- (MDT - Engineering Oversight Bureau) I do not believe that this is currently defined.

- (MDT - Engineering Oversight Bureau) Inspect the installation of BMP & give guidance to the contractor, also to look for areas not shown in the plan.

- (MDT - Engineering Oversight Bureau) Monitoring the projects and mentoring the Project Managers.

- (MDT - Environmental Services) Erosion and sediment control best management practices implementation is to maintain on site the soils that have erosion potential or have potential to pollute of degrade waters of the state or United States.

- (MDT - Environmental Services) To protect water quality as well as adjacent landowners from project sediment impacts.
- (MDT - Maintenance Division) Install when necessary to prevent erosion.
- (MDT - Maintenance Division) Maintenance after released from Construction
- (MDT - Maintenance Division) Maintenance of BMP's after the completion of the project by the contractor.
- (MDT - Maintenance Division) Maintenance should request and follow all design recommendations. Maintenance is also responsible for maintaining BMP's in place.
- (MDT - Preconstruction Bureau) Check design and/or design BMPs for Highway projects.
- (MDT - Preconstruction Bureau) It is our job to transmit the Erosion Control Plans form the Consultant to Environmental.
- (MDT - Preconstruction Bureau) None
- (MDT - Preconstruction Bureau) Drafting of plan sheets for Erosion Control from design given to us by Environmental.
- (MDT - Preconstruction Bureau) Our perceived roll would be in a technical advisory capacity if asked. We would view this as a very rare occurrence.
- (MRA) My ROLE is as a permitting authority under Section 404 of the Federal Clean Water Act, to ensure the preservation, protection, and restoration of the physical, chemical, and biological integrity of our Nation's waters.
- (MRA) Oversight
- (MRA) CWA 404 certifications, SWPP oversight, construction site inspections.
- (MRA) The DEQ Storm Water Program issues Montana Pollutant Discharge Elimination System (MPDES) permits which provide permit coverage for "storm water discharges associated with construction activity." This pertains to most MDT construction projects. Ensure the proper permitting, compliance, inspection, monitoring, reporting, recordkeeping, and enforcement is performed as required by environmental statutes (Montana Water Quality Act) and regulations. Ensure appropriate permit coverage is obtained, typically under the MPDES "General Permit for Storm Water Discharge Associated with Construction Activity" (informally called the "Construction General Permit"). Ensure the development and implementation of the required "Storm Water Pollution Prevention Plan" (SWPPP), formerly called an "Erosion Control Plan." The primary purpose of this permitting is to minimize or prevent potential pollutant (such as sediment) discharges into "surface waters" through storm water runoff. Ensuring proper erosion and sediment control BMP implementation is the primary function of this permitting program with respect to regulating "storm water discharges associated with construction activity."

5. **(MDT)** How does MDT currently inspect BMPs in the field?

- (MDT - Construction) The Engineering Project Manager is responsible for the BMP inspections.

- (MDT - Construction) Field inspector
- (MDT - Construction) Inspected daily to ensure they are working properly.
- (MDT - District Offices) Field crew-weekly, before and after storm.
- (MDT - District Offices) Generally the Engineering Project Manager assigns an inspector to periodically review BMPs.
- (MDT - District Offices) MDT Construction inspectors check BMPs in the field.
- (MDT - District Offices) On sight inspections, during installation and weekly or after rainstorms.
- (MDT - District Offices) Put an inspector with the installer (contractor), when possible, but assure proper installation before payment.
- (MDT - District Offices) Visually for proper installation and location and as often as necessary to be compliant.
- (MDT - District Offices) Field crew watches initial installation, reviews BMPs one per week and within one day of rain event. Review consists of drive by to verify BMP is still in place and functioning.
- (MDT - District Offices) MDT construction inspectors monitor the installation and maintenance while the construction contract is open. This is done in conjunction with the contractor since we are co-permitees. Once the construction contract is closed maintenance takes over all responsibilities. MDT's Environmental Unit then makes a final determination as to when the vegetation has been re-established and the permit can be closed.
- (MDT - District Offices) Visual inspection during and after installation by contractor.
- (MDT - Engineering Division) We do not have a formal process other than one person who should be providing leadership.
- (MDT - Engineering Oversight Bureau) Comparing the BMPs shown on the Erosion Control Plan to those actually in place, or in some cases, succumb to the regulator that whines the loudest.
- (MDT - Engineering Oversight Bureau) Engineering Project Manager, Reviews by Environmental, Construction Bureau and Oversight Bureau.
- (MDT - Engineering Oversight Bureau) Field inspectors
- (MDT - Engineering Oversight Bureau) The Engineering Project Manager and his project staff are responsible for this inspection. The contractor should also be inspecting these on a regular basis but that may not be happening.
- (MDT - Environmental Services) BMPs are inspected by the Engineering Project Manager or one of his crew during construction operations, transferred to maintenance for the post construction process as well as periodic inspections by DEQ, FW&P, USACOE, other agencies, as well as the Construction Review. Environmental Construction Review, Oversight Review teams.

- (MDT - Environmental Services) Combination of field staff with occasional spot inspection from Environmental Services staff.

- (MDT - Maintenance Division) During daily routine roadway inspections and after major storm events.

- (MDT - Maintenance Division) Maintenance is to check on them once a month or after a major storm event.

- (MDT - Maintenance Division) Section personnel inspect them

- (MDT - Maintenance Division) With Maintenance forces and with "spot checks" from personnel within the Environmental Section.

- (MDT - Preconstruction Bureau) Do not know - Probably the Project Engineer.

- (MDT - Preconstruction Bureau) Don't really know, Ben Dean from Enviro does field checks, maybe the Project Manager.

- (MDT - Preconstruction Bureau) I suppose Environmental does it! Ben Dean?

6. **(MDT, MRA)** What could be done to improve the BMP inspection process?

    - (Consultant) Ensure the people that are doing the inspections are qualified. Just because a person is in a position with a certain title does not mean they are qualified to do the inspection. Example: A supervisor-engineer or biologist-a lot of MDT people are in the Erosion control field and within short time become experts with no training. Most of the personnel involved in BMPs are lacking in both manual and especially field training.

    - (MDT - Construction) A checklist of what is to be covered in the inspection and submittal of the inspections to document that they are truly being performed.

    - (MDT - Construction) If possible, have an inspector assigned solely to the inspection of BMPs.

    - (MDT - Construction) Training

    - (MDT - District Offices) Better training for contractor staff, MDT construction staff, and MDT maintenance on installation, maintenance, and removal.

    - (MDT - District Offices) Have an inspector able to work on this full time, which does not happen because our staffing is not where it should be. Inspectors are mostly doing two or three different things.

    - (MDT - District Offices) Make the contractor have a specialized installer with credentials.

    - (MDT - District Offices) More field crew employees available to do this.

    - (MDT - District Offices) Revise contract provisions so contractors are responsible for violations.

- (MDT - District Offices) Have set price for linear feet of erosion control, i.e. $25.00 per linear meter installed and maintained by contractor for length of project. This would reduce force account record keeping.

- (MDT - District Offices) Increased training, more site-specific erosion control plans, more clearly defined guidance on when to use erosion control, and which BMPs are acceptable in situations. Define more clearly what needs to be protected and what doesn't.

- (MDT - District Offices) Provide more FTE's to aid in field inspections.

- (MDT - Engineering Division) Improved organization to show who is responsible, improved training to those responsible, and more field people with the assignment: I think the concept of certification of field personnel working in this arena is a good idea. Joe Olsen has a concept on this.

- (MDT - Engineering Oversight Bureau) There needs to be more flexibility given to the field personnel as to the type(s) of BMPs to be installed. Simply because a manmade barrier may not be visible at a given location doesn't necessarily mean there is no protection (i.e., silt fence vs. a ridge/berm of topsoil, etc.), nor should that be regarded as a violation of the permit. A much more commonsense approach is sorely needed in this area!

- (MDT - Engineering Oversight Bureau) Have the contractor take a more active roll in this field. Contractors need to take erosion more seriously and have someone trained in erosion.

- (MDT - Engineering Oversight Bureau) More Reviewers in the Environmental Section.

- (MDT - Engineering Oversight Bureau) Training, training, training-More interaction with the regulating agencies, DEQ.

- (MDT - Environmental Services) The field crews for both Maintenance and construction need to be trained in what is expected and what is required during each phase of the project.

- (MDT - Environmental Services) Training of field personnel, increase of Environmental Services staff dedicated to inspection.

- (MDT - Maintenance Division) Better Communication or notice of BMP between Maintenance and Construction.

- (MDT - Maintenance Division) Have an environmentalist in each division to do inspections.

- (MDT - Maintenance Division) Maintenance, Construction, and the contractor should do a field review of the completed project. Once all parties are satisfied then the project could be signed off.

- (MDT - Maintenance Division) Additional manpower and training for Maintenance.

- (MDT - Preconstruction Bureau) Get more people knowledgeable of the process.

- (MDT - Preconstruction Bureau) I have no idea since my function is well departed from the actual implementation.

- (MRA) Closer monitoring of inspection reports.

- (MRA) Label each BMP installation in the field with a unique ID number or code, or label each one with a project name and project station, then ensure that there is a clear way to identify the structure or BMP on the appropriate set of construction plans.

- (MRA) More resources towards monitoring and specific vegetation/erosion control success measures.

- (MRA) The aforementioned MPDES General Permit for Storm Water Discharge Associated with Construction Activity has requirements for self-monitoring (inspection) on a routine basis and after storm events. There are other related requirements pertaining to BMP evaluation and maintenance. On-site permittees (both owners and contractors) need to be familiar with specific general permit and SWPPP (ECP) requirements, and stay on top of BMP implementation, inspection, and maintenance. One or two specialized storm water or erosion control inspectors within MDT cannot be reasonably expected to adequately inspect BMPs for numerous MDT projects spread out around the State, especially when you consider the unpredictability of storm events and the duration of many projects. MDT could consider better utilizing field personnel and project-specific managers and contractors to help effectively ensure DEQ permit requirements are complied with and BMPs are properly implemented and maintained. Inspecting BMPs after storm events is critical to ensuring their ongoing adequacy and effectiveness. The only way this can be reasonably accomplished is by the project-specific personnel. Perhaps they need to play a more active role. Ideally, representatives should frequently inspect BMPs (such as prior to leaving the site each day) since they typically will be walking or driving by these same BMPs in most situations. Daily inspections are not a general permit requirement, but may themselves be a reasonable and good BMP (if easy to perform). After construction is completed, and before "final stabilization" is achieved, representatives of permittees still must perform inspections, particularly after storm events. In these cases, if project-specific people are not able to adequately perform inspections to help ensure proper BMP implementation and maintenance, then perhaps other MDT/contractor staff could be trained on the basics, and serve as substitute eyes in the field.

7. **(MDT, MRA, CONT, CONSULT)** What BMPs have you found to be effective in Montana and why?

    - (Consultant) Ditch-blocks are very effective, as well as replanting and seeding slopes as soon as possible. This will add stability to the topsoil and slow the water preventing erosion.

    - (Consultant) Most of the BMPs currently used by MDT are effective if installed correctly and maintained.

    - (Consultant) Seeding/Mulching, Sediment Ponds, Silt Fence, these work best to prevent sediment transport from the site due to runoff and wind erosion.

    - (Consultant) Silt fence if installed properly, and field observations.

- (Consultant) Silt fence, inlet/outlet protection, temporary sediment basin/traps, and permanent seeding in season and controlling tracking of mud from construction sites. These are familiar practices and materials are readily available. Contractors have become familiar with these methods.

- (Consultant) Silt fence, erosion matting. The silt fence seems to be adequate in controlling sediment discharge from the site and the erosion matting is effective for steep slopes and sandy or silty soil by trapping moisture and promoting plant grow before erosion takes place.

- (Contractor) All of them have problems. Silt fence seems to be the best.

- (Contractor) Silt fence has been effective near or in water. They do the job and are relatively easy and economical to install, maintain, and remove.

- (Contractor) Straw bales have not worked well in or near water. They are hard to find, plug up easily, and require more maintenance.

- (MDT - Construction) Sediment control fences, they work in the right applications. At times they are specified where they are not effective Gravel Berms, they filter out sediment and also reduce the velocity of water in ditches.

- (MDT - Construction) Scraper dips, silt fence, gravel filter berms. They slow down the flow of water more effectively and are durable for a long period of time.

- (MDT - Construction) Silt Fence, gravel berms, catch basins - most effective for sediment control.

- (MDT - District Offices) Silt Fence and Gravel Berms, properly installed, permit settlement of sedimentation within the ditch lines.

- (MDT - District Offices) Silt fence w/backing, berms, slope roughening.

- (MDT - District Offices) Silt Fence, Gravel Berms, Erosion Matting.

- (MDT - District Offices) Silt fence, gravel filter berms, dugout ditch basins. Most are BMPs and are effective but some have to be left in place and removed later.

- (MDT - District Offices) Silt fence, rock lined outlet settling basins, re-vegetation, slope drains, check dams, and others depending on the situation.

