MONTANA

Forestry Best Management Practices 2022 Monitoring Report

Executive Summary

Montana's Forest Practices Program involves both a regulatory and a non-regulatory approach. Forestry Best Management Practices (BMPs) continue to provide guidance on water and soil resource protection standards for timber harvest and other types of forest operations. In 1987 the Montana Legislature passed House Joint Resolution 49 directing 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 1989 an interdisciplinary working group released the revised Forestry Best Management Practices that, with minor changes over time, we still use today.

Also, in 1989, 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. Once notified, DNRC Service Foresters provide information, education and technical assistance to landowners and loggers on proper harvesting techniques and BMP implementation. Forest practices are administered by the DNRC within a non-regulatory framework with public education and resource protection as the main goals.

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

Since 1991 the Streamside Management Zone (SMZ) Law has regulated forest practices by restricting and regulating --not prohibiting-- commercial forest operations along streams, lakes and other bodies of water. 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. The law also provides landowners and managers flexibility by allowing site-specific exceptions referred to as *alternative practices.* DNRC-approved alternative practices allow activities that would normally be prohibited by the SMZ Law, but, through review and environmental analysis, are deemed to be a better approach

to meeting landowner objectives while still protecting water quality.

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 as required by the 1987 amendments to the Clean Water Act. DNRC evaluates forest practices for BMP implementation and effectiveness every two years and presents the findings to the EQC. This report summarizes the findings of the 2022 Forestry BMP Field Review cycle effort.

THE FIELD REVIEW PROCESS

As in past cycles, three interdisciplinary teams were formed to conduct the reviews in 2022. Teams covered the northwest, the west, and the central/east regions of the state. Each team is comprised of a fisheries biologist, forester, hydrologist, conservation organization representative, road engineer, soil scientist, non-industrial private forest landowner and/or a logging professional. Additional observers are always welcome. The landowner & logger that worked on the project are also encouraged to attend. DNRC used established site selection criteria to select 38 new timber harvest sites primarily harvested since 2019. The teams evaluated a maximum of 49 BMPs at each site, rating the application and effectiveness for each BMP on a five-point scale.

FIELD REVIEW OBJECTIVES

The BMP field reviews have been conducted every two years beginning in 1990 with the exception of 2020 due to the Covid pandemic; 2022 represents the 16th cycle. As with previous reviews, the 2022 objectives were:

1. Determine if BMPs are being utilized on timber harvest operations.
2. Evaluate the effectiveness of BMPs in protecting soil and water resources.
3. Assess the implementation of the SMZ Law and Rules to determine effectiveness in terms of protecting water quality.
4. Collect solid information to refine and focus ongoing educational efforts.
5. Provide information on the need to revise, clarify, or strengthen BMPs.

BMP Field Review Team members evaluating a site.

SAMPLE SIZE & DISTRIBUTION

The targeted 38 field review sites are distributed across the state by geographical region and land ownership. The review process recognizes four land ownership groups: State, federal, industrial private and non-industrial private forest owners (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 38 sites were reviewed during the 2022 BMP cycle, five (13%) were industry sites, nine (24%) were State sites, 14 (37%) were federal sites, and 10 (26%) were NIPF sites.

SITE INSPECTIONS

The teams conducted the 2022 field reviews from early July to early August. During each on-site review, team members and landowners or their representatives meet at an off-site location prior to inspection. 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. Teams and observers then travel to the site. 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. Landowners, operators and observers are encouraged to join in the discussion. Teams typically spend about two hours inspecting each site. Before leaving the site, the team gathers to determine the official BMP ratings.

APPLICATION & EFFECTIVENESS

A Total of 38 review sites were evaluated for BMP application. Results showed that across all ownerships, BMPs were properly applied 96% of the time. Although 55% of harvest sites had at least one instance where a BMP was inadequately applied, most of these departures were minor (41 of 46) and most impacts were minor as well (14 of 24). Of the 38 sites, four sites, (11%), had one or more major BMP departures in application. For comparison, three sites, (7%), had a major BMP departure in application during the 2018 field reviews. In an effort to gain insight regarding the practices with the higher potential to directly impact water quality, eight high risk BMPs have been identified and analyzed separately. The application of eight high risk BMPs were evaluated separately because these are among the most important for protecting soil and water resources. In 2022, these high risk BMPs were properly applied 90.3% of the time across all ownerships.

