CHAPTER 6.0 DISCUSSION AND FINDINGS

This chapter begins with a synthesis of the results of the Forest Service case analyses. Trends toward meeting NEPA’s intent and the principles of ecosystem management, as evidenced through the case analyses, are then identified and discussed. The chapter next progresses to a discussion of the relationship of ecosystem management to the NEPA process within the U.S. Forest Service. Following this discussion is a critique of key findings of the case analyses. The chapter closes with a discussion of several deficiencies and constraints that were inherent to overall Forest Service EIS processes.

6.1 Analysis of the Forest Service Case Studies

Table 6.1 is a summary of the case analyses for the George Washington and Francis Marion National Forests. Positive changes toward meeting the “ideal” NEPA and ecosystem management criteria from the 1986 to 1993 and 1985 to 1996 EIS case studies are designated by a (+), while changes that are further removed from the “ideal” NEPA and ecosystem management criteria are designated by a (-).

6.1.1 George Washington National Forest

6.1.1.1 NEPA Criteria and Questions

As shown in Table 6.1, the 1986 George Washington National Forest Final EIS and Forest Plan documents did not meet the “ideal” NEPA criteria in any area. The 1993 Final EIS and Forest Plan documents, however, met the “ideal” NEPA criteria in the following eight areas:

- All identified critical impacts were discussed and then avoided through design changes or were to be mitigated.
- Ecological information was integrated throughout the document and played a part in the selection of the alternatives.
- A detailed monitoring and evaluation program specific to the George Washington National Forest was developed as part of the Final EIS and Record of Decision (ROD).
- A site-specific, detailed mitigation plan was developed as part of the Final EIS and ROD and was considered an essential part of the alternative selection process.
- The project was changed following scoping and then again following Draft EIS review comments and to a level consistent with the agency and public comments and concerns.
- Environmental information, based on the principles of ecosystem management, was integrated throughout the EIS process and it was evident that the environmental data influenced the selection of the final plan of action.
- Unquantifiable environmental values were not quantified in dollar values and were given appropriate consideration in the decisionmaking process along with quantifiable considerations.
<table>
<thead>
<tr>
<th>NEPA Question</th>
<th>George Washington</th>
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<th>Francis Marion</th>
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<th>Change</th>
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</thead>
<tbody>
<tr>
<td>1. Early ID of critical environmental impacts.</td>
<td>*</td>
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<tr>
<td>2. Manages critical environmental impacts.</td>
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<td>(+)</td>
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<tr>
<td>3. Integration of ecological information.</td>
<td>*</td>
<td>*</td>
<td>(+)</td>
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<tr>
<td>4. Estimates impacts magnitude/significance.</td>
<td>*</td>
<td>*</td>
<td>(-)</td>
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<td>(+)</td>
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<tr>
<td>5. Identifies irretrievable resources.</td>
<td>*</td>
<td>*</td>
<td>(-)</td>
<td>*</td>
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<td>(+)</td>
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<tr>
<td>6. Integration of an interdisciplinary approach.</td>
<td>*</td>
<td>*</td>
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<td>*</td>
<td>(+)</td>
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<tr>
<td>7. Provisions for monitoring and evaluation.</td>
<td>*</td>
<td>*</td>
<td>(+)</td>
<td>*</td>
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<td>(+)</td>
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<tr>
<td>8. Mitigates unavoidable impacts.</td>
<td>*</td>
<td>*</td>
<td>(+)</td>
<td>*</td>
<td>*</td>
<td>(+)</td>
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<tr>
<td>9. Citizen, government agencies, etc. input.</td>
<td>*</td>
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<td>(+)</td>
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<tr>
<td>10. Public input impacts decisionmaking.</td>
<td>*</td>
<td>*</td>
<td>(+)</td>
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<tr>
<td>11. Environmental data influences final plan.</td>
<td>*</td>
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<td>(+)</td>
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<tr>
<td>12. Consideration of unquantifiable attributes.</td>
<td>*</td>
<td>*</td>
<td>(+)</td>
<td>*</td>
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<tr>
<td>13. Provision for a decisionmaking framework.</td>
<td>*</td>
<td>*</td>
<td>(+)</td>
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<tr>
<td><strong>Summation:</strong></td>
<td>3</td>
<td>10</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>8</td>
<td>(+6)</td>
<td>8</td>
<td>5</td>
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<table>
<thead>
<tr>
<th>Ecosystem Management Questions</th>
<th>George Washington</th>
<th></th>
<th>Francis Marion</th>
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</thead>
<tbody>
<tr>
<td>1. Maintenance of viable species populations.</td>
<td>*</td>
<td>*</td>
<td>(+)</td>
<td>*</td>
<td>*</td>
<td>(+)</td>
<td></td>
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<tr>
<td>2. Acknowledges ecological processes.</td>
<td>*</td>
<td>*</td>
<td>(+)</td>
<td>*</td>
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<td>(+)</td>
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<tr>
<td>3. Measures to sustain ecosystem diversity.</td>
<td>*</td>
<td>*</td>
<td>(+)</td>
<td>*</td>
<td>*</td>
<td>(+)</td>
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<tr>
<td>4. Ecosystems at different time/spatial scales.</td>
<td>*</td>
<td>*</td>
<td>(+)</td>
<td>*</td>
<td>*</td>
<td>(+)</td>
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<tr>
<td>5. Delineation of management boundaries.</td>
<td>*</td>
<td>*</td>
<td>(+)</td>
<td>*</td>
<td>*</td>
<td>(+)</td>
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</tr>
<tr>
<td>6. Integrative, interdisciplinary approach.</td>
<td>*</td>
<td>*</td>
<td></td>
<td>*</td>
<td>*</td>
<td>(+)</td>
<td></td>
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<tr>
<td>7. Public involvement in decisionmaking.</td>
<td>*</td>
<td>*</td>
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<td>*</td>
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<tr>
<td>8. Integration of &quot;new&quot; scientific research.</td>
<td>*</td>
<td>*</td>
<td>(+)</td>
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<td>(+)</td>
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<tr>
<td>9. Adaptive management techniques.</td>
<td>*</td>
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<td>(+)</td>
<td>*</td>
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<td>(+)</td>
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</tr>
<tr>
<td>10. Incorporation of educational programs.</td>
<td>*</td>
<td>*</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>11. Societal and environmental constraints.</td>
<td>*</td>
<td>*</td>
<td>(+)</td>
<td>*</td>
<td>*</td>
<td>(+)</td>
<td></td>
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</tr>
<tr>
<td><strong>Summation:</strong></td>
<td>7</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>(+8)</td>
<td>7</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>5</td>
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</tr>
</tbody>
</table>