- (MDT - District Offices) All BMP types are effective in one location or another. Specific types can be more easily obtained in some locations, as in straw bales. I personally do not like straw bales, as they become saturated and become less effective over time.

- (MDT - District Offices) All of the BMPs are effective when used in the proper situation. The problem is silt fence is used in most situations and other BMPs would serve the same purpose and be less of an eye sore.

- (MDT - District Offices) Gravel berms for ditches and limited maintenance dig out basins for settling of sediment.

- (MDT - Engineering Division) Silt fences, when installed properly, control sediment transport. Straw bales also the same as silt fence. Sediment basins if maintained.

Energy controls in the ditch to slow water flow. Frequent cross drains or carry out ditches to control water speed and volume in the ditch. Lead out culverts to keep ditches from draining directly into the stream course.

- (MDT - Engineering Oversight Bureau) Erosion mats, ditch sediment traps, gravel filter berm, silt fence, straw bale barriers, and runoff interception ditch.

- (MDT - Engineering Oversight Bureau) I like any of the BMP's that do not require any maintenance. Rock piles, Dig out Basins, Straw matting, etc.

- (MDT - Engineering Oversight Bureau) They all can be effective if installed properly. Silt fence is the one most commonly used.

- (MDT - Environmental Services) Erosion mat, various types depending on the conditions, if installed correctly. Keeps soils in place, ties grasses in place and provides a stable base for the vegetative effort. Does not have to be removed after installation. Gravel berms if installed correctly in the correct locations. Slows and spreads water run off allowing for less erosion potential, does not have to be removed after installation. Rolled erosion mat with one edge embedded, works like a straw log. This works to filter, slow and spread the water without allowing the water to float and move under the installation. Rock over geo-textile. Effective type of down drain drop structures, ephemeral channel stabilization, Geo-textile keeps the soils in place and the rock works as an energy dissipater. Dug out ditch basins. Work as an in term settling basin during the construction. Slows, settles and contains storm water run off when installed correctly and appropriately. Erosion seeding. Provides a quick ground cover for completed sections during construction this works during periods of light moisture and when established as a vegetative buffer strip. Berms, dips, to spread, contain, and slow water flow. Tackifier for use over seed hydro-seeding etc. to hold soils and seed in place during the vegetative effort. Has to be used according to instructions. Slope roughening, slows spreads and allows water to soak, evaporate etc without concentrating flows. Stepped slopes slows spreads and allows water to soak, evaporate etc without concentrating flows. Benched slopes slows spreads and allows water to soak, evaporate etc without concentrating flows. Straw tucking tucked straw works as a vegetative growth and a vegetative buffer strip. There are other methods that are effective.

- (MDT - Environmental Services) Gravel Berm - versatile, can usually be left in place.

- (MDT - Maintenance Division) Frequent inspection and maintenance, easier to keep them in working condition.

- (MDT - Maintenance Division) Silt Fence.

- (MDT - Maintenance Division) Gabions and earth ditch blocks.

- (MDT - Preconstruction Bureau) Straw bails seem to stop most sediment.

- (MDT - Preconstruction Bureau) From personal observation the gravel berms placed in ditches as check structures appear to work quite well.

- (MRA) Gravel berms, sediment basins, some sediment control fence (when installed correctly).

- (MRA) Most BMPs are effective if properly installed and maintained.

- (MRA) One important point to consider. If good erosion control measures are in place and working, then actual sediment control becomes less necessary. Essentially, try to keep the sediment from becoming mobile in the first place. Erosion control fabrics, hydro seeding, and check structures have often been effective.

8. **(MDT, MRA, CONT, CONSULT)** What BMPs have you found to be ineffective in Montana and why?

    - (Consultant) I haven't dealt with any non-effectual methods.
    - (Consultant) Silt fences are often ineffective due to poor installation and/or lack of maintenance. It appears from driving by many construction sites that contractors install them and never touch them again.
    - (Consultant) Some of the selected BMPs selected for the sites are not correct. Other failures are due to non-maintenance.
    - (Consultant) Straw bale barriers - used for ditch sediment traps. Improper installation causes erosion between or around barriers.
    - (Consultant) Straw bale barriers, these items are rarely constructed or maintained in an effective manner.
    - (Consultant) Temporary seeding doesn't work well in this arid climate for the areas east of the Continental Divide.
    - (Consultant) We have not had the opportunity to observe MDT projects under construction and do not know what BMPs that MDT uses have not been effective.
    - (Contractor) Silt fence, drain rock, and ditch blocks.
    - (MDT - Construction) Temporary seeding - it does very little good to install temporary seeding in the middle of the summer when the temperatures are hot, it's dry, and there is practically no chance for the seed to germinate, grow and provide protection from storm water.
    - (MDT - Construction) Straw bales don't last long, look ugly, and animals get into them and tear them up or eat them.
    - (MDT - Construction) Temporary seeding never comes in fast enough.
    - (MDT - District Offices) Most have some use depending on the situation and correct installation.
    - (MDT - District Offices) Scraper Dips, and Silt Fence if not properly installed.
    - (MDT - District Offices) None
    - (MDT - District Offices) See statement above.
    - (MDT - District Offices) Silt fence where flowing water is. It is impossible to keep silt fence up when heavy rain hits. Maintenance of silt fence is also very expensive.

- (MDT - Engineering Division) Inspection requirements in the contract that never get performed. Some of the culvert protection measures do not seem to handle the storm flows. Gravel berms that are not adequate get breached easily.

- (MDT - Engineering Oversight Bureau) Straw Bales, not only are they unsightly (along with silt fencing), but they are only marginally effective. In some areas of the state (i.e., reservations) they have a tendency to be devoured by roaming range stock.

- (MDT - Engineering Oversight Bureau) I do not like the silt fence. It is a maintenance problem, has on going installation problems, and contractors are taking advantage of the methods of payment by MDT.

- (MDT - Engineering Oversight Bureau) In my opinion, temporary seeding and erosion seeding are not very effective. There is just not enough time and moisture to make this effective.

- (MDT - Engineering Oversight Bureau) Straw bales are too hard to work with and they are usually improperly installed.

- (MDT - Environmental Services) Straw bales: Hard to install correctly, hard to maintain, weeds.

- (MDT - Environmental Services) Straw Logs: not installed correctly, float, allow water to flow under them are over toped to easy, are not effective; Straw Bails: improper installation, animal involvement, traffic hazard.

- (MDT - Maintenance Division) Sporadic inspections and maintenance, leaves the opportunity for BMP failure.

- (MDT - Maintenance Division) Straw bales and small ditch blocks.

- (MDT - Preconstruction Bureau) We have noted on occasion that silt fences placed around drop inlets or culvert inlets have at times caused more problems, as they tend to divert runoff away from the drainage structure. This happened on McDonald Pass several months ago.

- (MRA) BMPs that are not properly installed or maintained.

- (MRA) Coir (fabric) logs: (they get undermined, or are impossible to seal tightly to begin with. Straw bales: sometimes they work, but they are also tough to seal. Sediment fence: if installed incorrectly, or if located incorrectly.

- (MRA) Silt fences in windy areas, or when they are overused, may not be as effective as other BMPs.

9. **(MDT)** MDT is a co-permittee with contractors for erosion and sediment control. What procedure(s) will increase MDT's efficiency in getting the BMPs properly installed, maintained and re-established within the permit requirements?

    - (Consultant) I use the detailed drawings. I've been told by MDT consultant design that there are no current erosion control manuals or help guides. I have used DEQ's erosion control manual, but it is quite cumbersome and not really written for highway projects.

- (MDT - Construction) Make the contractor responsible for the installation, maintenance, and inspection of the BMPs during the construction of the project. The contractor should also be responsible for any violations and penalties.

- (MDT - Construction) Do not make MDT a co-permittee. Make the contractor the sole permittee. This would make the contractor responsible for the proper installation and maintenance. If not installed properly, make no payment to the contractor until corrected.

- (MDT - Construction) Don't pay for poor installation, give notice of potential violations if not installed before work begins.

- (MDT - District Offices) Contractor knowledge of how to install the BMPs, most contractors don't take it serious; they are only concerned with getting paid force account. Bid item pricing would be most effective to having the contractor install the erosion control properly or not get paid for the work.

- (MDT - District Offices) Make sure the contractor has an erosion control specialist with a history or credentials.

- (MDT - District Offices) Proper training and possible certification programs for contractors and State forces so everyone understands what needs to be done and the consequences. The State is sometimes held accountable for violations by the contractor. The contractor should be held accountable for his actions. This will increase his competency of installation and maintenance.

- (MDT - District Offices) The contractor has to be made responsible for his operation as they affect BMPs.

- (MDT - District Offices) The contractor has to know that some of their employees must be available to do this work whenever it's needed, not just when they have time.

- (MDT - District Offices) The contractor should be responsible for obtaining the permit and compliance violations.

- (MDT - District Offices) Have erosion control inspector assigned to each district to review every project in district. Make sure this inspector has been properly trained in all aspects of design, installation and maintenance of all erosion and sediment control BMPs. Do not force field crews to perform this, duty crews are not trained properly.

- (MDT - District Offices) Have one (1) person in each district inspecting and reporting on BMPs for each project.

- (MDT - District Offices) Put more dollar value in erosion control. Contractor's effort is based on profit, not threats of penalty. All construction activities now have a threat of penalty if not performed to our expectations. Another option would be to pay our crews to install BMPs.

- (MDT - District Offices) Revised payment methods. Erosion Control is currently paid on a force account basis or agreed prices. This method of payment works with experienced inspectors but can often be taken advantage of by contractors when dealing with inexperienced inspectors.

- (MDT - Engineering Division) Maybe more personnel that are concerned about the condition of the erosion control. On jobs where we have these folks, we do not have problems. Also, trained or certified contractor personnel dedicated to erosion control. Maybe a different way of paying for the erosion control and specing it in the contract.

- (MDT - Engineering Oversight Bureau) The only way I can see making MDT more efficient regarding enforcement of the permit's, BMP requirements are to get MDT out from under the "co-permittee" status. As I understand it, the only reason MDT is included in the "co-permittee" status is because of regulatory agencies perception that, because MDT is considered the Owner and administrator of the contract, we (i.e., MDT) are jointly liable. Nothing is farther from the truth in my opinion. MDT has fulfilled their obligation by having all of the required permits for the permanent work in place before the project goes to contract. Only the contractors' methods of operations, sequencing, and procedures remain unknown at the time of contract letting. That is, MDT does not possess the crystal ball necessary to be able to see how a contractor plans to build the project. For that reason, and that reason alone, the contractor should be solely responsible for their work. If MDT is removed from the "co-permittee" status, MDT can then concentrate on the oversight and enforcement of the contractors' responsibilities concerning BMPs, rather than scrambling to try second-guessing the whims of regulatory agency personnel that may show up on a project.

- (MDT - Engineering Oversight Bureau) Contractors have to get their people trained and responsible for their part in the erosion control plan. It is not very effective for MDT's staff to have to continually request and direct the contractor to properly install BMPs in a timely manner. The contractor has to become proactive in this part of their contract and understand the seriousness and importance of this work.

- (MDT - Engineering Oversight Bureau) Hold the contractor accountable.

- (MDT - Engineering Oversight Bureau) The MCA environmental meeting this year helped to make the contractors aware of their responsibilities. Additional joint training for the contractors and MDT would be helpful.

- (MDT - Environmental Services) Environmental preconstruction meetings. MDT and Contractor staff training.

- (MDT - Environmental Services) Turn the installation, maintenance and permits over to the contractor. Due to their construction practices they make more disturbance, wait, tell the last to re-vegetate, and generally do not keep good housekeeping. By making them responsible for the total vegetative effort and not allowing them to finish and close the project until proper vegetation is established they will perform the necessary work to minimize and maintain the required practices in a efficient manner rather than an after thought. Should be bid on a lump sum.

- (MDT - Maintenance Division) Closer inspection and adherence to proper installation practices.

- (MDT - Maintenance Division) Have the contractors responsible for a longer period of time.

- (MDT - Maintenance Division) These procedures should be developed by MDT construction.

- (MDT - Maintenance Division) The contractors should be billed for the repairs Maintenance makes after a project is completed. The costs could be shared.

- (MDT - Preconstruction Bureau) Establish bid items for the installation, and partial payments for maintained BMPs.

- (MRA) Increasing EPM awareness of the necessity.

- (MRA) MDT will typically be a co-permittee with the contractor or any other "operator" meeting that definition in the new reissued General Permit, which is effective June 8, 2002. The new Notice of intent will ask which operators (co-permittees) are responsible for what, and during what time period, for major aspects of the projects including inspections, final stabilization, annual fee payments, and submittal of the Notice of Termination.

10. **(MDT)** What procedures could MDT follow to be proactive rather than reactive on implementation and maintenance of BMPs?

    - (MDT - Construction) Make the contractor responsible for the installation, maintenance, and inspection of the BMPs during the construction of the project. The contractor should also be responsible for any violations and penalties. Have periodic inspections of all BMPs on the project to insure proper BMPs are being used both in current installations and planned for upcoming work.