The field review teams also evaluated the same 38 sites for BMP effectiveness. Results showed that across all ownerships, BMPs were effective in protecting soil and water resources 98% of the time. Of the 38 sites, 14 (37%) had one or more impacts in BMP effectiveness. This compares with 36% in 2018. 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 six sites (16%), compared to four sites, (9.5%), in 2018. High risk BMPs were effective in providing adequate protection to soil and water resources 94% of the time.

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

SMZ Ratings

The field review teams also evaluated application and effectiveness of the Montana Streamside Management Zone (SMZ) Law. Out of the 241 ratings for application and effectiveness, the teams found 6 departures for application (five minor; one major) and five impacts for effectiveness, all rated as minor.

Table 1: Summary of the 2022 BMP/SMZ Application and Effectiveness by Ownership Group.

Practice	State	Federal	Industry	NIPF	Avg.
BMP/SMZ Application	97.0%	95.7%	95.4%	97.8%	96.5%
BMP/SMZ Effectiveness	98.3%	97.1%	99.4%	98.8%	98.1%

RESULTS

Below are the results of the 2022 Field Reviews for ***Application*** and ***Effectiveness.*** Streamside Management Zones were also rated for 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/or in the proper locations. Field review teams rated a total of 1250 practices over the course of the 2022 BMP field reviews to assess how landowners and operators applied BMPs. They found 46 departures, 41 of which were given a rating of "3" (minor), and five 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	Number of Practices Rated	Number and Percentage (%) of Practices Rated in Each Category			
		Meet or Exceed	***Minor Departures***	***Major Departures***	***Gross Neglect***
State	343	333 (97.1%)	10 (2.9%)	0%	0%
Federal	507	485 (95.7%)	19 (3.7%)	3 (0.6%)	0%
Industry	131	124 (97.7%)	7 (5.3%)	0%	0%
NIPF	269	262 (97.4%)	5 (1.9%)	2 (0.7%)	0%
All	1250	1204 (96.3%)	41 (3.3%)	5 (0.4%)	0%

Effectiveness of BMPs: The effectiveness rating evaluates how well the applied BMP protected soil and water resources. For 2022, 24 of the 1250 practices evaluated had impacts. These break down as 14 with ratings of "3" (minor and temporary impacts) and six with ratings of "2" (major and temporary or minor and prolonged impacts), and four 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	Number of Practices Rated	Number and Percentage (%) of Practices Rated in Each Category			
		Adequate protection	***Minor impacts***	***Major and temporary/ minor & prolonged impacts***	***Major & prolonged***
State	343	338 (98.5%)	5 (1.5%)	0%	0%
Federal	507	493 (97.2%)	7 (1.4%)	5 (1.0%)	2 (0.4%)
Industry	131	130 (99.2%)	1 (0.8%)	0%	0%
NIPF	269	265 (98.5%)	1 (0.4%)	1 (0.4%)	2 (0.7%)
All Sites	1250	1226 (98.1%)	14 (1.1%)	6 (0.5%)	4 (0.3%)

A water diverter installed on an open road. Road drainage should be installed at a frequency to minimize erosion, reducing maintenance costs and protecting water quality.

Streamside Management Zones: The SMZ rating form used in 2022 rated the same 11

practices used in previous review cycles. The SMZ law and rules were applicable to 30 of the 38 sites. SMZ rules were applied correctly 97.5% of the time. Teams found nine departures out of 241 ratings for application with all being rated minor. Table 4 summarizes these findings.

Table 4: SMZ (Application) Departures by Ownership Group

Ownership Group	Number of Practices Rated	Number and Percentage (%) of Practices Rated in each Category			
		Meet or Exceed	***Minor Departures***	***Major Departures***	***Gross Neglect***
State	62	60 (96.8%)	1 (1.6%)	1 (1.6%)	0
Federal	80	77 (96.3%)	3 (3.7%)	0	0
Industry	44	43 (97.7%)	1 (2.3%)	0	0
NIPF	55	55 (100%)	0	0	0
All Sites	241	235 (97.5%)	5 (2.1%)	1 (0.4%)	0

SMZ Effectiveness

SMZ effectiveness was also rated very high at 98% for all ownerships combined. Of the 241 SMZ practices evaluated, 236 provided adequate protection. Of the five practices that had impacts, four were rated as a "3" (minor and temporary) and one was rated as a "2" (minor and prolonged).

