MONTANA

Forestry Best Management Practice (BMP) 2016 Monitoring Report

Executive Summary

Montana's water quality protection program as it applies to forest management/timber harvest involves both a regulatory and a voluntary approach. Since the 1970's, non-regulatory Forestry Best Management Practices (BMPs) have provided guidance on water quality protection standards for harvest and other types of operations. At the same time, concern over impacts of forest management on Montana's watersheds prompted the 1987 Montana Legislature to pass House Joint Resolution 49. This resolution directed the Montana Environmental Quality Council (EQC) to study "how current forest management practices are affecting watersheds in Montana." The EQC established a Forestry BMP technical committee that developed Montana's first statewide forestry BMPs in 1987. In 1989 an interdisciplinary working group released the revised Forestry Best Management Practices we still use today.

That same year, the Montana Legislature enacted the BMP Notification Law (76-13-131 MCA), which requires private landowners to notify the Montana Department of Natural Resources and Conservation (DNRC) prior to harvesting timber. DNRC Service Foresters provide information, education and landowner technical assistance on proper harvest techniques and BMP implementation. Forest practices & timber harvesting are administered by the DNRC within a non-regulatory framework; public education and resource protection are the main goals.

Montana's Best Management Practices (BMPs) aim to protect watersheds and water quality.

Since October 1991 the Streamside Management Zone (SMZ) Law has regulated forest practices along streams by requiring suitable streamside management practices when operating near streams. The law also provided for exceptions, (Alternative Practices), that must be pre-approved by DNRC and properly applied. The law also prohibits certain forest practices along streams, such as equipment operation in the SMZ and clearcutting. The SMZ Rules were adopted on March 15, 1993, and were updated in 2006. They define and clarify the SMZ law and associated enforcement policies.

This BMP Field Review process has been developed to evaluate whether BMPs are effectively limiting non-point source pollution resulting from timber harvest operations in

Montana. MT DNRC evaluates forest practices for BMP implementation every two years and presents the findings to the EQC. This report summarizes the findings of the 2016 Forestry BMP Field Review cycle effort.

THE FIELD REVIEW PROCESS

AS in past cycles, in 2016 three interdisciplinary teams were formed to conduct the reviews. Teams covered the northwest, the west, and the central/east regions of the state. Each team has up to eight members: a fisheries biologist, a forester, a hydrologist, a conservation organization representative, a road engineer, a soil scientist, non-industrial private forest landowner and/or logging professional. Additional observers are always welcome. The landowner & logger being reviewed were also both encouraged to attend. DNRC used established site selection criteria to select forty (40) new timber harvest sites harvested since 2013. The teams evaluated a maximum of forty-nine (49) BMPs at each site, rating the application and effectiveness for each BMP on a five-point scale.

BMP Field Review Team members evaluate a site.

APPLICATION & EFFECTIVENESS

All 40 review sites were evaluated for **BMP application.** Results showed that across all ownerships, BMPs were properly applied 97.5% of the time. Although many harvest sites (50%) had at least one instance where a BMP was inadequately applied, a majority of these departures were minor and did not cause any impacts; i.e. erosion or delivery of any material to a stream. Of all 40 sites, only 1 site, (2.5%), had one or more major BMP departures in application. In the 2014 reviews, 2 sites, (5%), had major BMP departures in application. The application of eight high risk BMPs were evaluated separately because these are among the most important for protecting soil and water resources. In 2016, these high risk BMPs were properly applied 92.7% of the time.

The field review teams also evaluated the same 40 sites for **BMP effectiveness**. Results showed that across all ownerships, BMPs were effective in protecting soil and water resources 98.9% of the time. Of the 40 sites, 10 (25%) had one or more minor impacts in BMP effectiveness. This compares with 31% in 2014. Minor impacts in effectiveness produce minor impacts to soil and water resources, for example: eroded material reaches a draw, but not a stream. Major impacts for BMP effectiveness were found on only 1 site (2.5%), compared to 3 sites, (7%), in 2014. High risk BMPs were effective in providing adequate protection to soil and water resources 96.1% of the time.

As with previous cycles, the greatest frequency of departures from BMPs, and the most impacts, were associated with road maintenance and road surface drainage.

The field review teams also evaluated application and effectiveness of the Montana Streamside Management Zone (SMZ) Law. Out of the 299 ratings for application and effectiveness. The Teams found 8 departures for application with all rated as minor and 6 impacts for effectiveness, 2 of which turned out to be major.