    - (MDT - Construction) More training for the Contractor and MDT personnel on the proper installation of BMPs.

    - (MDT - District Offices) Contractor and MDT training would increase our credibility with MRAs. A mechanism for the contractor to be responsible for fines levied against the Department for negligence by the contractor would help to ensure compliance.

    - (MDT - District Offices) Don't allow contractor to proceed until BMPs are in place. Shut down contractor if BMPs are not maintained.

    - (MDT - District Offices) Have more inspectors, or trained inspectors on the BMPs.

    - (MDT - District Offices) Include on plans areas and types of BMPs to be installed. If possible have a field crewmember and contractor employee designated for this work.

    - (MDT - District Offices) More accurate plans in the design phase, not just throwing in BMPs for the sake of it, having accurate and specific plans.

    - (MDT - District Offices) More consistency in the interpretation of the requirements. The interpretation of what is required is very subjective and currently varies depending on the individual doing the inspection and even with the MDT crew and/or contractor on the job.

    - (MDT - District Offices) Share in the rewards of proper installation of erosion control devices. We are co-permitted when penalty is assessed. What do we (MDT) get for a good job, other than a pat on the back from someone?

    - (MDT - Engineering Division) Establish a certification program for employees. Make changes to the contract and strengthen the use of BMPs.

- (MDT - Engineering Oversight Bureau) Continuing education for both the MDT and contractors: MDT needs to ensure environmental provisions remain in the forefront. The best way to do that is provide an active role in education in what needs to be developed, implemented, and maintained during and post construction.

- (MDT - Engineering Oversight Bureau) Detailing BMP locations on the Permits with more emphasis on location and type.

- (MDT - Engineering Oversight Bureau) On active construction projects (and this is being done on some), the EPM and the contractor's superintendent should inspect the project on a weekly basis to make sure all BMPs are in place and functioning. The contractor should be sharing his schedule with the EPM so they can plan the next week's work and anticipate what will be needed as far as BMPs. This should be documented by both the EPM and the contractor.

- (MDT-Engineering Oversight Bureau) More training. In all the training I have been to all that is shown and talked about is the problems. No one shows how to install the BMP and where to install them. I'm not sure any two people can agree on all the correct locations.

- (MDT - Environmental Services) Require a trained erosion specialist to be on the contractor's work force and remain on the project from start to finish. MDT would also have to have more than one individual trained in erosion controls.

- (MDT - Environmental Services) Training, trying new ideas.

- (MDT - Maintenance Division) Implementation of training: Recently we had an excellent training session; we need to do this for all employees.

- (MDT - Maintenance Division) Knowledge of the harm the erosion can cause.

- (MDT - Maintenance Division) Provide a list of active projects bi-monthly.

- (MDT - Maintenance Division) Additional Maintenance training and sufficient manpower to effectively monitor the BMPs.

- (MDT - Preconstruction Bureau) Better education

- (MDT - Preconstruction Bureau) Establishment of standards that are above what is required now.

- (MDT - Preconstruction Bureau) Regular inspections and field placed BMPs that make sense. (e.g. don't need silt fences at of cuts, etc.)

- (MRA) Require development of comprehensive erosion control plans (SWPPP), and thoroughly discuss at pre-construction conference.

- (MRA) See response to question #6 above.

11. **(MDT)** What process could be implemented to monitor BMPs and determine when they should be removed?

    - (MDT - Construction) Have Construction Reviewers monitor vegetative growth then decide.

- (MDT - Construction) Maintenance personnel are responsible for monitoring BMPs after projects are complete. Give training to them on proper vegetation and removal procedures.

- (MDT - District Offices) A post-construction program for MDT Maintenance forces with our Environmental Section needs to be in place after the contractor and MDT field construction forces are assigned to another project.

- (MDT - District Offices) Each district has an environmental person; this person should monitor a construction project 12 months after completion to see if the erosion controls can be removed, if not then review after another growing season. Most BMP's are left in place too long. Then the grass and bushes grow through the fence around creeks and streams and then it is very hard to get out. Plus this creates a barrier for the deer and other creatures while trying to get around. I think that 18 months (after completion) could be the limit.

- (MDT - District Offices) Let maintenance superintendents follow up and determine when there is sufficient vegetation to remove BMPs.

- (MDT - District Offices) MDT has one person to determine when BMPs can be removed. Provide one person in Each District to determine, or use consultants.

- (MDT - District Offices) This would have to be done by MDT maintenance or environmental; the field crew could be long gone.

- (MDT - District Offices) Have environmental person do final review of each project in a timely manner.

- (MDT - District Offices) Increased staffing in the environmental unit: The current process is fine it's just they are lacking the people to monitor it as closely as is desirable.

- (MDT - District Offices) The completed project is turned over to Maintenance. Make them responsible for removal of the devices, instead of complaining about the mess engineering made for another project.

- (MDT - Engineering Division) I think training of maintenance personnel to do this job, and have a way of paying them with federal aid dollars. Quality assurance would be provided by environmental or construction.

- (MDT - Engineering Oversight Bureau) MDT should require that contractors have trained and certified personnel on the project at all times that are empowered to install, monitor, and modify BMPs as necessary. MDT should have adequate numbers of personnel available that are empowered to decide when the BMPs should be removed. As it stands right now, 2 people are not physically able to cover the entire state to make those decisions.

- (MDT - Engineering Oversight Bureau) First the Maintenance people need to be trained on what is required when they take over a project after construction. And further training should be required so the maintenance people can recognize when a project is ready for "final acceptance." Then they should know whom to contact to get on the project so it can be inspected and finally accepted.

- (MDT - Engineering Oversight Bureau) Have maintenance take an active roll in this. They are the ones that work with the projects after they are completed.

- (MDT - Engineering Oversight Bureau) Within the Districts there are Traffic Engineers, Right of Way Bureaus, Material Bureaus, etc. to monitor one process. An environmentalist assigned to each District to monitor BMP's and permitting would only seem appropriate. With only one person that is qualified to determine when the BMP's can be removed, I think that additional personnel that can make the determination of when the BMP's can be removed would be the most help.

- (MDT - Environmental Services) The procedure in the NPDES, and MPDES permit should be followed.

- (MDT - Environmental Services) Tracking system - installation to removal.

- (MDT - Maintenance Division) A District environmentalist could speed up the process.

- (MDT - Maintenance Division) My understanding is we have a lack of manpower to assist Ben Dean, possibly utilize the section personnel more effectively in reporting when they may be removed.

- (MDT - Maintenance Division) Semi-annual reviews by the environmental unit.

- (MDT - Maintenance Division) Maintenance should make the call.

- (MDT - Preconstruction Bureau) Inspection at critical stages of the project.

- (MDT - Preconstruction Bureau) Use a term contract for removal (Mom & Pop type shop), with Environmental signing off.

- (MRA) I think the process is in place if it is adhered to.

- (MRA) See response to question #6 above. Also, please refer to the new reissued General Permit. This contains DEQ-required monitoring (inspection) requirements. Also, BMPs are typically required to be maintained and kept in-place until "final stabilization" has been achieved (as required in the General Permit).

12. **(MDT)** Does MDT experience any problems in successfully operating the Erosion & Sediment Control Program that may be due to your current organizational structure? If so, what are possible solutions?

    - (MDT - Construction) How to pay for BMPs: Make erosion control a bid item.

    - (MDT - District Offices) Having enough employees available to show the contractor what we need, where we need it, inspect the installation, measure the quantities, make force account notes, and put on monthly estimate.

    - (MDT - District Offices) Not to my knowledge.

    - (MDT - District Offices) Staffing problems sometimes cause delays. A method of tracking the status of permits may help the field construction crews. The permitting process is slow and involves many bureaucracies.

    - (MDT - District Offices) We have a lot of new inspectors that need to get up to snuff. We have a small Environmental Services bureau doing monitoring. This is better suited to the regulatory agency.

- (MDT - District Offices) Have erosion control plans and personnel that designed these plans attend the pre-construction conference to review this program.

- (MDT - District Offices) Have more participation from Maintenance who takes over the maintenance of the BMPs until they are ready to be removed. MDT needs to be more proactive in monitoring projects after construction is completed to determine when re-vegetation has satisfactorily occurred.

- (MDT - District Offices) Lack of staffing and uniform guidance is the only problem with the organizational structure I can see. An environmental reviewer in each district and a more specific erosion control manual would eliminate the majority of problems.

- (MDT - District Offices) Yes. I have a temp review erosion and sediment controls, as we do not have an environmental representative in the district.

- (MDT - Engineering Division) I really do not have one location where I can say an erosion control guru exists. We do have that kind now with Joe Olsen and the Erosion Control and Construction permitting section in Environmental Services. That is a new section, and maybe over time they are the folks that will be taking the lead. But, I know they are overwhelmed with the issues.

- (MDT - Engineering Oversight Bureau) YES! Too few people know too little about the process. It's not that the people are stupid, it's just that the whole permitting process is so convoluted that people just do not have a good grasp of what permits are required, and who is responsible for applying for them, etc.. (That also applies to our friends in the contracting community). The entire process needs to be streamlined. One possible solution would be to create a "clearinghouse" for processing permit applications. That is, have one-stop shopping. In order to have any hope of working, this would require personnel with a strong working knowledge of construction methods and procedures, as well as MDT project specific specification requirements.

- (MDT - Engineering Oversight Bureau) I believe the main problem is getting the contractors to take this issue seriously.

- (MDT - Engineering Oversight Bureau) I think the Environmental Unit could use additional staff that could assist the field and provide guidance to the EPM's and Maintenance.

- (MDT - Engineering Oversight Bureau) There are problems when the contractors are not willing to put the time and manpower into the BMPs. This should change with the training and schooling held this year.

- (MDT - Environmental Services) The erosion control plan shells and drafting inclusion of Environmental Services recommended BMPs are conducted by Road Design. This causes several steps of information transfer. It may be more efficient if Environmental Services had staff to conduct drafting functions.

- (MDT - Environmental Services) Yes MDT can only inform the contractor that the work is required; they do not have a staff and equipment to install or maintain the erosion and sediment controls. A method to penalize the contractor for not being responsive is required.

- (MDT - Maintenance Division) A District environmentalist could speed up the process.
- (MDT - Maintenance Division) As stated earlier I heard that there is a lack of manpower available, but am not in a position to know if this is the case.
- (MDT - Maintenance Division) Yes, we are not provided enough current information and we have inadequate staff size to oversee the program. The program is directed more towards contractors then maintenance.
- (MDT - Maintenance Division) Monitoring is not handled at the local level and the entire topic is therefore not well understood nor given a high priority by many field personnel.
- (MDT - Preconstruction Bureau) Yes, the designers who are doing it now including the consultants, do not have the updated knowledge at all times, nor is this in their field of expertise. The environmental section has this knowledge and is kept updated at all times to new standards and procedures. When the plans are submitted to them they are changed by them and sent back out for correction. If they did them in the first place this would eliminate this step and the process would be more effective.
- (MDT - Preconstruction Bureau) Road Design is responsible for developing the plans and we are not experts in this category. It wastes a lot of time for us to "guess" on the Erosion Control plans and then have Environmental have us make corrections.
- (MDT - Preconstruction Bureau) It appears to me we don't do a very good job of removing old erosion control measures such as silt fences, old straw bales, etc.
- (MDT - Preconstruction Bureau) Put someone in charge that has the power to make decisions. You have to fully man and fund the program!

(MDT, MRA, CONT, CONSULT) Current Erosion and Sediment Control Manual

13. Do you currently use any of MDT's erosion and sediment control manuals; help guides, specifications, etc.?
    - (Consultant) Detailed Drawings
    - (Consultant) I use the detailed drawings. I've been told by MDT consultant design that there are no current erosion control manuals or help guides. I have used DEQ's erosion control manual, but it is quite cumbersome and not really written for highway projects.
    - (Consultant) No, MDT's current guide is referred to the contractors and or MDT employees.
    - (Consultant) Yes
    - (Consultant) Yes, detail drawings
    - (Consultant) Yes, we typically use the detail drawings and MDT Std. Specs. Haven't used the manuals, etc.