SMZ impacts: Impacts included inadequate SMZ width maintained, side casting of road material into a stream, insufficient retention of trees and submerchantable vegetation and shrubs, equipment operation, and deposition of slash into streams.

Fish Passage: Fish passage for new culvert installations on fish streams was adopted six years ago and ratings are now included with the SMZ statistics. Three sites qualified all were rated a "4" (operation meets requirements) with no observable impacts.

CONCLUSIONS

Application Ratings Across All Ownerships: Of all practices rated, 96.5% were properly applied according to BMP/SMZ standards. This very high level of compliance demonstrates the strong commitment all ownership groups and contractors have to proper forest management and to the protection of Montana's water and forest resources.

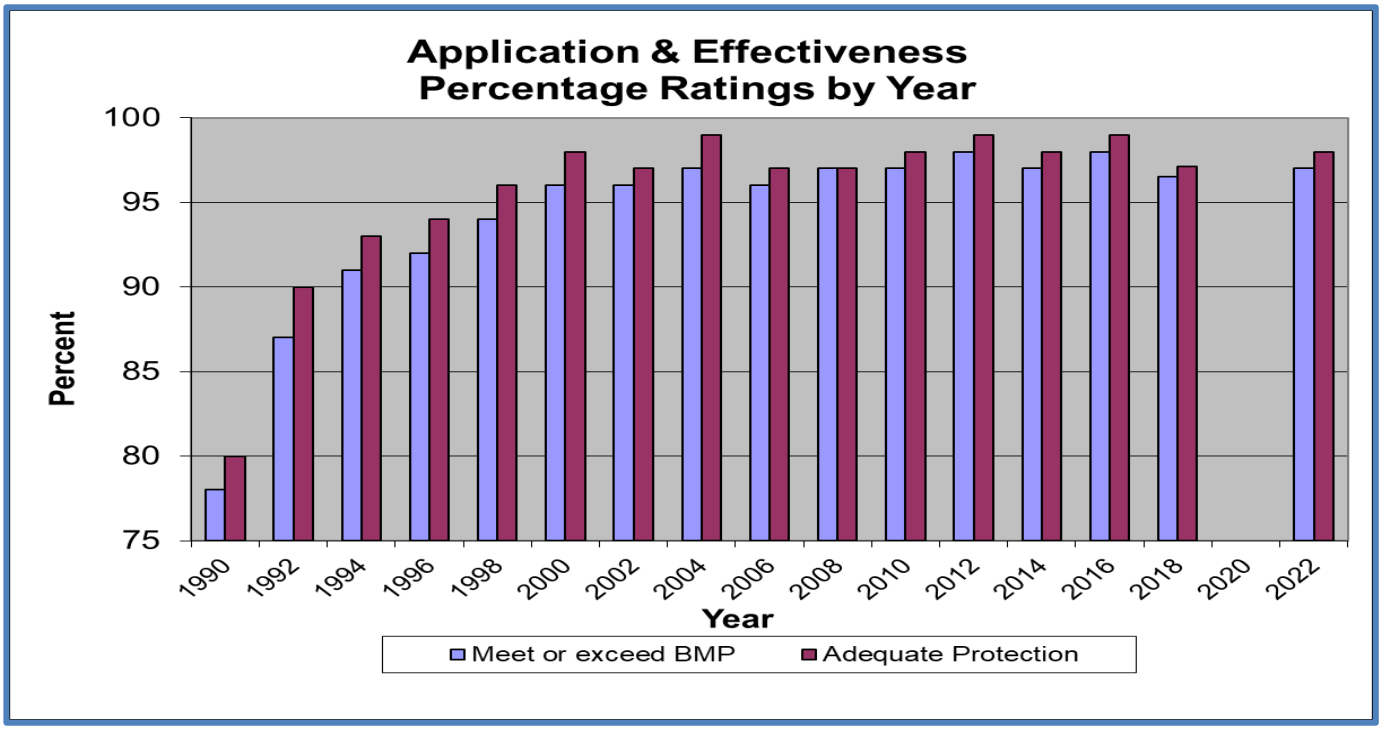
Effectiveness Ratings Across All Ownerships: For all applied BMP/SMZ practices, 98.1 % were shown to be effective for preventing natural resource impacts. This is on par with the overall effectiveness from 2018, as well as the previous 11 cycles, all of which found effectiveness ratings above 95%. Again, a very high standard is being maintained. The most frequent departures and impacts were again associated with road maintenance and road surface drainage consistent with past review cycles.

