



STRATEGIES TO INTEGRATE ENVIRONMENTAL STEWARDSHIP INTO ADOT'S BUSINESS

Final Report 543

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16. Abstract This report documents the results of State Planning and Research (SPR) 543 <i>Strategies to Integrate Environmental Stewardship into ADOT's Business</i> . The primary objectives of this research were to qualitatively evaluate the environmental performance of ADOT and to identify opportunity areas and strategies/actions for improving environmental performance. A collaborative approach to the research was used in executing the information-gathering, performance evaluation, documentation, and review elements of the research project. Two rounds of nine workshops involving a broad cross section of ADOT managers, supervisors, employees, and consultant personnel were conducted between July 2003 and April 2004. Representatives from Transportation Planning, Maintenance, Transportation Services, General Operations, Equipment Services, Construction, Aeronautics, Development, and the Motor Vehicle Division participated in the workshops. Technical Advisory Committee members selectively participated in the workshops. Before and after each round of workshops, the AASHTO consultant and the TAC met to discuss the workshop plans and outcomes. Based on the information gained from the 18 workshops, additional interactions with ADOT personnel, and review of background information provided, the researcher evaluated the environmental performance of the nine ADOT organizations and identified opportunity areas and strategies/actions for improving ADOT's environmental performance and stewardship. Overarching environmental performance improvement opportunities and strategies were identified in 13 environmental performance areas to improve ADOT's overall environmental performance and stewardship. Organization-specific environmental performance improvement opportunities were identified for each of the nine organizations. The details of the 18 workshops and the environmental performance evaluation are documented in the 11 Technical Memorandums prepared by the researcher. They were reviewed by the nine organizations and revised according to their comments. The Technical Memorandums are on file.			
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TABLE OF CONTENTS

1	EXECUTIVE SUMMARY	1
2	INTRODUCTION	5
2.1	BACKGROUND	5
2.2	APPROACH	5
3	OVERARCHING ENVIRONMENTAL PERFORMANCE EVALUATION & STRATEGIES/ACTIONS	9
3.1	ENVIRONMENTAL LEADERSHIP AND STEWARDSHIP EMPHASIS	9
3.2	ENVIRONMENTAL PLANNING, MANAGEMENT, AND COMPLIANCE PROCEDURES	10
3.3	ENVIRONMENTAL ELEMENTS OF CORE BUSINESS POLICIES AND PROCEDURES	11
3.4	ENVIRONMENTAL TRAINING AND CERTIFICATION PROGRAM	12
3.5	ENVIRONMENTAL INFORMATION SYSTEM	13
3.6	RECYCLING AND WASTE REDUCTION	15
3.7	ENERGY CONSERVATION	16
3.8	WATER MANAGEMENT STRATEGY	16
3.9	ASBESTOS MANAGEMENT	19
3.10	OUTDOOR LIGHTING	20
3.11	INTERAGENCY AND TRIBAL RELATIONSHIP BUILDING	20
3.12	ENVIRONMENTAL SERVICES FOR ADOT ORGANIZATIONS	21
3.13	ENVIRONMENTAL MANAGEMENT	22
3.14	ADOT ANNUAL REPORT	24
4	ORGANIZATION-SPECIFIC ENVIRONMENTAL PERFORMANCE EVALUATIONS & IMPROVEMENT OPPORTUNITIES	25
4.1	TRANSPORTATION PLANNING	25
4.2	MAINTENANCE	31
4.3	TRANSPORTATION SERVICES GROUP	42
4.4	CONSTRUCTION	50
4.5	GENERAL OPERATIONS	63
4.6	EQUIPMENT SERVICES	72
4.7	DEVELOPMENT	76
4.8	AERONAUTICS	99
4.9	MOTOR VEHICLE DIVISION	104
5	REFERENCES	111
6	APPENDICES	115
6.1	Appendix A-Table 1	115
6.2	Appendix B-Exhibit 1	121

ABBREVIATIONS

AASHTO.....	American Association of State Highway and Transportation Officials
ADEP.....	Arizona Department of Environmental Quality
ADOT.....	Arizona Department of Transportation
EEG.....	Environmental and Enhancement Group
EPA.....	U.S. Environmental Protection Agency
FAA.....	Federal Aviation Administration
FHWA.....	Federal Highway Administration
FTA.....	Federal Transit Administration
GIS.....	Geographic Information System
MSDS.....	Material Safety Data Sheets
NCHRP.....	National Cooperative Highway Research Program
NEPA.....	National Environmental Policy Act
PM.....	Particulate Matter
SWPPP.....	Storm Water Pollution Prevention Plan
TCRP.....	Transit Cooperative Research Program
TSG.....	Transportation Services Group

1 EXECUTIVE SUMMARY

In July 2003, the Arizona Department of Transportation (ADOT) initiated State Planning and Research (SPR) 543 *Strategies to Integrate Environmental Stewardship into ADOT's Business*. The primary objectives of this research were to qualitatively evaluate the environmental performance of ADOT and to identify opportunity areas and strategies for improving environmental performance. The research was conducted by Wayne Kober, Senior Environmental Management Specialist, serving as a consultant to the American Association of State Highway and Transportation Officials (AASHTO) Center for Environmental Excellence. The research was administered by Estomih Kombe, Project Manager, with the ADOT Transportation Research Center. The research was guided by a Technical Advisory Committee (TAC) chaired by Terry Trost. The research is documented in this report.

This research report describes the approach used in conducting the environmental performance evaluation, the evaluation results, and suggested overarching strategies/actions for improving ADOT's environmental performance. Eleven technical memorandums (1-11) were prepared to document the information gained during the current practice orientation and presentation sessions and the environmental performance evaluation results.

A collaborative approach to the research was used in executing the information-gathering, performance evaluation, documentation, and review elements of the research project. Two rounds of nine workshops involving a broad cross section of ADOT managers, supervisors, employees, and consultant personnel were conducted between July 2003 and April 2004. Representatives from Transportation Planning, Maintenance, Transportation Services, General Operations, Equipment Services, Construction, Aeronautics, the Development Program, and the Motor Vehicle Division (MVD) participated in the workshops. TAC members selectively participated in the workshops. Before and after each round of workshops, the AASHTO consultant and the TAC met to discuss the workshop plans and outcomes.

The first round of nine workshop sessions were conducted to: 1) inform ADOT personnel of the research project approach; 2) increase their understanding of the core business practice, environmental performance, and environmental stewardship concepts; 3) prepare them to identify their respective core business practices and the environmental aspects of those practices; 4) increase the TAC and AASHTO consultant knowledge and understanding of ADOT's core business practices and environmental aspects; 5) identify nine team leaders and teams to prepare Powerpoint presentations describing their core business practices and environmental aspects. The information gained from these workshops was documented in Technical Memorandums 1, 2, and 5. The TAC and the workshop participants reviewed and commented on the Technical Memorandums. The AASHTO consultant revised the Technical Memorandums in accordance with the review comments.

The second round of nine workshop sessions were conducted to: 1) have the nine teams make their Powerpoint presentations on their core business practices and environmental aspects, and 2) further the TAC and AASHTO consultant knowledge and understanding of ADOT's core business practices and environmental aspects. After these workshops, the AASHTO consultant used the information gained from these workshops to conduct an environmental performance evaluation of each of the nine organizations and prepared Technical Memorandums 3, 4, 5, 6, 7, 8, 9, 10, and 11. The TAC and the workshop participants reviewed and commented on the technical memorandums. The AASHTO consultant revised the technical memorandums in accordance with the review comments.

After the 18 workshops and ADOT review of the 11 technical memorandums, the AASHTO consultant used the information to develop overarching environmental strategies/actions to improve ADOT's environmental performance and to prepare this draft research report.

During the course of this research project, the following general observations regarding environmental performance and environmental stewardship in ADOT were made by the AASHTO consultant:

- ADOT's environmental management approach is slowly moving from a compliance orientation to a stewardship orientation. Some ADOT organizations are moving faster than others.
- ADOT's current environmental management approach is not systematic and comprehensive. Most of its business activities are carried out without the underpinning of environmental goals, objectives, measures, policies, procedures, and training. Most of ADOT's environmental policy emphasis and expertise is centered in highway project development and roadside vegetation management. ADOT's current environmental performance varies widely across its business activities. Where environmental protection and enhancement have been well-integrated into its decision-making, environmental performance is very good to excellent. Where environmental protection and enhancement are considered as an afterthought in its business decision-making, environmental performance is poor to fair.
- ADOT's top management through its Core Team is strongly emphasizing proactive environmental compliance and stewardship. The Core Team is a group of ADOT executive-level staff who assist the Secretary of Transportation in strategic planning and decision-making. The Core Team is routinely communicating the urgent need to bring all of ADOT's business activities into compliance with state and federal laws, regulations, and policies.
- Many ADOT employees want to know what the right thing to do is from an environmental stewardship perspective and how to do it. Also, they want to have the time, financial resources, and management support to protect and enhance the environment as they conduct their business.
- As with many state transportation organizations, most ADOT environmental professionals are heavily focused on ensuring environmental compliance during

highway corridor planning and project development. They are routinely engaged in highway corridor planning and project development activities such as project scoping, corridor planning studies, and alignment studies and the associated environmental analysis, documentation, agency coordination, and public involvement. They are not routinely involved in ensuring environmental compliance during highway systems planning, construction, maintenance, and operations. Also, they are not routinely involved in ensuring environmental compliance in aviation, transit, and railroad system planning, project development, construction, maintenance, and operations.

- ADOT does not have a comprehensive environmental training program covering multimodal transportation planning, project development, construction, maintenance, and operations.
- Although ADOT has included environmental stewardship in its mission statement and strategic plan, its annual business planning and budgeting activities do not routinely include environmental goals, objectives, and performance measures.
- ADOT's information management and program management systems do not include environmental management information.
- ADOT does not have a single environmental management organization to develop, lead, monitor, and report on the agency's environmental management activities. ADOT's environmental management responsibilities are dispersed throughout the agency's organizations.
- ADOT is currently experiencing some serious noncompliance problems in the water management and asbestos management areas. As a result, considerable attention is being directed to developing and implementing strategies/actions to address them.
- ADOT's interagency coordination activities are usually conducted on project-by-project basis and not on statewide basis such as regular monthly interagency coordination meetings. Each project manager is responsible for organizing and conducting the interagency coordination needed to advance highway corridor planning and project development on a project-by-project basis. However, ADOT has numerous memorandums of understanding or agreement in place with various land management and other agencies which specify the agency coordination requirements for highway corridor planning and project development.
- ADOT's award programs do not routinely include recognition of outstanding environmental performance.
- There are numerous opportunities for streamlining ADOT's transportation program delivery (planning, design, construction, maintenance, and operations) while protecting and enhancing the environment.
- ADOT has not yet realized the full potential for improving its transportation program delivery and environmental performance through partnerships with consultants, contractors, metropolitan and regional planning organizations, federal land management agencies, tribal governments, and state and federal regulatory agencies.

As part of the evaluation of ADOT's environmental performance, the AASHTO consultant identified overarching and organization-specific opportunities for improving

the environmental performance of the nine organizations. The organization-specific opportunities are described in Section 4 this research report and in Technical Memorandums 3, 4, 5, 6,7,8,9,10, and 11.

The overarching opportunities for improving environmental performance are described in Section 3 of this report. Along with identifying the overarching opportunities, the AASHTO consultant developed overarching strategies/actions for improving ADOT's environmental performance in 14 environmental performance areas as follows:

1. Environmental Leadership and Stewardship Emphasis
2. Environmental Planning, Management, and Compliance Procedures
3. Environmental Elements of Core Business Policies and Procedures
4. Environmental Training and Certification
5. Environmental Information System
6. Recycling and Waste Reduction
7. Energy Conservation
8. Water Management
9. Asbestos Management
10. Outdoor Lighting
11. Interagency and Tribal Relationship Building
12. Environmental Services for ADOT Organizations
13. Environmental Management
14. ADOT Annual Report

The AASHTO consultant recommends that the TAC and Core Team use the information in the research report and technical memorandums to: 1) conduct a series of round table discussions with ADOT managers and supervisors; 2) assemble an ADOT environmental management steering committee to oversee the development and implementation of an ADOT environmental performance improvement plan; and 3) create a new ADOT environmental management organization to develop and implement an ADOT environmental performance improvement plan.

2 INTRODUCTION

2.1 BACKGROUND

The Arizona Department of Transportation (ADOT) has identified environmental stewardship as one of its priority focus areas. The department's Core Team: 1) views the integration of environmental stewardship into the department's culture and daily activities as absolutely essential to positioning itself to exceed its customers' needs and expectations for safe and efficient transportation as well as an excellent quality of life; 2) believes that the delivery of a safe and efficient transportation program and environmental stewardship are not mutually exclusive; 3) uses a broad definition of environment that encompasses both natural and human communities; 4) has a strong desire to raise the level of agency consciousness in the area of environmental stewardship as quickly as possible by learning from its peers in the transportation and other sectors; and 5) recognizes that there is likely to be resistance to recasting its cultural norm to institutionalize environmental stewardship, but is determined to explore every opportunity to do so. The Core Team is a group of ADOT executive-level staff who assist the Director of Transportation in strategic planning and decision-making.

Improving its environmental performance and stewardship directly supports the department's strong commitment to carrying out its mission *"to provide products and services for a safe, efficient, cost-effective transportation system that links Arizona to the global economy, promotes economic prosperity, and demonstrates respect for Arizona's environment and quality of life."*

In concert with the Core Team's identification of environmental stewardship as a priority focus area, the Arizona Transportation Research Center (ATRC) initiated State Planning and Research (SPR) 543-*Strategies to Integrate Environmental Stewardship into ADOT's Business* in July 2003. The primary objectives of this research project were to qualitatively evaluate the environmental performance of ADOT and to identify opportunity areas for improving environmental performance.

2.2 APPROACH

The approach used in conducting this research project involved: 1) reviewing background materials describing ADOT's organizational structure, mission, goals, policies, and procedures; 2) conducting a series of nine current business practice orientation sessions with business process owners; 3) having the business process owners prepare a Powerpoint presentation describing their core business activities and environmental aspects; 4) conducting a series of current business practice presentation sessions with nine business process owners; 5) qualitatively evaluating the environmental performance of the business process owners; 6) documenting the information gained during the orientation sessions, presentation sessions, and environmental performance evaluation in technical memorandums; 7) developing overarching strategies/actions for improving overall environmental performance; and 8) preparing this draft research project report.

The American Association of State Highway and Transportation Officials (AASHTO) Center for Environmental Excellence consultant reviewed published background information supplied by the nine business process owners and other information posted on ADOT's website. The published information provided is cited in the bibliography.

A broad, representative cross section of the ADOT organization was engaged in the current practice orientation and presentation sessions. The organizations were: Transportation Planning, Maintenance, Transportation Services Group (TSG), General Operations, Equipment Services, Construction, Aeronautics, Development, and Motor Vehicle Division (MVD). Key individuals from each of the organizations who had a thorough understanding of the core business practices participated in the orientation and presentation sessions. Several volunteers from each organization participated in a team that prepared and presented a Powerpoint presentation describing their core business activities and environmental aspects.

The members of the project Technical Advisory Committee (TAC) participated in several of the current practice orientation and presentation sessions. Several TAC meetings were held with the AASHTO consultant to provide information and guidance.

The current practice orientation sessions conducted with Transportation Planning, Maintenance, TSG, General Operations, Equipment Services, Construction, Aeronautics, Development, and MVD were documented in Technical Memorandums 1, 2, and 5 as follows:

Technical Memorandum # 1– Transportation Planning and Maintenance Current Practices Orientation Session on July 29-30, 2003, dated August 26, 2003.

Equipment Services was included in the Maintenance Current Practices Orientation Session held on July 30, 2004

Technical Memorandum # 2– General Operations, Development, TSG, Aeronautics, and Construction Current Practices Orientation Sessions on October 6-10, 2003, dated November 23, 2003

Technical Memorandum # 5– Motor Vehicle Division Current Practices Orientation Session on February 2, 2004, dated February 13, 2004

The current practice presentation sessions conducted by Transportation Planning, Maintenance, Transportation Services, General Operations, Equipment Services, Construction, Aeronautics, Development, and MVD were documented in Technical Memorandums 3, 4, 6, 7, 8, 9, 10, and 11 as follows:

Technical Memorandum # 3– Transportation Planning Division Environmental Performance Evaluation, dated November 22, 2003

Technical Memorandum # 4– Maintenance Environmental Performance Evaluation, dated November 22, 2003

Technical Memorandum # 6– Transportation Services Group Environmental Performance Evaluation, dated February 19, 2004

Technical Memorandum # 7– Construction Environmental Performance Evaluation, dated February 24, 2004

Technical Memorandum # 8– General Operations and Equipment Services Environmental Performance Evaluations, dated March 24, 2004

Technical Memorandum # 9– Development Environmental Performance Evaluation, dated April 14, 2004

Technical Memorandum # 10– Aeronautics Division Environmental Performance Evaluation, dated March 25, 2004

Technical Memorandum # 11– Motor Vehicle Division Environmental Performance Evaluation, dated April 13, 2004

Along with documenting the information gained during the current practices orientation and presentation sessions in the technical memorandums, the AASHTO consultant described the results of his qualitative evaluation of the environmental performance in each of the core business areas and identified opportunity areas for improving environmental performance. The environmental performance evaluation results and opportunity areas for each organization actively participating in this research are described in Section 4.

The environmental performance indicators used in this evaluation were developed by the AASHTO consultant solely for the purposes of qualitatively evaluating the environmental performance of the ADOT organizations participating in this research project with a very limited amount of baseline information on current business practices and their respective environmental aspects. These indicators were not drawn from any published source of environmental performance indicators.

As the draft technical memorandums were completed, they were distributed electronically for review and comment to the ADOT organization responsible for the subject area covered in the document and the TAC. All of the ADOT staff commenting on the technical memorandums supplied their comments electronically. Where clarification and/or explanation of the review comments were needed, telephone conference calls were conducted with the respective team members. Based on the comments received by the AASHTO consultant on the draft technical memorandums, they were edited and finalized. The technical memorandums (1-11) are on file at the ADOT ATRC.

As the current practices orientation and presentation sessions were held and the technical memorandums were prepared and finalized, the AASHTO consultant developed overarching strategies/actions for improving ADOT's overall environmental performance. The overarching strategies/actions are described in Section 3 of this research report.

Finally, this draft research report was prepared to document the results of the research to date and to give ADOT management and staff the opportunity to review and comment on the results. Based on the comments received from ADOT, the AASHTO consultant edited and finalized the research report.

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3 OVERARCHING ENVIRONMENTAL PERFORMANCE EVALUATION & IMPROVEMENT STRATEGIES/ACTIONS

This section describes the results of the overarching environmental performance evaluation and strategies/actions for ADOT's consideration to improve its overall environmental performance. Included in each of the environmental performance areas are a description of the environmental performance indicator, the environmental performance summary, the opportunity area(s) for improvement, the recommended strategies/actions, the recommended priority (Low, Medium, or High), and the estimated level of investment (Low, Medium or High). Table 1 provides a listing of the overarching environmental performance areas and the corresponding strategies and actions.

Over the course of this research it became apparent that there are several overarching areas associated with ADOT environmental performance that are common to all of the ADOT organizations that were actively engaged in the current practice orientation and presentation sessions and the environmental performance evaluations. As mentioned earlier, these organizations are Transportation Planning, Maintenance, TSG, General Operations, Equipment Services, Construction, Aeronautics, Development, and MVD. Because these organizations represent a broad range of core business activities and environmental aspects within ADOT, it is reasonable to assume that the overarching environmental performance areas are likely to apply to the balance of ADOT organizations not actively engaged in this research project.

3.1 Environmental Leadership and Stewardship Emphasis

Performance Indicator(s): All ADOT managers, supervisors, employees, consultants, contractors, and vendors assume responsibility for understanding the environmental aspects of their core business activities and routinely implementing environmental protection and enhancement measures.

Performance Evaluation Summary: Many ADOT managers, supervisors, employees, consultants, contractors, and vendors appear to be generally aware of the environmental aspects of their core business activities and try to implement environmental protection and enhancement measures. In cases where required environmental protection measures are not routinely implemented, the primary leadership-related causes appear to be: lack of continuous management, supervisory direction, and emphasis on environmental stewardship and full compliance; lack of technical skills and knowledge training made readily and continuously available to the employees; lack of environmental professional staff resources allocated to organizations with complex environmental compliance responsibilities; and lack of proactive budgeting and financing of environmental protection and enhancement measures.

Opportunity Area(s) for Improvement: Placing management and supervisory emphasis on environmental stewardship and compliance; increasing technical skills and knowledge training; allocating environmental professional positions to organizations that require

environmental expertise in-house; and proactively budgeting and financing environmental and enhancement measures.

Recommended Strategies/Actions:

3.1.1 Require managers and supervisors to emphasize environmental stewardship and full compliance in strategic planning, business planning, project management, staff meetings, employee training plans, and employee performance evaluations/reviews.

Priority: High

Estimated Level of Investment: Low

3.1.2 Develop environmental leadership training materials for managers, supervisors, and employees. Incorporate these materials into existing and future ADOT training programs.

Priority: High

Estimated Level of Investment: Low

3.1.3 Conduct an environmental professional staffing needs analysis; prepare an environmental staffing plan, and implement the plan.

Priority: Medium

Estimated Level of Investment: Low

3.1.4 Incorporate environmental performance specifications into all ADOT contracts where there is a potential to protect and enhance the environment. Inform consultants, contractors, and vendors on their environmental responsibilities at contract-related interactions such as scope-of-work meetings, pre-bid meetings, partnering meetings, pre-construction conferences, and industry conferences.

Priority: High

Estimated Level of Investment: Low

3.2 Environmental Planning, Management, and Compliance Procedures

Performance Indicator(s): Standardized environmental planning, compliance, and management procedures are included in the operating procedures of all ADOT divisions. Managers and supervisors are formally required to continuously emphasize sound environmental management and compliance. Environmental management and compliance training materials and guidelines covering the environmental planning and compliance process are developed and widely distributed to all ADOT divisions. Best environmental management practice information in critical areas such as natural resources management and cultural resources management is developed and routinely utilized.

Opportunity Area(s) for Improvement: Except for a few core business areas such as highway corridor planning and project development, there is an absence of standardized environmental planning, compliance, and management procedures throughout ADOT. Although ADOT executive management continues to sound environmental management and compliance in special and routine communications with managers, supervisors, and staff, there is an absence of formal requirements, such as provisions included in employee

job descriptions and performance criteria and standards. There are relatively few environmental management and compliance training materials and guidelines developed and widely distributed throughout ADOT. Some environmental best management practice information is developed and distributed in a few organizations in ADOT. Because of the potential for substantial transportation impacts on natural and cultural resources, there is an urgent need for standardized environmental planning, compliance, and management procedures and best environmental management practice information in those areas to be developed and widely distributed.

Recommended Strategies/Actions:

3.2.1 Standardize environmental planning, compliance, and management procedures and incorporate them into all ADOT divisions.

Priority: High

Estimated Level of Investment: High

3.2.2 Require managers and supervisors to emphasize environmental management and compliance through provisions in employee job descriptions and job performance criteria and standards.

Priority: High

Estimated Level of Investment: Low

3.2.3 Develop orientation training, guidelines, and best management practices covering the environmental planning, management, and compliance aspects of ADOT's core business activities, with natural resources management and cultural resources management as priority areas.

Priority: High

Estimated Level of Investment: Medium

3.3 Environmental Elements of Core Business Policies and Procedures

Performance Indicator(s): All ADOT core business policies and procedures have comprehensive environmental protection and enhancement elements incorporated in them. All practitioners are well-informed and trained on the implementation of the elements.

Performance Evaluation Summary: Relatively few ADOT core business policies and procedures have environmental protection and enhancement elements incorporated in them. For the most part, environmental protection and enhancement elements are covered by separate directives that may be referenced in the core business policies and procedures. In some cases, environmental protection and enhancement measures required in core business areas may be implemented from experience and not from written policies and procedures. In other cases, environmental measures may be implemented from interpretations of the state and federal laws, regulations, and guidelines and not from ADOT policies and procedures. For example, the ADOT Highways Division Project Development Manual, dated February 1995, contains some very basic and general environmental requirements. There are no environmental analysis and documentation

procedures in the manual. A separate ADOT Environmental and Enhancement Group (EEG) Procedures Manual is currently under development. Training is often, but not always conducted as core business policies and procedures are updated, depending on their magnitude and complexity.

Opportunity Area(s) for Improvement: Incorporating environmental protection and enhancement elements in the core business policies and procedures for all ADOT core business processes; reengineering the core business processes to incorporate the environmental protection and enhancement elements in a streamlined and environmentally-sound manner; and implementing a comprehensive training program for updated core business policies and procedures.

Recommended Strategies/Actions:

3.3.1 Conduct a department-wide study of how well environmental protection and enhancement elements are incorporated in the core business policies and procedures. Where absences and deficiencies are identified, direct the core business process owner to update the business policies and procedures.

Priority: High

Estimated Level of Investment: Low

3.3.2 Appoint and direct a central office team to develop and implement a phased, department-wide environmental protection and enhancement incorporation plan and program. The phases would include: developing an implementation plan, schedule, and budget; leading and assisting all ADOT organizations in incorporating environmental elements into their core business policies and procedures; and delivering a comprehensive training program.

Priority: High

Estimated Level of Investment: High

3.4 Environmental Training and Certification Program

Performance Indicators: There is a comprehensive, department-wide environmental training and certification program that satisfies the environmental training and expertise needs of ADOT and its business partners on a continuous basis. All ADOT personnel have environmental training requirements in their training plans. All ADOT consultant, service, and construction contracts include environmental training and certification requirements. All state and federal regulatory agencies, land management agencies, and metropolitan and rural planning organizations are offered the opportunity to receive environmental training conducted and/or sponsored by ADOT. Funds for environmental training and certification are routinely included in the operational budgets of all ADOT organizations.

Performance Evaluation Summary: ADOT does not have a comprehensive, department-wide environmental training and certification program for ADOT employees. ADOT does not have a comprehensive transportation-oriented environmental training program for state and federal regulatory agencies, land management agencies, and metropolitan

and rural planning organizations. Environmental training is provided on critical environmental subject areas on an irregular, periodic basis. Several sources of environmental training are used by the department and its consultants and contractors. Examples of environmental training sources are the: ADOT EEG; ADOT Natural Resources Section; ADOT Safety and Health Section; the National Highway Institute; the National Transit Institute; the FHWA Division Office and Resource Center; the AASHTO Center for Environmental Excellence; the North Carolina State University Center for Transportation and the Environment; environmental consultants; universities; training consultants; regulatory agencies; and land management agencies. There is some limited certification involved with some environmental subject areas such as asbestos, nuclear testing, sewage treatment, and hazardous waste management. All ADOT employees do not have environmental training plans. ADOT consultant and contractor contracts do not currently include environmental training and certification requirements.

Opportunity Area(s) for Improvement: Requiring environmental training and certification elements in the training plans of all ADOT managers, supervisors, and employees; requiring environmental training and certification elements in the pre-qualifications packages and contracts of all consultants and contractors; giving all state and federal regulatory agencies, land management agencies, and metropolitan and rural planning organizations the opportunity to receive transportation-oriented environmental training conducted and/or sponsored by ADOT; and including funds for environmental training and certification in the operational budgets of all ADOT organizations.

Recommended Strategies/Actions:

3.4.1 Conduct a comprehensive environmental training needs assessment and prepare a department-wide environmental training plan. Include environmental training requirements in the training plans of all ADOT employees.