- (Consultant) Yes
- (Consultant) Yes
- (Contractor) I didn't know they had any.
- (Contractor) We use the specifications from the contract plans and the MDT permitting guide.
- (Contractor) We usually place erosion control based on guidance from MDT personnel.
- (MDT - Construction) Yes
- (MDT - Construction) Standard Drawings
- (MDT - Construction) Yes
- (MDT - District Offices) I use our Standard Specifications, project specific Erosion Control Plans, Detail Drawings for BMPs, the Permitting Guide for Highway Construction Permitting, and help guides such as Designing for Effective Sediment & Erosion Control on Construction Sites.
- (MDT - District Offices) Procedure is in place to produce erosion control plans.
- (MDT - District Offices) The BMP section of detailed drawings - I've never seen anything else.
- (MDT - District Offices) We use the MDT detail drawings.
- (MDT - District Offices) Yes
- (MDT - District Offices) Yes
- (MDT - District Offices) Yes
- (MDT - District Offices) Yes, I use all of them, and they are not enough information for my purposes.
- (MDT - Engineering Division) No. I am aware of them, but in my job I do not use them.
- (MDT - Engineering Oversight Bureau) Yes, MDT's Detailed Drawings (Section 208), Standard Specifications, Supplemental Specifications, the MDT "Permitting Guide for Highway Construction Permitting," and applicable Erosion Control Plans.
- (MDT - Engineering Oversight Bureau) As an EPM, I used all of them. I would like to see them updated and more training for the inspectors in the field.
- (MDT - Engineering Oversight Bureau) Yes
- (MDT - Engineering Oversight Bureau) Yes
- (MDT - Environmental Services) Yes

- (MDT - Environmental Services) Yes
- (MDT - Maintenance Division) No, we do not have such a manual.
- (MDT - Maintenance Division) No, with the heightened awareness of BMPs we will be using them more. Currently we are using the information we learned at the last training.
- (MDT - Maintenance Division) Some yes
- (MDT - Maintenance Division) No
- (MDT - Preconstruction Bureau) Limited
- (MDT - Preconstruction Bureau) Yes
- (MDT - Preconstruction Bureau) No
- (MDT - Preconstruction Bureau) Road Design uses the specifications in the Detailed Drawings. We also develop proposed contours using our Road Design package.
- (MDT - Preconstruction Bureau) No
- (MRA) No
- (MRA) No, I rely on MT DEQ or US EPA or the tribes' expertise and experience, or on the experience of MDT field/HQ personnel.
- (MRA) We typically do not use these documents, but occasionally provide input on them to MDT.

14. Which portions of the current MDT erosion and sediment control documents do you like?

- (Consultant) Detailed Drawings
- (Consultant) None are clearly sufficient to adequately protect all field situations.
- (Consultant) Standard Details and design guidelines.
- (Consultant) The detailed drawings do a good job of describing the various BMPs.
- (Consultant) The detailed drawings.
- (Contractor) Not familiar with the documents.
- (Contractor) See above
- (Contractor) The drawings make it easier to understand what is required.
- (MDT - Construction) It shows BMP use very well for a static type of project.
- (MDT - Construction) Detailed Drawings
- (MDT - District Offices) The field guide portions.

- (MDT - District Offices) The manual with detailed drawings.
- (MDT - District Offices) Detailed drawings with specific information.
- (MDT - District Offices) I use the permitting guide and the standard drawings.
- (MDT - District Offices) The permitting guide is very helpful and so are the detailed drawings.
- (MDT - Engineering Oversight Bureau) The detailed sketches or depictions of the various BMPs.
- (MDT - Engineering Oversight Bureau) I think the detailed drawings are helpful. The Permitting Guide is a little difficult to follow and understand. It does have lots of good information in it.
- (MDT - Engineering Oversight Bureau) The guide in the Detailed Drawings is helpful.
- (MDT - Environmental Services) Most of the documents are outdated.
- (MDT - Environmental Services) There are various sections of each that are effective, but none that are complete or comprehensive.
- (MDT - Maintenance Division) I have used the Standard Erosion Control Work Plan, and the new Maintenance manual.
- (MDT - Preconstruction Bureau) Key to BMPs
- (MDT - Preconstruction Bureau) None
- (MDT - Preconstruction Bureau) I don't mind developing the contours and plan sheets, but applying the BMPs' are definitely out of our expertise.
- (MRA) Using standard BMPs, with symbols, details, explanations, and diagrams has been beneficial for consistency, clarity, and ease of reference.

15. Which portions of the current MDT erosion and sediment control documents do you dislike?

- (Consultant) I have found no guidance to describe in much detail where the various BMPs should be used. Some are relatively obvious (like the ones for a culvert), but there's no guidance concerning how close you need to be to a waterway before you use waterway protection, etc.
- (Consultant) Rigidly enforced compliance.
- (Contractor) BMPs required where they do no good.
- (Contractor) Not familiar
- (Contractor) See above
- (MDT - Construction) There is very little in it that deals with day to day BMPs etc. for a project that has many phases and problems that are associated with each phase.

- (MDT - District Offices) Bad plans
- (MDT - District Offices) Parts of the permitting guide are confusing.
- (MDT - District Offices) The permitting guide is a hard read to determine exactly who the agency is, and what permit is needed, especially to newer employees.
- (MDT - District Offices) Legal paperwork that is difficult to read and interpret.
- (MDT - District Offices) There just isn't enough guidance on what to use and when to use them. When it's acceptable not to protect something and when it is required is very difficult to determine right now.
- (MDT - Engineering Oversight Bureau) The lack of clarity when it comes to trying to determine which permits apply to which situation. And, who is responsible for which permits & who needs to apply for them.
- (MDT - Environmental Services) Most of the documents are outdated.
- (MDT - Environmental Services) The detail drawings were approved and issued without consultation of the individuals that knew what was needed and are for the most part ineffective and in need of major revision.
- (MDT - Preconstruction Bureau) All
- (MDT - Preconstruction Bureau) Standard drawings
- (MDT - Preconstruction Bureau) It is wrong for other agencies to create and finish erosion control plans for the Environmental Section for their submittal.
- (MDT - Preconstruction Bureau) Placing the BMPs
- (MRA) In current MDT "Erosion Control Plan" documents submitted for MPDES storm water permitting, the overall project site map on the cover page could be better, at least for storm water permitting purposes. MDT, and all permittees, will need to start submitting the projects on USGS-maps in the future based on the reissued General Permit. Using USGS maps provides more clarity and consistency with respect to discerning overall topography and surface water features.

16. Do you use other state, or local agencies erosion and sediment control manuals, help guides, etc.? If so, which one?

- (Consultant) Colorado
- (Consultant) No
- (Consultant) No
- (Consultant) No, but over my years of service with the state I reviewed a few manuals.
- (Consultant) See #13
- (Contractor) No

- (Contractor) No
- (Contractor) See above
- (MDT - Construction) No
- (MDT - Construction) No
- (MDT - Construction) No
- (MDT - District Offices) No
- (MDT - District Offices) No
- (MDT - District Offices) No
- (MDT - District Offices) Only what is provided by our staff.
- (MDT - Engineering Division) No, there are some excellent guides and manuals from other states and organizations.
- (MDT - Engineering Oversight Bureau) Personally, I do not.
- (MDT - Engineering Oversight Bureau) No
- (MDT - Engineering Oversight Bureau) No
- (MDT - Engineering Oversight Bureau) No
- (MDT - Environmental Services) California
- (MDT - Environmental Services) Washington State, AASHTO, DEQ, and Forest Service.
- (MDT - Maintenance Division) No
- (MDT - Maintenance Division) Water Quality BMP's for Montana forests.
- (MDT - Maintenance Division) No
- (MDT - Preconstruction Bureau) No
- (MDT - Preconstruction Bureau) No
- (MDT - Preconstruction Bureau) No
- (MDT - Preconstruction Bureau) None that I’m aware of.
- (MRA) No
- (MRA) No
- (MRA) Sporadic reference to various manuals, but nothing in particular.

New Erosion and Sediment Control Manual

17. **(MRA, CONT, CONSULT)** Will a new Erosion and Sediment Control Manual have a significant impact on your group for implementation and training of employees?

    - (Consultant) A new manual will definitely help in selection of BMPs on FWP projects. FWP would probably not use a manual for training.
    - (Consultant) No, the changes being proposed by DEQ in the permitting process will have a substantially greater impact on consultants, in my opinion.
    - (Consultant) Probably not
    - (Consultant) Yes, if MDT or others provide training.
    - (Consultant) Yes, it seems that after erosion control plans are used we end up removing a lot of the BMPs.
    - (Consultant) Yes, time, training and implementation into new projects.
    - (Consultant) No, significant impact anticipated.
    - (Contractor) Yes
    - (Contractor) Yes
    - (Contractor) Yes
    - (MDT - District Offices) From my end I don't know what is wrong with the existing manual.
    - (MDT - District Offices) Yes
    - (MDT - Engineering Oversight Bureau) Yes
    - (MDT - Environmental Services) I hope so.
    - (MDT - Environmental Services) Yes
    - (MDT - Preconstruction Bureau) No
    - (MDT - Preconstruction Bureau) Hydraulics is not involved in temporary erosion control measures.
    - (MDT - Preconstruction Bureau) No, we just do drafting.
    - (MRA) I would think that is dependent upon the Manual and the relative training.
    - (MRA) No, since my agency does not directly regulate erosion control features. We just need to ensure that proper measures are taken to prevent erosion and sedimentation.
    - (MRA) It will be helpful in monitoring construction activities.

- (MRA) Our General Permit, and corresponding statutes and regulations, direct how we proceed with respect to permitting storm water discharges. Internal procedures, guidance, and training are also developed, however. It is possible our internal guidance documents, such as updating the 1996 Montana Sediment and Erosion Control manual, and perhaps training, will be influenced by MDT's new Erosion and Sediment Control Manual.

18. **(MDT, MRA, CONT, CONSULT)** Two options are being considered for the Erosion and Sediment Control Manual. Option one would be a single concise manual covering all aspects of an erosion and sediment control program. Option two would be a multiple volume manual that would cover planning, design, construction, contractors, maintenance, monitoring and removal of erosion and sediment control devices. Please list your recommendations below for either a single or multiple volume manual. If you would prefer a multiple manual, please specify what material should be covered in each volume.

    - (Consultant) A single manual covering all aspects in a divided ring binder with guide specifications available for electronic down loading and printing in a Word format.
    - (Consultant) I prefer a single volume with all of the information in one location.
    - (Consultant) I would consider creating both types of manuals.
    - (Consultant) I would think a single manual would be the most useful.
    - (Consultant) Multiple volumes, definitely. We all have too much paper already, and few people will need all of the volumes. 1. Planning and design. 2. Construction and Contractors maintenance. 3. Monitoring and removal. #3 needs to clearly define responsibility for removal, and if that responsibility is MDT's, they need to start doing it. Many projects have old, useless silt fences blowing in the wind long after vegetation has been re-established.
    - (Consultant) Single Manuel
    - (Consultant) I would prefer a single manual covering all aspects.
    - (Contractor) A multiple volume manual oriented with specific, relevant info for each section.
    - (Contractor) Contractors need one manual that covers all activities that they will be expected to be responsible for.
    - (Contractor) Single manual-keep it as simple as possible.
    - (MDT - Construction) A single manual since we already have enough manuals to take off. Keep all the information in one book that can be updated as needed.
    - (MDT - Construction) For Construction: construction, contractors, maintenance, monitoring, removal.
    - (MDT - Construction) Option 1
    - (MDT - District Offices) A single manual would be the most useful.
    - (MDT - District Offices) I favor one single manual. The rules should be the same for everyone.

- (MDT - District Offices) I think that a single manual would be better, sometimes the multiple manuals includes too much information.

- (MDT - District Offices) Just a single manual would be sufficient.

- (MDT - District Offices) Multiple volumes would work best overall especially for training and reference. A pre-construction volume would be a guide for planners and designers. The construction information, which involves MDT field construction crews and contractors, and post-construction information, which involves MDT Maintenance crews, overlap in the areas of installation, monitoring, and maintenance. Removal is an important part of post-construction.

- (MDT - District Offices) Option one would be used and is needed for field personnel.

- (MDT - District Offices) A single volume would be best as long as it didn't get too large since everything is interrelated. If a single volume were too large though, it would be best to break it into 2 volumes. The first volume would be planning and design; the second would cover the rest.

- (MDT - District Offices) As long as all information is clearly indexed into separate chapters, a single manual would be ok.

- (MDT - District Offices) Single

- (MDT - Engineering Division) Multiple volume manual with field guides for preliminary field review efforts, construction and maintenance. The maintenance field manual would include termination of permit activity.

- (MDT - Engineering Oversight Bureau) If a single volume would not be too large and cumbersome, that would be the most desirable. If that is not possible, the least number of multiple volumes would be the next option. To me, it really wouldn't matter what material is included in each volume, as long as it is indexed and tabbed. Whichever format is adopted, it needs to be "updateable" - to accommodate revisions, errata, etc... And, the manuals must be kept current through an ongoing upgrade program (perhaps electronically for hardcopy printing in the field).

- (MDT - Engineering Oversight Bureau) I think a multiple manual that covers erosion control from A to Z would be best.

- (MDT - Engineering Oversight Bureau) I would rather see one manual that doesn't get too lengthy. A manual that doesn't require hours of reading by the inspectors or EPM's. An example of too lengthy would be the Traffic Engineering Manual of which I have 6-3 ring binders, Part I, II, III, IV, VI VII and supplements.

- (MDT - Engineering Oversight Bureau) Number one

- (MDT - Environmental Services) Multiple manual - 1. Planning & Design, 2. Construction, 3. Maintenance & Stabilization, 4. Procedure & Monitoring.

- (MDT - Environmental Services) Multiple manuals are needed. The break points would be pre-construction and design, construction and maintenance requirements, and maintenance, repair, and removal. There should be cross over for each section so that the different groups know what is required throughout. A committee should be established having representation by each group to review and implement changes.