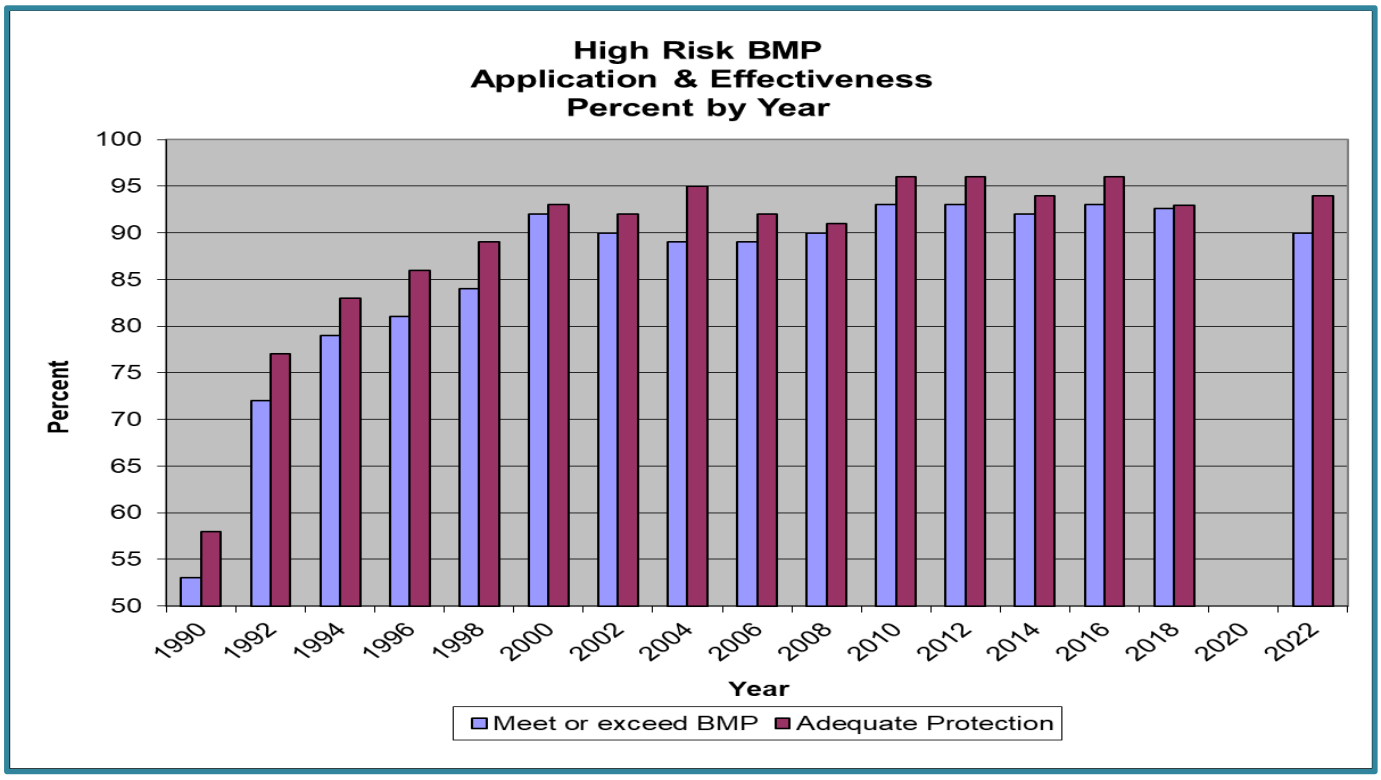
Combining application and effectiveness, including the SMZ ratings, the 2022 field reviews rated a total of 2982 practices across all 38 reviewed sites. There are a combined total of 81 ratings with either a departure or an impact. **A departure and/or impact occurred approximately 2.7% of the time for all practices rated.**