Priority: High

Estimated Level of Investment: Low

3.4.2 Develop and implement a comprehensive, cooperative environmental training and certification program with the ADOT business partners. Budget and allocate funding for training material development, training delivery, participation in training, training equipment, and travel expenses. Make maximum use of distance learning training techniques to control costs and facilitate participation in training and certification.

Priority: High

Estimated Level of Investment: Medium

3.5 Environmental Information System

Performance Indicator(s): There is a comprehensive, computerized environmental information system that serves multimodal transportation planning, design, construction, maintenance, and operations. High quality environmental information is readily available to support decision-making, monitoring, tracking, and compliance activities to promote sound environmental management and stewardship. Multimodal transportation planning,

design, construction, maintenance, and operations information systems include environmental elements.

Performance Evaluation Summary: ADOT does not have a comprehensive environmental information system. There are a variety of environmental databases used by the Transportation Planning Division, EEG, and the Safety and Health Section of the Transportation Services Group from various sources via the Internet and the ADOT Intranet. For example, an electronic environmental compliance project tracking system developed by EEG is currently in use. EEG is involved in joint effort with its Technology Group and Scheduling Section to integrate the tracking system with the project scheduling system and other ADOT project databases. These systems will include web access. Also, the Arizona Information Data Warehouse is building the environmental elements of its data libraries. There are currently no ADOT requirements to include environmental elements in transportation planning, design, construction, maintenance, and operations information system upgrades.

Opportunity Area(s) for Improvement: Developing an ADOT environmental information system. Including environmental elements in the information systems for multimodal transportation planning, design, construction, maintenance, and operations as these information systems are upgraded. Linking ADOT into existing environmental databases maintained by others such as nonprofit organizations, regulatory agencies, land management agencies, and planning organizations.

Recommended Strategies/Actions:

3.5.1 Review the National Cooperative Highway Research Program (NCHRP) Report 481, *Environmental Information System and Decision Support System Handbook*, and assess ADOT's interests in and potential benefits of developing and implementing an environmental information system. Participate as a pilot state in the development of environmental information system software as part of NCHRP 25-23(2), which will be initiated in June/July 2004.

Priority: Medium

Estimated Level of Investment: Low

3.5.2 Using the environmental information systems development guidance in NCHRP Report 481, develop a basic ADOT environmental information system. Build on the current work in progress by EEG to develop a project environmental compliance project tracking system and a cultural resource database.

Priority: Medium

Estimated Level of Investment: Medium

3.5.3 Require all ADOT information system upgrade projects include environmental elements where the availability of environmental information will improve environmental performance.

Priority: High

Estimated Level of Investment: Low

3.6 Recycling and Waste Reduction

Performance Indicator: ADOT complies with requirements of the state recycling and waste reduction programs. An ADOT recycling and waste reduction strategy is implemented and periodically updated. Quantities of materials recycled and wastes reduced are reported.

Performance Evaluation Summary: All ADOT organizations are aware of the requirements of the state recycling program and ADOT complies with them. Some organizations in ADOT may voluntarily go beyond the basic requirements of the state recycling program. Examples of the materials recycled include: high quality paper; aluminum and glass containers; toner cartridges; aluminum signs; asphalt, concrete; guardrail; motor oils; antifreeze; and equipment parts cleaners. An example of a waste reduction measure is replacing paper business transactions and files with electronic transactions and filing systems. ADOT does not have a recycling and waste reduction strategy. ADOT meets the reporting requirements of the state recycling program.

Opportunity Area(s) for Improvement: Developing and implementing an ADOT recycling and waste reduction strategy that goes beyond the state recycling and waste reduction programs where it is cost effective. Monitoring and reporting the quantities of materials recycled and wastes reduced in ADOT performance reports.

Recommended Strategies/Actions:

3.6.1 Apply for Arizona Department of Environmental Quality (ADEQ) funding for the development and implementation of an ADOT recycling and waste reduction strategy that goes beyond the basic requirements of the existing state program. Include provisions for a short-term (three to five years) recycling and waste reduction program coordinator position in the funding request.

Priority: Low

Estimated Level of Investment: Low

3.6.2 Develop an ADOT recycling and waste reduction strategy and implementation plan.

Priority: Low

Estimated Level of Investment: Low

3.6.3 Develop and implement a recycling and waste reduction reporting system to monitor and report on the quantities of materials recycled and the waste reduced as part of routine ADOT performance reporting.

Priority: Low

Estimated Level of Investment: Low

3.6.4 Continuing to replace paper business transactions and files with electronic transactions and files.

Priority: High

Estimated Level of Investment: Medium

3.7 Energy Conservation

Performance Indicator(s): ADOT complies with the requirements of the state energy conservation programs. An ADOT energy conservation strategy is implemented and periodically updated. The amount of energy used and conserved is reported.

Performance Evaluation Summary: All ADOT organizations are aware of the state energy conservation program and comply with them. Examples of energy conservation measures include: routinely performing energy audits; increasing use of electronic business transactions; ridesharing programs; employee telecommuting; installing and maintaining energy-efficient copying, computer, heating, and air-conditioning systems; and teleconferencing, web-conferencing, and videoconferencing. ADOT does not have an energy conservation strategy. ADOT complies with the requirements of the state energy conservation programs. ADOT does not have a comprehensive energy use and conservation auditing and reporting program.

Opportunity Area(s) for Improvement: Developing and implementing an ADOT conservation strategy that goes beyond the state energy conservation programs where it is cost effective. Conducting energy audits and using the results to target areas for improvement. Reporting the results of the energy conservation programs.

Recommended Strategies/Actions:

3.7.1 Apply for state and federal funding for the development and implementation of an ADOT energy conservation strategy that goes beyond the basic requirements of the existing state program.

Priority: Low

Estimated Level of Investment: Low

3.7.2 Develop an ADOT energy conservation strategy and implementation plan.

Priority: Low

Estimated Level of Investment: Low

3.8 Water Management Strategy

Performance Indicator(s): ADOT complies with the requirements of the state water management programs. Examples of water management program areas affecting ADOT include: water conservation; storm water runoff; erosion and sediment pollution control; water supply (surface and groundwater) protection; wastewater treatment; and water resource (wetlands, rivers, lakes, floodplains) encroachment permitting. An ADOT water management strategy is implemented and periodically updated. The progress made in implementing the strategy is regularly monitored and reported.

Performance Evaluation Summary: ADOT is currently experiencing compliance challenges in the water management program areas listed above with the exception of water conservation and water resource encroachment permitting. Examples of the compliance challenges include: state and/or federal noncompliance notices and penalties

in the areas of water supply, waste water treatment, and storm water management associated with ADOT highway maintenance and operations; and state and/or federal noncompliance notices and penalties in the areas of storm water management and erosion and sediment pollution control associated with highway construction. ADOT does not currently have a comprehensive water management strategy in place. The responsibility for compliance with water management rules is dispersed among various ADOT organizations such as General Operations, Development, Construction, Equipment Services, Grand Canyon Airport, EEG, and MVD. ADOT does not routinely monitor and report on water management compliance activities.

Opportunity Area(s) for Improvement: Developing and implementing a comprehensive water quality management program to ensure compliance.

Recommended Strategies/Actions:

3.8.1 Establish an ADOT Water Management Program with using a framework with five elements as follows:

Element 1: ADOT Water Quality Management Program Steering Committee or Task Force

- This committee would lead the development and implementation of the ADOT Water Quality Management Program (WQMP), until the ADOT organizations with water quality responsibilities are meeting and/or exceeding the requirements.
- This committee would be chaired by an executive-level ADOT manager and include mid-level management representation from ADOT organizations with substantial water quality responsibilities and ADEQ executive-level and mid-level manager(s).
- This committee would meet at least biweekly in the early phase of the development of the WQMP and monthly as the WQMP implementation.
- A set of operating procedures would be developed and adopted for the steering committee to guide decision-making, interagency coordination, and issue resolution.

Element 2: ADOT Water Quality Management Program Team

- A multi-disciplinary team of environmental and engineering professionals would be assembled and work full-time to develop and implement the WQMP.
- The WQMP Team would be lead by a highly motivated, full-time ADOT senior-level professional who reports directly to the chair of the WQMP Steering Committee.
- At least a five-year statewide open end consultant services WQMP contract would be executed with a highly qualified and experienced multi-disciplinary consultant team. The WQMP consultant team must be able to serve the WQMP needs of all ADOT functional areas such as planning, development, construction, maintenance, and operations. The WQMP consultant team must be capable of

- assisting ADOT in integrating sustainable water quality management practices into its business.
- A peer consultation/benchmarking mechanism would be established to take advantage of the WQMP experiences, lessons learned, management approaches, funding approaches, and best practices of other transportation agencies. Agencies known to have considerable experience with water quality management programs are the Maryland State Highway Administration, Washington State Department of Transportation (DOT), Caltrans, Oregon DOT, North Carolina DOT, and Massachusetts Highway Department.

Element 3: ADOT Water Quality Management Program Strategic Plan and Work Program

- A WQMP Strategic Plan and Work Program would be developed and implemented by the ADOT WQMP Team. At a minimum, they should meet the requirements of any compliance order.
- The Work Program would include tasks, team member assignments, workload analyses, target dates, and completion dates. Project management software would be used to coordinate and manage the implementation of the work plan. All WQMP Team members would have web-based access to the Strategic Plan and Work Program.
- The Strategic Plan and Work Program would include a strong ADOT, regulatory agency, consultant, contractor, and public information and education component to promote the understanding of the transportation program delivery, environmental stewardship, and other aspects of the program implementation.
- The Strategic Plan and Work Program would include a legislative information component to inform the elected officials of the transportation program delivery, financial, legal, regulatory, and time aspects of their implementation.

Element 4: ADOT Water Quality Financial Plan and Budget

- A WQMP Financial Plan and Budget would be developed by the ADOT WQMP Team in cooperation with the ADOT budgeting professionals. Potential sources of non-transportation funds should be explored.
- The WQMP Financial Plan and Budget should include provisions for: 1) Overseeing and managing the WQMP program; 2) Developing the policies, procedures, analysis tools, communication tools, and information management tools; and 3) Constructing the water quality-related features of ADOT's physical plant and multimodal transportation infrastructure improvements.
- In the long term, the WQMP-related funding would be integrated into the business plans and budgets of the ADOT organizations with water quality compliance responsibilities.

Element 5: ADOT Pilot Environmental Management System Application

- The WQMP would be developed and implemented in accordance with the ISO 14001 Environmental Management System (EMS) standards as a pilot application of EMS in ADOT. The "*Plan>Do>Check>Act*" environmental management system model would be used to guide the development and implementation of WQMP on a voluntary basis.

Priority: High

Estimated Level of Investment: High

Note: This Water Management Program framework was developed and provided to John Nichols by the AASHTO consultant on February 6, 2004 at the request of the TAC at its meeting with the AASHTO consultant on February 5, 2004.

3.8.2 Appoint a full-time water management program coordinator to supply technical assistance, training, and regulatory agency liaison to all ADOT organizations with water management responsibilities. This action would be implemented should ADOT decide that a comprehensive water management strategy will not be prepared.

Priority: High

Estimated Level of Investment: Low

3.9 Asbestos Management

Performance Indicator(s): ADOT is in compliance with the state and federal asbestos management requirements. An asbestos management strategy is developed and implemented. The progress made in implementing the strategy is monitored and reported.

Performance Evaluation Summary: ADOT has experienced compliance challenges in managing asbestos in ADOT buildings and buildings acquired for highway rights-of-way. ADOT has received noncompliance notices and penalties from state and federal agencies. A statewide asbestos survey of about 1200 ADOT buildings is currently underway. An interim ADOT asbestos management policy is in place to provide direction to people using ADOT buildings regarding the disturbance of floors, walls, and ceilings for maintenance, construction, and operations. A two-year funding appropriation is in place for asbestos management activities. An ADOT asbestos management policy and procedure is in place for right-of-way acquisition activities, including building appraisals and demolitions.

Opportunity Area(s) for Improvement: Developing and implementing an asbestos management strategy.

Recommended Strategies/Actions:

3.9.1 Develop an asbestos management strategy based on the results of the statewide asbestos survey.

Priority: High

Estimated Level of Investment: Low

3.9.2 Appoint a full-time asbestos management program coordinator to supply asbestos abatement project management, technical assistance, training, and regulatory agency liaison to all ADOT organizations with asbestos management responsibilities. This action would be implemented should ADOT decide that a comprehensive asbestos management strategy would or would not be prepared.

Priority: High

Estimated Level of Investment: Low

3.10 Outdoor Lighting

Performance Indicator(s): All ADOT facilities use outdoor lighting designs, fixtures, and controls to minimize the amount of fugitive light emitted to the sky and adjacent areas.

Performance Evaluation Summary: As more transportation facilities are constructed in rural areas and more areas along existing transportation facilities are developed, the negative effects of fugitive light are of concern. Currently, ADOT does not have an outdoor lighting policy to address fugitive light emissions.

Opportunity Area(s) for Improvement: Incorporate fugitive light emission control elements into existing outdoor lighting design policies and procedures for all ADOT facilities using outdoor lighting.

Recommended Strategies/Actions:

3.10.1 Conduct a review of existing ADOT facility design policies and procedures to determine how well they address fugitive light emissions. Revise the outdoor lighting design policies and procedures to incorporate provisions for controlling fugitive light emissions.

Priority: Low

Estimated Level of Investment: Low

3.11 Interagency and Tribal Relationship Building

Performance Indicator(s): Working relationships with regulatory, land management, transportation planning, resource agencies, and tribes are positive and productive. Agencies and tribes understand and mutually respect their missions, needs, and goals. Agencies and tribes have established lines of communication, including conflict resolution procedures. Agencies share information and resources to accomplish their respective missions and achieve their goals. Agencies and tribes establish informal and formal agreements to meet their responsibilities and commitments. Agencies and tribes regularly meet to collectively discuss their evolving missions, needs, and goals and to celebrate their successes and to learn from their failures.

Performance Evaluation Summary: Over many years ADOT personnel have worked hard to establish and maintain positive and productive relationships with the regulatory, land management, and resource agencies and tribes. This is a very labor and time intensive activity requiring constant attention. There are numerous ADOT personnel interacting

with agencies and tribes using a wide variety of communication media. ADOT, agencies, and tribes have numerous informal and formal operating agreements. ADOT, agencies, and tribes do not have formal conflict resolution procedures in all agreements. ADOT, agencies, and tribes do not have regular meetings where they meet collectively.

Opportunity Area(s) for Improvement: Establishing and maintaining effective lines of communication among the agencies and tribes. Issuing conflict resolution policies and procedures. Conducting training to help people better understand their respective missions, needs, and goals.

Recommended Strategies/Actions:

3.11.1 Assess the effectiveness of the lines of communication among agencies and tribes. Develop a relationship-building strategy with the agencies and tribes.

Priority: Medium

Estimated Level of Investment: Medium

3.11.2 Appoint a full-time interagency coordinator to work with the existing tribal coordinator to establish and maintain agency and tribal relationships.

Priority: Medium

Estimated Level of Investment: Medium

3.12 Environmental Services for ADOT Organizations

Performance Indicator(s): All ADOT business units have fast, convenient, and reliable access to the range of in-house, consultant, and outside agency environmental services they need to maintain excellent environmental performance.

Performance Evaluation Summary: Currently, most of the ADOT in-house environmental professional staff focus on serving the project development and roadside maintenance environmental needs of the department. Most environmental professionals are located in the EEG in the Development Section of the Intermodal Transportation Division and in the Natural Resources Section in the Operations Section of the Intermodal Transportation Division. Therefore, the ADOT organizations with environmental needs outside of project development and roadside maintenance do not have direct access to in-house environmental services. Currently most of the ADOT consultant environmental professionals concentrate on serving project development with the exception of those performing asbestos surveys of ADOT buildings. Currently, most of the outside agency environmental professionals focus on serving the environmental needs of project development through interagency funding agreements.

Opportunity Area(s) for Improvement: Giving all ADOT organizations with environmental service needs fast, convenient, and reliable access to environmental professionals.

Recommended Strategies/Actions:

3.12.1 Assess and document the existing and projected environmental service needs of all ADOT organizations. Develop an environmental professional services strategy to meet the needs using a combination of in-house, consultant, and outside agency personnel.

Priority: High

Estimated Level of Investment: Low

3.13 Environmental Management

Performance Indicator(s): ADOT uses a "*Plan>Do>Check>Act*" approach to managing the environmental protection and enhancement aspects of its business activities. An ADOT organization provides proactive leadership, planning, training, technical assistance, and performance monitoring services to all ADOT organizations, consultants, contractors, airport authorities, transit agencies, and vendors in the area of environmental management.

Performance Evaluation Summary: Generally, ADOT appears to use primarily a "*Do*" approach to managing its environmental protection and enhancement activities. Although there is some environmental protection and enhancement planning, doing, checking, and acting associated with highway project development and hazardous materials spill response, many ADOT organizations are basically complying with environmental requirements in a reactive fashion. Environmental protection and enhancement are not routinely a prominent focus area of the ADOT strategic and business planning, except where compliance problems require immediate attention and priority treatment. There is no overall environmental management framework for all ADOT organizations, consultants, contractors, and vendors to use to systematically incorporate environmental protection and enhancement elements into their respective core business activities. For the most part, each ADOT organization independently addresses its environmental protection and enhancement responsibilities to the best of its ability with available resources. There is no ADOT environmental management organization assigned the permanent duty of assisting all ADOT organizations, consultants, contractors, airport authorities, transit agencies, and vendors in identifying, meeting and/or exceeding their environmental management responsibilities. Currently, the EEG focuses on serving the environmental management needs of highway project development, and the Natural Resources Section focuses on roadside vegetation management. With a few exceptions, these organizations virtually have all the environmental management expertise in ADOT within their ranks. There is no full-time environmental management position in the ADOT district offices. The lack of a full-time district environmental manager results in reactive environmental compliance which often hampers program delivery.

Opportunity Area(s) for Improvement: Modifying the ADOT environmental management approach to more effectively incorporate environmental protection and enhancement into all aspects of its business activities on a routine basis. Creating a comprehensive environmental management framework to serve as the agency-wide approach to environmental protection and enhancement. Establishing a new ADOT environmental management organization to provide proactive leadership, planning, training, technical assistance, and performance monitoring services to all ADOT organizations, consultants, contractors, airport authorities, transit agencies, and vendors in the area of environmental

management. Establishing a full-time ADOT district environmental manager position staffed by a highly qualified environmental professional.

Recommended Strategies/Actions:

3.13.1 Create an ADOT Office of Environmental Quality. Assign the office the responsibility of leading and assisting all ADOT organizations, consultants, contractors, vendors, airport authorities, transit agencies, and vendors in incorporating environmental protection and enhancement into all their business activities affecting the environment. Staff the office with full-time manager and at least five (5) full-time environmental management professionals, an administrative assistant, and a secretary. Assign the environmental management professional to assist one (1) or more ADOT organizations as follows:

- Office of Environmental Quality Manager: director, deputy director, and chief of staff
- Environmental Professionals 1 and 2: Intermodal Transportation Division, consultants, contractors, and vendors
- Environmental Professional 3: TSG, consultants, contractors, and vendors
- Environmental Professional 4: Aeronautics, MVD, Legislative Services, consultants, contractors, vendors, airport authorities, and transit Agencies
- Environmental Professional 5: Environmental Monitoring and Information Management

Priority: High

Estimated Level of Investment: Medium

3.13.2 Create an ADOT Environmental Management Steering Committee to oversee and coordinate the development and implementation of an ADOT Environmental Management Program. Appoint an ADOT senior executive manager to chair the committee and to report environmental performance progress and results to the ADOT Core Team. Appoint managers from all ADOT divisions to serve on the committee. Invite state and federal environmental agencies, consultants, contractors, airport authorities, transit agencies, and vendors to serve on the committee. Encourage the committee to hold monthly meetings for the first year, bimonthly for the second year, and quarterly meetings for the third year.

Priority: High

Estimated Level of Investment: Low

3.13.3 Develop and implement an ADOT Environmental Management Program. Include policies, procedures, training, technical assistance, monitoring, and reporting in the program. Include all ADOT organizations in the development and implementation.

Priority: High

Estimated Level of Investment: Medium

3.13.4 Develop and execute a five-year, \$5 million, open-end environmental management services consultant contract to assist ADOT in developing and implementing the ADOT Environmental Management Program. Require the consultant to assign a core staff of professionals and support personnel to reside in the ADOT central office and other offices as necessary to develop and implement the Program.

Priority: High

Estimated Level of Investment: High

3.13.5 Apply for ADEQ, U.S. Environmental Protection Agency (EPA), and/or Federal Highway Administration (FHWA) funds to develop and implement an ADOT Environmental Management Program.

Priority: High

Estimated Level of Investment: Low

3.13.6 Partner with the Phoenix Public Transit Agency to develop its Environmental Management System as a prototype for other Arizona transit agencies.

Note: The Phoenix Public Transit Agency is currently receiving environmental management system training and technical assistance sponsored by the Federal Transit Administration.

Priority: High

Estimated Level of Investment: Low

3.13.7 Develop and execute an environmental management technical assistance agreement with the AASHTO Center for Environmental Excellence to strategically mentor ADOT in the development and implementation of its Environmental Management Program. Evaluate and update the agreement on an annual basis.

Priority: High

Estimated Level of Investment: Low

3.13.8 Create a full-time environmental manager position staffed with a highly qualified environmental professional in each of the ADOT district offices.

Priority: High

Estimated Level of Investment: Medium

3.14 ADOT Annual Report

Performance Indicator(s): The ADOT annual report summarizes the agency's environmental performance in planning, development, construction, maintenance, and operations. An ADOT annual environmental quality report describes the agencies progress, challenges, and achievements in addressing its environmental goals, objectives, and measures.

Performance Evaluation Summary: *No specific information provided.*

Opportunity Area(s) for Improvement: Informing the ADOT partners and customers of the agencies progress, challenges, and achievements in addressing its environmental goals, objectives, and measures.

Recommended Strategies/Actions:

3.14.1 Prepare and distribute an annual ADOT environmental quality report. Summarize the important elements of the report in the ADOT annual report.

Priority: Medium

Estimated Level of Investment: Low

4 ORGANIZATION-SPECIFIC ENVIRONMENTAL PERFORMANCE EVALUATIONS & IMPROVEMENT OPPORTUNITIES

This section summarizes the results of the organization-specific environmental performance evaluations and the opportunity areas for improvement for Transportation Planning, Maintenance, Transportation Services, General Operations, Equipment Services, Construction, Aeronautics, Development, and MVD. Included in each of the environmental performance areas are a description of the environmental performance indicator, the environmental performance summary, and the opportunity area(s) for improvement.

4.1 Transportation Planning

4.1.1 Statewide Metropolitan, Regional, Local Community and Tribal Lands Transportation Plan Development, Updates, and Technical Assistance

Performance Indicator(s): The statewide, metropolitan, regional, local community, and tribal long range transportation plans and their updates include a range of environmental performance goals, objectives and measures. Protection and enhancement of important human and natural environmental resource areas such as air, water, noise, ecosystem, cultural, social, economic, and land use are addressed in the goals, objectives, and measures. An ADOT indirect and cumulative impact assessment methodology is developed and used to address the effects of the land use changes associated with transportation during planning and project development. Annual reports documenting the progress in meeting the goals, objectives, and measures are prepared and widely distributed.

Performance Evaluation Summary: The current statewide, metropolitan, regional, local community, and tribal long range transportation plans do not routinely include a range of environmental performance goals, objectives, and measures. ADOT uses the indirect and cumulative impact assessment guidance included in NCHRP research publications to assess the impacts during the project development process. ADOT and its transportation planning partners do not assess the indirect and cumulative effects during transportation planning. The current progress reports include primarily air quality conformity information from a compliance perspective.

Opportunity Area(s) for Improvement: Including a range of environmental performance goals, objectives, and measures in the statewide, metropolitan, regional, local community, and tribal long range transportation plans. Developing an ADOT indirect and cumulative impact assessment methodology for transportation planning and project development. Annually reporting progress in meeting the goals, objectives, and measures in air quality conformity and other environmental subject areas.

4.1.2 Priority Programming, Five Year Transportation Facilities Construction Program, and State Transportation Improvement Program

Performance Indicator(s): Adequate funding is programmed for environmental analyses, documentation, mitigation, and enhancements based on scoping information and historical data on costs. Funding mechanisms are in place for unplanned and emergency environmental analyses, documentation, mitigation, and enhancements. Funding is set aside for programmatic approaches to environmental analysis, documentation, mitigation, and enhancements to conserve funding and time and to improve environmental performance.

Performance Evaluation Summary: Program and project funding is programmed based on scoping information and historical data and costs. Accurate historical data and cost information may not always be available for programming. Where unplanned and emergency funding needs evolve, additional funding is usually provided by deferring other project work. There is usually no funding set-aside for unplanned and emergency situations. Some limited funds have been allocated for programmatic approaches.

Opportunity Area(s) for Improvement: Developing an environmental cost accounting mechanism to provide accurate data for programming. Setting aside project funding for unplanned and emergency situations to avoid deferring projects. Setting aside research and project funding for developing programmatic approaches. Setting aside project funding for the identification and mapping of the project environmental context prior to scoping, corridor planning studies, and project development.

4.1.3 Transportation Planning and Research Study Preparation and Administration

Performance Indicator(s): The ADOT research program routinely includes research to provide information and tools to improve environmental performance. ADOT proposes and supports NCHRP, Transit Cooperative Research Program (TCRP), and FHWA environmental research.

Performance Evaluation Summary: Some environmental research such as this research project and safe wildlife crossing research is being conducted. There is no comprehensive environmental research program to improve environmental performance. ADOT responds to the NCHRP and TCRP solicitations for problem statements and participates in research project panels.

Opportunity Area(s) for Improvement: Developing and funding a robust environmental research program to provide information and tools for improving environmental performance. Routinely submitting environmental research problem statements to NCHRP, TCRP, and other research organizations. Conducting pooled-funded environmental research with other organizations such as: ADEQ, EPA, U.S. Forest Service, and state transportation agencies.

4.1.4 Transportation Planning Air Quality Programs

Performance Indicator(s): ADOT and transportation planning organizations include air quality improvement goals, objectives, and measures in their transportation plans and programming activities. The required air quality conformity analyses are conducted and the transportation improvement programs are developed in compliance with state and federal air quality rules. The implementation of the air quality improvements is coordinated with the ADOT and private-sector project development, construction, and maintenance organizations. ADOT project development proactively addresses air quality goals, objectives, and measures in the design of highway improvements. ADOT public relations programs include air quality public education and outreach elements. An ADOT air quality information management system is used to collect and manage air quality information.

Performance Evaluation Summary: The primary focus of the air quality programs have been air quality conformity analyses, documentation, reviews, and construction program adjustments during transportation planning and programming. ADOT project development includes micro-scale air quality analyses, which determine whether or not air quality standards are exceeded on a specific project design. When the analyses indicate a potential violation of the air quality standard, the project alternatives are modified to eliminate the violation. The Blue Skies Air Quality Training Program appears to be effectively providing training to the highway construction industry in reducing fugitive dust at construction sites. Some ADOT public relations program materials include air quality information. ADOT does not have a comprehensive air quality information management system.

Opportunity Area(s) for Improvement: Incorporating air quality goals, objectives, and measures into transportation planning, rather than only conducting the conformity analyses and reacting to nonconformity results. Incorporating air quality goals, objectives, and measures into transportation project development. Disseminating additional air quality public education materials. Developing and deploying an ADOT air quality information management system.