- (MDT - Maintenance Division) I believe option 2 would be best; we would be able to then just get the volume that would deal with Maintenance. I do not believe we need all aspects in Maintenance just a user-friendly manual on Maintenance.

- (MDT - Maintenance Division) Multiple volume manual.

- (MDT - Maintenance Division) Multiple: What are the erosion control requirements for our standard Maintenance Activities? Culvert cleaning as an example.

- (MDT - Maintenance Division) A single manual so that everyone could answer and question. If they couldn't answer them, they could direct the question to the proper person.

- (MDT - Preconstruction Bureau) Multiple, with one volume on Design and a second volume for Implementation and maintenance.

- (MDT - Preconstruction Bureau) One manual

- (MDT - Preconstruction Bureau) A multiple volume manual would be better because we just need limited information. With this kind of a manual, we can always pick up other sections as needed.

- (MDT - Preconstruction Bureau) Multi-volume manual, all the basic sections plus a section on making and finishing plan sheets for submittal. Also a section on documentation and implantation on plan sheet of delineated wetlands.

- (MDT - Preconstruction Bureau) One concise manual would obviously be preferable. Everyone already has too many manuals sitting on the shelf.

- (MRA) It would seem that "Erosion and Sediment Control" is the subject matter that is of concern. If that is the case, I would not complicate it with multiple manuals.

- (MRA) One manual, because even field engineered features need to consider some of the same things as pre-construction features. Make the whole toolbox available to everyone at once.

- (MRA) Recommend just one manual which is well-organized and broken down into sections. However, this would tend to lean towards multiple volumes in essence. The important thing is to tie roles/responsibilities of parties, and potential issues, together well through cross-referencing/training in other sections or volumes. My concern is that if a permitted operator just focuses (or is trained) on a particular manual which most suits their role, they may actually be missing some necessary duties, conditions, and requirements pertaining to SWPPP development and implementation, inspections, BMP maintenance, etc… Perhaps this could lead to less coordination (and finger-pointing when something is not performed). It should ultimately be a team effort among co-permittees (operators) to ensure all needs are accomplished.

- (MRA) Single=concise

19. **(MDT, CONT)** Would a small, pocket sized, erosion and sediment control field manual for contractors and inspectors be beneficial and why?

- (Consultant) Yes, inspectors are frequently not “up” on the design elements and operational aspects of erosion features, a field manual could offer necessary insights to enable better performance of field duties.
- (Contractor) Yes, forman could carry it with him.
- (Contractor) Yes, our field supervisors would love to have such a reference manual.
- (Contractor) Yes, this would help our field people easily use the available information.
- (MDT - Construction) As long as it refers to the main big manual where appropriate.
- (MDT - Construction) Yes, we already have plenty of books, but the office also needs a large manual.
- (MDT - Construction) Yes. Good reference. We need something small to carry in our vehicles instead of a large manual.
- (MDT - District Offices) Definitely, each inspector and contractor could have one.
- (MDT - District Offices) No, 8.5X11” would be fine.
- (MDT - District Offices) No, the detail drawings in a hard back three ring binder works fine.
- (MDT - District Offices) No, too many things to update when changes are made, they would become out of date. The erosion control plans and detailed drawings should show all details for the project.
- (MDT - District Offices) Yes, as a quick reference guide for the most important BMP data.
- (MDT - District Offices) A small pocket field manual with installation and maintenance information would be helpful.
- (MDT - District Offices) It would be nice if it could concisely cover the main aspects an inspector should be watching in the field.
- (MDT - District Offices) No, not if we have a single manual.
- (MDT - District Offices) Yes, it is easier to take a small manual to the field.
- (MDT - Engineering Division) Yes, it could be something to keep in their field papers, and for quick reference. I used a comic book type of field manual in the past, and it was very effective with equipment operators.
- (MDT - Engineering Oversight Bureau) I think it would be helpful - especially for personnel that may be unfamiliar with erosion and sediment control. It will be a good “quick reference” manual. But, it will be impossible to make such a manual “all inclusive”.
- (MDT - Engineering Oversight Bureau) I think a regular sided binder would be okay, or a CD with a searchable database for the laptops.

- (MDT - Engineering Oversight Bureau) Yes, it would be easy to carry in the field. In most cases if the manual is large, people have a tendency not to use them.

- (MDT - Engineering Oversight Bureau) Yes, it would be easy to take in the field and use as a quick guide and help.

- (MDT - Environmental Services) Yes, quick reference in the field is necessary; it is too hard to bring large amounts of documents with you in a truck or survey van. The small manuals could be reproduced in bulk so each inspector could have one.

- (MDT - Environmental Services) Yes, user friendly.

- (MDT - Maintenance Division) And for Maintenance Personnel.

- (MDT - Maintenance Division) I would imagine, I know one on the maintenance of them would be.

- (MDT - Maintenance Division) Yes, but it needs to be specific to maintenance concerns and operations.

- (MDT - Maintenance Division) Yes, it could contain some type of pictures that would so proper and improper BMPs. This would help Maintenance forces make proper and cost-effective repairs.

- (MDT - Preconstruction Bureau) Possibly, if it is understandable and could be followed.

- (MDT - Preconstruction Bureau) Yes, to be used as a reminder after initial training

- (MDT - Preconstruction Bureau) Yes, extra classroom training wouldn't hurt either.

- (MRA) Pocket sized would be great, but I would suggest making it that size and a three-ring binder, so that updated sheets could be added as required. Make it a living manual, and easy to use.

- (MRA) Yes, especially if it clearly highlights the requirements for normal erosion control.

- (MRA) Of course, in the field, the smaller and more easier something is to carry around, the more it may be used. However, text and diagrams need to be large enough so they are legible, and easily referenced without eyestrain. Also, can you really expect to fit what may ultimately be a relatively thick 8 1/2" x 11" manual into a pocket-sized version? Unless it is broken up by sections or volumes, this may not be feasible while still making it readable.

20. **(MDT)** How should the new manual tie into specifications, detail drawings and other design aids?

- (MDT - Construction) As needed, a good manual could be incorporated into the contract by reference.

- (MDT - Construction) Make it part of the contract as the spec. book and detailed drawings, etc. are.

- (MDT - Construction) Site new manual in specification.

- (MDT - District Offices) Detail drawing numbers should correlate with the specification number.
- (MDT - District Offices) It should be tied directly to our contract documents with reference to them and importantly, consistent with them.
- (MDT - District Offices) References to them - spec#, drawing#.
- (MDT - District Offices) The manual and specifications should be consistent. The manual could be referenced in the specifications similar to the way the detail drawings are.
- (MDT - District Offices) They need to be consistent with the existing data.
- (MDT - District Offices) A new manual should reference existing specs, design aids, and detailed drawing.
- (MDT - District Offices) It must match EXACTLY into our specifications, otherwise we will have claims and the contractor will want additional monies to perform standard duties.
- (MDT - District Offices) Special reference is governing manual and specs.
- (MDT - District Offices) The new manual would not be part of the contract with the contractor so it would need to be a guide that referenced the specifications, detailed drawings, and erosion control plan and clarified the requirements of the contract documents.
- (MDT - Engineering Division) Yes, when and where appropriate.
- (MDT - Engineering Oversight Bureau) If in hardcopy format, all cross-reference ties should be inserted with the applicable provision either in the text itself or at the end of a particular section, not as a supplement and not at the end of the manual. If an electronic format is used, links should be provided to each specification reference.
- (MDT - Engineering Oversight Bureau) All should give the same information. No conflict between them.
- (MDT - Engineering Oversight Bureau) I think it all has to be tied. It should all be referenced especially to specifications. That can be the first argument from a contractor, which is, “Where does it say it in the spec book that I have to do this?”
- (MDT - Environmental Services) The new manual should be a stand-alone document with appropriate sections reproduced in the appropriate manuals.
- (MDT - Environmental Services) They should complement each other and reference accordingly.
- (MDT - Maintenance Division) The manual should be tied into specifications and detailed drawings.
- (MDT - Preconstruction Bureau) It should be made part of the detail drawings and should meet all specifications.

- (MDT - Preconstruction Bureau) It should mesh just as the other section manuals (bridge, road design, traffic, etc.).

- (MDT - Preconstruction Bureau) The closer this manual is tied to the existing resources we use, the better! It keeps things recognizable and familiar.

- (MDT - Preconstruction Bureau) Through the use of the computer all plans and details should be accessible. Standard drawing of detail should only be a one shot deal.

- (MDT - Preconstruction Bureau) The manual should show us exactly how the plans should be drawn, but other than that the actual design should be done by Environmental.

- (MRA) The Manual could be referenced in the specials and thus become a part of the contract.

21. **(MDT)** What obstacles do you foresee in the attempt to consolidate erosion and sediment control planning, design, implementation, monitoring and maintenance into a manual?

    - (MDT - Construction) Keep planning etc. separate from construction.

    - (MDT - Construction) Lot of material to fit into a "user friendly" manual.

    - (MDT - District Offices) Constructability is an issue; we need to get away from steep slopes. This sets the construction phase up for defeat.

    - (MDT - District Offices) It must stay consistent with our contract documents and be user friendly.

    - (MDT - District Offices) No

    - (MDT - District Offices) None at this time.

    - (MDT - District Offices) Understanding what is actually needed and what is not.

    - (MDT - District Offices) Currently review of erosion control devices is not covered under payment; individual items like this need to be covered and explained better than the current manuals.

    - (MDT - District Offices) Inadequate training and oversized egos in regulatory personnel. No team effort with regards to implementation of erosion and sediment control. The attitude is "we need to plump up those dirt stiffs as none of them listen to what we say."

    - (MDT - District Offices) Keeping it concise: The contractors and MDT construction crews need more specific guidance in order to make proper decisions but if the information is too difficult to find the manual will not be used.

    - (MDT - District Offices) This is probably the best way to put a manual together. It just takes time to make sure that all aspects are covered and cross-referenced in the manual.

    - (MDT - Engineering Division) None

- (MDT - Engineering Oversight Bureau) “Learning curve” heartburn only: I think after everyone has a chance to get familiar with the manual, the obstacles will go away.

- (MDT - Engineering Oversight Bureau) It’s a lot of information for people to bother with.

- (MDT - Engineering Oversight Bureau) None, perhaps challenges, time and money, but no obstacles.

- (MDT - Environmental Services) Jurisdictional disputes and the use of plausible deniability in other words if we do not know it we don’t have to acknowledge what is needed.

- (MDT - Environmental Services) Staffing

- (MDT - Maintenance Division) Divide it into separate manuals.

- (MDT - Maintenance Division) Large, confusing, and therefore not practical for use in the field.

- (MDT - Maintenance Division) None

- (MDT - Maintenance Division) Some people may believe that a formal education is required to make some of the required decisions. I feel that it doesn’t take an Engineer to make common sense decisions but it will take some additional training.

- (MDT - Preconstruction Bureau) Different agenda of the different areas, which has control of the document? Environmental? Construction?

- (MDT - Preconstruction Bureau) The rules are always changing and this area of expertise is in the environmental section.

- (MDT - Preconstruction Bureau) Environmental Section will claim they don’t have enough time to implement all of these items involved in a proper Erosion Control Program.

- (MDT - Preconstruction Bureau) I’m not sure of any obstacles for design, but I do know that a lot of this information will not be used very often.

- (MDT - Preconstruction Bureau) It doesn’t lend itself to the use of the road designer because he doesn’t have the necessary expertise to evaluate Erosion practices. The manual would have to make things fail safe.

- (MRA) Requires a paradigm shift. “We’ve always done it this way,” or “we’ve never had to do that before,” is no longer acceptable.

22. **(MDT)** Do you foresee any funding/cost obstacles in the implementation of a new erosion and sediment control manual within your section or bureau?

    - (MDT - Construction) Don’t know

    - (MDT - Construction) Yes, probably a costly undertaking.

    - (MDT - District Offices) No

- (MDT - District Offices) No
- (MDT - District Offices) No
- (MDT - District Offices) No
- (MDT - District Offices) No
- (MDT - District Offices) Probably not
- (MDT - District Offices) No
- (MDT - District Offices) No, more than any budgeted item
- (MDT - District Offices) On my projects, I have never used the entire amount of erosion control monies available for each of my projects.
- (MDT - Engineering Division) None
- (MDT - Engineering Oversight Bureau) If this whole program ever has any hope of succeeding, MDT cannot afford to let funding be a limiting factor. If it ends up being an ala carte program, or if the manual ends up being a one-shot deal, it is doomed from the start. It needs to be an on-going venture.
- (MDT - Engineering Oversight Bureau) No
- (MDT - Engineering Oversight Bureau) No
- (MDT - Environmental Services) No, with the potential of fines implementation, informative instruction will in the long run save.
- (MDT - Environmental Services) Yes
- (MDT - Maintenance Division) No
- (MDT - Maintenance Division) There may not be sufficient manpower within Maintenance.
- (MDT - Preconstruction Bureau) No
- (MDT - Preconstruction Bureau) Not for Environmental Section.
- (MDT - Preconstruction Bureau) I don't see any funding or cost obstacles as long as we are not involved.
- (MRA) Quality work, whether construction or erosion control, usually saves money.