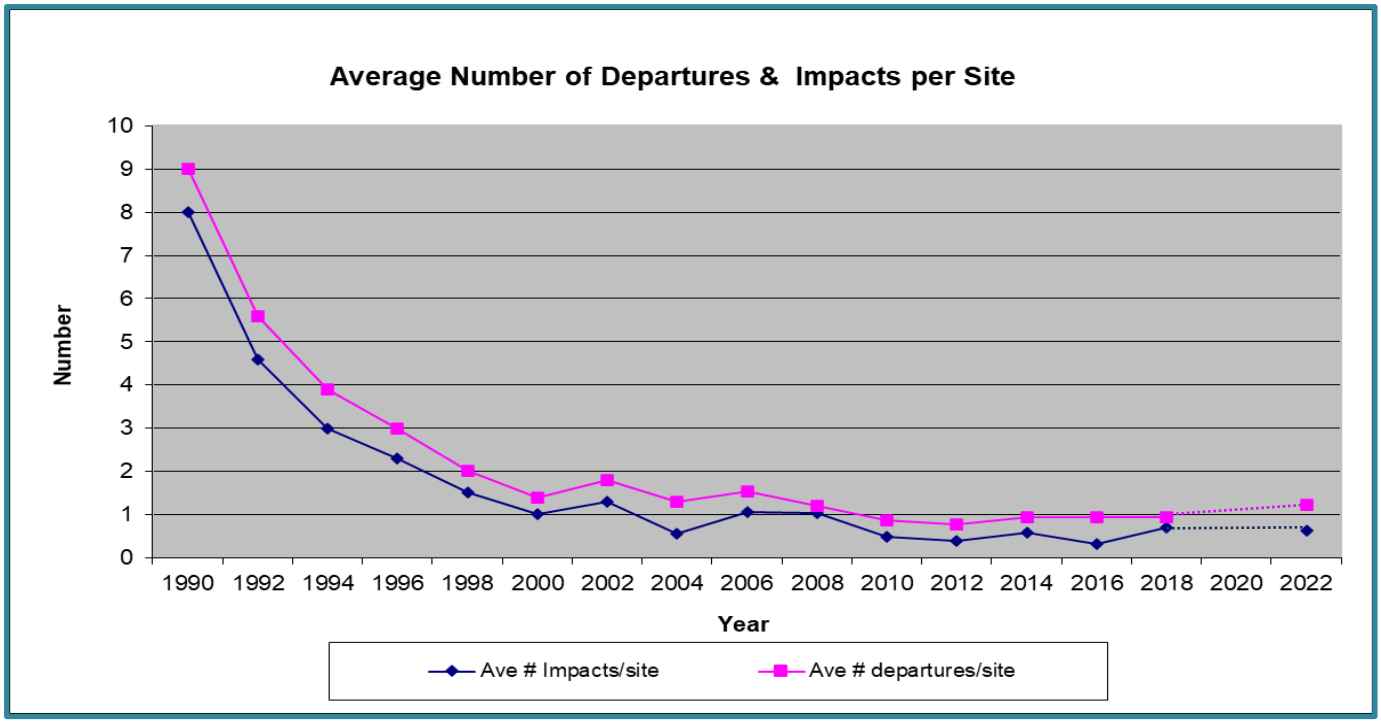
Stream crossing installed to minimize sediment delivery to the stream and provide fish passage

COMPARISON TO BMP FIELD REVIEW RESULTS 1990 – 2022

The following graphs and table 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; hovering around 98%. This success is a tribute to the continuing efforts of all landowners and loggers working in Montana's forests.






Average Number of Departures & Impacts per Site
Number
Year
Ave # Impacts/site
Ave # departures/site