4.1.5 Transportation Infrastructure Asset Management System

Performance Indicator(s): Sensitive environmental features within the rights-of-way of the transportation system are inventoried, mapped, and included in a transportation infrastructure asset management system GIS database. Examples of sensitive environmental features are: parks, recreation areas, residential communities, rare plant communities, storm water facilities, historic transportation resources, archaeological resources, wetlands, hazardous waste sites, floodplains, wildlife crossings, forested areas, streams, and scenic areas. Management plans are developed and implemented to protect and enhance the sensitive environmental features.

Performance Evaluation Summary: Some sensitive environmental assets such as storm water facilities, archaeological resources, historic bridges, and scenic areas are currently inventoried, mapped, and included in a GIS database(s).

Opportunity Area(s) for Improvement: Inventorying and mapping all sensitive environmental features. Protecting and enhancing the sensitive environmental features through the development and implementation of management plans for construction, maintenance, and operations.

4.1.6 Arizona Information Data Warehouse

Performance Indicator(s): All environmental data needed for transportation decision-making is managed through the Arizona Information Data Warehouse (Warehouse). The Warehouse contains environmental data collected by ADOT and others. The Warehouse provides linkages to other environmental data sources.

Performance Evaluation Summary: The Warehouse is currently building its data libraries. Some readily available environmental data is in the Warehouse. ADOT and consultant planning, environmental, and engineering professionals are currently accessing web-based environmental data sources.

Opportunity Area(s) for Improvement: Establishing a one-stop source of environmental data for ADOT transportation decision-making.

4.1.7 Highway Performance Monitoring System Operation

Performance Indicator(s): Highway performance information used for environmental analyses such as air quality conformity, traffic noise impacts, water quality runoff impacts, and project development public involvement is accurate, displayed in a user friendly format, and readily available. Environmental performance factors are incorporated in the Highway Performance Monitoring System.

Performance Evaluation Summary: Highway traffic and accident data used in transportation planning and project development are often difficult for ADOT professionals, the public, and the regulator agencies to understand. This information is always critical to understanding the purpose and need of proposed transportation improvements. Also, it is the foundation of environmental impact prediction in the areas of air quality, traffic noise, and water quality. Environmental performance factors are not currently included in the Highway Performance Monitoring System.

Opportunity Area(s) for Improvement: Developing and using more effective techniques and tools for graphically displaying traffic and accident data use in transportation planning and project development environmental analyses, environmental documentation, agency coordination, and public involvement.

4.1.8 ADOT Library Operation

Performance Indicator(s): Published and web-based environmental information relevant to transportation is available to all ADOT employees and consultants. The library subscribes to valuable environmental information services. Training is provided in using the library resources.

Performance Evaluation Summary: No specific information was provided. Typically, most transportation environmental professionals maintain their own library, web-based access to environmental information, and subscriptions to publications. Also, library use training is typically provided to new employees.

Opportunity Area(s) for Improvement: Developing and maintaining an on-line navigator to find published and web-based environmental information. Subscribing to valuable environmental information services. Providing training to employees as new library services are added.

4.1.9 ADOT Environmental Research Information Dissemination

Performance Indicator(s): There is widespread dissemination of information about the ADOT and other transportation environmental research in progress and completed. The information is primarily distributed electronically.

Performance Evaluation Summary: The ADOT Transportation Research Digest (Digest) is no longer published. The ADOT Transportation Research Newsletter is periodically published and includes articles about ongoing and completed environmental research. For example, the January 2004 issue of the newsletter included an article about this research project. The newsletter is widely distributed within ADOT in paper form. No information was provided about whether or not the newsletter covers environmental research outside ADOT.

Opportunity Area(s) for Improvement: Including additional articles in the Transportation Research Newsletter about the transportation environmental research in progress and completed by others. Distributing the newsletter primarily by electronic means, except for some customers without computers.

4.1.10 ADOT Product Resource Investment, Deployment, & Evaluation (Pride) Program Administration

Performance Indicator(s): Innovative ways to protect and enhance the environment are included in the Pride Program evaluations. Care is taken not to mistakenly value engineer the environmental protection and enhancement out of an ADOT product or customer service.

Performance Evaluation Summary: No specific information was provided about how environmental protection and enhancement is considered in the Pride Program evaluations. ADOT has had some instances where the value engineering process has eliminated environmental mitigation commitments identified during project development.

Opportunity Area(s) for Improvement: Incorporating procedures in the Pride Program to evaluate the environmental protection and enhancement aspects of a product or service.

4.1.11 ADOT Statewide Bicycle and Pedestrian Plan Development/Update

Performance Indicator(s): The ADOT Bicycle and Pedestrian Plan and its updates include provisions to protect and enhance the environment.

Performance Evaluation Summary: No specific information provided. Generally, bicycle and pedestrian facilities serve to protect and enhance human and natural environment. In some rare instances, they can adversely impact the environment when proper precautions are not taken. When state and/or federal transportation funding is used for bicycle and pedestrian project design and construction, an environmental evaluation is conducted.

Opportunity Area(s) for Improvement: Incorporating environmental protection and enhancement measures into bicycle and pedestrian plans, programs, and projects.

4.1.12 Transit Technical, Planning, and Operational Assistance Program Administration

Performance Indicator(s): Transit technical, planning, and operational assistance programs include provisions to protect and enhance the environment in the improvement, maintenance, and operation of transit systems.

Performance Evaluation Summary: No specific information provided. Generally, state DOT's provide a minimal amount of technical guidance in the environmental area to transit agencies. The transit agencies follow the FTA NEPA rules for transit project development. They comply with the EPA and state environmental agency waste management and pollution prevention rules. They rely heavily on consultant expertise to satisfy the environmental requirements.

Opportunity Area(s) for Improvement: Adapting and sharing highway environmental guidance and training materials with the transit agencies. Providing environmental technical assistance and training to transit agencies.

4.2 MAINTENANCE

4.2.1 Highway Maintenance Manual Updates

Performance Indicator(s): Environmental protection and enhancement policies, procedures, best environmental management practices, and quality control/assurance measures are incorporated into the maintenance manual as the manual is updated.

Performance Evaluation Summary: Few environmental protection and enhancement policies, procedures, best environmental management practices, and quality control/assurance measures are incorporated into the maintenance manual. In the absence of this guidance in the maintenance manual, guidance is available through: regulatory permit conditions; state and federal land management agency agreements and consultations; operation and/or site specific work plans and instructions; institutional memory; and training materials and seminars. This lack of written guidance results in inconsistent environmental performance.

Opportunity Area(s) for Improvement: Incorporating environmental protection and enhancement policies, procedures, best environmental management practices, and quality control/assurance measures are incorporated into the maintenance manual as the manual is updated.

4.2.2 PeCoS Maintenance Management System

Performance Indicator(s): Environmental protection and enhancement performance guidelines and work method options, best environmental management practices, and quality control/assurance measures are included in PeCoS as it is updated.

Performance Evaluation Summary: Few environmental protection and enhancement performance guidelines and work method options, best environmental management practices, and quality control/assurance measures are in PeCoS. In the absence of this guidance in PeCoS, guidance is available through: regulatory permit conditions; state and federal land management agency agreements and consultations; operation and/or site specific work plans and instructions; institutional memory; and training materials and seminars. This lack of guidance results in inconsistent environmental performance.

Opportunity Area(s) for Improvement: Incorporating environmental protection and enhancement performance guidelines and work method options, best environmental management practices, and quality control/assurance measures into PeCoS as it is updated.

4.2.3 Environmental Assessment of Routine Maintenance District Activities

Performance Indicator(s): Environmental impacts of routine maintenance activities and measures to avoid, reduce, and mitigate them are identified. Environmental protection and enhance performance guidelines and work method options, best environmental

management practices, and quality control/assurance measures are incorporated in the Highway Maintenance Manual and PeCoS.

Performance Evaluation Summary: There is historically a limited understanding and documentation of the environmental impacts of ADOT's routine highway maintenance activities. As a result, environmental impacts are not always adequately considered in planning, doing, and checking routine maintenance operations. This sometimes results in maintenance operations having unintended environmental consequences

Opportunity Area(s) for Improvement: Identifying the environmental impacts of routine maintenance activities and measures to avoid, reduce, and mitigate them through the proposed *Environmental Assessment for Routine District Maintenance Activities*. This statewide assessment promises to provide the analyses and documentation needed to incorporate best environmental management measures into the ADOT Highway Maintenance Manual and PeCoS. Incorporating environmental protection and enhancement performance guidelines and work method options, best environmental management practices, and quality control/assurance measures in the Highway Maintenance Manual and PeCoS.

4.2.4 PeCoS Programs 100 and 120: Paved and Unpaved Surfaces – Paving Equipment Cleaning

Performance Indicator(s): Best environmental management practices for paving operation equipment cleaning are used.

Performance Evaluation Summary: Paving operation equipment is often cleaned without proper pollution prevention measures and /or in environmentally sensitive areas.

Opportunity Area(s) for Improvement: Identifying and implementing best environmental management practices for paving operation equipment cleaning. Incorporating those practices into the Highway Maintenance Manual, PeCoS, and maintenance paving contracts.

4.2.5 PeCoS Programs 100 and 120: Paved and Unpaved Surfaces – Paving Staging Areas and Material Stockpiling

Performance Indicator(s): Using best environmental practices for paving equipment staging and material stockpiling.

Performance Evaluation Summary: Paving equipment staging areas and material stockpiles are sometimes located in or adjacent to sensitive environmental and community areas such as cultural sites, endangered plant and animal species habitat, wetland, residential areas, and commercial areas. Occasionally, there are adverse impacts to these sensitive areas due to the location and the nature of the paving equipment staging area and material stockpiling activities.

Opportunity Area(s) for Improvement: Identifying and implementing best environmental management practices for locating and using staging areas material stockpiles. Incorporating those practices into the Highway Maintenance Manual, PeCoS, and maintenance paving contracts. Obtaining project and/or programmatic approvals to stabilize unpaved surfaces on state and federal lands

4.2.6 PeCoS Programs 100 and 120: Paved and Unpaved Surfaces – Erosion and Sediment Pollution Control

Performance Indicator(s): Erosion and sediment pollution during paving operations is controlled.

Performance Evaluation Summary: Maintenance paving operations on existing highway sometimes changes storm water drainage patterns and flow quantities, and causes roadside erosion and the deposition of sediment in highway drainage facilities and water bodies.

Opportunity Area(s) for Improvement: Developing standard erosion and sediment pollution control measures for maintenance paving operations and including them in the Highway Maintenance Manual, PeCoS, and maintenance paving work plans and contracts.

4.2.7 PeCoS Programs 100 and 120: Paved and Unpaved Surfaces-Dust Pollution Control

Performance Indicator(s): Dust pollution during maintenance operations is controlled.

Performance Evaluation Summary: Maintenance paving operations often involve pavement sawing, milling, high-pressure air blasting, and mechanical sweeping that cause localized dust pollution affecting workers, motorists, and neighbors. This exacerbates PM₁₀—particulate matter smaller than 10 microns, an air quality problem that is of major concern in Arizona.

Opportunity Area(s) for Improvement: Developing standard pavement sawing, milling, high-pressure blasting, and sweeping methods that eliminate or minimize fugitive dust emissions and including them in the Highway Maintenance Manual, PeCoS, and maintenance paving work plans and contracts.

4.2.8 PeCoS Programs 100 and 120: Paved and Unpaved Surfaces – Disposal of Sweepings, Concrete Debris, and Asbestos

Performance Indicator(s): Using best environmental practices for disposal of paving operation sweepings, concrete debris, and asbestos.

Performance Evaluation Summary: Pavement operation sweepings, concrete debris, and asbestos are sometimes difficult to dispose of properly and cost-effectively near the work

site. Occasionally, they may be improperly disposed of due to these difficulties or lack of awareness of the environmental impacts.

Opportunity Area(s) for Improvement: Developing convenient, cost-effective, and environmentally-sound methods for recycling and proper disposal of paving operation waste materials. Incorporating those practices into the Highway Maintenance Manual, PeCoS, and maintenance paving contracts.

4.2.9 PeCoS Program 200: Rest Areas-Recreational Vehicle Sewage Holding Tank Dumping

Performance Indicator(s): There is proper disposal of recreational vehicle sewage holding tank wastes.

Performance Evaluation Summary: Uncontrolled release of human waste on roadsides and at roadside rest areas is a public health and environmental hazard/nuisance. Maintenance workers cleaning roadsides and rest areas are usually not properly equipped to handle these releases.

Opportunity Area(s) for Improvement: Partnering with the recreational vehicle industry and trade organizations, campsite owners, and truck stops to provide incentives such as free/reduced fee disposal to promote proper disposal.

4.2.10 PeCoS Program 200: Rest Areas – Miscellaneous Litter, Pet Waste, and Urine Bottle Dumping

Performance Indicator(s): There is safe pick-up and proper disposal of miscellaneous litter, pet wastes, and dumped urine bottles.

Performance Evaluation Summary: Uncontrolled release of miscellaneous litter, pet wastes, and dumped urine bottles on roadsides and at roadside rest areas is a public health and environmental hazard/nuisance. Maintenance workers cleaning roadsides and rest areas are usually not properly equipped to handle these releases.

Opportunity Area(s) for Improvement: Partnering with the recreational vehicle industry and trade organizations, restaurants, campsite owners, and truck stops to provide incentives such as free/reduced fee disposal to promote proper disposal. Developing and implementing worker health and safety and best environmental management practices accompanied by a training program. Incorporating those practices into the Highway Maintenance Manual, PeCoS, and maintenance contracts.

4.2.11 PeCoS Program 200: Rest Areas – Broken Water Line Sanitization

Performance Indicator(s): Potable water lines broken during repair operations are properly sanitized.

Performance Evaluation Summary: Crews repairing potable water lines at roadside rests may not always be properly trained and equipped to sanitize broken water lines as part of the repairs.

Opportunity Area(s) for Improvement: Developing and implementing potable water line sanitization practices accompanied by a training program. Incorporating those practices into the Highway Maintenance Manual, PeCoS, and maintenance contracts.

4.2.12 PeCoS Program 910: Contract Maintenance-Environmental Permits and Approvals

Performance Indicator(s): Environmental permits/approvals from regulatory agencies are secured prior to contractors commencing work. Contracted maintenance work in or near environmentally sensitive areas is monitored.

Performance Evaluation Summary: Maintenance contractors are sometimes required to secure environmental permits/approval prior to commencing work, rather than ADOT securing these approvals in advance. This may result in delays in starting work, increased cost to ADOT for the application process and time delays. Also, having multiple contractors applying for permits and approvals is likely to cause confusion among the regulatory agencies and a lack of confidence that the proper environmental management practices will be implemented. Contractor work is usually monitored by non-environmental professionals as part of routine engineering-oriented inspections.

Opportunity Area(s) for Improvement: Having ADOT district or consultant professionals secure all necessary environmental permits/approvals in advance of contract maintenance work. Having ADOT district or consultant qualified environmental professionals monitor the work to ensure and document compliance.

4.2.13 PeCoS Programs 140 and 300: Vegetation Control and Landscaping

Performance Indicator(s): Best environmental management practices are incorporated into ADOT roadside vegetation management and landscaping.

Performance Evaluation Summary: The ADOT Intermodal Transportation Division Natural Resource Section's current *Integrated Natural Resource Management Plan* serves to update ADOT's *Maintenance Vegetation Management Plan-- August 30, 1988*. The current plan provides an excellent, high-level framework for guiding ADOT's roadside vegetation management and landscaping activities. It includes: highway safety and natural resource conservation goals; a selection of standard operating protocols for maintenance and construction roadside activities affecting natural resources; and emphasis on managing roadsides to support the biome ecosystems they are located in.

Opportunity Area(s) for Improvement: Researching and expanding the level of detail on best environmental management practices for integrated roadside vegetation management and landscaping. Incorporating those practices into the Highway Maintenance Manual,

PeCoS, and maintenance contracts. Expanding the scope of and update the current *Integrated Natural Resource Management Plan* to cover all integrated roadside vegetation management activities—not just those affecting natural resources.

4.2.14 PeCos Program 600: Overhead (Contracting)

Performance Indicator(s): All maintenance contracts include environmental protection and enhancement provisions. Contractors are informed of environmental protection and enhancement provisions at pre-bid meetings. Maintenance contracts are monitored to ensure that environmental provisions are properly implemented.

Performance Evaluation Summary: No specific information provided. Typically, maintenance contract documents specify compliance with all environmental rules and do not specify environmental protection and enhancement provisions. Compliance with environmental rules is usually discussed at pre-bid meetings. Maintenance contracts are monitored for quality assurance and compliance.

Opportunity Area(s) for Improvement: Evaluating how well environmental protection and enhancement provisions are incorporated into maintenance contracts; contractors are informed of environmental provisions at pre-bid meetings; and contract work is monitored for environmental compliance. Developing and incorporating standard environmental provisions into maintenance contracts. Developing and using standard environmental monitoring protocols for sensitive environmental areas such as water supplies, wetlands, and archaeological sites.

4.2.15 PeCos Program 130: Shoulders – Storm Water Pollution Prevention

Performance Indicator(s): Maintenance activities comply with state and federal requirements for preparation of Storm Water Pollution Prevention Plans (SWPPPs) for earth disturbances greater than one acre.

Performance Evaluation Summary: ADOT currently prepares and implements SWPPPs for maintenance projects disturbing greater than one acre.

Opportunity Area(s) for Improvement: Develop a comprehensive ADOT SWPPP manual accompanied by ongoing quality control/assurance and training for ADOT and contract maintenance personnel. Partner with the state and federal regulatory agencies to delegate SWPPP development and implementation for maintenance activities to ADOT.

4.2.16 PeCos Program 130: Shoulders – Cultural Resource Site Identification and Protection

Performance Indicator(s): Cultural resources within and adjacent to shoulder areas during maintenance operations are identified and protected. Where known archaeological resources within the potential effect area of maintenance activities, cultural resource management plans are developed and implemented.

Performance Evaluation Summary: The ADOT Cultural Resource Database identifies the presence of such resources within the highway right-of-way. Maintenance District personnel often lack the knowledge and training to use the database. On federal lands, the federal agencies want more information than the database provides. Cultural resource management plans are not usually prepared for maintenance activities.

Opportunity Area(s) for Improvement: Developing and implementing a cultural resource database training program for maintenance personnel. Partnering with the federal land management agencies to develop an effective, efficient, and timely approach for identifying and protecting cultural resources, including programmatic Section 106 agreements and cultural resource management plans.

4.2.17 PeCos Program 130: Shoulders – Threatened and Endangered Species Identification and Conservation

Performance Indicator(s): Threatened and endangered (T and E) species of plants and animals are identified and protected during maintenance activities where known T and E species populations may be jeopardized by maintenance activities. Endangered Species Act Section 7 Consultation is initiated and species/habitat conservation measures are implemented and monitored.

Performance Evaluation Summary: District Maintenance personnel often lack the knowledge, skills, and written guidance to identify the presence of T and E species. A comprehensive GIS database does not exist. When a T and E species is potentially affected by a maintenance activity they always need expert technical assistance from the central office. The lead time and the central office expertise are often not readily available.

Opportunity Area(s) for Improvement: Partnering with the state and federal agencies and conservation groups to developing a comprehensive T and E species GIS database and accompanying training; surveying all ADOT rights-of-way in advance for T and E species; developing programmatic Section 7 Consultation agreements for maintenance activities; and providing readily available on-call technical assistance. Incorporating T and E protection practices into the Highway Maintenance Manual and PeCoS.

4.2.18 PeCos Program 160: Drainage – Nationwide Section 404 Permit Limitations on Scope of Work

Performance Indicator(s): Maintenance activities in protected waters comply with Section 404 requirements.

Performance Evaluation Summary: ADOT complies with permit limitations on the nature and scope of maintenance work within protected waters. It makes the necessary written notifications prior to work and to extend the work area.

Opportunity Area(s) for Improvement: Developing a comprehensive best environmental practices manual for work in protected waters accompanied by ongoing quality control/assurance and training for ADOT and contract maintenance personnel. Partnering with the state and federal regulatory agencies to apply for a *General Section 404 Permit*—provided it will result in time, labor, & cost savings.

4.2.19 PeCos Program 160: Drainage – Threatened and Endangered Species Identification and Conservation

Performance Indicator(s): Same as Section 4.2.17 above.

Performance Evaluation Summary: Same as Section 4.2.17 above.

Opportunity Area(s) for Improvement: Same as Section 4.2.17 above.

4.2.20 PeCos Program 190: Encroachment Permits – Certification of Compliance Requirement

Performance Indicator(s): Environmental permit terms and conditions for the maintenance work and associated environmental protection measures are met. Trained professionals certify that terms and conditions are met.

Performance Evaluation Summary: District maintenance personnel sometimes have difficulty certifying that the terms and conditions are met due to a lack of environmental knowledge, skills, and experience.

Opportunity Area(s) for Improvement: Develop and conduct environmental training for maintenance personnel to increase their knowledge, skills, and experience in the water resource area. Supply qualified and experienced environmental professionals to certify that terms and conditions are met.

4.2.21 PeCos Program 190: Encroachment Permits – Access to Qualified Environmental Professionals and a Comprehensive and Consistent Permitting Approach

Performance Indicator(s): Environmental documents and permit applications are prepared and/or reviewed by qualified environmental professionals. There is a comprehensive and consistent approach to the permitting process in place. The permitting process is supported by policies, procedures, training, and technical assistance.

Performance Evaluation Summary: District maintenance personnel lack the environmental qualifications and experience to prepare and review environmental documents and permit applications. They rely heavily on ADOT central office environmental professionals outside the maintenance organization for technical assistance. Currently, these professionals are not readily available and delays result. There is not a comprehensive and consistent statewide approach to permitting.

Opportunity Area(s) for Improvement: Assigning an adequate level of qualified environmental professional capacity to the central office and district maintenance organizations to facilitate timely, efficient, and effective preparation and review of environmental documents and permit applications. Develop and implement a comprehensive and consistent statewide permitting process supported by training and technical assistance.

4.2.22 PeCoS Program 150: Activity 1502: Spot Litter and Dumped Urine Bottles

Performance Indicator(s): Urine bottle litter at highway interchanges and pull-offs is properly handled and disposed of.

Performance Evaluation Summary: As stated earlier in Section 4.2.10, maintenance workers cleaning roadsides and rest areas are usually not properly equipped to handle these releases.

Opportunity Area(s) for Improvement: Developing and implementing worker health and safety and best environmental management practices accompanied by a training program. Incorporating those practices into the Highway Maintenance Manual, PeCoS, and maintenance contracts.

4.2.23 PeCoS Program 150: Activity 1504: Annual Fence Inspection and Dead Tree Removal

Performance Indicator(s): Dead trees are removed from the highway right-of-way that are presenting safety risks and maintenance difficulties. T and E species of plants and animals using dead trees are protected.

Performance Evaluation Summary: Annual right-of-way fence and other inspections sometimes identify dead trees (snags) that must be removed in areas where T and E species may be or are present. When T and E species are involved, district maintenance personnel experience lengthy delays in removing the trees that present safety risks.

Opportunity Area(s) for Improvement: Partnering with resource, land management agencies, and conservation groups in advance to identify T and E species areas within all the ADOT rights-of-ways and develop programmatic Section 7 Consultation Agreements and Habitat Conservation Plans. Incorporating those measures into the Highway Maintenance Manual and PeCoS. Developing and conducting training for maintenance personnel.

4.2.24 PeCoS Program 170: Snow and Ice

Performance Indicator(s): The environmental impacts of snow- and ice-control activities are identified, and measures to avoid, reduce, and mitigate them are implemented. Environmental protection and enhancement performance guidelines, work method

options, best environmental management practices, and quality control/assurance measures are incorporated into the Highway Maintenance Manual and PeCoS.

Performance Evaluation Summary: There is historically a limited understanding and documentation of the environmental impacts of ADOT’s snow- and ice-control activities. As a result, environmental impacts are not always adequately considered in planning, doing, and checking snow- and ice-control operations. This sometimes results in those operations having unintended environmental consequences.

Opportunity Area(s) for Improvement: Identifying the environmental impacts of routine maintenance activities and measures to avoid, reduce, and mitigate them through the proposed *Environmental Assessment for Routine District Maintenance Activities*. This statewide assessment promises to provide the analyses and documentation needed to incorporate best environmental management measures into ADOT maintenance operations. Incorporating environmental protection and enhance performance guidelines and work method options, best environmental management practices, and quality control/assurance measures in the Highway Maintenance Manual and PeCoS.

4.2.25 PeCoS Program 400: Traffic Control – Pavement Marking

Performance Indicator(s): Best environmental protection practices and environmentally friendly materials are used in preparing pavement, applying thermoplastic pavement markings, and painting traffic lines.

Performance Evaluation Summary: ADOT currently: performs all maintenance traffic line painting with ADOT personnel and equipment; uses water-based, lead-free white and yellow paints with a methanol quick-drying agent (125 grams/liter); uses yellow thermoplastic pavement markings that contain lead—making grinding a potential pollution problem; performs mechanical sweeping; cleans painting equipment; and stores and handles large quantities of paint and associated chemicals.

Opportunity Area(s) for Improvement: Identifying and incorporating more best environmental management practices into the Highway Maintenance Manual and PeCoS with emphasis on: eliminating releases of lead and particulates from grinding pavement markings; and capturing, recycling, and disposing of equipment cleaning fluids. Developing and conducting training for painting crews.

4.2.26 PeCoS Program 400: Highway Sign Installation, Cleaning, Recycling, and Lighting

Performance Indicator(s): Highway signing is installed using best environmental management practices to avoid safety risks and adverse visual and cultural resource impacts. Signing materials are recycled to reduce waste disposal. Highway signing is cleaned with environmentally friendly materials. Cleaning fluid overspray is minimized. Spent containers and fluids are recycled or properly disposed of. Highway lighting is

installed to avoid and minimize fugitive light. Energy efficient lighting is installed. Light bulbs that may contain harmful substances are recycled or properly disposed of.

Performance Evaluation Summary: ADOT minimizes the risks and adverse impacts of sign installation through minimizing highway signing and sensitively locating signing. ADOT recycles most of its unusable signing materials. Typically, relatively small amounts of water and detergents are used to periodically wash signs in place. Detergents are typically biodegradable. Containers are disposed of as municipal solid wastes.

Opportunity Area(s) for Improvement: Continuing to minimize signing and to sensitively locate it. Recycle all signing materials. Incorporate signing installation and maintenance best environmental management practices into the Highway Maintenance Manual and PeCos. Using only biodegradable detergents and recycling of detergent containers. Using no detergents with high pressure water cleaning. Timing of cleaning to avoid the potential overspray onto traffic. Incorporating signing installation and maintenance best environmental management practices into the Highway Maintenance Manual and PeCos. Researching and using sign lighting designs and equipment that avoid and minimize unwanted lighting. Continuing to use the most energy efficient lighting equipment available. Looking for ways to recycle light bulbs and equipment.

4.2.27 PeCoS Program 500: Sign Factory – Sign Fabrication

Performance Indicator(s): Signs are fabricated using production and equipment cleaning methods that produce no indoor or outdoor air pollution, minimize waste disposal, protect health and safety of workers, use recyclable materials, and conserve energy.

Performance Evaluation Summary: The most environmentally friendly materials available are used to fabricate signs and to clean equipment. Some volatiles are emitted outdoors through ventilation and drying equipment. Workers are properly equipped and trained to protect health and safety. Some materials are recyclable. Older equipment may not be energy efficient.

Opportunity Area(s) for Improvement: Conducting an environmental and energy audit of the sign factory to identify the best environmental management approaches. Incorporating sign fabrication best environmental management practices into the Highway Maintenance Manual and PeCos.