Table 1: Summary of the 2016 BMP/SMZ Application and Effectiveness by Ownership Group.

Practice	DNRC	Federal	Industry	NIPF	Totals
BMP Application	98%	96%	98%	98%	98%
BMP Effectiveness	99%	98%	99%	100%	99%
SMZ Application	99%	94%	97%	99%	97%
SMZ Effectiveness	99%	98%	97%	99%	98%

FIELD REVIEW OBJECTIVES

The BMP field reviews have been conducted every two years beginning in 1990; 2016 represents the 14th cycle. As with previous reviews, the 2016 objectives were to:

1. Determine if BMPs are being applied on timber harvest operations.
2. Evaluate the general effectiveness of BMPs in protecting soil and water resources.
3. Provide information on the implementation of the SMZ law and rules and assess general effectiveness in terms of protecting water quality.
4. Provide information to focus future educational or study efforts by identifying subjects and geographic areas in need of further attention or investigation.
5. Provide information on the need to revise, clarify, or strengthen BMPs.

Across all ownerships, for 2014, BMPs were effective in protecting soil and water resources 98% of the time.

SAMPLE SIZE & DISTRIBUTION

The targeted 40 field review sites are distributed across the state by geographical region and land ownership. The review process recognizes four land ownership groups: State of Montana, Federal, private industrial (Industry) and non-industrial private forest (NIPF). The basis for site distribution is the proportion of the total statewide harvest volume that is harvested within each region by each ownership group for the latest year complete records are available.

A total of 40 sites were reviewed during the 2016 BMP cycle. 11 (27.5%) were industry sites, 9 (22.5%) were State sites, 10 (25%) were federal sites, and 10 (25%) were NIPF sites.

SITE INSPECTIONS

The teams conducted the 2016 field reviews from late June through late August. During the on-site review, team members and landowners or their representatives meet at a central location prior to inspection. Teams and observers then travel to the site. When in the general area of the site, but before actually entering the road system to access the harvest area or the harvest area itself, the group stops to discuss the specifics of the review. The team leader provides maps and field review forms. There may be a landowner briefing to the team giving background information such as silvicultural prescription, season of operation, and associated practices. The final decisions as to which roads and harvest units will be reviewed are then made by the team. All decisions regarding what to review --

which roads, SMZs, new culvert installations and harvest units -- **are determined before the team enters the area.** Once on site, team members walk the site as a group and review BMP practices conducted in the predetermined areas. Teams typically spend about two hours inspecting each site. Before leaving the site, the team gathers to determine the official BMP ratings.

RESULTS

Below are the results of the 2016 Field Reviews for ***Application*** and ***Effectiveness.*** Streamside Management Zones were also rated in terms of application and effectiveness.

Application of BMPs: The application rating measures whether the BMP was applicable to the site, and if so whether it was applied to the correct standards, the appropriate number of times and in the proper locations. Field review teams rated a total of 1,211 practices to assess how landowners and operators applied BMPs. They found 29 departures, 27 of which were given a rating of "3" (minor), and 2 were rated a "2" (major). There were no ratings of "1" (gross neglect). Table 2 illustrates the application of BMPs for all rated practices.

Table 2: Application of BMPs to All Rated Practices by Ownership Group and Rating Category.

Ownership Group	# Practices Rated	# & Percentage (%) of Practices Rated As			
		Meet or Exceed	***Minor Departures***	***Major Departures***	***Gross Neglect***
State	343	337 or 98.25 %	6 or 1.75%	0%	0%
Federal	308	295 or 95.8%	11 or 3.6%	2 or 0.6%	0%
Industry	316	311 or 98.4%	5 or 1.6%	0%	0%
NIPF	244	239 or 98.0%	5 or 2.0%	0%	0%
All Sites	1,211	1,182 or 97.6%	27 or 2.2%	2 or 0.2%	0%

Effectiveness of BMPs: The effectiveness rating evaluates how well the applied BMP protected soil and water resources. In terms of impacts: of the 1,211 practices evaluated, 13 practices had impacts. These break down as 11 with ratings of 3 (minor temporary impacts) and 2 with ratings of 2 (major temporary or minor prolonged impacts), and 0 ratings of 1 (major prolonged impacts) as illustrated in Table 3.