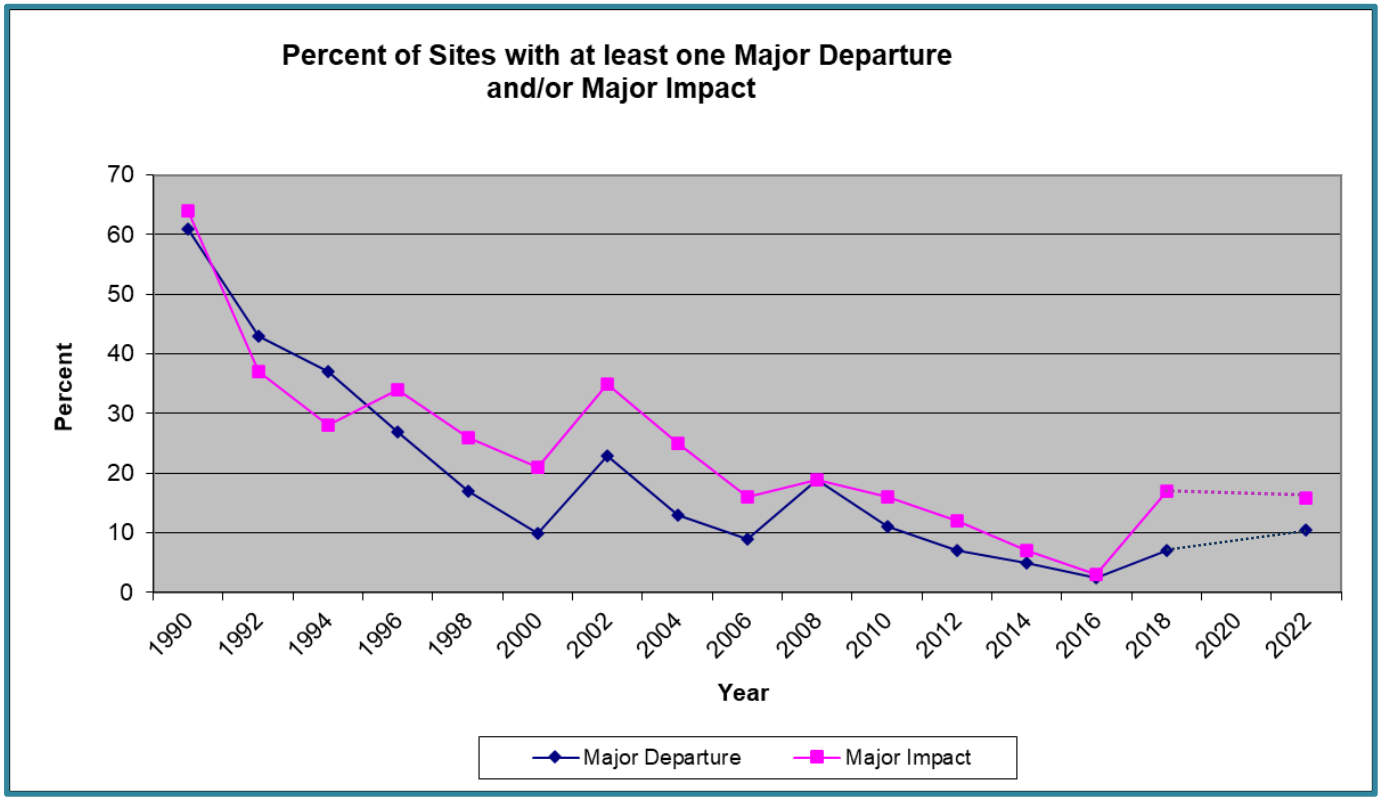

Percent of Sites with at least one Major Departure and/or Major Impact
Percent
Year
Major Departure
Major Impact

TABLE 5: COMPARISON OF BMP FIELD REVIEW RESULTS 1990-2022

Category	2022	2018	2016	2014	2012	2010	2008	2006	2004	2002	2000	1998	1996	1994	1992	1990
Application of all practices that meet or exceed BMP requirements.	96%	97%	98%	97%	98%	97%	97%	96%	97%	96%	96%	94%	92%	91%	87%	78%
Application of high risk practices that meet or exceed BMP requirements.	90%	92%	93%	92%	93%	93%	90%	89%	89%	90%	92%	84%	81%	79%	72%	53%
Number of sites with at least one major departure in BMP application.	4/38 11%	3/42 7%	1/42 2.5%	2/42 5%	3/42 7%	5/45 11%	8/42 19%	4/44 9%	5/39 13%	10/43 23%	4/42 10%	8/47 17%	12/44 27%	17/46 37%	20/46 43%	27/44 61%
Average number of all departures in BMP application, per site.	1.21	0.93	0.93	0.93	0.76	0.87	1.19	1.52	1.30	1.80	1.40	2.00	3.00	3.90	5.60	9.00
Percentage of all practices providing adequate protection.	98%	98%	99%	98%	99%	98%	97%	97%	99%	97%	98%	96%	94%	93%	90%	80%
Percentage of high risk practices providing adequate protection.	94%	93%	96%	94%	96%	96%	91%	92%	95%	92%	93%	89%	86%	83%	77%	58%
Number of sites having greater than a minor impact	6/38 16%	7/42 17%	1/40 2.5%	3/42 7%	5/42 12%	7/45 16%	8/42 19%	7/44 16%	10/39 25%	15/43 35%	9/42 21%	12/47 26%	15/44 34%	13/46 28%	17/46 37%	28/44 64%
Average number of impacts per site.	0.63	0.69	0.325	0.57	0.38	0.47	1.02	1.05	0.56	1.30	1.00	1.50	2.30	3.00	4.60	8.00