4.2.28 PeCoS Program 510: Traffic Signals and Freeway Lighting – Traffic Signal Installation, Operation, and Maintenance

Performance Indicator(s): Traffic signals are installed, operated, and maintained to avoid and minimize adverse effects on visual quality, air quality, vehicular energy consumption, cultural resources, and communities.

Performance Evaluation Summary: Traffic signals are sometimes installed without considering the adverse impacts.

Opportunity Area(s) for Improvement: Developing and implementing context-sensitive traffic signal design, installation, operation, and maintenance practices that avoid and minimize adverse environmental effects. Incorporating traffic signal best environmental management practices into the Highway Maintenance Manual and PeCos.

4.3 TRANSPORTATION SERVICES GROUP

4.3.1 Arizona Highways Magazine

Performance Indicator(s): Magazine is prepared and published electronically and on paper to reduce paper consumption and delivery energy consumption. Magazine photography is digital to avoid use of photo processing chemicals and to reduce paper consumption. Magazine is printed on recycled and recyclable paper. Calendar is printed on recycled and recyclable paper. Magazine articles highlighting ADOT's environmental stewardship challenges, accomplishments, and successes are regularly published. Gift shop reduces customer travel and energy consumption through mail order.

Performance Evaluation Summary: Magazine is prepared and published electronically and using paper. No specific information provided on numbers of paper copies printed, amount of digital versus film photography used, amount of recycled and recyclable paper used for printing the magazine and calendar, number of magazine articles highlighting environmental stewardship challenges, accomplishments, and successes published, and gift shop mail order volumes.

Opportunity Area(s) for Improvement: Continuing to encourage customers to receive the magazine electronically to reduce printing and delivery. Using digital photography to reduce photo processing, paper consumption, and archival space. Using recycled and recyclable paper. Including a regular feature article on ADOT's environmental stewardship challenges, accomplishments, and successes. Continuing to expand the Internet-based mail order business of the gift shop.

4.3.2 Audits and Analysis

Performance Indicator(s): Environmental compliance audits are routinely performed for all ADOT activities requiring compliance with environmental laws, regulations, and policies. Electronic file auditing and reporting are used to reduce paper, energy consumption, and traffic congestion. Audit policies and procedures are available electronically.

Performance Evaluation Summary: Internal environmental compliance audits are not routinely performed. There are recurring problems with asbestos, water supplies, waste water, and storm water compliance. Current auditing objectives constrain the use of electronic file auditing as many of the audited functions are not on electronic media. There is increasing use of e-mail and electronic files where possible under current audit objectives. Audit sections have electronic boilerplates for the repeated functions that are performed. Audit policies are available agency-wide on the Intranet. The professional

authoritative guidance from the federal government and from the Institute of Internal Auditors is available through the Internet.

Opportunity Area(s) for Improvement: Conducting internal environmental compliance audits for all ADOT activities requiring compliance with environmental laws, regulations, and policies. Establishing self-auditing approaches such as “Facilitated Self-Assessments” where appropriate. Exploring the opportunities to use electronic audit work papers. Carefully planning and coordinating auditor travel to reduce automobile usage. Increasing teleconference and videoconference use to conserve energy and time. Continuing to make all auditing policies and procedures available electronically.

4.3.3 Budgeting and Strategic Planning

Performance Indicator(s): Annual business plan/budget for each organizational unit in ADOT include funds for environmental protection and enhancement related to their impacts on the environment and specific compliance responsibilities. ADOT Strategic Plan includes environmental protection and enhancement in its descriptions of the mission, vision, values, strategic issues, critical strategic issues, goals, and measures.

Performance Evaluation Summary: No specific information provided on organizational unit or department-wide budgeting of environmental protection and enhancement. The ADOT Mission Statement reads, “To provide products and services for a safe, efficient, cost-effective transportation system that links Arizona to the global economy, promotes economic prosperity and demonstrates respect for Arizona’s environment and quality of life.” The ADOT Vision Statement does not specifically include the word, “environment.” However, the words, “standards of excellence” could apply to an environment standard of excellence. The ADOT Values do not specifically include the words, “environmental protection or enhancement.” The ADOT Strategic Issues include “Environmental Stewardship – Subject to 62 different federal, state, local and tribal environmental rules and regulations, ADOT will continue to integrate environmental management into its business practices.” The ADOT Critical Strategic Issues do not include any environmental issues. The ADOT Goals do not include explicit environmental goals.

Opportunity Area(s) for Improvement: Based on the specific environmental protection and enhancement responsibilities of each organizational unit’s annual business plan/budget request, allocating funds to meet those responsibilities on a priority basis. Exploring the establishment of a dedicated ADOT environmental protection and enhancement funding set-aside each year. Considering changing the word “respect” to “protect and enhance” to make a stronger environmental stewardship commitment. No opportunity to incorporate environmental protection and enhancement into the vision statement is apparent. Adding environmental protection, enhancement, or stewardship to the list of values. Including environmental compliance or protection as a critical strategic issue until noncompliance issues are no longer present. Including an environmental goal in the list of ADOT goals.

4.3.4 Civil Rights and Equal Opportunity

Performance Indicator(s): ADOT policies, procedures, and activities are in compliance with the Federal Environmental Justice Executive Order 12898 and FHWA Order, *FHWA Actions to Address Environmental Justice in Minority Populations & Low-Income Populations-December 2, 1998*. Consultant and construction service procurement processes for environmental studies and mitigation include opportunities for disadvantaged businesses.

Performance Evaluation Summary: All Environmental Assessments and Environmental Impact Statements include an analysis of environmental justice issues. The Civil Rights Office reviews them prior to finalization. ADOT certifies to FHWA that its transportation planning, funding, and project development activities are in compliance. ADOT complies with the Governor's Executive Orders 2000-4 and 2003-9, which set a goal for all procurements, including those for environmental activities. All Arizona state agencies must solicit at least one bid or quote from a woman- or minority-owned business for all contracts between \$1000 and \$25,000. If the skill set required by a contract is available from a certified Disadvantaged Business Enterprise (DBE), then the goal is to request at least one bid from a DBE. Most of the contracts let through the Engineering Contracts Section have a 6% DBE goal. Environmental studies typically include DBE goals. Also, mitigation is addressed in construction contracting and all federally aided construction projects are evaluated for DBE opportunities and usually have DBE goals.

Opportunity Area(s) for Improvement: Continuing to review ADOT policies and procedures for conformance with environmental justice rules. Continuing to audit and report on compliance on an annual basis as part of routine civil rights and equal opportunity reporting. Developing and conducting environmental justice training. Continuing to review procurement processes for opportunities for disadvantaged businesses and adjust goals accordingly.

4.3.5 Community Relations

Performance Indicator(s): ADOT transportation planning, project development, construction, maintenance, and operations include community relations programs to keep highway users and neighbors well-informed of potential impacts of construction, maintenance, and operations.

Performance Evaluation Summary: As the primary media and public relations point of contact, the ADOT Community Relations Office has programs to promote anti-litter and other environmental protection and enhancement programs. Typically, transportation systems planning and construction activities are the most challenging areas in which to proactively engage the communities. ADOT appears to have comprehensive community relations programs for project development, maintenance, and operations.

Opportunity Area(s) for Improvement: Developing effective community relations programs for transportation planning and construction. Developing and conducting

community relations program development and implementation training for transportation planning and construction professionals.

4.3.6 Financial Management Services

Performance Indicator(s): Financial aspects of environmental protection and enhancement activities are systematically tracked and reported. ADOT activities with high risk from an environmental compliance and financial cost perspective are carefully managed to minimize risks.

Performance Evaluation Summary: ADOT expenditures for environmental protection and enhancement measures are not routinely and separately tracked and reported. These costs are usually buried in the planning, project development, construction, maintenance, and operations cost information. The ADOT Advantage Financial Accounting System has the capability to create separate sub-projects for environmental protection and enhancement work. The sub-project can capture and accumulate all direct costs charged to it. An environmental activity code could be created for employees to use when they are performing environmental work. Reports could be generated summarizing the costs incurred. Environmental compliance issues and their respective costs are currently being addressed as they emerge.

Opportunity Area(s) for Improvement: Developing tracking and reporting approaches for more accurately tracking and reporting environmental protection and enhancement costs to support agency decision making. Using the Advantage Financial Accounting System as the platform for the tracking and reporting approaches. Identifying the high risk business activities and managing them to avoid compliance and financial issues. Tracking and reporting on compliance on a regular basis. Budgeting for proactive measures to avoid high risks and costs.

4.3.7 Human Resources and Personnel

Performance Indicator(s): Measurable environmental performance objectives are included in the annual performance evaluations of all ADOT employees with environmental compliance responsibilities. Employee discipline policies and procedures are applied to noncompliance with environmental rules. Employee and team awards and recognition programs include an environmental stewardship category. ADOT employee classifications and pay attracts and retains highly skilled and qualified environmental professionals.

Performance Evaluation Summary: ADOT employee performance objectives included in performance evaluations do not usually include environmental performance as a specific objective. Currently, employee discipline policies and procedures are applied to noncompliance with environmental rules. Currently, there are no specific environmental stewardship categories within ADOT awards programs. However, ADOT divisions and management teams may recognize and reward any outstanding performance, including environmental protection and enhancement. Currently, ADOT uses a number of

classification and compensation tools to address recruitment and retention issues (i.e., special entrance rates, reclassifications, and administrative adjustments).

Opportunity Area(s) for Improvement: Developing ADOT employee performance evaluation forms and guidelines that include measurable environmental compliance and stewardship objectives. Continuing to provide guidance to managers, supervisors, employees on the application of disciplinary procedures for noncompliance with environmental rules. Including an environmental stewardship category for the ADOT employee and team awards and recognition programs. Assessing the appropriateness of the classification and pay of ADOT environmental professionals. Changing the classification system and pay schedule if they are not resulting in recruiting and retaining highly skilled and qualified environmental professionals.

4.3.8 Information Technology Services

Performance Indicator(s): An ADOT automated environmental compliance database and tracking system is used to monitor and report on all environmental compliance activities. An ADOT environmental information and decision-support system is used to manage environmental data for transportation planning, project development, construction, maintenance, and operations. ADOT, consultant, regulatory agency, and environmental agency professionals are highly skilled in the use of existing environmental databases for environmental data collection and analysis. Expert systems are developed for transportation planning and project development that efficiently and effectively integrate environmental analyses. Teleconferencing is used extensively for internal and external meetings to reduce travel and travel time. Videoconferencing and web conferencing are used extensively for internal and external meetings to reduce travel and travel time.

Performance Evaluation Summary: No agency-wide automated environmental compliance database and tracking system is in place or used. Some ADOT organizations may be working on tracking systems for their respective areas. Some individuals may have their own tracking systems in use. Some environmental databases are in use for transportation planning and project development. A cultural resource GIS database is in use by EEG, the State Historic Preservation Office, and consultants. Regulatory and resource agency databases are currently used by ADOT for aquatic, terrestrial, and waste management analyses. Some professionals are highly skilled at using existing environmental databases. Currently there are no expert systems in use in ADOT for transportation planning and project development. All ADOT personnel have easy access to teleconferencing services, including conference calls and bridge services, through the regular telephone system and Arizona Office of Administration Telecommunications. ADOT does not have a mechanism to capture teleconference use and travel reduction data. ADOT has a dedicated videoconference room in its main administration building and additional facilities in many of the outlying offices. No specific information was provided on the current level of use of videoconferencing and data on travel reduction and time savings.

Opportunity Area(s) for Improvement: Developing an ADOT environmental compliance database and tracking system that serves transportation planning, project development, construction, maintenance, and operations. Training employees with environmental compliance responsibilities on the use of the database and tracking system. Developing an ADOT environmental information and decision-support system. NCHRP Project 25-23(2), *Environmental Information and Decision Support System Software Development* will use pilots in state transportation agencies in 2004-2005 to develop software ADOT could use to develop such a system. Developing distance learning tutorials for teaching effective environmental database use. Developing and deploying expert systems for various transportation planning and project development activities such as air quality conformity analyses, corridor feasibility studies, project scoping, and environmental analyses. Maintaining easy access to teleconferencing hookups and conference rooms. Setting goals and targets for increasing teleconferencing and reducing travel. Capturing and reporting data on the travel and time savings. Establishing easy access and training for use of videoconferencing and web conferencing. Adding videoconferencing capabilities to ADOT facilities where it will be cost-effective. Setting goals and targets for increasing videoconferencing and web conferencing and reducing travel. Capturing and reporting data on the travel and time savings.

4.3.9 Legislative Liaison

Performance Indicator(s): ADOT environmental and legislative liaison professionals are proactively engaged in the promulgation of state and federal environmental laws, regulations, policies, and procedures to look out for its interests.

Performance Evaluation Summary: ADOT's Legislative Office identifies, tracks, and obtains analyses on all federal and state legislation that may impact the agency. Additionally, the Legislative Office works with the ADOT director and the Governor's Office on all legislative issues to ensure the best results for the agency and the state.

Opportunity Area(s) for Improvement: Continuing to proactively monitor and engage in state and federal environmental rulemaking activities. Training professionals how to effectively monitor and engage in rulemaking to protect ADOT interests.

4.3.10 Organizational and Employee Development

Performance Indicator(s): Comprehensive ADOT environmental training plan and program are budgeted and implemented. All ADOT employees, consultants, and contractors receive environmental training on a continuing basis necessary to carry out their assignments in an environmentally responsible manner. Distance learning tools and techniques are used for internal and external training to reduce travel and travel time.

Performance Evaluation Summary: Numerous forms of environmental training are conducted and sponsored by various ADOT organizations and their partners. The training appears to be conducted periodically on an as-needed or as-available basis, without a

department-wide environmental training plan, budget, and schedule. Some distance learning in the form of videoconference and web-based training is being conducted.

Opportunity Area(s) for Improvement: Developing and implementing a comprehensive ADOT environmental training plan and program. Utilizing distance learning to the maximum extent possible. Partnering with other transportation agencies, regulatory agencies, environmental agencies, and interest groups to develop and deliver the training. Expanding the use of distance learning for internal and external training.

4.3.11 Procurement

Performance Indicator(s): Procurement policies, guidelines, and procedures include environmental compliance. Procurement proposals and contracts include product environmental compliance requirements. Environmentally friendly (biodegradable, recyclable, nonhazardous) products are purchased and used.

Performance Evaluation Summary: Environmental compliance requirements are included in procurement rules and guidance. Environmental compliance requirements are included in procurement proposals and contracts for products. Decisions on purchasing environmentally friendly products are made on a case-by-case basis through review of statutes, rules, policies, and/or procedures

Opportunity Area(s) for Improvement: Periodically reviewing procurement rules and guidance to ensure that current environmental requirements are applied and documenting the results of the review. Assessing and documenting the effectiveness of the product environmental compliance requirements in protecting the environment. Partnering with internal and external customers to ensure products being purchased are in compliance with current statutes, rules, policies, and/or procedures and to broaden the range of environmentally friendly products available through changes to statutes, rules, policies, and/or procedures.

4.3.12 Safety and Health

Performance Indicator(s): All ADOT operating policies and procedures include appropriate employee health and public safety provisions. Hazardous material information such as Material Safety Data Sheets (MSDS) and spill pollution prevention and control plans are on-line and posted in all areas where hazardous materials are likely to be spilled. All hazardous material spills on ADOT properties are tracked, properly cleaned up and reported. All employees exposed to hazardous material have appropriate medical surveillance, and results are reported. Safety and health protection equipment and supplies are readily available to employees and they are properly used. All employees receive safety and health training appropriate for their job duties. All employee workplaces are as safe and healthy as reasonably possible.

Performance Evaluation Summary: ADOT safety and health policies and procedures address only employee and contractor safety. ADOT had over 20 separate safety and

health policies to ensure that appropriate protective measures are in place and that the agency is in compliance with federal, state, and local laws. Generally, they are not integrated into operating policies and procedures. All safety and health policies and procedures are on-line. ADOT has a Hazardous Communications Program which is included in SAF 7.01. ADOT supervisors are required to make MSDSs available to all employees and to display them in common areas where there is easy access. No information was provided on spill pollution, prevention, and control plans.

All hazardous material spills on ADOT properties are reported to ADOT's Emergency Response Specialist. If there is a responsible party, that party must hire a clean-up contractor to remediate the hazard. If there is no responsible party, then ADOT uses an on-call clean-up contractors. An automated hazardous material spill tracking system is under development. An ADOT medical surveillance program is in place. An electronic medical surveillance management and information system is under development. When the program is operational, the training coordinators will be able to easily inform employees of their training and medical surveillance needs. Currently, the ADOT industrial hygienists oversee the surveillance program. ADOT is in the process of hiring an occupational health nurse to assist in the medical surveillance program and in worker compensation case management. An on-line ADOT Safety Clothing and Equipment Catalog is heavily used (1500 hits/month). Procurement process is simplified. Typically, supervisors are responsible for seeing that equipment is properly used. Typically, employees receive safety and health training before they perform their duties and as conditions change. On-line/on-demand safety and health training courses are being developed and made available. ADOT safety consultants randomly inspect ADOT work areas for compliance with safety and health rules. Copies of completed inspection reports go to the supervisors for corrective action. When compliance issues emerge that cannot be addressed by the supervisor, they are elevated. A hand-held computer inspection tool is currently under development and should be ready for testing in 2004. The tool will tie into the TRIRIGA Software. This will enable ADOT to have electronic inspection data for each facility, including corrective action tracking and facility history.

Opportunity Area(s) for Improvement: Integrating employee and public safety policies and procedures into all agency operating procedures where there are potential safety and health risks. Continuing to post all policies and procedures on-line. Posting hazardous material information and spill prevention and control plans on-line and on-site. Continually training and reminding employees of spill pollution, prevention, and control plans. Conducting drills to have employees practice controls. Developing and deploying the hazardous material spill tracking system. Developing and deploying the electronic medical surveillance management and reporting system. Continuing to conduct and report on safety audits to ensure that equipment is used and used properly. Continuing to develop more on-line/on-demand safety and health training courses. Continuing to systematically evaluate and to document the safety and health aspects of employee workspaces.

4.4 CONSTRUCTION

4.4.1 Pre-Construction Activity: Design Stage I Review (15% Review)

Performance Indicator(s): Project environmental protection and enhancement measures proposed in the environmental study process are constructible. Preliminary projections of construction duration, timing, and costs of project environmental measures are as reasonable and accurate as possible.

Performance Evaluation Summary: It appears that construction professionals do not routinely get involved in project-by-project constructability reviews of environmental measures in Stage I. Therefore, the constructability of environmental measures is not evaluated by construction professionals. It appears that construction professionals do not routinely get involved in reviews of preliminary projections of project duration, timing and costs of environmental measures in Stage I.

Opportunity Area(s) for Improvement: Having construction professionals conduct Stage I constructability reviews of proposed environmental measures. Also, having design and environmental professionals monitor construction to assess the constructability of their designs for future reference. Having construction professionals review preliminary projections of project duration, timing, and costs of environmental measures in Stage I. Also, creating a construction information database with historic data on duration, timing, and costs of environmental measures for reference by planning, design, construction and environmental professionals.

4.4.2 Pre-Construction Activity: Design Stage II Review (30% Review)

Performance Indicator(s): Project environmental protection and enhancement measures incorporated into Stage II design plans and draft environmental permit applications are constructible. Preliminary construction staging includes provisions for proper timing of environmental protection and enhancement measures. Preliminary projections of construction duration, timing, and costs of environmental measures are as reasonable and accurate as possible.

Performance Evaluation Summary: It appears that construction professionals do not routinely get involved in project-by-project constructability reviews including construction staging in Stage II. Therefore, the constructability and staging of environmental protection and enhancement measures are not evaluated by construction professionals. It appears that construction professionals do not routinely get involved in reviews of preliminary projections of project duration, timing, and costs of environmental measures in Stage II.

Opportunity Area(s) for Improvement: Having construction professionals conduct Stage II constructability and staging reviews of proposed environmental protection and enhancement measures. Also, having design and environmental professionals monitor construction to assess the constructability and staging of their designs for future

reference. Having construction professionals review preliminary projections of project duration, timing, and costs for environmental measures in Stage II.

4.4.3 Pre-Construction Activity: Design Stage III Review (60% Review)

Performance Indicator(s): Project environmental protection and enhancement measures incorporated into Stage III design plans and final environmental permit applications are constructible. Preliminary construction staging includes provisions for proper timing of environmental protection and enhancement measures. Proposed construction schedules, quantity estimates, and cost estimates of project environmental measures are as reasonable and accurate as possible.

Performance Evaluation Summary: It appears that construction professionals do not routinely get involved in project-by-project constructability reviews including construction staging in Stage III. Therefore, the constructability and staging of environmental protection and enhancement measures are not evaluated by construction professionals. It appears that construction professionals do not routinely get involved in reviews of construction schedules, quantity estimates, and cost estimates of environmental measures in Stage III.

Opportunity Area(s) for Improvement: Having construction professionals conduct Stage III constructability and staging reviews of proposed environmental protection and enhancement measures. Also, having design and environmental professionals monitor construction to assess the constructability and staging of their designs for future reference. Having construction professionals review preliminary projections of project duration, timing, and costs of environmental measures in Stage III.

4.4.4 Pre-Construction Activity: Design Stage IV Review (95% Review)

Performance Indicator(s): Project environmental protection and enhancement measures incorporated into Stage IV design plans and final environmental permits are constructible. Construction staging includes provisions for proper timing of environmental measures. Contract language clearly describes environmental requirements. Construction schedules, quantities, and cost estimates for project environmental measures are as reasonable and accurate as possible.

Performance Evaluation Summary: It appears that construction professionals do not routinely get involved in project-by-project constructability reviews including construction staging in Stage IV. Therefore, the constructability and staging of environmental measures are not evaluated by construction professionals. Also, environmental requirements are not always clearly translated into contract language. The Kingman District developed a *Project Reference Manual for the US 93* to consolidate environmental requirements in one place. It appears that construction professionals do not routinely get involved in reviews of construction schedules, quantity estimates, and cost estimates of environmental measures in Stage IV.

Opportunity Area(s) for Improvement: Having construction professionals conduct Stage IV constructability and staging reviews of proposed environmental measures, paying close attention to clarity of contract language. Having design and environmental professionals monitor construction to assess the constructability and staging of their designs for future reference. Preparing and distributing environmental measure reference manuals to inform construction professionals. Having construction professionals review construction schedules, quantities, and cost estimates of environmental measures in Stage IV.

4.4.5 Pre-Construction: Contractor Pre-Qualification

Performance Indicator(s): Construction prime contractors and subcontractors are pre-qualified for environmental protection and enhancement measure implementation.

Performance Evaluation Summary: No specific information provided. Typically, prime construction contractors and subcontractors are pre-qualified for the implementation of the environmental measures. In many cases, the subcontractors bring the qualified environmental expertise to the construction team.

Opportunity Area(s) for Improvement: Reviewing the ADOT construction pre-qualification rules to confirm that construction contractors and subcontractors must be qualified for the implementation of the environmental measures.

4.4.6 Pre-Construction Activity: Consultant Construction Management and Inspection Contract Execution

Performance Indicator(s): Construction management/inspection consultants and sub-consultants are prequalified and/or qualified to inspect environmental protection and enhancement measures.

Performance Evaluation Summary: No specific information provided. Typically, construction inspection consultants and subconsultants are prequalified to inspect the implementation of the environmental measures.

Opportunity Area(s) for Improvement: Reviewing the ADOT construction consultant management and inspection prequalification rules to confirm that consultants and subconsultants must be qualified to inspect the implementation of the environmental measures.

4.4.7 Pre-Construction Activity: Pre-Bid Conference

Performance Indicator(s): The environmental performance expectations of the environmental protection and enhancement plans, specifications, permits, and narratives are clearly communicated during the pre-bid conference.

Performance Evaluation Summary: Environmental performance expectations are communicated at the pre-construction conference for many, but not all projects.

Opportunity Area(s) for Improvement: Clearly communicating the environmental performance expectations of the environmental measures in writing and verbally at all pre-bid conferences. Developing and using a construction environmental performance expectations form to convey the information on these measures.

4.4.8 Pre-Construction Activity: Construction Project Work Plan Outline

Performance Indicator(s): Construction work plan outline prepared by Design Stage IV includes provisions for the implementation and monitoring of the environmental protection and enhancement measures.

Performance Evaluation Summary: No specific information provided. Typically, construction work plan outlines and plans are prepared early in the construction, not in Design Stages I through IV.

Opportunity Area(s) for Improvement: Including provisions for the implementation and monitoring of the environmental measures in the construction work plan outline prepared by Design Stage IV. Developing a standard construction work plan outline format and/or checklist for environmental measures.

4.4.9 Construction Activity: Pre-Construction Conference

Performance Indicator(s): The environmental performance expectations of the environmental protection and enhancement plans, specifications, permits, and narratives are clearly communicated during the pre-construction conference.

Performance Evaluation Summary: Environmental performance expectations are communicated at the pre-construction conference for many, but not, all projects. A standard construction environmental performance expectation form is not currently used.

Opportunity Area(s) for Improvement: Clearly communicating the environmental performance expectations of the environmental measures at all pre-construction conferences. Developing and using a construction environmental performance expectations form to convey the information on these measures.

4.4.10 Construction Activity: Partnering Conference (Optional)

Performance Indicator(s): The environmental performance expectations of the environmental protection and enhancement plans, specifications, permits, and narratives are clearly communicated during the partnering conference. Partnering agreements include environmental performance expectations.

Performance Evaluation Summary: No specific information provided. Typically, the environmental performance expectations of major projects are communicated during the partnering conference. A standard construction environmental performance expectation form is not currently used.

Opportunity Area(s) for Improvement: Clearly communicate the environmental performance expectations of the environmental measures at all partnering conferences. Developing and using a construction environmental performance expectations form to convey the information. Including environmental performance expectations in all partnering agreements.

4.4.11 Construction Activity: Final Construction Work Plan

Performance Indicator(s): Construction work plans include provisions for the implementation and monitoring of the environmental protection and enhancement measures. For projects with substantial environmental impacts, a project-specific environmental monitoring plan is included in the work plans.

Performance Evaluation Summary: No specific information provided. Typically, construction work plans for major projects include provisions for the implementation of the environmental measures. Some major projects include specific environmental monitoring and reporting activities.

Opportunity Area(s) for Improvement: Including provisions for the implementation and monitoring of the environmental measures in all construction project work plans. Developing a standard construction work plan format and/or checklist for environmental measures. Including project-specific environmental monitoring plans for all major projects.

4.4.12 Construction Activity: Start of Construction

Performance Indicator(s): Environmental permitting agencies are formally notified of the start of construction and before the contractor moves onto the project site. For projects with substantial environmental impacts and mitigation measures, an interagency field review(s) is held before earthmoving begins. Project interagency communication and compliance reporting mechanisms are established.

Performance Evaluation Summary: No specific information provided. Typically, environmental permitting agencies are formally notified as the contractor moves onto the project site, but before earthmoving begins. Interagency field views are sometimes held. Interagency communication and compliance reporting mechanisms are sometimes established for projects as specified in environmental permit conditions.

Opportunity Area(s) for Improvement: Notifying environmental permitting agencies before the contractor moves onto the site for all projects with permits. Conducting interagency field views for all projects with substantial environmental impacts and

mitigation measures. Establishing interagency communication and compliance reporting mechanisms. Flagging and fencing environmentally sensitive areas.

4.4.13 Construction Activity: Right-of-Way

Performance Indicator(s): Prior to building demolition during construction, conduct pre-demolition asbestos and abatement as per state and federal rules. Prior to construction, conduct hazardous waste surveys and develop waste management plans.