Training Programs

23. **(MDT, MRA, CONT, CONSULT)** Would module training or one all-inclusive training program work better for your group and why?
    - (Consultant) All-inclusive would work better since it would provide exposure to all aspects of erosion and sediment control.

- (Consultant) All-inclusive, saves time and would give a better picture of what is expected.
- (Consultant) As a one person consultant it would, but it would be very difficult to get FWP employees into a training program as they do not use this type of program often enough.
- (Consultant) Module training may be a more efficient use of time.
- (Consultant) Module training would be better since we primarily deal with planning and design and would not be as interested in maintenance, removal, etc.
- (Consultant) Module training, because consultants are generally not involved in construction, monitoring and removal, so that information would not be very beneficial to us.
- (Consultant) One, all-inclusive training, it gives everyone training on the complete program not just one module. Designers benefit from collective information on construction maintenance, actual methods and results.
- (Consultant) Probably the all-inclusive training would work better since all aspects of sediment control from design to implementation would be covered.
- (Contractor) Several short sessions would be best so people did not lose interest.
- (Contractor) We would prefer training in those areas that we would be responsible for, due to time constraints.
- (Contractor) With all-inclusive we have limited time for training. Get everyone together and get it done.
- (MDT - Construction) Some of both depending on whom the training is focused.
- (MDT - Construction) Construction needs their own training for working on the projects.
- (MDT - Construction) Module training: Train the specific units involved. Ex: Construction/Contractor-proper installation, Maintenance- proper vegetation and removal.
- (MDT - District Offices) All-inclusive would be better. We are swamped with training as it is.
- (MDT - District Offices) All-inclusive, because this would be less time spent in a classroom sitting and more time on the project.
- (MDT - District Offices) If a lot of changes are made, training would be required for the designers producing (Ex. the erosion plans).
- (MDT - District Offices) Module - installation and maintenance.
- (MDT - District Offices) Module training, because by the time the project gets out here, sometimes we just need to do the best we can do. It won't do any good for people to know how it was designed in the field, because there are usually reasons it was designed the way it was (extenuating circumstances).

- (MDT - District Offices) Training could be in separate modules with emphasis on the applicable volumes with a brief overview of other volumes.

- (MDT - District Offices) A combination: One course to start with would be good to give the overall picture but then some modules would be necessary to get into the necessary detail.

- (MDT - District Offices) Module training during the slow time of the year. It‘s hard to put people that are used to working outdoors and independently into a classroom environment. Long hours with uncomfortable seating also detract from the learning experience.

- (MDT - District Offices) Module training would work better, because it is easier to understand.

- (MDT - Engineering Division) Module, aimed at the specific activity of the group: design, construction, permitting, maintenance, closure, oversight, etc.

- (MDT - Engineering Oversight Bureau) I would suggest a 2-prong program be used. When the manual first comes available, an “overview” training session is needed to acquaint the user with the manual contents. Then, module-type training could go into depth for each section.

- (MDT - Engineering Oversight Bureau) I think all-inclusive for my group. We need to know about the total package.

- (MDT - Engineering Oversight Bureau) Module training for the different bureaus involved. All the different Bureaus have to know what is happening with the other areas. If a design idea is not constructible, then Design needs to get feedback on why it could not be built.

- (MDT - Engineering Oversight Bureau) Module: People will lose interest if you give them too much all at once.

- (MDT - Environmental Services) For my group the all-inclusive training would be more effective. My group is involved from implementation to closure of the projects.

- (MDT - Environmental Services) Since we oversee all aspects of Erosion control, all-inclusive of all training modules.

- (MDT - Maintenance Division) Module training for maintenance with Maintenance specific information.

- (MDT - Maintenance Division) Module training: We would know what to look for in our field of expertise.

- (MDT - Maintenance Division) No

- (MDT - Maintenance Division) Yes, but it would have to concentrate on the installation and maintenance areas.

- (MDT - Preconstruction Bureau) All inclusive, so that everyone would be on the same page.

- (MDT - Preconstruction Bureau) Depends on the size of the manual. Module might be good if the manual is lengthy.
- (MDT - Preconstruction Bureau) Module for the same reasons as multiple volumes manuals.
- (MDT - Preconstruction Bureau) No
- (MDT - Preconstruction Bureau) We would all get the same information at the same time. Not just what Joe Blow thought was pertinent.
- (MDT - Preconstruction Bureau) Since it's just training in drafting plans, I think one all-inclusive program would work.
- (MRA) All-inclusive would be better use of one block of time.
- (MRA) Usually a comprehensive (2-3 days) training session given on an annual basis brings new employees up to speed and serves as a refresher for old hands. Whether 1 or 3 days, the critical aspect is that it is given repeatedly.
- (MRA) I'm not thinking about our DEQ group so much as the overall "regulated community" when I recommend a basic or general overall training presentation for everybody involved, which may be short in duration, but would allow all parties to see where their role fits in, and what other roles and requirements could potentially affect, interact, or overlap with theirs. Also, a particular party or person's role/responsibility could change during the length of a project. This could be particularly true with respect to achieving "final stabilization," and BMP inspections/maintenance after the construction earthwork has ceased. After this basic or general overall presentation is completed, more focused module training could allow the most efficient in-depth training for specialized or custom roles and responsibilities.
- (MRA) One all-inclusive: Less travel costs, more overlap between subjects.

24. **(MDT, MRA, CONT)** Would your group benefit from hands-on training? If so, what would be the key feature?

- (Consultant) Design, Consult-No. Construction, Consult-Yes.
- (Consultant) Hands on is the best method, but I'm not sure what is meant by the key feature.
- (Consultant) Key feature would be a visit to an active construction project where various measures are being implemented, to see them in person and be able to understand their function/intent.
- (Consultant) Yes, a better understanding of what exactly is necessary.
- (Contractor) I think videos would benefit our people just as much.
- (Contractor) No
- (Contractor) Yes, they could demonstrate proper installation.
- (MDT - Construction) Not necessarily, good visual aids are a definite benefit.

- (MDT - Construction) Would help to actually see the BMPs in place.
- (MDT - Construction) Yes, proper installation and location of BMPs
- (MDT - District Offices) Hands-on is always better; it's hard to tell without knowing what the proposed plan is.
- (MDT - District Offices) It couldn't hurt, but more so the contractors.
- (MDT - District Offices) No, most field people know what needs to be done, this is not new to us, we've had hands on for 8 years now.
- (MDT - District Offices) Videos of projects showing what works and what doesn't may give a broader overview of many different situations.
- (MDT - District Offices) We would benefit from project visits and review by the trainers.
- (MDT - District Offices) Hands on of good/bad installation and good/bad maintenance.
- (MDT - District Offices) Yes, field instructions with everyone involved getting dirt under his or her fingernails and on their shoes.
- (MDT - District Offices) Yes. For this to work would have to use real world situations and should not focus on what has been being done wrong in the past. Show a situation, work on a solution(s) together, and discuss the different ideas and what would be the best course of action.
- (MDT - Engineering Division) Yes, lots of examples and how to handle the various situations.
- (MDT - Engineering Oversight Bureau) Not sure about the intent of this question. Are you asking about hands-on training for use of the manual, or are you asking about hands-on training for installing BMPs, etc.?
- (MDT - Engineering Oversight Bureau) Yes, can you find any two people that agree on all the correct locations to install the BMPs?
- (MDT - Engineering Oversight Bureau) Yes, field trips would be good and lots of photos of good and bad installations.
- (MDT - Engineering Oversight Bureau) Yes, more than photos of what is wrong. Show what is wrong and how it is fixed.
- (MDT - Environmental Services) Yes, observing how BMPs work or don't work in the field.
- (MDT - Environmental Services) Yes, to be able to observe the methods and be able to inspect as to proper installation and maintenance.
- (MDT - Maintenance Division) Maintenance issues only.
- (MDT - Maintenance Division) Yes, BMP installation and repair.

- (MDT - Maintenance Division) Yes, proper maintenance and information on proper use.
- (MDT - Maintenance Division) No
- (MDT - Preconstruction Bureau) Possibly, it would give the ability to know what is actually happening.
- (MDT - Preconstruction Bureau) Yes, what is expected as a delivery package.
- (MDT - Preconstruction Bureau) No
- (MDT - Preconstruction Bureau) No
- (MDT - Preconstruction Bureau) No
- (MDT - Preconstruction Bureau) Again we won't be determining the BMPs to be used, so hands-on training is not needed to do drafting.
- (MRA) "Hands-on" training usually increases retention of new information.
- (MRA) Yes, but the key feature would be for making us better aware of BMPs so that our regulatory decisions mesh well with those of the other agencies.
- (MRA) We should benefit. Interaction between MDT and DEQ is typically a constructive and mutually-beneficial effort. Training which is conducive to pulling us onto common ground and understandings with respect to requirements, potentially including hands-on training, should be beneficial.
- (MRA) Yes, hands-on, or at least with examples of various techniques to examine.

25. **(MDT, MRA, CONT, CONSULT)** Would a training booklet be beneficial during the training and why?

    - (Consultant) A booklet provides space for notes and additional information. More pictures.
    - (Consultant) The manuals should be complete, so they can be used as a reference during the training.
    - (Consultant) Yes, that way it could be looked over at a later date to better understand the class.
    - (Consultant) Yes, because it would reduce the need for note taking and any notes taken would be in the proper section when stored.
    - (Consultant) Yes, because it's easier to follow the presenter of a program if a manual is available.
    - (Consultant) Yes, easier to follow along and have a record of the training.
    - (Consultant) Yes, for note taking and better understanding between theory and practice.
    - (Consultant) A complete manual may be the only document required.

- (Contractor) I think having the field manual (Question #19) would benefit the people during training.
- (Contractor) Yes, it would be something to refer back to.
- (Contractor) Yes, we would be able to follow along.
- (MDT - Construction) Yes, something to refer back too.
- (MDT - Construction) Yes, use as reference material.
- (MDT - District Offices) No
- (MDT - District Offices) No, we have plenty of manuals.
- (MDT - District Offices) Not sure
- (MDT - District Offices) Yes
- (MDT - District Offices) Yes, could be used for future reference.
- (MDT - District Offices) Any field examples would be beneficial.
- (MDT - District Offices) Certainly and it should contain examples etc.
- (MDT - District Offices) Yes, most people make notes and doodle during seminars.
- (MDT - District Offices) Yes, training is always best if it is based on some sort of reference the trainee can use during the course of his job and that they have written notes on during the class to help them out later.
- (MDT - Engineering Division) Yes, tests will be important to be sure the folks have learned what we are trying to do.
- (MDT - Engineering Oversight Bureau) Yes, it could be a useful reference document for the user after one leaves the training sessions. Others that don't receive the formal training can also use it.
- (MDT - Engineering Oversight Bureau) I have taken training with a booklet that had the same photos as shown in class with an open area for comments next to the photo for me to write in, that gives me a chance to make notes to myself.
- (MDT - Engineering Oversight Bureau) Yes, it would be good reference material.
- (MDT - Engineering Oversight Bureau) Yes, to help follow along.
- (MDT - Environmental Services) Yes, a training booklet to add notes to would be needed.
- (MDT - Environmental Services) Yes, for note taking, and it personalizes the course to some extent.
- (MDT - Maintenance Division) Yes, it would be used as a reference material.
- (MDT - Maintenance Division) Yes, you would know where to reference.

- (MDT - Maintenance Division) Yes, if it was a list of "reminders" that they could refer too when installing or maintaining BMPs.
- (MDT - Preconstruction Bureau) Yes, something to refer to and take notes for future reference.
- (MDT - Preconstruction Bureau) Yes, to be used as reference, this could be stored on line. My office is full of these things!
- (MDT - Preconstruction Bureau) No
- (MDT - Preconstruction Bureau) Yes, it should include computer procedures.
- (MDT - Preconstruction Bureau) Yes, you could cover the booklet page by page and show them what is expected.
- (MDT - Preconstruction Bureau) I suppose, to show us how the plans should look.
- (MRA) Train right out of the manual you will be using, do not use a separate manual. I guess this means that you need to include examples in the manual, but that is not a bad thing.
- (MRA) Training booklets are usually only as valuable as the resource data they contain.
- (MRA) Since the manual could be lengthy and cumbersome to read or follow in depth for many during a training session, a "training booklet" or a similar highlighted/bulleted summary of major points could be beneficial.
- (MRA) Yes, coordinating information, transfer back to workplace.

26. **(MDT, MRA, CONT, CONSULT)** Does your group learn best from a projected presentation or a paper copied presentation?