Table 3: Effectiveness of BMPs for All Rated Practices by Ownership Group and Rating Category

Ownership Group	# Practices Rated	Percentage (%) of Practices Rated As			
		Meet or Exceed	***Minor Departures***	***Major Departures***	***Gross Neglect***
State	343	340 or 99.1%	3 or 0.9%	0%	0%
Federal	308	301 or 97.7%	5 or 1.6%	2 or 0.7%	0%
Industry	316	313 or 99.1%	3 or 0.9%	0%	0%
NIPF	244	244 or 100%	0%	0%	0%
All Sites	1,211	1,198or 98.9%	11 or 0.9%	2 or 0.2%	0%

Team Members inspect culvert for proper installation and fish passage

Streamside Management Zones: The SMZ rating form used in 2016 rated the same 11 BMPs used in previous review cycles. The SMZ law and rules were applicable to 35 sites. SMZ rules were applied correctly 97.3% of the time. Teams found 8 departures out of 299 ratings for application with all being rated minor. Table 4 summarizes these findings

Table 4: SMZ (Application) Departures by Ownership Group

		# & Percentage (%) of Practices Rated As			
Ownership Group	# Practices Rated	***Meet or Exceed***	***Minor Departures***	***Major Departures***	***Gross Neglect***
State	84	83 or 98.8 %	1 or 1.2%	0	0
Federal	52	49 or 94.2 %	3 or 3.3%	0	0
Industry	92	89 or 96.7%	3 or 3.3%	0	0
NIPF	71	70 or 98.6%	1 or 1.4%	0	0
All Sites	299	291 or 97.3%	8 or 2.7%	0	0

SMZ effectiveness was also rated very high at 98% for all ownerships combined. Of the 299 SMZ practices evaluated, 293 provided adequate protection. Of the 6 practices that had impacts, four were rated as a 3 (Minor or Temporary), and 2 were rated as a 2, (major or prolonged).

Continuing improvements in harvesting equipment have facilitated industry's ability to meet or exceed the guidelines of Montana's Best Management Practices.

SMZ impacts: Impacts included insufficient SMZ width, side casting of road material into a stream, and insufficient leave trees.

Fish Passage: Fish passage for new culvert installations on fish streams was adopted four years ago and ratings are now included with the SMZ statistics. Five sites qualified and of those sites 2 were rated a "5" (operation exceeds requirements), 2 were rated as adequate and 1 site had a minor departure with a minor impact.

CONCLUSIONS

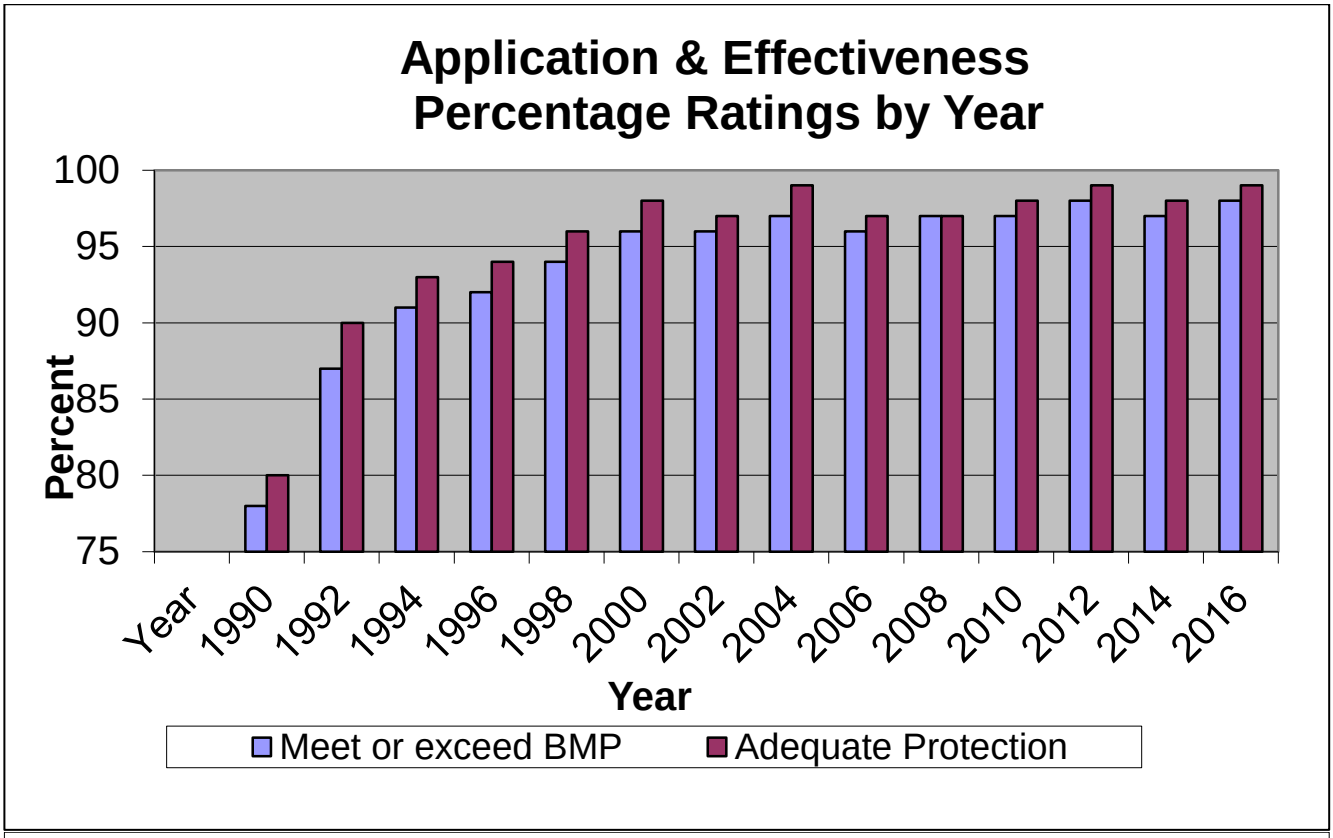
Application Ratings Across All Ownerships: Of all practices rated, 98% were properly applied according to BMP standards. This percentage maintains the 2014 as well as previous overall rating showing that the BMPs are maintaining a *very high* level of compliance. This high rating demonstrates the strong commitment all ownership groups have to proper forest management and to the protection of Montana's water and forest resources.