Performance Evaluation Summary: Asbestos surveys and abatement are routinely conducted in the Design Stage during building demolition. When known asbestos-containing areas required for construction are not legally or physically accessible before construction, surveys and abatement are conducted concurrently with construction. Construction activities are staged outside known contaminated areas until they are cleaned up. Hazardous waste surveys are conducted and waste management plans are prepared for sites with known contamination in the Design Stage. When known hazardous waste areas are not legally or physically accessible, hazardous waste surveys are conducted and waste management plans are implemented concurrently with construction.

Opportunity Area(s) for Improvement: Pursuing cost savings for asbestos surveys, asbestos abatement, hazardous waste surveys, and hazardous waste management through innovative consulting and contracting arrangements. Creating a waste management database to track waste surveys, waste management, costs, and waste disposal manifests.

4.4.14 Construction Activity: Utility Relocation

Performance Indicator(s): Utility relocation includes environmental protection and enhancement. Utilities receive early notification of potential relocations and consider the environmental aspects in their planning and design activities.

Performance Evaluation Summary: Utility companies relocating their utilities are required to comply with state and federal environmental laws. ADOT does not routinely address the environmental impacts and mitigation for utility company utility relocation activities.

Opportunity Area(s) for Improvement: Notifying and coordinating with utilities during appropriate stages of design to encourage them to properly address the environmental impacts of their relocations and implement mitigation. Sharing environmental inventories and mapping with utilities. When it is mutually beneficial, cooperating on joint environmental impact assessment, documentation, permitting, and mitigation measure implementation.

4.4.15 Construction Activity: Construction Staging Areas

Performance Indicator(s): Construction staging areas are sited, established, maintained, and restored to protect and enhance the environment.

Performance Evaluation Summary: No specific information provided. Typically, the construction staging area siting, establishment, maintenance and restoration are the responsibility of the contractor. Information about sensitive environmental areas such as: wetlands, floodplains, archaeological sites, endangered species habitats, and hazardous waste sites is given to the contractors. The contractor is required to obtain necessary environmental permits before affecting sensitive environmental areas.

Opportunity Area(s) for Improvement: In very sensitive environmental areas, ADOT siting the potential staging areas and obtaining the environmental approvals construction staging areas in the Design Stage. In routine, minimal environmental impact/risk situations, ADOT informing the contractors of the environmental context and environmental permitting requirements through the project environmental documents. Developing environmental management. Developing environmental management practices for staging areas. Performing inspections of restored staging areas and correcting deficiencies before closeout of the contract.

4.4.16 Construction Activity: Borrow and Waste Areas

Performance Indicator(s): Construction borrow and wastes areas are sited, established, maintained, and restored to protect and enhance the environment.

Performance Evaluation Summary: ADOT EEG coordinates with the ADOT construction personnel to help them site borrow and waste areas, so they do not impact environmentally sensitive areas. Environmental database searches and field reviews are performed to identify sensitive areas. Contractors are responsible for securing the environmental approvals prior to establishing borrow and waste areas.

Opportunity Area(s) for Improvement: Performing the siting, acquisition, and environmental permitting of borrow and waste areas in the Design Stage for projects with substantial impacts on sensitive environmental areas resulting from large quantities of borrow and waste. Including the environmental protection and enhancement measures for borrow and waste areas in the in the project plans, specifications, and estimates. If the contractor proposes alternate sites, require the contractor to supply the environmental analysis, documentation, and environmental permits.

4.4.17 Construction Activity: Construction Progress Meetings

Performance Indicator(s): Weekly construction progress meetings cover environmental protection and enhancement measure implementation. Environmental monitoring reports are reviewed for implementation and compliance.

Performance Evaluation Summary: No specific information provided. Typically, environmental compliance problem areas are covered at progress meetings. Environmental monitoring reports are not currently prepared for most projects.

Opportunity Area(s) for Improvement: Prepare and review project environmental monitoring reports at all progress meetings.

4.4.18 Construction Activity: Contractor-Supplied Design Alternatives and Value Engineering Proposals

Performance Indicator(s): Contractor-supplied designs and value-engineering proposals comply with the project environmental protection and enhancement requirements specified in the contract. When major design and environmental measure changes are proposed, coordination with the environmental permitting agencies and communities is done to renegotiate the environmental commitments.

Performance Evaluation Summary: No specific information provided. Typically, major design changes during construction require the reevaluation of the environmental impacts and environmental protection and enhancement measures. When the design changes are likely to result in changes to the environmental protection and enhancement measures, appropriate actions are taken to ensure environmental compliance and agency and community coordination.

Opportunity Area(s) for Improvement: As an interim measure, including special provisions in the construction bid documents describing the environmental analysis, coordination, documentation, and approval requirements for changing designs during construction. As a permanent measure, including similar provisions in the ADOT construction specifications for changing designs and complying with environmental requirements.

4.4.19 Construction Activity: Design Clarification

Performance Indicator(s): The project design teams, including the environmental professionals, are consulted to clarify the design intent of complex environmental protection and enhancement measures to ensure the desired outcomes.

Performance Evaluation Summary: No specific information provided. Typically, project design team members are available to clarify the design intent of complex environmental measures.

Opportunity Area(s) for Improvement: Including presentations by environmental professionals at pre-bid, pre-construction, and progress meetings to explain the intent of complex environmental measures.

4.4.20 Construction Activity: Design and Contract Modification

Performance Indicator(s): Design and contract modifications comply with the project environmental protection and enhancement requirements specified in the contract. When major design and environmental measure changes are proposed, coordination with the environmental permitting agencies and communities is done to renegotiate the environmental commitments.

Performance Evaluation Summary: No specific information provided. Typically, major design and contract changes during construction require the reevaluation of the environmental impacts and environmental protection and enhancement measures. When the design and contract changes are likely to result in changes to the environmental protection and enhancement measures, appropriate actions are taken to ensure environmental compliance and agency and community coordination.

Opportunity Area(s) for Improvement: As an interim measure, including special provisions in the construction bid documents and contracts describing the environmental analysis, coordination, documentation, and approval requirements for changing designs during construction. As a permanent measure, including similar provisions in the ADOT construction specifications for changing designs and complying with environmental requirements.

4.4.21 Construction Activity: Construction Budget

Performance Indicator(s): Construction budgets are increased or decreased to reflect the changes in the environmental protection and enhancement measures.

Performance Evaluation Summary: No specific information provided. Typically, construction budgets are increased due to changes in the project designs and environmental measures or unplanned for events such as floods, landslides, and late finds of archaeological resources, hazardous wastes, and sinkholes.

Opportunity Area(s) for Improvement:) Exploring cost-effective ways with the contractors on a project-by-project basis to implement the project environmental measures at less cost with equal or better outcomes. Exploring cost-effective ways through a statewide initiative to reengineer the designs and specifications for high cost environmental measures.

4.4.22 Construction Activity: Construction Schedule

Performance Indicator(s): Construction schedules are modified to accommodate the changes in the environmental protection and enhancement measures.

Performance Evaluation Summary: No specific information provided. Typically, construction schedules, but not the end dates, are often modified to ensure that the changes in the environmental measures are properly implemented. In many cases, the

work on the environmental measures is fast-tracked to avoid delaying the end date of construction.

Opportunity Area(s) for Improvement: Including emphasis in construction policies to modify construction schedules when it is necessary to properly implement the environmental measures.

4.4.23 Construction Activity: Field Inspection

Performance Indicator(s): Construction field inspection routinely includes monitoring, documenting, and reporting on the implementation of the environmental protection and enhancement measures. Construction inspection professionals are qualified to monitor, document, and report on environmental protection and enhancement measure implementation.

Performance Evaluation Summary: Field inspection routinely includes monitoring, documenting, and reporting on the implementation of the environmental measures. Inspectors may not always have adequate environmental context information and knowledge of how to implement the environmental measures. Most ADOT construction inspection professionals have an engineering and/or a construction background, not an environmental background. ADOT EEG and Natural Resources Management Section environmental professionals do not routinely monitor construction activities due to time, scope, and staffing constraints. Consultant inspection firm environmental professionals are used to monitor the implementation of environmental measures.

Opportunity Area(s) for Improvement: Preparing and distributing a project-specific environmental measure implementation guide to the resident engineer, inspection staff and construction company superintendent before the pre-construction conference. When field computer capabilities are in place, include information in computerized format. Preparing a web-based construction environmental measure implementation guide for high-risk environmental impact areas such as: water resources (wetlands, aquifers, storm water); endangered species of plants and animals; fish and wildlife habitat protection; construction equipment noise; and dust control. Cross training ADOT construction inspection professionals to monitor, document, and report on routine environmental measure implementation. Using qualified consultant construction inspection professionals for complex environmental measure monitoring. Adding environmental professional staff to ADOT construction inspection organizations.

4.4.24 Construction Activity: Materials Sampling and Testing

Performance Indicator(s): Construction material sampling and testing complies with environmental laws and regulations.

Performance Evaluation Summary: No specific information provided. Typically, sampling and testing equipment operation and maintenance involves use of substances that can harm humans, animals, plants, and the environment. Equipment manufacturers

usually include safety, health, and environmental protection guidelines in the equipment operating instructions.

Opportunity Area(s) for Improvement: Reviewing ADOT construction material sampling and testing policies and procedures to assess compliance with safety, health, environmental laws and regulations. Correcting deficiencies in policies and procedures.

4.4.25 Construction Activity: Materials Supply

Performance Indicator(s): Construction materials are environmentally friendly. They are safe, nontoxic, biodegradable, recycled, recyclable, odorless, aesthetically pleasing, and long lasting.

Performance Evaluation Summary: No specific information provided. Typically, construction material review and approval procedures do not include reviews of the environmental aspects of materials such as: toxicity, biodegradability, and recycling potential.

Opportunity Area(s) for Improvement: Systematically reviewing ADOT's list of approved construction materials and substituting environmental friendly materials. Adding environmental performance standards and criteria to the ADOT construction materials evaluation and approval process.

4.4.26 Construction Activity: Coordination with Other Agencies, Organizations, and Businesses

Performance Indicator(s): There is early and ongoing coordination with agencies, organizations, and businesses affected by the environmental impacts of construction activities.

Performance Evaluation Summary: ADOT routinely coordinates with many other agencies, organizations, and businesses during the design and construction stages. There is sometimes a gap in the coordination between the stages. In most cases, there are different ADOT professionals doing the coordination in the design and construction stages. In many cases, there are substantial time gaps between the stages. There is sometimes a lack of clear and easily accessible documentation of the design stage coordination.

Opportunity Area(s) for Improvement: Developing construction agency, organization, and business coordination programs for projects and groups of projects in the design stage. Including provisions for construction coordination in the construction bid documents Developing an effective documentation and information management mechanism to capture the important design coordination information and transfer it to construction. Exploring the development and use of web-based coordination database. Assigning the same communication professionals throughout the design and construction stages of projects.

4.4.26 Construction Activity: Public Information and Coordination

Performance Indicator(s): Public information about important construction activities, environmental impacts, and mitigation is accurate and readily available. In areas where there are substantial environmental impacts anticipated, there is coordination with the public.

Performance Evaluation Summary: ADOT communicates information to the public affected by construction activities in a variety of ways. Typically, the amount and level of detail of the public information is commensurate with the level of environmental impacts. There is sometimes a gap in the public information and coordination between the design and construction stages. In most cases, there are different ADOT professionals doing the public information and coordination activities in the design and construction stages. In many cases, there are substantial time gaps between the stages. There is sometimes a lack of clear and easily accessible documentation of the design stage public involvement and coordination.

Opportunity Area(s) for Improvement: Developing construction public information and coordination programs for projects and groups of projects in the design stage. Including provisions for construction public involvement in the construction bid documents. Developing an effective documentation and information management mechanism to capture the important design public involvement information and transfer it to construction. Exploring the development and use of web-based public involvement database. Assigning the same communication professionals throughout the design and construction stages.

4.4.27 Construction Activity: Contractor Payment

Performance Indicator(s): Contractors bid on and receive payment for all environmental protection and enhancement measures that are satisfactorily completed.

Performance Evaluation Summary: Most environmental protection and enhancement measures are incorporated into the plans, specifications, and quantities used for construction contracting.

Opportunity Area(s) for Improvement: Monitoring and documenting the cost and effectiveness of including the environmental protection and enhancement measures as bid items and not force account items.

4.4.28 Construction Activity: Contractor Claims

Performance Indicator(s): Environmental protection and enhancement measure plans, specifications, and quantities accurately describe the work and materials.

Performance Evaluation Summary: No specific information provided. Construction claims for environmental measure implementation are sometimes caused by a

combination of unforeseen environmental conditions and inaccurate plans, specifications, and estimates.

Opportunity Area(s) for Improvement: Carefully preparing construction, plans, specifications, and quantities based on adequate environmental conditions information. Reviewing past construction claims for their causes and correcting the deficiencies.

4.4.29 Construction Activity: Final Inspection and Acceptance

Performance Indicator(s): Final inspection determines and documents that the environmental protection and enhancement measures were properly implemented. Key environmental permitting agency professionals participate in the final inspection of the environmental measures implemented.

Performance Evaluation Summary: Final inspections are conducted for all construction projects. The implementation of the environmental measures is included in the inspection. Environmental permitting agency professionals are sometimes invited to participate in final inspections for major projects. Minutes of final inspections are prepared and archived.

Opportunity Area(s) for Improvement: Developing a final inspection checklist and report form for the environmental measure implementation documentation. Archiving and distributing the form to the key environmental permitting agencies to demonstrate that ADOT met and/or exceeded its environmental commitments.

4.4.30 Construction Activity: As-Built Drawings and Other Documentation

Performance Indicator(s): As-built drawings and other documentation of project environmental protection and enhancement measures are archived and available for future reference.

Performance Evaluation Summary: No specific information provided. Typically, environmental measure construction documentation is included in as-built drawings and notes. An as-built drawing content checklist and report format for environmental features is not currently used.

Opportunity Area(s) for Improvement: Developing an as-built drawing content checklist and report format for environmental measure implementation documentation. Archiving and distributing the drawings and report to maintenance personnel.

4.4.31 Construction Activity: Environmental Protection and Enhancement Feature Maintenance

Performance Indicator(s): Ongoing maintenance is performed on environmental protection and enhancement measures so that their functions are sustained.

Performance Evaluation Summary: The ADOT *Project Development Process Manual* describes the first year of maintenance as part of the project development process. In practice, construction team members do not routinely interact with maintenance personnel after the final project inspection.

Opportunity Area(s) for Improvement: Developing an as-built drawing content checklist and report format for environmental measure implementation documentation. Archiving and distributing the drawings and reports to maintenance personnel. Include contact information to help maintenance personnel contact the construction personnel responsible for the environmental measure implementation.

4.4.32 Construction Activity: Environmental Protection and Enhancement Feature Monitoring and Reporting

Performance Indicator(s): The environmental performance of the environmental protection and enhancement measures is monitored, documented, and reported in accordance with a monitoring plan.

Performance Evaluation Summary: Some limited monitoring and reporting of environmental measures implementation is currently conducted as per the environmental permitting conditions, particularly in the areas of wetlands, vegetative plantings, and storm water.

Opportunity Area(s) for Improvement: Establishing an ongoing environmental measure implementation monitoring and reporting program to demonstrate that environmental commitments are met and to capture lessons learned. When deficiencies are found, take and document corrective action.

4.5 GENERAL OPERATIONS

4.5.1 General Operations Facilities Maintenance Services: Material Storage

Performance Indicator(s): Facility maintenance material storage facilities include pollution prevention and control and spill prevention and control.

Performance Evaluation Summary: No specific information provided.

Opportunity Area(s) for Improvement: Conducting a comprehensive inventory and evaluation of the pollution prevention and control and spill prevention and control at facility maintenance material storage facilities.

4.5.2 General Operations Facilities Maintenance Services: Pollution Prevention and Spill Control Devices

Performance Indicator(s): Properly functioning facility pollution prevention and spill control devices are operated and maintained. Device performance is monitored and deficiencies are corrected. Drywells are designed, constructed, operated, and maintained for zero pollution discharge. Vehicle wash facilities are designed, constructed, operated, and maintained for zero pollution discharge. Paint booths are designed, constructed, operated, and maintained for zero pollution discharge and optimum worker safety conditions. Bi-fuel repair facilities include proper ventilation systems.

Performance Evaluation Summary: Existing pollution prevention and spill control devices such as containment pads, drywells, septic tanks, industrial drains, and oil/water separators are not always functioning and maintained properly. Drywells are discharging pollutants. Inventory started in the summer 2003 will be completed in 2004 along with a drywell management program. Some vehicle washes are discharging pollutants. Treating wash water is difficult where there are no municipal sewers available or willing to accept the discharge. Paint booths use the latest volatile organic carbon (VOC) reduction technology. No specific information provided on paint booth emissions, operations and maintenance procedures, and worker safety. Bi-fuel ventilation systems are being installed in bi-fuel vehicle repair facilities

Opportunity Area(s) for Improvement: Incorporating policies and procedures for properly maintaining pollution prevention and spill control devices. Monitoring and reporting implementation of the policies and procedures. Taking corrective action on the drywell deficiencies on a case-by-case or programmatic basis. Developing and implementing a drywell management program to attain a zero pollution discharge goal. Researching, developing, and implementing vehicle wash strategies to meet a zero pollution discharge goal. Monitoring and reporting on paint booth operations and maintenance for zero pollution discharge and safe working conditions. Incorporating environmental protection and worker safety procedures into paint booth operations and maintenance procedures. Continuing to install ventilation systems in bi-fuel repair facilities. Incorporate environmental protection and worker safety procedures into bi-fuel repair facility operations and maintenance procedures.

4.5.3 General Operations Facilities Design Services: Policies, Standards, and Procedures

Performance Indicator(s): Facilities design policies, standards, and procedures include cost-effective environmental protection and enhancement measures.

Performance Evaluation Summary: Some facilities design policies, standards, and procedures include environmental protection and enhancement measures.

Opportunity Area(s) for Improvement: Incorporating environmental measures into all facilities design policies, criteria, standards, and procedures. Where written policies, criteria, standards, and procedures do not exist, developing them and including environmental measures.

4.5.4 General Operations Facilities Design Services: Context-Sensitive Design

Performance Indicator(s): Facility designs are context-sensitive. They include environmental protection and enhancement based on the context of the project environs.

Performance Evaluation Summary: Many facility designs include environmental protection and enhancement measures.

Opportunity Area(s) for Improvement: Developing and implementing a context-sensitive facility design process. Identifying and documenting the environmental context at all existing facilities to guide future design. Developing innovative design standards and drawings for environmental measures.

4.5.5 General Operations Facilities Design Services: Pollution Prevention and Spill Control Devices

Performance Indicator(s): Properly functioning facility pollution prevention and spill control devices are designed.

Performance Evaluation Summary: Existing pollution prevention and spill control devices such as containment pads, drywells, septic tanks, industrial drains, and oil/water separators are not always functioning properly.

Opportunity Area(s) for Improvement: Conducting cooperative research on more cost-effective designs for pollution prevention and spill control devices used at facilities. Establishing design criteria.

4.5.6 General Operations Facilities Design Services: Asbestos Testing and Abatement

Performance Indicator(s): Asbestos testing is conducted at all facilities and asbestos abatement measures are implemented in accordance with the regulations. Separate asbestos abatement funding is budgeted for facilities.

Performance Evaluation Summary: ADOT is currently testing about 1200 buildings for the presence of asbestos. As testing reveals asbestos, abatement measures will be designed and implemented. An interim facilities asbestos policy is in effect. There is a two-year funding appropriation for testing.

Opportunity Area(s) for Improvement: Developing and implementing a statewide facilities asbestos abatement program and database. Budgeting specific abatement funding for facilities. Monitoring and reporting on the implementation of the program.

4.5.7 General Operations Facilities Design Services: Design Consultant Contracts

Performance Indicator(s): Design consultants incorporate environmental protection and enhancement measures into design plans and specifications for facilities projects. Design consultants are pre-qualified for environmental protection and enhancement measure assignments.

Performance Evaluation Summary: Environmental measures are included in consultant-prepared design plans and specifications as specifically directed. Typically, the consultant contract includes blanket-type language requiring compliance with all applicable environmental rules. No specific information is provided on design consultant pre-qualification for environmental protection and enhancement. Typically, design consultant pre-qualification includes environmental protection and enhancement design.

Opportunity Area(s) for Improvement: Reviewing how well environmental measures are incorporated into consultant-prepared facilities designs. If gaps exist, developing design contracting mechanisms to better incorporate the environmental measures. Reviewing the facilities design consultant pre-qualification requirements to confirm that consultants must be qualified for environmental measure assignments.

4.5.8 General Operations Facilities Design Services: Construction Contract Pre-Bid Conferences

Performance Indicator(s): The environmental performance expectations of the environmental protection and enhancement plans, specifications, permits, and narratives are communicated during the construction pre-bid conference.

Performance Evaluation Summary: Environmental performance expectations are communicated at the pre-bid conferences.

Opportunity Area(s) for Improvement: Reviewing how well environmental performance expectations of the environmental measures are communicated at pre-bid conferences. If gaps exist, developing mechanisms such as a facilities construction environmental performance expectations form to convey the measures information.

4.5.9 General Operations Facilities Construction Services: Policies, Standards, and Procedures

Performance Indicator(s): Facilities construction policies, standards, and procedures include cost-effective environmental protection and enhancement measures.

Performance Evaluation Summary: Some facilities construction policies, standards, and procedures include environmental protection and enhancement measures.

Opportunity Area(s) for Improvement: Incorporating environmental measures into all facilities construction policies, criteria, standards, and procedures. Where written policies, criteria, standards, and procedures do not exist, developing them and including environmental measures.

4.5.10 General Operations Facilities Construction: Pre-Construction Conference

Performance Indicator(s): The environmental performance expectations of the environmental protection and enhancement plans, specifications, permits, and narratives are communicated during the pre-construction conference.

Performance Evaluation Summary: No specific information provided.

Opportunity Area(s) for Improvement: Developing and using a construction environmental performance expectations form to convey the environmental measures information.

4.5.11 General Operations Facilities Construction: Start of Construction

Performance Indicator(s): Environmental permitting agencies are formally notified of the start of construction and before the contractor moves onto the project site. For projects with substantial environmental impacts and mitigation measures, an interagency field view(s) is held before activities such as building demolition and earthmoving begins. Project interagency communication and compliance reporting mechanisms are established.

Performance Evaluation Summary: No specific information provided.

Opportunity Area(s) for Improvement: Notifying environmental permitting agencies before the contractor moves onto the site for all projects with permits. Conducting interagency field views for all projects with substantial environmental impacts and mitigation measures. Establishing interagency communication and compliance reporting mechanisms. Flagging and fencing environmentally sensitive areas.

4.5.12 General Operations Construction Activity: Construction Staging Areas

Performance Indicator(s): Construction staging areas are sited, established, maintained, and restored to protect and enhance the environment.

Performance Evaluation Summary: No specific information provided. Typically, the construction staging area siting, establishment, maintenance, and restoration are the responsibility of the contractor. Information about sensitive environmental areas such as: wetlands, floodplains, archaeological sites, endangered species habitats, and hazardous

waste sites is given to the contractors. The contractor is required to obtain necessary environmental permits before affecting sensitive environmental areas.

Opportunity Area(s) for Improvement: In very sensitive environmental areas, ADOT siting the potential staging areas and obtaining the environmental approvals for construction staging areas in the Design Stage. In routine, minimal environmental impact/risk situations, ADOT informing the contractors of the environmental context and environmental permitting requirements through the contract documents. Developing environmental management practices for staging areas. Performing inspections of restored staging areas and correcting deficiencies before closeout of the contract.

4.5.13 General Operations Facilities Construction Services: Field Inspection

Performance Indicator(s): Construction field inspection routinely includes monitoring, documenting, and reporting on the implementation of the environmental protection and enhancement measures. Construction inspection professionals are qualified to monitor, document, and report on environmental protection and enhancement measure implementation.

Performance Evaluation Summary: Field inspection routinely includes monitoring, documenting, and reporting on the implementation of the environmental measures. Inspectors may not always have adequate environmental context information and knowledge of how to implement the environmental measures. Most facilities construction inspection professionals have an engineering and/or a construction background, not an environmental background. ADOT EEG and Natural Resources Management Section environmental professionals do not routinely monitor facilities construction activities due to time, scope, and staffing constraints. Consultant inspection firm environmental professionals are sometimes used to monitor the implementation of environmental measures

Opportunity Area(s) for Improvement: Preparing and distributing a project-specific environmental measure implementation guide to the resident engineer, inspection staff, and construction company superintendent before the pre-construction conference. When field computer capabilities are in place, include information in computerized format. Preparing a web-based construction environmental measure implementation guide for high-risk environmental impact areas such as: water resources (wetlands, aquifers, storm water); endangered species of plants and animals; fish and wildlife habitat protection; construction equipment noise; and dust control. Cross training facilities construction inspection professionals to monitor, document, and report on routine environmental measure implementation. Using qualified consultant construction inspection professionals for complex environmental measure monitoring. Adding environmental professional staff to facilities construction inspection teams.

4.5.14 General Operations Facilities Construction Services: Contractor Payment

Performance Indicator(s): Contractors bid on and receive payment for all environmental protection and enhancement measures that are satisfactorily completed. Incentives and/or disincentives are used in contracts to obtain the desired level of environmental performance.

Performance Evaluation Summary: Most environmental protection and enhancement measures are incorporated into the plans, specifications, and quantities used for construction contracting. Currently, environmental performance incentives and/or disincentives are not used in construction contracts.

Opportunity Area(s) for Improvement: Monitoring and documenting the cost and effectiveness of including the environmental protection and enhancement measures as bid items and not force account items. Experimenting with the use environmental performance incentives and/or disincentives on a pilot project basis and evaluating benefits and costs.

4.5.15 General Operations Facilities Construction Services: Contractor Claims

Performance Indicator(s): Environmental protection and enhancement measure plans, specifications, and quantities accurately describe the work and materials.

Performance Evaluation Summary: No specific information provided. Typically, construction claims for environmental measure implementation are caused by a combination of unforeseen environmental conditions and inaccurate plans, specifications, and estimates.

Opportunity Area(s) for Improvement: Carefully preparing construction, plans, specifications, and quantities based on adequate environmental conditions information. Reviewing past construction claims for their causes and correcting the deficiencies.

4.5.16 General Operations Facilities Construction Services: Final Inspection and Acceptance

Performance Indicator(s): Final inspection determines and documents that the environmental protection and enhancement measures were properly implemented. Key environmental permitting agency professionals participate in the final inspection of the environmental measures implemented.

Performance Evaluation Summary: Final inspections are conducted for all construction projects. The implementation of the environmental measures is included in the inspection. Environmental permitting agency professionals are sometimes invited to participate in final inspections for major projects. Minutes of final inspections are prepared and archived.

Opportunity Area(s) for Improvement: Developing a final inspection checklist and report form for the environmental measure implementation documentation. Archiving and distributing the form to the key environmental permitting agencies to demonstrate that ADOT met and/or exceeded its environmental commitments.

4.5.17 General Operations Facilities Construction Services: As-Built Drawings and Other Documentation

Performance Indicator(s): As-built drawings and other documentation of project environmental protection and enhancement measures are archived and available for future reference.

Performance Evaluation Summary: No specific information provided. Typically, environmental measure construction documentation is included in as-built drawings and notes. An as-built drawing content checklist and report format for environmental features is not currently used.

Opportunity Area(s) for Improvement: Developing an as-built drawing content checklist and report format for environmental measure implementation documentation. Archiving and distributing the drawings and report to maintenance personnel.