- (Consultant) Both
- (Consultant) Both are effective, especially in conjunction with each other.
- (Consultant) No preference
- (Consultant) Paper
- (Consultant) Paper copied is best, it allows notes to be taken on the paper copies, and allows for later reference of material.
- (Consultant) Power point presentations with the manuals and skilled, knowledgeable trainers.
- (Consultant) Projected presentation with a training booklet.
- (Consultant) I feel a projected presentation with a hardcopy of the presentation for the group.
- (Contractor) Projected presentation

- (Contractor) Use both please
- (Contractor) Video presentations combined with pre-printed handouts (field manuals) would be good.
- (MDT - Construction) A combination of both.
- (MDT - Construction) Both
- (MDT - Construction) The use of both
- (MDT - District Offices) Both
- (MDT - District Offices) Both: And paper copies work well for notes.
- (MDT - District Offices) It depends on how technical the presentation material is. A projected presentation with examples and photos would work well.
- (MDT - District Offices) Projected
- (MDT - District Offices) Projected
- (MDT - District Offices) Some of both
- (MDT - District Offices) A combination is usually best.
- (MDT - District Offices) My group learns best from hands on training. Colleagues and administration work best in the indoor environment.
- (MDT - District Offices) Paper copies of a projected presentation with many photos of different examples
- (MDT - Engineering Division) A bit of both
- (MDT - Engineering Oversight Bureau) A well-done PowerPoint presentation would be preferable over hard copy handouts, unless handouts are provided for note keeping purposes.
- (MDT - Engineering Oversight Bureau) No opinion. A combination would be fine.
- (MDT - Engineering Oversight Bureau) Project
- (MDT - Engineering Oversight Bureau) Projected with a training manual to write in.
- (MDT - Environmental Services) A combination of both methods would be best as we have individuals that are both written and visual learners.
- (MDT - Environmental Services) Combination of both
- (MDT - Maintenance Division) Both
- (MDT - Maintenance Division) Projected
- (MDT - Maintenance Division) Projected

- (MDT - Maintenance Division) A projected presentation that includes take-home material that can be referred back to.
- (MDT - Preconstruction Bureau) I would guess projected
- (MDT - Preconstruction Bureau) No
- (MDT - Preconstruction Bureau) Paper copied presentation
- (MDT - Preconstruction Bureau) Projected
- (MDT - Preconstruction Bureau) I suppose a paper copied presentation would work.
- (MRA) Best by following along on handouts that show up on the screen. It drives us bananas when we have handouts that do not match the presentation. (It probably drives you crazy as well!)
- (MRA) Depends somewhat on the material being presented.
- (MRA) Projected
- (MRA) Provide a paper copy, but go over the same material (at least for the major points) in a projected form during any training. This is good for promoting discussion and questions, which are often beneficial to many.

27. **(MDT, MRA, CONT, CONSULT)** Should training sessions be divided into different disciplines, i.e. designers, field crews, contractors?

    - (Consultant) No, mixed disciplines provide better discussions and interaction between disciplines using the erosion control manual.
    - (Consultant) Not necessarily, it would benefit designers to know what field crews are doing, and would benefit contractors to know what designers are up too. Communication and overall knowledge is beneficial.
    - (Consultant) That would be a good idea to separate the training.
    - (Consultant) Yes
    - (Consultant) Yes
    - (Consultant) Yes, for some aspects, sometimes it is beneficial to get the perspectives of all disciplines.
    - (Consultant) Yes, you get a better response from the people if they are with their own kind.
    - (Consultant) It may be beneficial for the designers and contractors training sessions to be at the same time to obtain input from both sides.
    - (Contractor) Yes
    - (Contractor) Yes
    - (Contractor) Yes, each group has different needs.

- (MDT - Construction) There are advantages for both. There should be concentrated training for each discipline and also combined for disciplines that work together at different times of a particular project.
- (MDT - Construction) Yes
- (MDT - Construction) Yes
- (MDT - District Offices) No
- (MDT - District Offices) No
- (MDT - District Offices) Not sure
- (MDT - District Offices) Yes
- (MDT - District Offices) Yes
- (MDT - District Offices) Yes
- (MDT - District Offices) If we are all working to the same goal, why do we have to be trained different?
- (MDT - District Offices) No, in this area interaction is necessary.
- (MDT - District Offices) No, lump us all together so we know what to look for. My field crews need to learn how to add a design element in the field to help control erosion.
- (MDT - Engineering Division) Yes
- (MDT - Engineering Oversight Bureau) Designers should be included in the field crew training. If the Designers do not have a field background, it is essential they develop a working knowledge of what is needed and "doable" in the field. Simply being able to draw features (manually or through CADD) on paper does not mean it is practical or even build able. A common sense approach.
- (MDT - Engineering Oversight Bureau) All together
- (MDT - Engineering Oversight Bureau) An overview of all aspects of the sessions should be given to everyone then broken out into specific areas. That way everyone has an idea of what is required and why.
- (MDT - Engineering Oversight Bureau) No, let everyone hear the same thing.
- (MDT - Environmental Services) That will depend on the type of training.
- (MDT - Environmental Services) Yes
- (MDT - Maintenance Division) Definitely
- (MDT - Maintenance Division) Yes
- (MDT - Maintenance Division) Yes, maintenance

- (MDT - Maintenance Division) Yes
- (MDT - Preconstruction Bureau) NO! We need to work together and hear the same presentation
- (MDT - Preconstruction Bureau) Yes
- (MDT - Preconstruction Bureau) No, the right hand should know what the left hand is up to. Find out what works and what doesn't.
- (MDT - Preconstruction Bureau) Yes, but some basics from other fields would probably be helpful.
- (MDT - Preconstruction Bureau) Definitely
- (MRA) No
- (MRA) Not necessarily, but the course should keep in mind the different aspects of development, implementation and maintenance of BMPs.
- (MRA) Perhaps, but very broadly. Above, there was a question about having one training session or various module training sessions. Breaking up the training too much could lead to inconsistencies and confusion when trying to coordinate the overall effort. Also, the right hand needs to understand what the left hand is doing, and properly coordinate with them. How training is conducted or broken up, in part, depends on the manual's structure as well as the volume and type of parties participating in the training. I'm not familiar enough with these at this time to have an opinion one way or the other.
- (MRA) Yes

28. **(MDT, MRA, CONT, CONSULT)** Would a training section in the manual be beneficial to your group and why?

    - (Consultant) I don't see the value in a training section. It seems to me it would just repeat information elsewhere in the manual.
    - (Consultant) No—One man consultant—FWP would not have the interest in a training program for their group.
    - (Consultant) Not necessarily, consultants need all perspectives.
    - (Consultant) Yes, if we don't use the information on a continual basis it would be a good review.
    - (Consultant) Yes, it would assist with any in-house training we might conduct.
    - (Consultant) Yes, new employees could reference the manual.
    - (Consultant) Yes, we have several new employees who have not worked with erosion control.
    - (Consultant) Not sure. Generally, a good quality manual with several representative examples is adequate.

- (Contractor) No
- (Contractor) Yes, different needs
- (MDT - Construction) Yes, it would help individuals become self-taught if the opportunity arises.
- (MDT - Construction) No, not if classroom/hands-on training was made available.
- (MDT - Construction) Yes, that's the book being used in the field.
- (MDT - District Offices) No
- (MDT - District Offices) No
- (MDT - District Offices) Not sure
- (MDT - District Offices) Yes, for new employees.
- (MDT - District Offices) Yes, then we may not need to do so much of the other training.
- (MDT - District Offices) No, training in a manual without a presentation is no good. People do not learn from only reading.
- (MDT - District Offices) The training should be based on the manual. I don't know that there needs to be a training section.
- (MDT - District Offices) Yes, any help in a manual is good for personnel that does not attend training or will hire after training session.
- (MDT - Engineering Division) Yes, I have design, construction and environmental, they all need help on their roles.
- (MDT - Engineering Oversight Bureau) Not sure what this question means, either?
- (MDT - Engineering Oversight Bureau) Yes, it would be an opportunity to become familiar with the manual.
- (MDT - Environmental Services) Yes, in the previous years I have been the trainer.
- (MDT - Environmental Services) Yes, we provide guidance on an ongoing basis.
- (MDT - Maintenance Division) I do not feel it belongs in the manual, I believe training should be separate.
- (MDT - Maintenance Division) No, we feel that we would benefit from a hands-on approach with examples provided.
- (MDT - Maintenance Division) Yes, you would know where to specifically look.
- (MDT - Maintenance Division) No, there is not sufficient "free time" to realistically complete it.

- (MDT - Preconstruction Bureau) Yes, because consultants could take the training by purchasing the manual and less time would be spent training them how to do it, and they would know what is expected of them from the start and not have to figure it out as they go.

- (MDT - Preconstruction Bureau) No

- (MDT - Preconstruction Bureau) Yes, simply to explain and show where to find stuff.

- (MDT - Preconstruction Bureau) Probably to refresh anyone who didn't do the drafting every day.

- (MRA) I wouldn't recommend it. It will be comprehensive enough without a training section.

- (MRA) No, but include pertinent examples throughout the manual.

- (MRA) It can only be helpful for DEQ and MDT to strive to better understand how the other department works with respect to sediment and erosion control, and storm water permitting requirements. As requirements and procedures on both ends are changing, this makes this realized benefit particularly true.

- (MRA) Yes, allow for info for contractors on each project.

29. **(MDT)** Do you foresee any funding/cost obstacles in the implementation of a new erosion and sediment control training program within your section or bureau?

    - (Contractor) I don't think we need that. If there were places in the manual to make notes during training, that would be good.

    - (MDT - Construction) No

    - (MDT - Construction) Don't know

    - (MDT - Construction) No

    - (MDT - District Offices) Erosion Control is just another reason that all projects are continually going up in price.

    - (MDT - District Offices) No

    - (MDT - District Offices) No

    - (MDT - District Offices) No, as long as it's reasonable.

    - (MDT - District Offices) No, not unless training budgets are cut.

    - (MDT - District Offices) No

    - (MDT - District Offices) As with any new system, budget restraints will dictate training requirements.

    - (MDT - District Offices) No

- (MDT - District Offices) No, we have a training group set up already. We need to schedule the training in the winter/spring when not in construction.
- (MDT - Engineering Division) I do not see that at this time, but cost is always an issue if it becomes too visible. We have paid fines of in excess of $200,000. We must stop money going to fines. I'd rather see it go to training and field application of BMPs.
- (MDT - Engineering Oversight Bureau) Not really
- (MDT - Engineering Oversight Bureau) No
- (MDT - Engineering Oversight Bureau) No
- (MDT - Engineering Oversight Bureau) No
- (MDT - Environmental Services) No
- (MDT - Environmental Services) Yes
- (MDT - Maintenance Division) It depends how in depth it gets.
- (MDT - Maintenance Division) No
- (MDT - Maintenance Division) FTE's
- (MDT - Preconstruction Bureau) No
- (MDT - Preconstruction Bureau) Not for Environmental Section.
- (MRA) Compare the costs of claims versus training and manuals.

MDT/ Regulatory Agency Interaction

30. **(MDT, MRA)** What could be done to minimize response time problems between MDT and MRA when there is a problem with erosion and sediment control non-compliance?
    - (MDT - Construction) Better communication/interaction between the agencies.
    - (MDT - Construction) We have e-mail now.
    - (MDT - District Offices) Cut out the email and pick up the telephone, get to the project and take a look.
    - (MDT - District Offices) Have the Regulatory agency do it's own monitoring.
    - (MDT - District Offices) Make contractors more subject to fines for violations.
    - (MDT - District Offices) Quick response and good communication from both sides is needed. The field needs to notify the Agencies immediately of problems and the Agencies need to have adequate staff to respond and review.
    - (MDT - District Offices) The administration should stress that we are all state agencies and should be working together, not against each other.

- (MDT - District Offices) Additional staffing and good communication.
- (MDT - District Offices) Cutting red tape that will cause supervisors heartburn. Any time you threaten monetary penalty, dotting the I's and crossing the T's will be done before blame is put on anyone.
- (MDT - District Offices) Have dedicated person on erosion control like we have on traffic control.
- (MDT - District Offices) More compliance reviews to help improve what we are trying to accomplish rather than constant threats of violations. We do some things quite well but nothing is ever said about the good, only the non-compliant items. We should be working together to improve our efforts.
- (MDT - Engineering Division) More communication, maybe a liaison position, more qualified MRA folks in transportation activities, leadership issues.
- (MDT - Engineering Oversight Bureau) By ensuring there is adequate and qualified staffing levels to respond to field issues as they arise. I don't know that a central, "clearinghouse" approach would work in this case, as it seems each of the regulatory agencies want to retain their own authority.
- (MDT - Engineering Oversight Bureau) A person that can be reached at all times. (During the work day)
- (MDT - Engineering Oversight Bureau) Better planning by the contractor. More and regular communications between MDT and MRA.
- (MDT - Engineering Oversight Bureau) District based MRA
- (MDT - Environmental Services) Make sure we have an open line of communication with agencies and keep each other informed of situations and concerns. Try to address situations on an informal level.
- (MDT - Environmental Services) Need a set procedure for the documentation, and mitigation measures as well as being able to identify potential violations and problem areas.
- (MDT - Maintenance Division) Have local environmentalists
- (MDT - Maintenance Division) Maintenance needs a contact person that works and deals exclusively with maintenance concerns.
- (MDT - Maintenance Division) I am not aware of a problem.
- (MDT - Preconstruction Bureau) Flatten the lines of authority and empower the employees.
- (MRA) Avoid non-compliance, and if there is non-compliance, you must realize that part of any penalty winds up being the undetermined amount of Regulatory Agency time spent on non-compliance issues when our time could be better used reviewing projects and processing permits. Remember, the projects being delayed are MDT and Contractor projects, not the regulatory agency projects. That sounds harsh, but it is the truth.