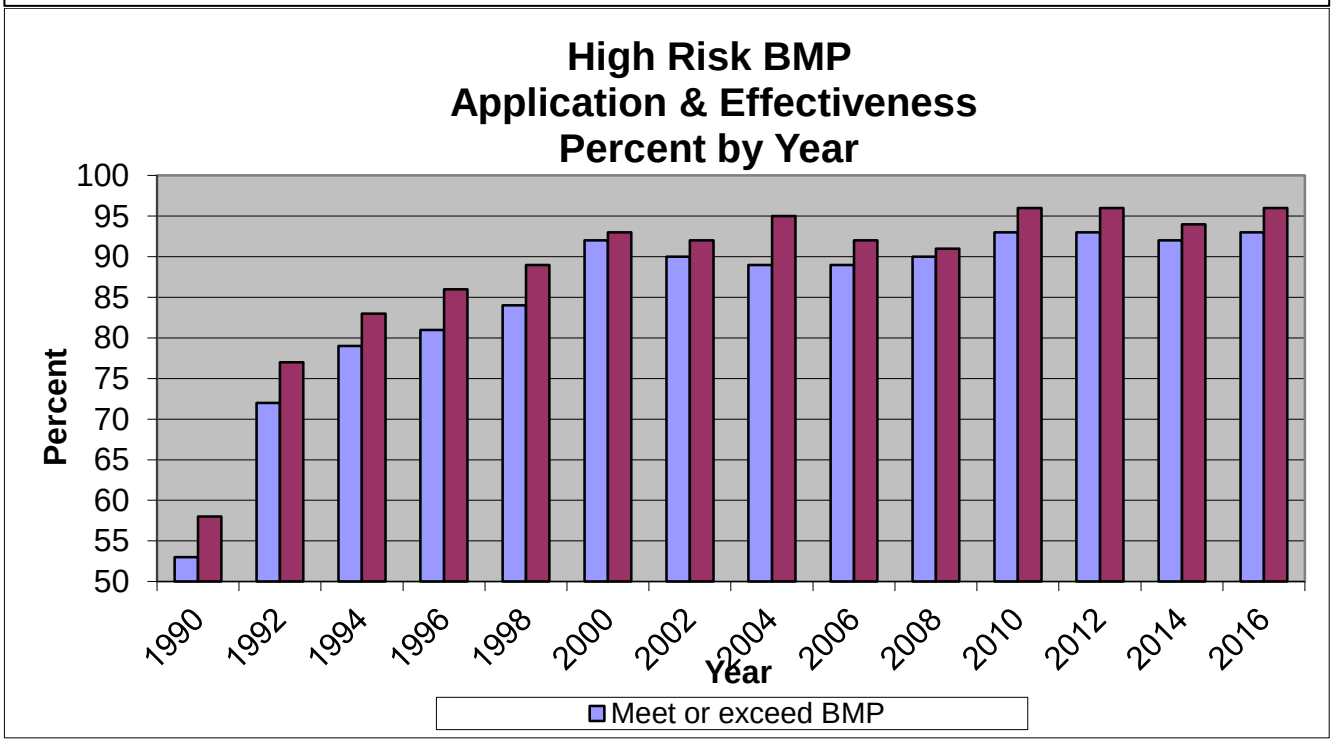
Effectiveness Ratings Across All Ownerships: For all applied BMPs, 99% were shown to be effective for all types of natural resource impacts. This is on par with the overall effectiveness from 2014, as well as the previous 8 cycles. All of which were at, near or above 95%. Again, a very high standard is being maintained. The most frequent departures and impacts were once again associated with road maintenance and road surface drainage.