4.5.18 General Operations Facilities Construction Services: Post-Construction Environmental Protection and Enhancement Feature Maintenance

Performance Indicator(s): Ongoing maintenance is performed on environmental protection and enhancement measures so that their functions are sustained.

Performance Evaluation Summary: Ongoing maintenance of environmental measures such as containment pads, drywells, sumps, septic systems, and oil/water separators is inconsistent.

Opportunity Area(s) for Improvement: Developing an as-built drawing content checklist and report format for environmental measure implementation documentation. Archiving and distributing the drawings and report to maintenance personnel. Include contact information to help maintenance personnel contact the construction personnel responsible for the environmental measure implementation.

4.5.19 General Operations/Equipment Services Facilities Construction Services: Post-Construction Environmental Protection and Enhancement Feature Monitoring and Reporting

Performance Indicator(s): The environmental performance of the environmental protection and enhancement measures is monitored, documented, and reported in accordance with a monitoring plan.

Performance Evaluation Summary: Some limited monitoring and reporting of environmental measures implementation is currently conducted as per the environmental

permitting conditions, particularly in the areas of wetlands, vegetative plantings, and storm water.

Opportunity Area(s) for Improvement: Establishing an ongoing environmental measure implementation monitoring and reporting program to demonstrate that environmental commitments are met and to capture lessons learned. When deficiencies are found, take and document corrective action.

4.5.20 General Operations Printing and Copying Services: Policies and Procedures

Performance Indicator(s): Printing and copying service policies, standards, and procedures include cost-effective environmental protection and enhancement measures, including energy conservation, waste reduction, and recycling.

Performance Evaluation Summary: No specific information provided. Typically, printing and copying organizations follow the environmental protection, health, and safety instructions on the equipment and supply manufacturers' labels and data sheets. Also, they adhere to the state's energy conservation, waste reduction, and recycling policies and procedures.

Opportunity Area(s) for Improvement: Incorporating environmental measures into printing and copying policies and procedures. Where written policies, criteria, standards, and procedures do not exist, developing them and including environmental measures.

4.5.21 General Operations Printing and Copying Services: Chemical Management

Performance Indicator(s): The number, volume, and hazard level of printing and copying chemicals is decreasing.

Performance Evaluation Summary: The Print Shop has implemented several measures to decrease the number, volume, and hazard level of chemicals including: eliminating over 10 chemicals used; replacing equipment with equipment that uses little or no chemicals; eliminating equipment where it is cost-effective to outsource the service; and modifying printing processes to eliminate hazardous chemicals.

Opportunity Area(s) for Improvement: Continuing to implement the chemical management strategies. Documenting and reporting the costs savings and benefits.

4.5.22 General Operations Printing and Copying Services: Paper Recycling

Performance Indicator(s): The amount of paper recycled is increasing.

Performance Evaluation Summary: The General Operations Group recycles all eligible waste paper. Currently, ADOT recycles about 2 tons of paper/month at 15 locations.

Opportunity Area(s) for Improvement: Continuing to recycle all eligible paper. Documenting and reporting the quantity of paper recycled.

4.5.23 General Operations Mail Services: Policies and Procedures

Performance Indicator(s): Mail service policies and procedures include cost-effective environmental protection and enhancement measures, including worker safety and health, energy conservation, waste reduction, and recycling.

Performance Evaluation Summary: No specific information provided. Typically, mail services organizations follow the environmental protection, health and safety instructions on the equipment and supply manufacturers' labels and data sheets. Also, they adhere to the state's worker health and safety, energy conservation, waste reduction, and recycling policies and procedures.

Opportunity Area(s) for Improvement: Incorporating environmental measures into mail services policies and procedures. Where written policies and procedures do not exist, developing them and including environmental measures. Documenting and reporting on the implementation of the environmental measures.

4.5.24 General Operations Engineering Records Services: Going Electronic

Performance Indicator(s): Engineering records policies and procedures require continuing shift from paper to electronic documentation. Also, policies and procedures include energy conservation, waste reduction, and recycling.

Performance Evaluation Summary: ADOT continues to replace paper documentation with electronic documentation. No specific information was provided regarding disposal and/or recycling of paper records in the archives that are being converted to electronic records.

Opportunity Area(s) for Improvement: Continuing to implement the conversion from paper to electronic records. Monitoring and reporting the quantities of paper eliminated and the benefits.

4.6 EQUIPMENT SERVICES

4.6.1 Equipment Services Facilities Maintenance Services: Policies, Standards, and Procedures

Performance Indicator(s): Facilities maintenance policies, standards, and procedures include environmental protection and enhancement measures.

Performance Evaluation Summary: Some facilities maintenance policies, standards, procedures include environmental protection and enhancement measures.

Opportunity Area(s) for Improvement: Incorporating environmental measures into all facilities maintenance policies, standards, and procedures. Where written policies, standards, and procedures do not exist, developing them and including environmental measures.

4.6.2 Equipment Services Facilities Maintenance Services: Contracts

Performance Indicator(s): Facilities maintenance service Requests for Proposals (RFPs) and scopes of work, and contracts specify environmental protection and enhancement measures and compliance with state and federal environmental rules. Facilities maintenance service contract pre-bid and start-up meetings include a presentation of the environmental protection and enhancement measures. Facilities maintenance service contractors properly implement environmental protection and enhancement measures and document implementation. Incentives and/or disincentives are used to obtain the desired level of environmental performance from facilities maintenance service contractors.

Performance Evaluation Summary: Specific environmental measures are included in RFPs, scopes of work, and contracts to meet regulatory requirements. Also, standard blanket-type language is included in the contracting documents requiring the contractors to comply with all applicable environmental rules. Environmental measures are presented at pre-bid and start-up meetings. No specific information is provided on how well contractors comply with the environmental rules. Typically contractors implement the environmental measures. However, implementation documentation is not always completed, submitted, and reviewed. Currently, environmental performance incentives and/or disincentives are not used in facilities maintenance service contracts.

Opportunity Area(s) for Improvement: Reviewing how environmental measures are specified in RFPs, scopes of work, and contracts to evaluate how well the contractors are given direction. Reviewing how environmental measures are presented at pre-bid and start-up meetings to contracts to evaluate how well the contractors are given direction. Developing standard environmental measure implementation documentation forms for reviews. Experimenting with the use of environmental performance incentives and/or disincentives on a pilot basis and evaluating costs and benefits.

4.6.3 Equipment Services Facilities Maintenance Services: Material Procurement

Performance Indicator(s): Environmentally friendly facility maintenance materials are used.

Performance Evaluation Summary: Typically, facility maintenance materials purchased are those that are safe for humans and the environment. In cases where potentially harmful materials are used, the manufacturer's directions for storage, use, recycling, and disposal are followed.

Opportunity Area(s) for Improvement: Conducting a comprehensive inventory and evaluation of the facility maintenance materials used identify substitute materials that are

safe, recycled, recyclable, biodegradable, and equally cost-effective. Specifying substitute materials.

4.6.4 General Operations/Equipment Services Facilities Maintenance Services: Material Storage

Performance Indicator(s): Facility maintenance material storage facilities include pollution prevention and control and spill prevention and control.

Performance Evaluation Summary: No specific information provided.

Opportunity Area(s) for Improvement: Conducting a comprehensive inventory and evaluation of the pollution prevention and control and spill prevention and control at facility maintenance material storage facilities. Correcting deficiencies.

4.6.5 Equipment Services Facility Maintenance Services: Material Disposal

Performance Indicator(s): Facility maintenance materials are recycled and properly disposed of.

Performance Evaluation Summary: No specific information provided.

Opportunity Area(s) for Improvement: Inventorying the quantities of facility maintenance materials recycled and disposed of. Exploring waste reduction and disposal alternatives for high-volume materials and materials with high disposal costs.

4.6.6 Equipment Services Facility Maintenance Services: Energy

Performance Indicator(s): Using energy efficient equipment and fixtures and implementing energy conservation measures.

Performance Evaluation Summary) ADOT is cooperating with other agencies responsible for energy conservation and implementing measures as required.

Opportunity Area(s) for Improvement: Conducting energy audits of facilities and implementing energy conservation strategies and actions. Measuring and reporting energy savings.

4.6.7 Equipment Services: Operation and Maintenance of Statewide Fleet Management Network

Performance Indicator(s): Fleet management policies and procedures include cost-effective environmental protection and enhancement measures, including worker safety and health, energy conservation, waste reduction, and recycling. Fleet management facilities are routinely inspected for compliance with environmental protection and enhancement measures and deficiencies are corrected.

Performance Evaluation Summary: Equipment Services implements numerous environmental measures including: recycling of used oil, lead acid batteries, and tires through vendors; reducing the antifreeze waste stream through testing; recovering and recycling 100% of automotive refrigerants; reducing waste water from vehicle wash racks through filtering and recycling; replacing solvent-based parts washers with water-based systems; using low VOC paints in auto painting operations; eliminating aerosol and chlorinated break and carburetor cleaners; using only chemicals approved by the Equipment Services/Environmental Administrator. Electronic billing and PM/repair/air quality emissions inspection notification process is being converted to an electronic process; and all waste oil, mixed fuels, and hazardous materials are disposed of and/or recycled through qualified vendors. Routine fleet maintenance facility safety inspections are conducted with some observations of environmental measure implementation. An industrial hygienist position is in the process of being filled in the next six months to conduct the inspections.

Opportunity Area(s) for Improvement: Systematically reviewing fleet management policies and procedures for how well environmental measures are incorporated. Incorporating environmental measures where gaps are identified. Eventually including environmental measure policies and procedures in the Fleet Focus Equipment Management System. Developing and using electronic fleet environmental measure inspection forms. Eventually including environmental measure inspection forms in the Fleet Focus Equipment Management System

4.6.8 Equipment Services: Statewide Fuel Resources

Performance Indicator(s): Fuel facilities are in compliance with environmental regulations. Clean fuels are used. Light and heavy duty vehicles purchased employ latest pollution fuel efficiency and emission technology.

Performance Evaluation Summary: All 106 fuel storage tanks currently meet EPA standards. The cleanest fuels available are used. Continuing to tighten emission technology purchasing specifications. Working towards the goal of 75% of light class vehicles being bi-fuel.

Opportunity Area(s) for Improvement: Monitoring and reporting on fuel facility operation and maintenance as required by the regulations. Developing and implementing a fuel facility management system as part of the Fleet Focus Equipment Management System. Continuing to purchase clean fuels. Monitoring and reporting on the costs and benefits of bi-fuel vehicles. Researching retrofitting diesel engines in fleet to reduce emissions.

4.6.9 Equipment Services: Maintenance of Port of Entry Scales

Performance Indicator(s): Port of entry scale management policies and procedures include cost-effective environmental protection and enhancement measures, including worker safety and health, energy conservation, light pollution control, waste reduction, recycling,

and spill prevention and control. Port of entry scales and associated facilities include environmental protection and enhancement measures.

Performance Evaluation Summary: No specific information provided. Typically, truck weight enforcement areas must be constructed and equipped to control unexpected spills and discharges of small quantities of solid and liquid substances from parked and idling trucks. Storm water containment facilities must be constructed to prevent ground and surface water pollution.

Opportunity Area(s) for Improvement: Systematically reviewing port of entry policies and procedures for how well environmental measures are incorporated. Incorporating environmental measures where gaps are identified. Assessing the effectiveness of the environmental measures incorporated into port of entry scales and associated facilities. Where environmental measures are found to be ineffective, research, develop, and implement effective measures.

4.6.10 Equipment Services: Statewide State Vehicle Auto Body Repair

Performance Indicator(s): Auto body repair policies and procedures include cost-effective environmental protection and enhancement measures, including worker safety and health, energy conservation, waste reduction, recycling, and spill prevention and control.

Performance Evaluation Summary: Most of the worker safety and health, waste reduction, recycling, and spill prevention and control aspects of auto body repair appear to be well managed and effective. The vehicle washing associated with auto body repair may be problem at locations with wash facilities not connected to municipal sewers.

Opportunity Area(s) for Improvement: Systematically reviewing auto body repair policies and procedures for how well environmental measures are incorporated. Incorporating environmental measures where gaps are identified.

4.7 DEVELOPMENT

4.7.1 Strategic Planning Activity: Critical Strategic Issue – Five Year Construction Program Delivery

Performance Indicator(s): Prioritized transportation projects are delivered on time, on budget, and in quality condition. Quality condition includes incorporating environmental protection and enhancement measures into project development and design using context-sensitive planning and design techniques.

Performance Evaluation Summary: A range of environmental impact analyses are conducted during the planning, development, and design of all transportation projects, depending on the scope, magnitude, and anticipated impacts. As environmental impacts are understood, plans and designs are modified. Currently, project environmental goals and performance measures are not established in the transportation planning phase to

facilitate context-sensitive project development and design. Currently, important environmental features are mapped and inventoried at the beginning of the corridor planning or project development.

Opportunity Area(s) for Improvement: Collaboratively establishing project environmental goals and measures during statewide and regional transportation planning with a broad range of stakeholders. Mapping and GIS inventorying important environmental features (context) in areas of potential project impacts, so that environmental context information is available before corridor planning, project development and design. Using a context-sensitive planning, project development and design approach. Monitoring and reporting on the implementation of environmental measures.

4.7.2 Strategic Planning Activity: Critical Strategic Issue – Accelerated Completion of the Regional Freeway System

Performance Indicator(s): The Maricopa Regional Freeway System is constructed, maintained, and operated in an environmentally sound manner.

Performance Evaluation Summary: All required environmental analyses are being conducted during the planning, development, and design of the freeway system. As environmental impacts are understood, plans and designs are modified and mitigation measures are included.

Opportunity Area(s) for Improvement: Monitoring and reporting on the implementation of the environmental mitigation measures during construction. Where deficiencies occur, correcting them. Incorporating environmental measures into freeway maintenance and operations policies, procedures, and work plans.

4.7.3 Program Development Activity: State Transportation Plan

Performance Indicator(s): The scope, purpose, and need of transportation improvement programs are broadly defined and documented. Broad program environmental goals and performance measures are collaboratively established with the regulatory and resource agencies

Performance Evaluation Summary: Well-documented transportation improvement program purpose and need information is not always a product of transportation planning. Also, broad program environmental goals and performance measures are rarely established.

Opportunity Area(s) for Improvement: Including transportation improvement program purpose and need and broad environmental performance goals and measures in statewide transportation plans. Engaging the regulatory and resource agencies in establishing broad program environmental goals and performance measures.

4.7.5 Program Development Activity: Regional Transportation Plan

Performance Indicator(s): The scope, purpose and need of regional transportation improvement programs are defined and documented. Program environmental goals and performance measures are collaboratively established with the regulatory and resource agencies. Important environmental features (context) in areas of potential project impacts are mapped and GIS inventoried, so that environmental context information is available before corridor planning, project development, and design. Local, regional, state, tribal, and federal land management and resource protection plan coordination with transportation plans is performed before project development and design.

Performance Evaluation Summary: Well-documented transportation improvement program purpose and need information is not always a product of regional transportation planning. Also, program environmental goals and performance measures are rarely established. Environmental features mapping and inventories are not routinely completed as part of regional transportation planning. Currently, important environmental features are mapped and inventoried at the beginning of the corridor planning or project development. Currently, coordination is focused more on program and project development, than on broad-based land management and resource protection planning. Mutually beneficial goals and objective are not often pursued.

Opportunity Area(s) for Improvement: Including transportation improvement program purpose and need and environmental performance goals and measures in regional transportation plans. Engaging the regulatory and resource agencies in establishing goals and measures. Mapping and GIS inventorying important environmental features (context) in areas of potential project impacts, so that environmental context information is available before corridor planning, project development, and design. Coordinating land management, resource protection, and transportation planning to meet mutually beneficial goals and objectives as part of project development and design.

4.7.6 Program Development Activity: Priority Programming

Performance Indicator(s): Funds for environmental mapping and GIS inventorying are included for statewide and regional transportation planning.

Performance Evaluation Summary: Since environmental mapping and GIS inventories are not included in statewide and regional transportation planning, no funds are programmed for this purpose.

Opportunity Area(s) for Improvement: Mapping and GIS inventorying important environmental features (context) in areas of potential project impacts, so that environmental context information is available before corridor planning, project development and design.

4.7.7 Program Development Activity: Transportation Corridor Planning Studies

Performance Indicator(s): Context-sensitive planning techniques are used in conducting transportation corridor planning studies. This includes developing corridors to incorporate environmental goals and performance measures. Programmatic environmental analysis, documentation, memorandums of agreement, advanced mitigation, and permitting approaches are collaboratively explored for transportation corridors. Important corridor-level environmental protection and enhancement information is in a computerized project environmental tracking system.

Performance Evaluation Summary: Currently, corridor planning alternatives are developed to avoid, minimize, and mitigate environmental impacts. Environmental features are mapped and inventoried at the beginning of the alternatives analysis or as it proceeds. Environmental goals and performance measures are not routinely established as part of corridor planning. Currently, EEG is exploring the establishment of environmental performance measures. Some programmatic approaches to streamlining project delivery are currently initiated during project development and design, not during corridor planning. Examples are wetland banking and Section 106 programmatic agreements. Currently, corridor planning-level environmental information is included in the corridor planning study reports. Reports are provided to the corridor location study teams. There is no computerized tracking system for important environmental information. A computerized environmental tracking system is being developed by EEG and is expected to be deployed in 2004.

Opportunity Area(s) for Improvement: Collaboratively establishing environmental goals and performance measures before or at the beginning of corridor planning studies. Using context-sensitive planning techniques to conduct corridor planning studies. Routinely involving environmental professionals in identifying the environmental issues and context. Initiating the development of programmatic approaches for environmental analysis, documentation, memorandums of agreement, advanced mitigation, and permitting during corridor planning. Deploying and using computerized environmental tracking system to ensure that important environmental protection and enhancement information flows through planning, development, design, construction, maintenance, and operations.

4.7.8 Program Development Activity: Transportation Corridor Location Studies

Performance Indicator(s): Context-sensitive corridor location techniques are used in conducting transportation corridor location studies. This includes locating corridors to incorporate environmental goals and performance measures.

Performance Evaluation Summary: Currently, corridor location alternatives are developed to avoid, minimize, and mitigate environmental impacts. Environmental features are mapped and inventoried at the beginning of the alternatives analysis or as it proceeds. Environmental goals and performance measures are not routinely established as

part of corridor location studies. Currently, EEG is exploring the establishment of environmental performance measures.

Opportunity Area(s) for Improvement: Collaboratively establishing environmental goals and performance measures before or at the beginning of corridor location studies. Using context-sensitive corridor location techniques to conduct corridor location studies. Routinely involving environmental professionals in identifying the environmental issues and context.

4.7.9 Program Development Activity: Programming

Performance Indicator(s): Adequate funds for environmental-related analysis, documentation, agency coordination, public involvement, and advance environmental mitigation are programmed for scoping, project assessments, location/design concept studies, and design concept studies. Costs of environmental-related analysis, documentation, agency coordination, public involvement, and advance mitigation are tracked, reported, and analyzed for financial management purposes.

Performance Evaluation Summary: Necessary funds are programmed for all the environmental-related aspects of scoping, project assessments, location/design concept studies, and design concept studies. Some limited advanced environmental mitigation funding is programmed. Costs of environmental aspects are not routinely broken out and tracked for financial management purposes.

Opportunity Area(s) for Improvement: Reviewing the planned versus actual expenditures of funds for environmental aspects to determine if adequate funding is programmed to keep projects advancing on schedule, within budget, and in an environmentally sound manner. Breaking out and tracking the costs of the environmental aspects. For high cost environmental aspects, consider reengineering how they are addressed to reduce costs.

4.7.10 Project Development Activity: Project Scoping, Project Assessments, Location/Design Concept Studies, and Design Concept Studies – Performance Area 1

Performance Indicator(s): Project scoping, project assessments, location/design concept studies, and design concept studies are responsive to environmental goals and performance measures established during program development.

Performance Evaluation Summary: Currently, environmental goals and performance measures are not established during program development. However, all project development activities include the assessment of environmental impacts and the modification of alternatives to avoid, minimize, and mitigate environmental impacts. Currently, the EEG is exploring the establishment of environmental performance measures.

Opportunity Area(s) for Improvement: Establishing project environmental goals and performance measures during program development and striving to satisfy them during

project development and project design. Developing an environmental protection and enhancement measure and commitment document for all projects.

4.7.11 Project Development Activity: Project Scoping, Project Assessments, Location/Design Concept Studies, and Design Concept Studies – Performance Area 2

Performance Indicator(s):) Project scoping, project assessments, location/design concept studies, and design concept studies use environmental mapping and GIS inventories developed during program development for environmental context information.

Performance Evaluation Summary: Currently, environmental mapping and GIS inventories are developed during project development and at the beginning of project scoping, project assessments, location/design concept studies, and design concept studies or as they proceed—not during program development.

Opportunity Area(s) for Improvement: Using environmental mapping and GIS inventories from program development to conduct project scoping, project assessments, location/design concept studies, and design concept studies.

4.7.12 Project Development Activity: Project Scoping, Project Assessments, Location/Design Concept Studies, and Design Concept Studies – Performance Area 3

Performance Indicator(s): Context-sensitive corridor location and design techniques are used in project scoping, project assessments, location/design concept studies, and design concept studies. This includes locating and designing corridor concepts to incorporate environmental goals and performance measures.

Performance Evaluation Summary: Currently, corridor location and design alternatives are routinely developed to avoid, minimize, and mitigate environmental impacts. Environmental features are mapped and inventoried at the beginning of the alternatives analysis or as it proceeds. Environmental goals and performance measures are not routinely established as part of corridor location studies.

Opportunity Area(s) for Improvement: Using context-sensitive corridor location and design techniques in project scoping, project assessments, location/design concept studies, and design concept studies. Incorporating environmental goals and performance measures into corridor and design concepts.

4.7.13 Project Development Activity: Project Scoping, Project Assessments, Location/Design Concept Studies, and Design Concept Studies – Performance Area 4

Performance Indicator(s): ADOT has delegated project environmental review approval and permitting authority from the FHWA and regulatory and resource agencies. Examples of potential delegation areas are: Categorical Exclusion Evaluations; Section 106 Eligibility and Effect Determinations; Section 404 General Permits; Section 4(f) Determinations; and Section 7 Consultations.

Performance Evaluation Summary: Currently, ADOT has some limited delegation of environmental review and approval authority for Categorical Exclusion Evaluations from the FHWA.

Opportunity Area(s) for Improvement: Seeking maximum delegation of environmental review and approval authority from the FHWA and regulatory and resource agencies to ADOT.

4.7.14 Project Development Activity: Project Scoping, Project Assessments, Location/Design Concept Studies, and Design Concept Studies – Performance Area 5

Performance Indicator(s): Federal land management agencies, tribal governments, and ADOT jointly establish and follow environmental processes for transportation project development, reviews, approvals, and permits. All organizations and individuals within the same agency generally follow the joint processes.

Performance Evaluation Summary: Currently, each federal land management agency and tribal government has some unique environment processes for transportation project development, reviews, approvals, and permits. Some environmental processes were not jointly developed. Some organizations and individuals within the agencies differ in how follow the processes.

Opportunity Area(s) for Improvement: Jointly developing and following transportation project development environmental processes with each federal land management agency, tribal government, and ADOT. Jointly updating existing processes such as those found in the U.S. Department of Agriculture (USDA) Forest Service *Guidelines for Highways on National Forest Land*, dated September 1994.

4.7.15 Project Development Activity: Project Scoping, Project Assessments, Location/Design Concept Studies, and Design Concept Studies – Performance Area 6

Performance Indicator(s): Regulatory and resource agency professionals proactively participate in complex transportation project development.

Performance Evaluation Summary: Regulatory and resource agency professionals participate in complex transportation project development in a reactive manner through reviews of project environmental documents and permit applications.

Opportunity Area(s) for Improvement: Involving the regulatory and resource agency professionals in complex projects in the roles of assisting ADOT in: verifying the environmental context; establishing environmental performance measures; developing context-sensitive location and design alternatives; and formulating mitigation strategies and concepts. Exploring the use of interagency funding agreements if manpower limitations prevent proactive involvement.

4.7.16 Project Development Activity: Project Scoping, Project Assessments, Location/Design Concept Studies, and Design Concept Studies – Performance Area 7

Performance Indicator(s): Preliminary right-of-way activities support environmental protection and enhancement.

Performance Evaluation Summary: Right-of-way professionals are often involved in providing preliminary right-of-way information such as potential number of relocations, time frames and costs of acquisitions, anticipated residential and business relocation complexities, social and economic fabric of communities, building demolition environmental issues (asbestos and other contamination), excess property for mitigation, and existing/future land use.

Opportunity Area(s) for Improvement: Routinely involving right-of-way professionals in identifying the environmental context, assessing the social and economic impacts, designing context-sensitive alternatives, developing mitigation concepts, and identifying excess parcels of land for mitigation.

4.7.17 Project Development Activity: Project Scoping, Project Assessments, Location/Design Concept Studies, and Design Concept Studies – Performance Area 8

Performance Indicator(s): Preliminary utility relocation activities include provisions for environmental protection and enhancement.

Performance Evaluation Summary: Utility professionals are sometimes involved in providing preliminary utility relocation information such as potential relocations, time frames and costs of relocations, anticipated relocation complexities, and relocation environmental issues (asbestos, contamination, permits). There are continuing coordination difficulties with utility companies and land management agencies on transportation project utility relocations.

Opportunity Area(s) for Improvement: Routinely involving utility professionals in identifying the utility involvements, assessing the impacts on utilities and services, and designing alternatives to minimize utility service disruptions. Developing and executing a cooperative agreement between utility companies and land management agencies for improved project coordination on environmental protection measures and permitting.

4.7.18 Project Development Activity: Project Scoping, Project Assessments, Location/Design Concept Studies, and Design Concept Studies – Performance Area 9

Performance Indicator(s): Project public involvement programs proactively engage the public in project development.

Performance Evaluation Summary: No specific information provided. Typically, the project public involvement programs have the public participating in project development

in a reactive manner through reviews of partially completed plans and supporting information. Occasionally, the public involvement programs use techniques to engage the public in clarifying environmental context of their respective communities, establishing community-based environmental protection and enhancement goals, and collaboratively exploring alternatives and mitigation measures.

Opportunity Area(s) for Improvement: Retrospectively reviewing a representative sample of project development public involvement program activities to assess their effectiveness. Developing and implementing public involvement programs for all projects to proactively engage the public in project development and project design. Preparing project design public involvement program work plans during project development to ensure continuity and a smooth transition to a new design team.

4.7.19 Project Development Activity: Project Scoping, Project Assessments, Location/Design Concept Studies, and Design Concept Studies – Performance Area 10

Performance Indicator(s): Project design professionals participate in planning, project development, construction, and maintenance activities to understand the evolution of the project, to offer design technical assistance, and to maintain quality, continuity and commitment.

Performance Evaluation Summary: Project design professionals occasionally participate in project development and rarely participate in planning, construction and maintenance. There are often gaps in the communication of important project information from planning to project development, to project design, to construction, to maintenance.

Opportunity Area(s) for Improvement: Requiring project design professionals, particularly future project managers, to selectively participate in planning, project development, construction, and maintenance activities. Assigning project managers to manage planning, project development, and design.

4.7.20 Project Development Activity: Project Scoping, Project Assessments, Location/Design Concept Studies, and Design Concept Studies – Performance Area 11

Performance Indicator(s): The same ADOT and on-call environmental professionals participate in planning, project development, project design, construction, and maintenance environmental activities to understand the evolution of the project, to offer environmental technical assistance, maintain quality, continuity, and commitment.