- (MRA) The Project Manager could make contact with the jurisdictional agency at the start of the Project and arrange a "hot line" for problem solutions. If the contact is not there, who does he talk to, if something happens on the weekend what should they do? Etc.

- (MRA) Have more time, resources, peoplepower at MDT - perhaps a hotline with one responsible party and chain of contact info.

- (MRA) The DEQ storm water permitting requirements are established and fixed in the statutes, rules, and general permits. The operators (permittees) and regulated community need to make a stronger effort to become familiar with general permit requirements, particularly SWPPP development and implementation. More specifically, improving self-monitoring (inspection), and ensuring BMP improvements and maintenance are performed as required and as soon as possible, would help to further minimize compliance problems. Adequate staff, prioritization, and attention needs to be devoted to this effort in order improve and ensure better compliance.

31. **(MDT, MRA)** Are communications/interactions between MDT and MRA's adequate?

- (MDT - Construction) I don't feel that they are. See No 30.

- (MDT - Construction) Don't really know

- (MDT - Construction) No

- (MDT - District Offices) I don't know yet

- (MDT - District Offices) It could be better if there was a list of names and telephone numbers in the manual on who to contact in case of a problem.

- (MDT - District Offices) No

- (MDT - District Offices) No

- (MDT - District Offices) The permitting process is too slow. There have been some slow response time problems.

- (MDT - District Offices) Depends on whose shoes you are standing in.

- (MDT - District Offices) In most cases

- (MDT - District Offices) Yes

- (MDT - Engineering Division) You can always improve communication, and I know we can. We do OK right now, but there is room for improvement.

- (MDT - Engineering Oversight Bureau) There is ALWAYS room for improvement, regardless of how good one thinks it might be.

- (MDT - Engineering Oversight Bureau) I think they are getting better, but I don't know if they are adequate.

- (MDT - Engineering Oversight Bureau) I would like to see more MRA in the field for hands on assistance when needed by the field crews.

- (MDT - Engineering Oversight Bureau) No
- (MDT - Environmental Services) No
- (MDT - Environmental Services) Yes, some need improvement.
- (MDT - Maintenance Division) Most of the time
- (MDT - Maintenance Division) No, we feel that there is not a contact person for maintenance.
- (MDT - Maintenance Division) I do not deal directly with MRA's; I go through the District Biologist.
- (MRA) Apparently not, from the claims I've seen.
- (MRA) Yes, in the case of our agency.
- (MRA) Considering staffing and workload on both ends, communication/interaction, is adequate. We have made improvements in working together and communicating in recent years.
- (MRA) Good - can always get better.

32. **(MDT, MRA)** If communications/interactions between MDT and MRA's are adequate, list reasons.

    - (MDT - District Offices) I don't think we know who the MRA is.
    - (MDT - District Offices) Required by law
    - (MDT - District Offices) See people every day on project - need contractor to put 1 person in charge of erosion like they do for traffic control. MDT needs to pay for erosion like traffic control.
    - (MDT - District Offices) There is currently not an adversarial relationship. We are trying to work with them to attain the same goal.
    - (MDT - Engineering Division) We do have meetings, we do know one another, we are committed to protecting the state's water quality.
    - (MDT - Engineering Oversight Bureau) I don't feel I'm qualified to answer this question.
    - (MDT - Environmental Services) Good working relationship and understanding of the responsibilities of the MRA.
    - (MRA) Dedicated personnel in our agency and in MDT to deal with our regulatory issues. We also coordinate priorities, which helps MDT understand our workload and helps us understand the scope and scale of MDT's program.

33. **(MDT, MRA)** If communications/interactions between MDT and MRA's are not adequate, list reasons.

- (Consultant) Most MDT employees do not want to take advice from the outside agencies unless a non-compliance notice has been issued. MDT does not really accept the rules and regulations that are imposed on them.

- (MDT - Construction) More compliance reviews to help improve what we are trying to accomplish rather than constant threats of violations. We do some things quite well but nothing is ever said about the good, only the non-compliant items. We should be working together to improve our efforts.

- (MDT - Construction) Lack of interaction with MRA early on during the construction phase to ensure proper compliance with MDT and the contractor.

- (MDT - District Offices) I don't think we know who the MRA is.

- (MDT - District Offices) Other than the MDT Environmental Bureau, we have very little communication with the MRA's unless they are citing us for a violation.

- (MDT - District Offices) Perhaps inadequate staffing on both sides may be a factor.

- (MDT - District Offices) The regulatory agencies have too much turn around time on approving permits or changes.

- (MDT - District Offices) Oversized egos: Our job is to help the environment, not someone's career.

- (MDT - District Offices) There are problems when there is the perception on MDT's part that the MRA is "out to get" them or the contractor on a job. This is also true if the MRA has the impression the contractor and MDT are not making an adequate effort to control erosion on a project.

- (MDT - Engineering Division) Personalities, lack of knowledge of each's workload, lack of training.

- (MDT - Engineering Oversight Bureau) There seems to be an awful lot of "second-guessing" by MDT field personnel, when trying to comply with permits requirements. As it has been pointed out at recent Environmental Workshops, what is OK with one agency might not be OK with another. Who does MDT answer to? Who should MDT answer to?

- (MDT - Engineering Oversight Bureau) Fear. I don't believe the people in the field believe the MRA are there to help them, just cause them problems.

- (MDT - Engineering Oversight Bureau) Shortage of personnel.

- (MDT - Environmental Services) Lack of understanding of MRA responsibilities, short staff of MRA.

- (MDT - Environmental Services) Try to hide problems, slide the work through by taking risks to save time, money or what they feel is extra work and not needed, (It's dry, why do we have to have a diversion channel or method to pass water through?)

- (MDT - Maintenance Division) No contact person

- (MRA - FHWA) Maybe to being re-active to erosion control problems, rather than pro. Also, there are always unanticipated situations that develop with no “plan b” in place.

- (MRA) There is still some disconnect between design and ultimate implementation, this is understandable. Trying to keep communication open is tough with limited resources. Scheduling site visits, inspections at the start of project might help.

34. **(MDT, MRA)** Please list areas that can be improved to ensure proper erosion and sediment control permitting, selection, implementation, monitoring, maintenance and removal.

    - (Consultant) Just about all the above could be improved but MDT needs to take the lead to ensure all the areas listed are addressed.

    - (MDT - Construction) I have noted some areas in the answers above.

    - (MDT - Construction) List in plans what permits are needed.

    - (MDT - Construction) Training

    - (MDT - District Offices) Removal takes to long.

    - (MDT - District Offices) The only thing I am aware of is elimination of violations during construction. This is controlled by the contractors operation.

    - (MDT - District Offices) There are too many shady areas on who the regulatory agency is. The agencies themselves have too many variables on if a permit is needed, or if the change warrants additional permitting, etc.

    - (MDT - District Offices) Training, communication, and staffing.

    - (MDT - District Offices) Increased staffing, training, and guidance.

    - (MDT - District Offices) More manuals

    - (MDT - District Offices) Selection: Have designers aware of newest erosion control items available in market.

    - (MDT - Engineering Division) Improved skills, knowledge and ability of staff, better information, performance objectives well defined for individuals, better definition of roles in the process.

    - (MDT - Engineering Oversight Bureau) Contractors need to be educated about what permits MDT has secured. Contractors need to be educated about their responsibilities concerning permits they need to acquire. Contractors need to be educated about the relevance and significance of protecting the resources.

    - (MDT - Engineering Oversight Bureau) Consistency between the MRA’s

    - (MDT - Engineering Oversight Bureau) More and better training: Make something that is easy to follow.

    - (MDT - Engineering Oversight Bureau) Training, more staff, more frequent reviews of projects.

- (MDT - Environmental Services) General understanding of what's required, training, contractor buy-in, proper staffing.

- (MDT - Environmental Services) Training, delegation of authority, adding erosion and sediment controls into the bid documents, making the erosion and sediment controls either lump sum and the total responsibility of the contractor or make erosion and sediment controls be paid for like traffic controls.

- (MDT - Maintenance Division) It will all be helped if we have Division representation.

- (MDT - Maintenance Division) Training, coordination, and communication.

- (MDT - Maintenance Division) Training and a reduction in the number of "levels of involvement" within MDT.

- (MDT - Preconstruction Bureau) More education and training.

- (MDT - Preconstruction Bureau) All the paper work/implementation should be done in the one agency section.

- (MRA) As stated previously in this survey, you could label each BMP installation in the field with a unique ID number or code, or label each one with a project name and project station. Then ensure that there is a clear way to identify the structure or BMP on the appropriate set of construction plans. Also, don't pay the contractor until the project is in compliance. Program a maintenance project each season to remove BMP's from completed projects that are no longer needed.

- (MRA) Personnel need to understand the cost of poor erosion control; money, time, loss of resources, loss of public trust and loss of credibility with resource agencies usually far outweighs any extra effort to avoid environmental damage. (Paradigm shift)

- (MRA) Need to establish vegetative success threshold for removal of silt fencing and remove old fencing - Need to have specific requirements for vegetation success and trained personnel that understand vegetating success and erosion potential, i.e.: more money, resources towards monitoring and eventual removal (or greater use of straw waddles.

- (MRA) See responses above

35. **(MDT, MRA, CONT, CONSULT)** Please provide any general comments about erosion and sediment control issues that may not have been covered in this survey or expand on questions listed above.

    - (Consultant) My understanding is that DEQ is streamlining the permitting process. That will substantially reduce problems that consultants have and that contractors have in starting the project. It will probably have a negative effect on the quality of the erosion control plans, however. When everybody's in a hurry, the last item can be easily left out.

    - (Consultant) The DEQ needs to be involved and trained. It would be helpful if the EC plans could be reviewed and approved prior to going to contract when they are included in the bid packages with final application and approval given to Contractor

signed documents. Timing is critical on many projects and the approval delays become an issue.

- (Contractor) A simple (field) orientated training and reference guide would help contractors' employees because of more understanding of the needs and requirements for erosion control.

- (Contractor) The process has to be streamlined. We need one point of contact for all permits. That office needs to understand contractors and the time obstacles they face with the short construction season in Montana. I'm tired of hearing that it's someone else's problem in another agency. The MDT needs to be the point of contact, but they have to be motivated about helping the contractor, not slowing the process.

- (Contractor) We would like to see bid items for the various BMPs that will be used on a project.

- (MDT - Construction) Should only have one agency (committee) doing the permitting so there are no conflicts between agencies on stipulations to the permits.

- (MDT - District Offices) I feel the permitting process and the violation process can be streamlined. The permitting process takes too long and the violation process is directed at MDT when it should be directed at the contractor who is doing the actual work and creating the violations.

- (MDT - District Offices) I guess it isn't clear to me which part of the current procedure isn't working. More information about what is wrong or broken would be helpful.

- (MDT - District Offices) We did not just fall off the turnip truck, we have detailed drawings now, the plans could be improved, follow up inspection could be more frequent and the contractor should be bidding the items, it has been 10 years or more, the department should be able to come up with competitive pricing for the erosion control items.

- (MDT - District Offices) It is a very good survey. Sorry for getting up on a soapbox and slinging sediment.

- (MDT - District Offices) MDT needs a dedicated person to review all erosion control for all projects in district. Field crews are not sufficiently trained to perform this job. Contractor needs to assign individual to maintain BMP's like they already maintain Traffic Control devices.

- (MDT - Engineering Division) This is a continual process improvement activity, and we need to continually look for ways to improve our actions and impacts on the state's waters. We need to provide better tools, and keep talking to one another.

- (MDT - Environmental Services) Responsibility of each party, when to install, inspection authority of each party, The chain of command and where each party can go to for arbitration in case of disagreements.

- (MDT - Maintenance Division) Training is essential.

- (MDT - Maintenance Division) Requests for permits periodically take months when they are identical to other projects that only take a few days. Sometimes requests for permits are lost or forgotten. Some Maintenance personnel may not fully understand

when permits are necessary and that the BMPs are a required component of the permits. Finally, there are BMPs in place that have been overlooked for years.

- (MDT - Preconstruction Bureau) The BMPs need to be nearly self evident to be properly installed and maintained. This work is usually done by the least experienced laborers on a project, and it needs to be simple and clear.

- (MDT - Preconstruction Bureau) Road Design doesn't get too involved in the erosion control process. I think this is why we get frustrated when asked to do this work. We spend a lot of time making plans for environmental, then they turn around and have tons of corrections for us to make. Time is wasted and people get frustrated during this phase.

- (MDT - Preconstruction Bureau) The construction of the Erosion Control Plans.

- (MDT - Preconstruction Bureau) The fact that Road Design has a small part in the design of Erosion control and that a Manual might be un-needed for us.

- (MRA) It's good to see an effort to address this area. If the State can save money on claims, that provides funds for roads and employees.