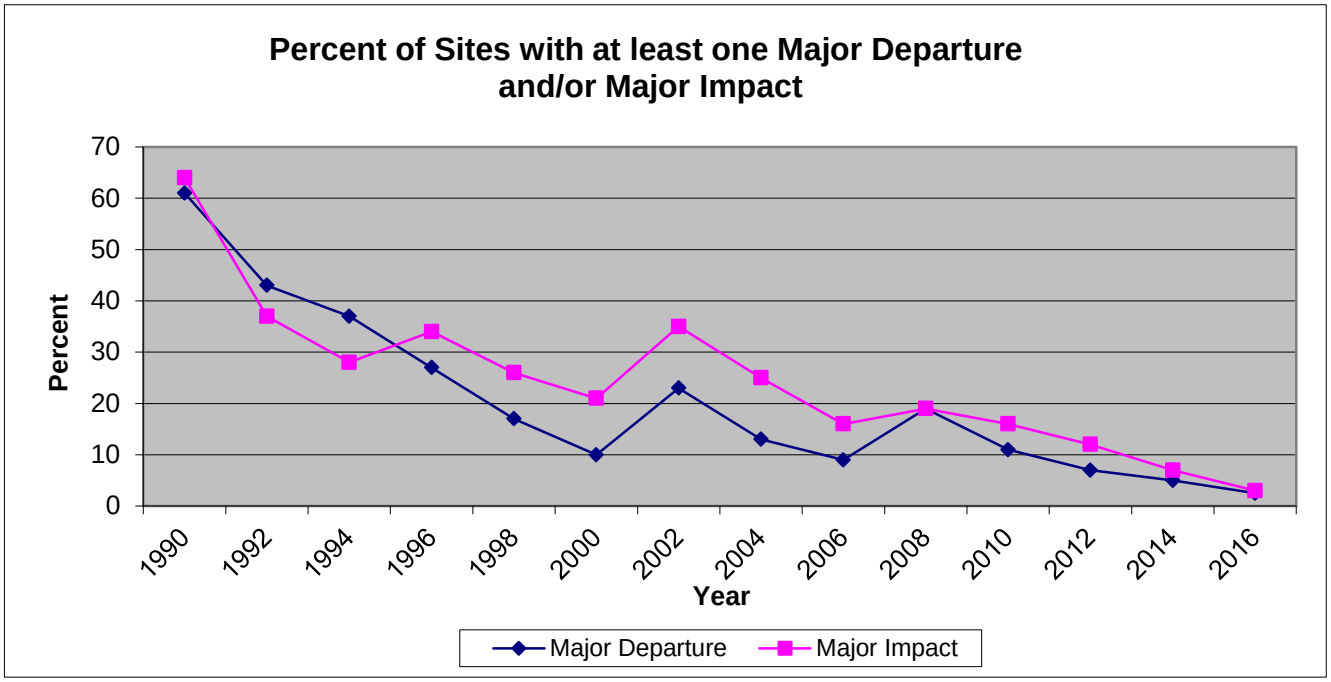
Combining application and effectiveness, including the SMZ ratings, the 2016 field reviews rated a total of 3,020 practices across all 40 reviewed sites. There are a combined total of 56 ratings with either a departure or an impact. **A departure and/or impact occurred approximately 1.8% of the time for all practices rated.**