Performance Evaluation Summary: ADOT and on-call environmental professionals routinely participate in planning and project development environmental activities. They sometimes participate in project design activities. They rarely participate in construction and maintenance activities.

Opportunity Area(s) for Improvement: Requiring ADOT and on-call environmental professionals to selectively participate in planning, project development, construction, and maintenance activities.

4.7.21 Project Development Activity: Project Scoping, Project Assessments, Location/Design Concept Studies, and Design Concept Studies – Performance Area 12

Performance Indicator(s): Preliminary SWPPPs are integral parts of program development, project development, and project design plans.

Performance Evaluation Summary: SWPPPs are usually prepared in the project design phase, not in the program development or project development phases. Because SWPPPs are one of the most critical components of a project design, at least conceptual development of the SWPPP in corridor planning and project development is likely to be of substantial benefit. Also, SWPPP facilities often cause environmental impacts that must be evaluated during corridor planning, project development, and project design.

Opportunity Area(s) for Improvement: Preparing preliminary SWPPPs during program development and project development. Preparing a comprehensive ADOT SWPPP web-based guide to integrate SWPPP into program development, project development, project design, construction, and maintenance.

4.7.22 Project Development Activity: Value Analysis

Performance Indicator(s): The project value analyses do not result in a decrease in the amount of environmental protection and enhancement.

Performance Evaluation Summary: No specific information provided. As project value analyses are performed during the scoping phase or design phase there is a risk that the environmental protection and enhancement measures and commitments will be compromised. Typically, this would occur due to the lack of information about reasons for the measures and commitments being readily available to the Value Analysis Team.

Opportunity Area(s) for Improvement: Carefully documenting the environmental protection and enhancement measures and commitments in the project environmental, planning, and design reports. Incorporating the measures and/or commitments into computerized project tracking and project management systems. Incorporating provisions into the *Value Analysis Procedures* to verify that the environmental protection and enhancement measures and commitments are not compromised.

4.7.23 Project Design Activity: Project Work Plan

Performance Indicator(s): The project work plan includes provisions for the incorporation of the environmental protection and enhancement measures into the project design plans.

Performance Evaluation Summary: No specific information provided.

Opportunity Area(s) for Improvement: Incorporating provisions into the project design work plan procedures to require the inclusion of the environmental protection and enhancement measures in the project design plans.

4.7.24 Project Design Activity: Kick-Off Meeting

Performance Indicator(s): The implementation of project environmental protection and enhancement measures is covered at the design kick-off meeting as part of the project work plan and project quality plan discussions.

Performance Evaluation Summary: The environmental protection and enhancement measures for major projects are routinely discussed at the design kick-off meeting. The measures are sometimes discussed for minor projects, depending on the environmental impacts and environmental permit requirements. Meeting handouts describing the environmental measures and commitments are often distributed at the meeting. Environmental professionals sometimes lead the meeting discussion on environmental measures and commitments when they are substantial or publicly sensitive.

Opportunity Area(s) for Improvement: Including environmental protection and enhancement measures and commitments on the design kick-off meeting agenda for every project. Distributing a project-specific environmental protection and enhancement measure summary handout at the meeting. For complex projects and/or projects with substantial measures and commitments, having environmental professionals who developed them lead a discussion at the meeting.

4.7.25 Project Design Activity: Quality Principles and Plans

Performance Indicator(s): Environmental protection and enhancement principles and standards are included in quality plans for project design.

Performance Evaluation Summary: No specific information provided. Typically, environmental principles and standards are not included in quality assurance/control plans for project design.

Opportunity Area(s) for Improvement: Reviewing a representative sample of quality assurance/control plans to see if and how well environmental principles and standards are incorporated into quality plans. If they are not incorporated, including requirements in the quality plan procedures.

4.7.26 Project Design Activity: Standard Environmental Criteria, Standards, and Drawings

Performance Indicator(s): Environmental protection and enhancement criteria, standards, and drawings are incorporated into the ADOT project design manual narratives, criteria tables, and standard drawings.

Performance Evaluation Summary: Typically, environmental protection and enhancement criteria, standards, and drawings are not incorporated into project design manuals. With the exception of erosion control, the environmental protection and enhancement measure designs and specifications are developed on a case-by-case basis and not standardized. The Roadside Development Section is in the process of updating the *Erosion Control Manual*.

Opportunity Area(s) for Improvement: Researching and developing environmental protection and enhancement criteria, standards, and drawings. Considering areas for standardization such as storm water management, aesthetics, vegetation management, noise abatement, waste reduction/recycling, outdoor lighting, wildlife crossings, and pedestrian/bicycle access. Completing the update the ADOT *Erosion Control Manual* and integrating it into the Design Manual. Developing a western states wildlife crossing best environmental practices website.

4.7.27 Project Design Activity: Stages I-IV-Performance Area 1

Performance Indicator(s): The Stage I through IV designs are responsive to environmental protection and enhancement goals, performance measures, and commitments established during program development and project development.

Performance Evaluation Summary: The design teams receive copies of the planning, engineering, and environmental documents prepared during project development. For major projects, they often receive a summary document describing the environmental protection and enhancement measures and commitments. The design teams routinely incorporate the measures and commitments. A computerized environmental tracking system is being developed by EEG and is expected to be deployed in 2004.

Opportunity Area(s) for Improvement: Developing an environmental protection and enhancement measure and commitment document for all projects. Incorporating provisions in the *Design Manual* for the preparation and distribution of the document. Incorporating an environmental protection and enhancement measure and commitment element into the EEG computerized environmental tracking system.

4.7.28 Project Design Activity: Stages I Through IV – Performance Area 2

Performance Indicator(s): Context-sensitive design techniques are used in preparing the design plans. This includes incorporating environmental protection and enhancement into the design plans as integral elements.

Performance Evaluation Summary: Currently, design plans are routinely developed to avoid, minimize, and mitigate environmental impacts. Sometimes on major projects, the design teams may not fully understand the environmental context and complexities, and the designs may not meet the environmental protection and enhancement goals and measures.

Opportunity Area(s) for Improvement: Providing clear and concise information on the environmental context and environmental protection and enhancement goals and measures to the design teams. Program and subprogram managers routinely informing EEG of upcoming projects, so that the appropriate environmental professional(s) are assigned to project teams. Including environmental protection and enhancement measures and commitments on the design kick-off meeting agenda for every project. Distributing a project-specific environmental protection and enhancement measure summary handout at the meeting. For complex projects and/or projects with substantial measures and commitments, having environmental professionals who developed them lead a discussion at the meeting.

4.7.29 Project Design Activity: Stages I Through IV – Performance Area 3

Performance Indicator(s): Regulatory and resource agency professionals proactively participate in the design activities of complex projects.

Performance Evaluation Summary: Regulatory and resource agency professionals usually participate in the design activities of complex projects in a reactive manner through reviews of permit applications.

Opportunity Area(s) for Improvement: Involving the regulatory and resource agency professionals in the design of complex projects in the roles of assisting ADOT in verifying the environmental context and environmental performance measures and developing context-sensitive designs and mitigation measures. Exploring the use of interagency funding agreements if manpower limitations prevent proactive involvement in project design activities.

4.7.30 Project Design Activity: Stages I Through IV – Performance Area 4

Performance Indicator(s): The project public involvement programs proactively engage the public in project design.

Performance Evaluation Summary: No specific information provided. Typically, the project design public involvement programs activities are far less intense than the project development public involvement program activities. Also, the project public involvement team that led the project development public involvement activities is usually no longer involved. There are often special purpose public meetings for noise abatement, access control, and landscaping.

Opportunity Area(s) for Improvement: Retrospectively reviewing a representative sample of project design public involvement program activities to assess their effectiveness. Developing and implementing public involvement programs for all projects to proactively engage the public in project design. Preparing construction public involvement work plans to ensure continuity and a smooth transition to a new project team.

4.7.31 Project Design Activity: Stages I Through IV – Performance Area 5

Performance Indicator(s): Right-of-way demolition activities include environmental protection and worker health and safety. Demolition waste are properly disposed of or recycled. Land for environmental mitigation is identified and acquired as early as possible.

Performance Evaluation Summary: No specific information provided. Typically, right-of-way demolition contracts include environmental protection and worker health and safety provisions. Some demolition wastes are recycled. Land for mitigation is identified and acquired.

Opportunity Area(s) for Improvement: Reviewing right-of-way demolition contract specifications to see how well environmental protection and worker health and safety are incorporated. Surveying a sample of demolition contract activities to determine if waste recycling is occurring and exploring approaches to increase recycling. Acquiring land in well in advance of construction and implementing mitigation prior to construction before impacts occur.

4.7.32 Project Design Activity: Stages I Through IV – Performance Area 6

Performance Indicator(s): Utility relocation activities include environmental protection and enhancement measures.

Performance Evaluation Summary: Utility relocations routinely include environmental measures whose implementation is usually the responsibility of the utility companies. When utility relocations are concurrent with highway construction and in the construction zone, the utility companies, ADOT, and the highway construction companies cooperatively implement the environmental measures.

Opportunity Area(s) for Improvement: Reviewing how well the utility relocation activities incorporate the environmental measures. Including environmental measures in the ADOT utility relocation procedures.

4.7.33 Project Design Activity: Stages I Through IV-Performance Area 7

Performance Indicator(s): Engineering survey field work is conducted so as to avoid and minimize environmental impacts and public controversy.

Performance Evaluation Summary: No specific information provided. Typically, engineering survey field work requires driving vehicles and walking on private and public property with advance notification. Sometimes, impacts to residential landscaping, natural vegetation, and agricultural crops are unavoidable. Typically, the impacts of the engineering field surveys are not addressed in the project environmental studies.

Opportunity Area(s) for Improvement: Reviewing the effectiveness of and how well environmental protection and mitigation measures are incorporated into the ADOT engineering survey procedures. If measures are not effective, developing and incorporating new measures. When extensive engineering field surveys may cause environmental impacts, addressing them in the project environmental studies and specifying protection measures.

4.7.34 Project Design Activity: Stages I Through IV – Performance Area 8

Performance Indicator(s): Geotechnical field survey work is conducted so as to avoid, minimize, and mitigate environmental impacts and public controversy.

Performance Evaluation Summary: Typically, geotechnical investigations require, driving vehicles and walking on private and public property and core boring with drill rigs with advance notification. Sometimes, impacts to archaeological sites, contaminated soils and groundwater, surface water courses, residential landscaping, natural vegetation, and agricultural crops are unavoidable. EEG provides environmental clearances including impact avoidance, minimization, and mitigation measures for all project-related geotechnical investigations prior to geotechnical investigations.

Opportunity Area(s) for Improvement: Incorporate environmental impact avoidance, minimization, and mitigation measures into geotechnical policies and procedures.

4.7.35 Project Design Activity: Stages I Through IV – Performance Area 9

Performance Indicator(s): Construction borrow and wastes areas protect and enhance environmentally sensitive areas.

Performance Evaluation Summary: ADOT EEG coordinates with the ADOT design and construction personnel to help them site borrow and waste areas, so they do not impact environmentally sensitive areas. Environmental database searches and field reviews are performed to identify sensitive areas. Construction contractors will usually be responsible for acquiring property agreements for borrow and waste areas, and securing the environmental approvals prior to establishing borrow and waste areas.

Opportunity Area(s) for Improvement: Performing the siting, acquisition, and environmental permitting of borrow and waste areas in the design stage for projects with substantial impacts on sensitive environmental areas resulting from large quantities of borrow and waste. Including the environmental protection and enhancement measures for the siting of borrow and waste areas in the project plans, specifications, and estimates. If it is likely that the contractors will propose alternate sites, requiring them to supply the property agreements, environmental analysis, documentation, and environmental permits.

4.7.36 Project Design Activity: Stages I Through IV – Performance Area 10

Performance Indicator(s): Construction staging areas protect and enhance environmentally sensitive areas.

Performance Evaluation Summary: No specific information provided. Typically, the construction staging area siting, establishment, maintenance, and restoration are the responsibility of the contractor. Information about sensitive environmental areas such as wetlands, floodplains, archaeological sites, endangered species habitats, and hazardous waste sites is given to the contractors. The contractor is required to obtain necessary environmental permits before affecting sensitive environmental areas.

Opportunity Area(s) for Improvement: In very sensitive environmental areas, ADOT siting the potential staging areas and obtaining the environmental approvals construction staging areas in the design stage. In routine, minimal environmental impact/risk situations, ADOT informing the contractors of the environmental context and environmental permitting requirements through the project environmental documents. Developing environmental management practices for staging areas. Requiring inspections of restored staging areas and correcting deficiencies before closeout of the contract.

4.7.37 Project Design Activity: Stages I Through IV – Performance Area 11

Performance Indicator(s): Construction work plan outline includes provisions for the implementation and monitoring of the environmental protection and enhancement measures.

Performance Evaluation Summary: No specific information provided. Typically, construction work plan outlines and plans are prepared early in the construction, not in design stages I through IV.

Opportunity Area(s) for Improvement: Including provisions for the implementation and monitoring of the environmental measures in the construction work plan outline. Developing a standard construction work plan outline format and/or checklist for environmental measures.

4.7.38 Project Design Activity: Stages I Through IV – Performance Area 12

Performance Indicator(s): Construction professionals conduct constructability reviews of proposed environmental protection and enhancement measures at stages II through IV.

Performance Evaluation Summary: It appears that construction professionals do not always get involved in project-by-project constructability reviews. Therefore, the constructability and staging of environmental protection and enhancement measures is not always evaluated by construction professionals. A checklist is currently used to identify the professionals who should review each project.

Opportunity Area(s) for Improvement: Having construction professionals conduct stage II through IV constructability of proposed environmental protection and enhancement measures. Continuing to use a checklist to help identify the professionals who should review each project. Also, having design and environmental professionals monitor construction to assess the constructability and staging of their designs for future reference.

4.7.39 Project Design Activity: Stages I Through IV – Performance Area 13

Performance Indicator(s): High-quality SWPPPs are integral parts of project design plans and all project design plans ensure compliance with SWPPP rules.

Performance Evaluation Summary: ADOT is currently experiencing SWPPP compliance problems caused by a number of factors such as increased enforcement activity, SWPPP measures not functioning properly, and general lack of depth in SWPPP expertise and experience in the Development, Construction and Maintenance organizations.

Opportunity Area(s) for Improvement: Developing a proactive and comprehensive SWPPP program that reaches across ADOT program development, project development, project design, construction, and maintenance. Some critical elements of an ADOT SWPPP program would include: a strategic plan, a budget, a highly-qualified SWPPP program manager, a comprehensive SWPPP manual including best practices, training, on-call technical assistance, quality control/assurance, and compliance monitoring and tracking.

4.7.40 Project Design Activity: Project Clearance

Performance Indicator(s): As part of substantiating clearance to advertise for bid, have on file a copy of all required clearances, including the environmental clearances and permits.

Performance Evaluation Summary: All environmental clearances and permits are routinely on file with the Contracts and Specifications Section before a project is approved for advertisement. Currently, all of the EEG environmental clearances and the supporting documentation are available electronically upon completion. However, not all preparers of construction bid packages use the electronic information. EEG has submitted a proposal to the ADOT Information Technology Group to develop an electronic document management and retrieval system. The proposed system would provide a mechanism to scan and archive historic documents.

Opportunity Area(s) for Improvement: Electronically filing all clearance and approval documents.

4.7.41 Project Design Activity: Pre-Bid Conference

Performance Indicator(s): The environmental performance expectations of the environmental protection and enhancement plans, specifications, permits, and narratives are clearly communicated during the pre-bid conference.

Performance Evaluation Summary: Environmental performance expectations are communicated at the pre-construction conference for many, but not all projects.

Opportunity Area(s) for Improvement: Clearly communicating the environmental performance expectations of the environmental measures in writing and verbally at all pre-bid conferences. Developing and using a construction environmental performance expectations form to convey the measures information.

4.7.42 Project Design Activity: Construction Inspection Contracts

Performance Indicator(s): The construction inspection contracts include provisions for the inspection of the implementation of the environmental protection and enhancement measures.

Performance Evaluation Summary: Construction inspection contracts routinely include provisions for the inspection of environmental measures.

Opportunity Area(s) for Improvement: Reviewing how well the provisions for the inspection of environmental measures are incorporated into construction inspection contracts. Also, reviewing the specifications for the qualification of inspectors for environmental certifications.

4.7.43 Post Design Activity: Pre-Construction Conference

Performance Indicator(s):) The environmental performance expectations of the environmental protection and enhancement plans, specifications, permits, and narratives are clearly communicated during the pre-construction conference.

Performance Evaluation Summary: Environmental performance expectations are communicated at the pre-construction conference for many, but not, all projects. A standard construction environmental performance expectation form is not currently used.

Opportunity Area(s) for Improvement: Clearly communicating the environmental performance expectations of the environmental measures at all pre-conference conferences. Developing and using a construction environmental performance expectations form to convey the measures information.

4.7.44 Post Design Activity: Construction Partnering Conference (Optional)

Performance Indicator(s): The environmental performance expectations of the environmental protection and enhancement plans, specifications, permits, and narratives are clearly communicated during the partnering conference. Partnering agreements include environmental performance expectations.

Performance Evaluation Summary: No specific information provided. Typically, the environmental performance expectations of major projects are communicated during the partnering conference. A standard construction environmental performance expectation form is not currently used.

Opportunity Area(s) for Improvement: Clearly communicate the environmental performance expectations of the environmental measures at all partnering conferences. Developing and using a construction environmental performance expectations form to convey the measures information. Including environmental performance expectations in all partnering agreements.

4.7.45 Post Design Activity: Design Clarification During Construction

Performance Indicator(s): The project design teams, including the environmental professionals, are consulted to clarify the design intent of complex environmental protection and enhancement measures to ensure the desired outcomes.

Performance Evaluation Summary: No specific information provided. Typically, project design team members are available to clarify the design intent of complex environmental measures.

Opportunity Area(s) for Improvement: Including presentations by environmental professionals at pre-bid, pre-construction, and progress meetings to explain the intent of complex environmental measures.

4.7.46 Post Design Activity: Design and Contract Modification During Construction

Performance Indicator(s): Design and contract modifications comply with the project environmental protection and enhancement requirements specified in the contract. When major design and environmental measure changes are proposed, coordination with the environmental permitting agencies and communities is done to renegotiate the environmental commitments.

Performance Evaluation Summary: No specific information provided. Typically, major design and contract changes during construction require the reevaluation of the environmental impacts and environmental protection and enhancement measures. When the design and contract changes are likely to result in changes to the environmental protection and enhancement measures, appropriate actions are taken to ensure environmental compliance and agency and community coordination.

Opportunity Area(s) for Improvement: As an interim measure, including special provisions in the construction bid documents and contracts describing the environmental analysis, coordination, documentation, and approval requirements for changing designs during construction. As a permanent measure, including similar provisions in the ADOT construction specifications for changing designs and complying with environmental requirements.

4.7.47 Post Design Activity: Final Construction Inspection

Performance Indicator(s): Final inspection determines and documents that the environmental protection and enhancement measures were properly implemented. Key EEG and environmental permitting agency professionals participate in the final inspection of the environmental measures implemented.

Performance Evaluation Summary: Final inspections are conducted for all construction projects. The implementation of the environmental measures is included in the inspection. ADOT EEG and environmental permitting agency professionals are sometimes invited to participate in final inspections for major projects. Minutes of final inspections are prepared and archived.

Opportunity Area(s) for Improvement: Developing a final inspection checklist and report form for the environmental measure implementation documentation. Archiving and distributing the form to the key environmental permitting agencies to demonstrate that ADOT met and/or exceeded its environmental commitments. Key ADOT EEG and environmental permitting agencies routinely participating in inspections.

4.7.48 Post Design Activity: Construction Environmental Protection and Enhancement Feature Monitoring and Reporting

Performance Indicator(s): The environmental performance of the environmental protection and enhancement measures is routinely monitored, documented, reported in accordance with a monitoring plan. Key ADOT EEG and environmental permitting agency professionals review monitoring reports.

Performance Evaluation Summary: Some limited monitoring and reporting of environmental measures implementation is currently conducted as per the environmental permitting conditions, particularly in the areas of wetlands, vegetative plantings, and storm water.

Opportunity Area(s) for Improvement: Establishing an ongoing environmental measure implementation monitoring and web-based reporting program to demonstrate that environmental commitments are met and to capture lessons learned. When deficiencies are found, take and document corrective action.

4.7.49 Development: General Management – Performance Area 1

Performance Indicator(s): Environmental compliance provisions are incorporated into all Development operating policies, guidelines, and procedures. For example, the ADOT *Erosion & Sediment Control Manual* is up to date on the latest techniques and technologies.

Performance Evaluation Summary: Some environmental compliance provisions are incorporated into Development operating policies, guidelines, and procedures. The EEG is working on a three-volume environmental procedures manual at this time. However, the relationship between the environmental procedures manual and the Highway Division *Project Development Manual* is not clear.

Opportunity Area(s) for Improvement: Evaluating all Development operating policies, guidelines, and procedures for how they address environmental compliance. Revising procedures accordingly. Updating the Development and EEG manuals to make them compatible.

4.7.50 Development: General Management – Performance Area 2

Performance Indicator(s): Development uses a "*Plan>Do>Check>Act*" environmental management framework to manage and implement its environmental protection and enhancement activities.

Performance Evaluation Summary: Development is moving in the direction of proactively managing its environmental activities. Currently, most of the emphasis is on "Do" environmental activities in reaction to external environmental requirements.

Opportunity Area(s) for Improvement: Using a "*Plan>Do>Check>Act*" environmental framework to manage and implement its environmental protection and enhancement activities. An AASHTO "*Plan>Do>Check>Act*" environmental management framework illustration is included in Appendix B. For more information, see the full text of the AASHTO environmental management system implementation guide, *Using and Environmental Management System to Meet Transportation Challenges and Opportunities* on the AASHTO website www.transportation.org. Several ADOT professionals participated in the August 11-13, 2003 AASHTO Environmental Management Systems Workshop in Scottsdale, Arizona. They received a hard copy of the above-mentioned implementation guide which includes a wealth of information on how to use an environmental management system to improve environmental performance and program delivery. Also, the implementation guide includes an 11-step AASHTO Environmental Management System Process Roadmap.

4.7.51 Development: General Management – Performance Area 3

Performance Indicator(s): Development has a comprehensive, ongoing environmental training program for ADOT, consultant, contractor, vendor, and environmental permitting agency personnel involved with project development.

Performance Evaluation Summary: Currently, ADOT conducts some environmental training for Development Program personnel on periodic basis.

Opportunity Area(s) for Improvement: Developing and implementing a Development Program environmental training program, beginning with an environmental training needs assessment.

4.7.52 Development: General Management – Performance Area 4

Performance Indicator(s): The Development Program has regular meetings with the environmental permitting agencies to discuss workload, project environmental performance, training, policy development, and process improvement.

Performance Evaluation Summary: No specific information provided. Typically, periodic meetings are held with environmental permitting agencies to resolve project environmental compliance issues.

Opportunity Area(s) for Improvement: Conducting regular Development Program meetings with environmental permitting agencies to discuss workload, project environmental performance, training, policy development, and process improvement. If design personnel hold similar meetings on a regular basis, participate in those meetings.

4.7.53 Development: General Management – Performance Area 5

Performance Indicator(s): Environmental protection and enhancement topics are routinely on the program at annual highway consultant industry conferences. ADOT, consultant, FHWA, contractor, and environmental permitting agencies exchange information and experiences on environmental performance.

Performance Evaluation Summary: Environmental topics are occasionally on the annual highway construction industry conferences.

Opportunity Area(s) for Improvement: Routinely exchanging important construction environmental performance information. Identifying mutually beneficial changes to rules and operating procedures.

4.7.54 Development: General Management – Performance Area 6

Performance Indicator(s): Environmental protection and enhancement topics are routinely on the agendas at meetings with state and federal land management agencies.

Performance Evaluation Summary: Environmental topics are often on the meeting agendas for project and special-purpose meetings.

Opportunity Area(s) for Improvement: Routinely exchanging important Development Program environmental performance information. Identifying mutually beneficial changes to rules and operating procedures.

4.7.55 Development: General Management – Performance Area 7

Performance Indicator(s): Environmental protection and enhancement topics are routinely on the agendas at tribal meetings.

Performance Evaluation Summary: Environmental topics are often on the meeting agendas for project and special-purpose meetings.

Opportunity Area(s) for Improvement: Routinely exchanging important Development Program environmental performance information. Identifying mutually beneficial changes to rules and operating procedures.

4.7.56 Development: General Management – Performance Area 8

Performance Indicator(s): Highly-qualified and well-trained environmental professionals conduct the environmental analysis, prepare the environmental and related documentation, and coordinate with the regulatory and resource agency professionals.

Performance Evaluation Summary: Highly-qualified ADOT environmental professionals and/or consultant firm environmental professionals always conduct the environmental analysis, prepare the environmental and related documentation and coordinate with the regulatory and resource agency professionals. Currently, there is no comprehensive environmental training program for environmental professionals involved in project development.

Opportunity Area(s) for Improvement: Developing and implementing a comprehensive project development environmental training program for ADOT, FHWA, consultant, and regulatory and resource agency environmental professionals to maintain a high level of knowledge and skill. Consultants are prequalified for planning, project development, and design environmental analysis, documentation, agency coordination, and public involvement.

4.7.57 Development: General Management – Performance Area 9

Performance Indicator(s): Consultants are prequalified for planning, project development, and design environmental analysis, documentation, agency coordination, and public involvement.

Performance Evaluation Summary: No specific information provided. Typically, consultants are prequalified for planning, project development, and design environmental analysis, documentation, agency coordination, and public involvement.

Opportunity Area(s) for Improvement:) Reviewing the ADOT planning, project development, and design consultant prequalification rules to confirm that desired environmental qualifications are included.

4.8 AERONAUTICS

4.8.1 Statewide, Metropolitan, Regional, Local, and Tribal Long Range Transportation Plans

Performance Indicator(s): All long range transportation plans address critical aviation environmental-related needs, including aircraft noise controls, land use compatibility studies, SWPPPs, and environmental justice assessments.

Performance Evaluation Summary: Cities and counties which include their airports in special districts within the planning area include environmental criteria in their plans which affect their airports.

Opportunity Area(s) for Improvement: Reviewing how aviation environmental-related needs are addressed in all long range transportation plans. Adding aviation environmental-related needs, goals, and strategies into long range transportation plans.

4.8.2 ADOT Strategic Plan-Fiscal Years 2005-2009

Performance Indicator(s): ADOT Strategic Plans include aviation-related environmental management issues, goals and strategies.

Performance Evaluation Summary: The 2005-2009 ADOT Strategic Plan does not include any specific aviation environmental management issues, goals, and strategies. In view of the eminent threats to airport safety and land use compatibility from rapidly increasing land development around airports, airport environmental management issue should be considered as critical strategic issue.

Opportunity Area(s) for Improvement: Including aviation environmental management issues such as land use compatibility as a critical strategic issue in the next update of the ADOT Strategic Plan. Land use compatibility is also an issue for the highways and transit system, particularly from an access management perspective.

4.8.3 Airport Development Grants

Performance Indicator(s): Grant program eligibility includes environmental protection and enhancement measures for airports such as Part 77 noise impact studies/land acquisitions, SWPPPs, project environmental assessments, master plans, and

environmental management systems. Final inspection of a project is completed at the end of a project and documentation is included in the project file.

Performance Evaluation Summary: Grant programs routinely include Part 77 noise impact studies/land acquisitions, project environmental assessments, and master plans. Historically, they have not included SWPPPs and environmental management systems. An environmental requirements checklist is not completed and reviewed for the grant application or final inspection.