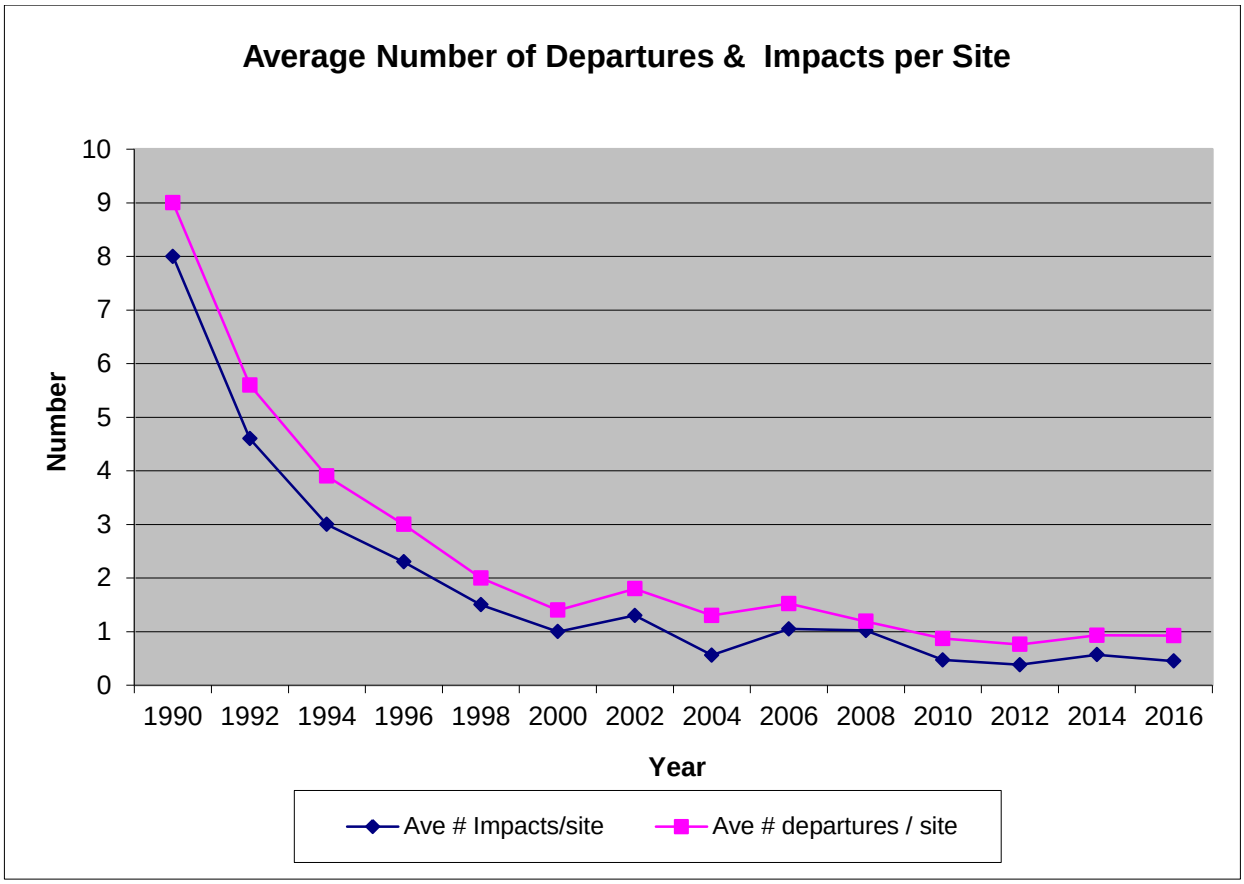
COMPARISON TO BMP FIELD REVIEW RESULTS 1990 – 2014

The following graphs illustrate conclusively that voluntary BMP implementation is working in Montana. A steady increase in proper application and effectiveness is evident from 1990 through 2000. Since 2000, the BMP reviews have shown a very high and sustained compliance rate. This success is a tribute to the continuing efforts of all landowners and loggers working in Montana's forests.






Percent of Sites with at least one Major Departure and/or Major Impact
Percent
70
60
50
40
30
20
10
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Year
Major Departure
Major Impact


Average Number of Departures & Impacts per Site
Number
10
9
8
7
6
5
4
3
2
1
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Year
Ave # Impacts/site
Ave # departures / site