Opportunity Area(s) for Improvement: Expanding the grant program to include SWPPPs and environmental management systems for airports. Developing and using an environmental requirements checklist for the grant application and final inspection reviews.

4.8.4 Statewide Aviation Planning

Performance Indicator(s): The statewide aviation plan addresses environmental-related needs of aviation including noise impact and land use compatibility studies, SWPPPs, wildlife impact studies and mitigation plans, recreation planning, and environmental justice.

Performance Evaluation Summary: The statewide aviation plan usually addresses noise impact and land use compatibility. Historically, SWPPPs, wildlife impact, recreation, and environmental justice are not addressed.

Opportunity Area(s) for Improvement: Expanding the scope of the statewide aviation plan environmental elements to include SWPPPs, wildlife impact studies and mitigation plans, recreation planning, and environmental justice.

4.8.5 Airport Development Loans

Performance Indicator(s): Airport development loan program eligibility includes environmental protection and enhancement measures for airports such as Part 77 noise impact studies/land acquisitions, SWPPPs, project environmental assessments, master plans, and environmental management systems. A comprehensive environmental requirements checklist is completed as part of the loan application and the project final inspection documentation.

Performance Evaluation Summary: Airport development loan programs routinely include Part 77 noise impact studies/land acquisitions, project environmental assessments, and master plans. Historically, they have not included SWPPPs and environmental management systems. An environmental requirements checklist is not completed and reviewed for the loan application or final inspection.

Opportunity Area(s) for Improvement: Expanding the scope of the airport development loans to include SWPPPs and environmental management systems for airports. Exploring

setting up a revolving airport development loan for environmental protection and enhancement. Developing and using an environmental requirements checklist for the loan application and final inspection reviews.

4.8.6 State Transportation Board' Five-Year Capital Improvement Program

Performance Indicator(s): Five-Year Capitol Improvement Program provides funds for airport environmental protection and enhancement measures. A comprehensive environmental requirements checklist is completed as part of the funding request and the project final inspection documentation.

Performance Evaluation Summary: Five-Year Capitol Improvement Program has provided funds for necessary environmental measures as part of airport improvement projects. An environmental requirements checklist is not completed and reviewed for the funding request or final inspection.

Opportunity Area(s) for Improvement: Continuing to provide funds for airport environmental protection and enhancement measures. Developing and using an environmental requirements checklist for the funding request and final inspection reviews.

4.8.7 Airport Layout Plan Plan Set

Performance Indicator(s): The airport layout plan (ALP) plan set includes all the environmental features and permanent environmental protection measures on the airport. A comprehensive environmental requirements checklist is completed as part of the ALP Plan Set preparation and review.

Performance Evaluation Summary: The ALP Plan Set usually includes drainage and land use on and off the airport, but does not include the prominent environmental features and permanent environmental protection measures on the airport. An environmental requirements checklist is not completed and reviewed as part of the ALP Plan Set process.

Opportunity Area(s) for Improvement: Reviewing the state and federal policies and procedures for the development and review of ALP Plan Sets to assess how well the environmental aspects are addressed. Developing and adding an environmental requirements checklist for the ALP Plan Set development and review process.

4.8.8 Airport Master Plan

Performance Indicator(s): The airport master plan includes an inventory of the existing environmental features and permanent environmental protection measures on the airport, plans for future airport development, and an environmental evaluation.

Performance Evaluation Summary: Airport master plans sometimes include: an environmental feature and/or protection measure inventory; future development plans; and an environmental evaluation of all the projects planned for future improvements.

Opportunity Area(s) for Improvement: Developing and using a comprehensive environmental checklist for the preparation and review of airport master plans and environmental evaluations.

4.8.9 Recreational Airport Planning

Performance Indicator(s): Include compatible recreational facilities in airport master plans where airports have been studied for the potential to enhance tourism and economic development as part of a recreational airport plan.

Performance Evaluation Summary: The typical airport recreation plan is currently limited in scope and limits recreational opportunities at airports.

Opportunity Area(s) for Improvement: Developing and implementing a statewide airport recreation facility plan in cooperation with tourism organizations and the Arizona Department of Commerce. Ensuring that any recreational land use is coordinated with the state/Federal Aviation Administration (FAA) prior to implementation.

4.8.10 Airport Disclosure Maps

Performance Indicator(s): Arizona Real Estate Department collects airport noise contour overlays from public use airports and makes them available to developers.

Performance Evaluation Summary: Availability of airport noise contour and traffic pattern airspace overlays applies only to public use airports and is not comprehensive in scope or details. Home buyers may purchase homes without information.

Opportunity Area(s) for Improvement: Assessing the effectiveness of the noise contour program and correcting the deficiencies.

4.8.11 Airport Influence Area Information

Performance Indicator(s): Public use airports may make airport influence area information available to surrounding communities. The County Recorder will annotate "Airport Influence Area" on the property records of those properties within the airport influence area.

Performance Evaluation Summary: Five airports make airport influence area information available to surrounding communities. It is unknown whether the County Recorder has accomplished the task. Some residents may feel that their property values are lowered if this action is taken. Participation in this program is voluntary and has been limited to airports in non-metropolitan areas

Opportunity Area(s) for Improvement Assessing the effectiveness of the airport influence area program and correcting the deficiencies.

4.8.12 Coordination with Highway Project Development

Performance Indicator(s): Highway improvement project avoid conflicts with airport runway clear zones and improve airport highway access.

Performance Evaluation Summary: Highway project development does not always consider airport clear zone and Federal Aviation Regulation (FAR) Part 77 Imaginary Airport Surface Requirements early in the process.

Opportunity Area(s) for Improvement: Reviewing highway project development airport clear zone policies and procedures and correcting deficiencies.

4.8.13 Aviation Environmental Technical Assistance

Performance Indicator(s): Aeronautics supplies on-call environmental management technical assistance to airports. Aeronautics provides funding support and technical assistance for an airport environmental management system development program.

Performance Evaluation Summary: Aeronautics does not have qualified and experienced environmental professionals to supply technical assistance to airports. Straightforward environmental issues raised to the Aeronautics Division will normally be handled internally. Complex and highly technical environmental issues are usually directed to FAA and consultants. Aeronautics does not have an airport environmental management system development program.

Opportunity Area(s) for Improvement: Assessing the need for and benefits of an on-call environmental technical assistance program, particularly in the areas of SWPPP and land use compatibility. Developing and implementing a program in cooperation with FAA and state environmental agencies. Developing and implementing a pilot airport environmental management system funding and technical assistance program. Monitoring and reporting on the pilot program's effectiveness.

4.8.14 Grand Canyon National Park Airport Management and Operation

Performance Indicator(s): The Grand Canyon Airport implements a comprehensive SWPPP and documents proper implementation. The Grand Canyon Airport implements a waste management plan that includes sewerage disposal, waste reduction, and recycling. The airport has an on-and-off airport vegetation management plan to maintain adequate clear zones. The airport fuel storage facilities comply with state and federal requirements. The Grand Canyon Airport properly collects, stores, and uses water from precipitation (rain and snow) for airport and related operations. The quantity and quality of water is adequate to serve the aviation and related needs. Water conservation measures are implemented.

Performance Evaluation Summary: The Grand Canyon Airport has a SWPPP, which is currently being updated by the ADOT EEG. The airport does not currently have a recycling program due to limited staff resources. The airport routinely coordinates vegetation management activities with the U.S. Forest Service. The airport fuel facilities are in compliance. The primary source of water is surface water collection devices on airport property. No information was provided regarding: the filtration and chlorination system for the water supply; the water quality monitoring and reporting program; and the best management practices to keep pollutants out of the surface water collection system. When insufficient water is available during drought periods, water is purchased and trucked in from long distances.

Opportunity Area(s) for Improvement: Continuing the update of the Grand Canyon Airport SWPPP. Regularly monitoring and reporting on the implementation of the SWPPP and promptly correcting deficiencies. Determining if the Grand Canyon Airport has a waste management plan. Regularly monitoring and reporting on the implementation of the plan. Evaluating the effectiveness of the vegetation management activities in respect to protecting wildlife habitat and visual quality. Regularly monitoring and reporting on fuel facility compliance. Conducting an airport water supply study to evaluate the existing and future water needs, existing management practices including water conservation, public health risks, and improvement options. Based on the results of the study, implement a water supply improvement program which includes a water conservation element.

4.9 MOTOR VEHICLE DIVISION (MVD)

4.9.1 ADOT Strategic Plan – Fiscal Years 2005-2009

Performance Indicator(s):) ADOT strategic plans include MVD-related environmental issues, goals, and strategies. Motor Vehicle Program Customer Service Strategies in the ADOT Strategic Plan include distinct environmental goals, actions, and measures.

Performance Evaluation Summary: The 2005-2009 ADOT Strategic Plan does not include any specific MVD environmental issues, goals, and strategies. However, the Motor Vehicle Program Customer Service Strategies to: A) Replace/Implement Automated Business Systems; B) Resolve Salary Inequities and Develop Career Paths; C) Increase Staffing Levels; and D) Streamline, Increase, and Enhance Training, include actions that could improve the environmental performance of MVD. For example, the use of automated business systems for licensing and motor vehicle registrations can greatly reduce paper and energy consumption.

Opportunity Area(s) for Improvement: Including environmental goals, actions, and performance measures in each of the Motor Vehicle Program Customer Service Strategies. Monitoring and reporting on environmental performance as part of reporting progress in implementing the customer service strategies.

4.9.2 Issuance of Licenses and Vehicle Credentials

Performance Indicator(s): Licenses and vehicle registration applications are prepared and processed through alternative service delivery channels to reduce paper consumption and energy consumption. Environmental benefits of alternative service delivery channels are routinely identified and reported along with other customer service improvement benefits. MVD licensing and registration facilities are maintained and operated in compliance with all federal and state environmental laws, regulations, policies, and procedures. Operational policies and procedures for licensing and registration facilities include environmental requirements. MVD staff operating licensing and registration facilities is trained in how to comply with environmental rules. Routine inspections of facilities include environmental compliance.

Performance Evaluation Summary: MVD has made significant advances in reducing paper consumption and energy consumption through offering alternative service delivery channels to customers for completing licensing and vehicle registration transactions. “ServiceArizona,” mail, telephone, and third party services are examples of alternative delivery channels. More than 20 MVD transactions and services are available over the Internet. More than 2.5 million customer transactions will be processed in 2004. More electronic transactions will be brought on line in 2004. Environmental benefits of alternative delivery channels are not identified and reported. All MVD licensing and registration facilities are maintained and operated so as to be in compliance with environmental rules. Generally, environmental requirements are not included in operational policies and procedures. MVD staff training sometimes includes environmental compliance. Facility inspections sometimes include environmental compliance. Currently, asbestos inspections are being conducted in all ADOT facilities and remediation of asbestos problems is ongoing. Managers, supervisors, and staff at MVD facilities are instructed to not disturb walls and ceilings unless asbestos surveys and necessary remediation are completed.

Opportunity Area(s) for Improvement: Continuing to offer new alternative customer delivery channels which improve customer service and improve environmental performance. Establishing environmental performance goals and measures. Identifying and reporting on the environmental benefits of alternative service delivery channels. Including environmental requirements in MVD licensing and vehicle facility operational policies, procedures, and training. Routinely including environmental compliance in all facility inspections and inspection reports. Correcting environmental-related deficiencies identified during facility inspections and reporting corrections.

4.9.3 Revenue Collection and Management

Performance Indicator(s): Revenue collection and management transactions are conducted electronically to reduce paper and energy consumption and vehicular air pollution. Environmental benefits of electronic processing are routinely identified and reported along with other customer service improvement benefits.

Performance Evaluation Summary: MVD has made significant advances in reducing paper consumption and energy consumption associated with revenue collection (more than \$1 billion dollars) and management through improvements in electronic processing. No specific information was provided on the air quality benefits. However, reductions in energy consumption directly translate into reductions in air pollution emissions. Environmental benefits of electronic processing of revenue collection and management transactions are not identified and reported.

Opportunity Area(s) for Improvement: Continuing to increase the automation of revenue collection and management transactions which improve customer service and improve environmental performance. Establishing environmental performance goals and measures. Identifying and reporting on the environmental benefits of automated revenue and management transactions.

4.9.4 Overseeing Public-Private Partnerships

Performance Indicator(s): ADOT public-private business partnership agreements include third-party environmental performance goals and measures. Environmental benefits of public-private partnerships are identified and reported.

Performance Evaluation Summary: Currently, public-private agreements do not include specific environmental performance goals and measures. However, the implementation of the agreements results in substantial environmental benefits such as energy conservation and a substantial reduction in vehicular air pollution emissions through reduced travel via on-line transactions and convenient walk-in service locations. Environmental benefits of public-private partnerships are not identified and reported.

Opportunity Area(s) for Improvement: Continuing to promote public-private partnerships for third-party services that improve customer service and improve environmental performance. Establishing environmental performance goals and measures. Identifying and reporting on the environmental benefits of public-private partnerships.

4.9.5 Transportation Law Compliance

Performance Indicator(s): Transportation law enforcement activities are conducted electronically to reduce paper and energy consumption. Activities are conducted regionally to reduce long-distance customer travel to hearing sites, traffic congestion, energy consumption, and air pollution. Environmental benefits of reduced paper consumption and travel are identified and reported.

Performance Evaluation Summary: Transportation law enforcement activities are being automated within the legal limits. Electronic documentation is prepared and processed where possible. Hearings are held at multiple locations around the state to make it convenient for customers and to reduce travel. Copies of legal documents are carried to the hearing sites to reduce mailing costs.

Opportunity Area(s) for Improvement: Continuing to automate transportation law enforcement activities within the law. Continuing to hold hearings at multiple locations. Identifying and reporting the environmental benefits of reduced paper, energy consumption, and mailing.

4.9.6 Records Management and Information

Performance Indicator(s): Record management and information systems are automated to reduce paper consumption and storage space requirements. Environmental benefits of reduced paper consumption and storage space required are identified and reported. Microfilm records are replaced with electronic files.

Performance Evaluation Summary: MVD has made significant advances in automating records management and information systems. Environmental benefits of automating records management and information systems are not identified and reported. MVD is currently replacing microfilm files with electronic files.

Opportunity Area(s) for Improvement: Continuing to automate record management and information systems to reduce paper consumption and storage space requirements. Identifying and reporting the environmental benefits. Continuing to replace microfilm files. Identifying and reporting benefits.

4.9.7 Maintaining Collaborative Partnerships with Federal, State, and Local Agencies

Performance Indicator(s): ADOT collaborative partnership agreements (formal and informal) with federal, state, and local agencies include environmental performance goals and measures. Environmental benefits of the collaborative partnerships are identified and reported.

Performance Evaluation Summary: Currently, formal and informal partnership agreements with federal, state, and local agencies do not include specific environmental performance goals and measures. However, the implementation of the agreements results in substantial environmental benefits such as reduced paper consumption, information-sharing, and travel reduction.

Opportunity Area(s) for Improvement: Continuing to promote collaborative partnership agreements with federal, state, and local agencies which improve customer service and regulatory compliance with environmental rules. Identifying and reporting the environmental benefits.

4.9.8 Legislative Support

Performance Indicator(s): MVD professionals through the TSG Legislative Services Office are proactively engaged in the promulgation of federal and state environmental laws, regulations, policies, and procedures affecting MVD functions.

Performance Evaluation Summary: No specific information provided. Typically, most state transportation agencies react to federal and state environmental rules once they are in effect. MVD does not appear to have mechanisms in place to routinely monitor and engage in the development of federal and state environmental rules affecting MVD functions.

Opportunity Area(s) for Improvement: Assigning MVD organizations and individuals the responsibility of monitoring and engaging in federal and state environmental rulemaking activities affecting MVD functions. Training MVD professionals how to effectively engage in environmental rulemaking to protect ADOT interests and promote environmental stewardship.

4.9.9 Special Border Projects

Performance Indicator(s): MVD Mexican border crossing operations comply with federal and state environmental laws, regulations, policies, and procedures. MVD border crossing operational policies and procedures include environmental requirements.

MVD staff operating border crossing facilities is trained in how to comply with environmental rules. Routine inspections of facilities include environmental compliance. Electronic vehicle clearance system is fully deployed at interstate border crossings to promote energy conservation, pavement preservation, and reduction in vehicular air pollution emissions. Identify and report the environmental benefits of the electronic clearances.

Performance Evaluation Summary: Border crossing facilities are maintained and operated so as to be in compliance with environmental rules. Generally, environmental requirements are not included in operational policies and procedures. MVD staff training sometimes includes environmental compliance. Facility inspections sometimes include environmental compliance. There is increasing use of electronic clearance systems at the interstate border crossings. Currently, the environmental benefits of the electronic clearances are not identified and reported.

Opportunity Area(s) for Improvement: Including environmental requirements in border crossing facility operational policies, procedures, and training. Routinely including environmental compliance in all facility inspections and inspection reports. Correcting environmental-related deficiencies identified during facility inspections and reporting corrections. Continuing the use of electronic clearance systems at the interstate border crossings. Identifying the environmental benefits of the electronic clearances.

4.9.10 Motor Vehicle Enforcement

Performance Indicator(s): MVD motor vehicle enforcement activities include compliance with federal and state environmental laws, regulations, policies, and procedures. Enforcement operational policies and procedures include environmental

requirements. Enforcement personnel are trained in how to enforce environmental rules, particularly hazardous waste transport-related environmental rules.

Performance Evaluation Summary: MVD motor vehicle enforcement activities are conducted so as to be in compliance with environmental rules. Generally, except for hazardous waste transport requirements, environmental requirements are not included in motor vehicle enforcement operational policies and procedures. Enforcement staff training sometimes includes environmental compliance beyond hazardous waste compliance.

Opportunity Area(s) for Improvement: Reviewing the motor vehicle inspection laws and regulations to determine which environmental rules other than those applying to hazardous wastes call for enforcement actions. Revising inspection policies and procedures if environmental rules are not being enforced.

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6.1 APPENDIX A

Overarching Environmental Improvement Strategies/Actions

Overarching Environmental Performance Areas	Overarching Environmental Improvement Strategies/Actions
3.1 Environmental Leadership and Stewardship Emphasis	<p>3.1.1 Require managers and supervisors to emphasize environmental stewardship and full compliance in strategic planning, business planning, project management, staff meetings, employee training plans, and employee performance evaluations/reviews.</p> <p>3.1.2 Develop environmental leadership training materials for managers, supervisors, and employees. Incorporate these materials into existing and future ADOT training programs.</p> <p>3.1.3 Conduct an environmental professional staffing needs analysis, prepare an environmental staffing plan, and implement the plan.</p> <p>3.1.4 Incorporate environmental performance specifications into all ADOT contracts where there is a potential to protect and enhance the environment. Inform consultants, contractors, and vendors on their environmental responsibilities at contract-related interactions such as scope of work meetings, pre-bid meetings, partnering meetings, pre-construction conferences, and industry conferences.</p>
3.2 Environmental Planning, Management, and Compliance Procedures	<p>3.2.1 Standardize environmental planning, compliance, and management procedures and incorporate them into all ADOT Divisions.</p> <p>3.2.2 Require managers and supervisors to emphasize environmental management and compliance.</p> <p>3.2.3 Develop orientation training, guidelines, and best management practices covering the environmental planning and compliance process and natural and cultural resources management.</p>

Overarching Environmental Performance Areas	Overarching Environmental Improvement Strategies/Actions
<p>3.3 Environmental Elements of Core Business Policies and Procedures</p>	<p>3.3.1 Conduct a department-wide study of how well environmental protection and enhancement elements are incorporated in the core business policies and procedures. Where absences and deficiencies are identified, direct the core business process owner to update the business policies and procedures.</p> <p>3.3.2 Appoint and direct a Central Office team to develop and implement a phased, department-wide environmental protection and enhancement incorporation plan and program. The phases would include: developing an implementation plan, schedule, and budget; leading and assisting all ADOT organizations in incorporating environmental elements into their core business policies and procedures; and delivering a comprehensive training program.</p>
<p>3.4 Environmental Training and Certification</p>	<p>3.4.1 Conduct a comprehensive environmental training needs assessment and prepare a Department-wide environmental training plan. Include environmental training requirements in the training plans of all ADOT employees.</p> <p>3.4.2 Develop and implement a comprehensive, cooperative environmental training and certification program with the ADOT business partners. Budget and allocate funding for training material development, training delivery, participation in training, training equipment, and travel expenses. Make maximum use of distance learning training techniques to control costs and facilitate participation in training and certification.</p>

Overarching Environmental Performance Areas	Overarching Environmental Improvement Strategies/Actions
3.5 Environmental Information System	<p>3.5.1 Review the NCHRP Report 481, <i>Environmental Information System and Decision Support System Handbook</i>, and assess ADOT’s interests in and potential benefits of developing and implementing an environmental information system. Participate as a pilot state in the development of environmental information system software as part of NCHRP 25-23(2) which will be initiated in June/July 2004.</p> <p>3.5.2 Using the environmental information systems development guidance in NCHRP Report 481, develop a basic ADOT environmental information system. Build on the current work in progress by the Environmental and Enhancement Group to develop a project environmental compliance project tracking system and a cultural resource database.</p> <p>3.5.3 Require all ADOT information system upgrade projects include environmental elements where the availability of environmental information will improve environmental performance.</p>
3.6 Recycling and Waste Reduction	<p>3.6.1 Apply for Arizona Department of Environmental Quality funding for the development and implementation of an ADOT recycling and waste reduction strategy that goes beyond the basic requirements of the existing state program. Include provisions for a short-term (3 to 5 years) recycling and waste reduction program coordinator position in the funding request.</p> <p>3.6.2 Develop an ADOT recycling and waste reduction strategy and implementation plan.</p> <p>3.6.3 Develop and implement a recycling and waste reduction reporting system to monitor and report on the quantities of materials recycled and the waste reduced as part of routine ADOT performance reporting.</p>
3.7 Energy Conservation	<p>3.7.1 Apply for state and federal funding for the development and implementation of an ADOT energy conservation strategy that goes beyond the basic requirements of the existing state program.</p> <p>3.7.2 Develop an ADOT energy conservation strategy and implementation plan.</p>

Overarching Environmental Performance Areas	Overarching Environmental Improvement Strategies/Actions
3.8 Water Management Strategy	<p>3.8.1 Establish an ADOT Water Management Program with using a framework with five elements as follows: Element 1: ADOT Water Quality Management Program Steering Committee or Task Force Element 2: ADOT Water Quality Management Program Team Element 3: ADOT Water Quality Management Program Strategic Plan and Work Program Element 4: ADOT Water Quality Financial Plan and Budget Element 5: ADOT Pilot Environmental Management System Application</p> <p>3.8.2 Appoint a full-time water management program coordinator to supply technical assistance, training, and regulatory agency liaison to all ADOT organizations with water management responsibilities. This action would be implemented should ADOT decide that a comprehensive water management strategy will not be prepared.</p>
3.9 Asbestos Management	<p>3.9.1 Develop an asbestos management strategy based on the results of the statewide asbestos survey.</p> <p>3.9.2 Appoint a full-time asbestos management program coordinator to supply asbestos abatement project management, technical assistance, training, and regulatory agency liaison to all ADOT organizations with asbestos management responsibilities. This action would be implemented should ADOT decide that a comprehensive asbestos management strategy would or would not be prepared.</p>
3.10 Outdoor Lighting	<p>3.10.1 Conduct a review of existing ADOT facility design policies and procedures to determine how well they address fugitive light emissions. Revise the outdoor lighting design policies and procedures to incorporate provisions for controlling fugitive light emissions.</p>
3.11 Interagency and Tribal Relationship Building	<p>3.11.1 Assess the effectiveness of the lines of communication among agencies and tribes. Develop a relationship-building strategy with the agencies and tribes.</p> <p>3.11.2 Appoint a full-time interagency coordinator to work with the existing tribal coordinator to establish and maintain agency and tribal relationships.</p>

Overarching Environmental Performance Areas	Overarching Environmental Improvement Strategies/Actions
<p>3.12 Environmental Services for ADOT Organizations</p>	<p>3.12.1 Assess and document the existing and projected environmental service needs of all ADOT organizations. Develop an environmental professional services strategy to meet the needs using a combination of in-house, consultant, and outside agency personnel.</p>
<p>3.13 Environmental Management</p>	<p>3.13.1 Create an ADOT Office of Environmental Quality. Assign the office the responsibility of leading and assisting all ADOT organizations, consultants, contractors, vendors, airport authorities, transit agencies, and vendors in incorporating environmental protection and enhancement into all their business activities affecting the environment. Staff the office with full-time manager and at least five (5) full-time environmental management professionals, an administrative assistant, and a secretary. Assign the environmental management professional to assist one (1) or more ADOT organizations as follows:</p> <ul style="list-style-type: none"> • Office of Environmental Quality Manager: Director, Deputy Director, and Chief of Staff • Environmental Professionals 1 and 2: Intermodal Transportation Division, Consultants, Contractors, and Vendors • Environmental Professional 3: Transportation Services Group, Consultants, Contractors, and Vendors • Environmental Professional 4: Aeronautics, Motor Vehicle, Legislative Services, Consultants, Contractors, Vendors, Airport Authorities, and Transit Agencies • Environmental Professional 5: Environmental Monitoring and Information Management <p>3.13.2 Create an ADOT Environmental Management Steering Committee to oversee and coordinate the development and implementation of an ADOT Environmental Management Program. Appoint an ADOT senior executive manager to chair the committee and to report environmental performance progress and results to the ADOT core team. Appoint managers from all ADOT Divisions to serve on the Committee. Invite state and federal environmental agencies, consultants, contractors, airport authorities, transit agencies, and vendors to serve on the committee. Encourage the committee to hold monthly meetings for the first year, bi-monthly for the second year, and quarterly meetings for the third year.</p>

Overarching Environmental Performance Areas	Overarching Environmental Improvement Strategies/Actions
3.13 Environmental Management-Continued	<p>3.13.3 Develop and implement an ADOT Environmental Management Program. Include policies, procedures, training, technical assistance, monitoring, and reporting in the program. Include all ADOT organizations in the development and implementation.</p> <p>3.13.4 Develop and execute a five-year, five million-dollar, open-end environmental management services consultant contract to assist ADOT in developing and implementing the ADOT Environmental Management Program. Require the consultant to assign a core staff of professionals and support personnel to reside in the ADOT central office and other offices as necessary to develop and implement the Program.</p> <p>3.13.5 Apply for Arizona Department of Environmental Quality, U.S. Environmental Protection Agency, and/or Federal Highway Administration funds to develop and implement an ADOT Environmental Management Program.</p> <p>3.13.6 Partner with the Phoenix Public Transit Agency to Develop Their Environmental Management System as a Prototype for Other Arizona Transit Agencies. <i>Note: The Phoenix Public Transit Agency is currently receiving environmental management system training and technical assistance sponsored by FTA.</i></p> <p>3.13.7 Develop and execute an environmental management technical assistance agreement with the AASHTO Center for Environmental Excellence to strategically mentor ADOT in the development and implementation of its Environmental Management Program. Evaluate and update the agreement on an annual basis.</p> <p>3.13.8 Create a full-time environmental manager position staffed with a highly qualified environmental professional in each of the ADOT District Offices.</p>
3.14 Annual ADOT Environmental Quality Report	3.14.1 Prepare and distribute an annual ADOT environmental quality report. Summarize the important elements of the report in the ADOT annual report.

6.2 APPENDIX B

The AASHTO Plan–Do–Check–Act Framework

Source-AASHTO Center for Environmental Excellence
Using an Environmental Management System to Meet Transportation Challenges and Opportunities-An Implementation Guide, August 2003