1 = does not meet criterion.
2 = partially meets criterion.
3 = satisfies criterion.
• A decisionmaking framework was provided so that the effects of the alternatives could be considered in relationship to the other alternatives and all other effects.

To summarize, the 1993 EIS process either met the “ideal” NEPA criteria (Questions 2, 3, 7, 8, 10, 11, 12, and 13) or was at the same level as the 1986 EIS process (Questions 1, 6, and 9). In two of the eight questions in which the NEPA criteria were met, the NEPA response “improved” from the lowest ranking, “does not meet the criterion” to the highest ranking, “satisfies criterion” (Questions 11 and 13). On the other hand, the 1993 EIS process was less successful in meeting the “ideal” NEPA criteria than the 1986 EIS process in two areas (Questions 4 and 5). Overall, there was a net change of +6 (based on 13 NEPA questions) toward meeting the “ideal” NEPA criteria.

6.1.1.2 Ecosystem Management Criteria and Questions
The 1986 George Washington National Forest Final EIS and Forest Plan documents did not meet the “ideal” ecosystem management criteria in any area as shown in Table 6.1. The 1993 Final EIS and Forest Plan documents, however, met the “ideal” ecosystem management criteria in the following five areas:

• The Forest Service proposed management procedures that would maintain viable populations of all native species in situ through the preservation and/or enhancement of multiple habitat types and sizes.
• The agency demonstrated an understanding of ecological patterns and biological diversity within Forest boundaries, and this understanding was reflected in the decisionmaking process.
• Numerous and specific measures were proposed to sustain ecosystem diversity, health, and productivity.
• The EIS process incorporated adaptive management by developing a site-specific monitoring and evaluation program that would evaluate multiple attributes and that would be used to direct future planning and management decisions.
• The Forest Service evaluated and set priorities that not only met social demands, but also that considered biological diversity; health of the Forest; old growth; aesthetic, historical and cultural values; etc.

To summarize, the 1993 EIS process either met the “ideal” ecosystem management criteria or exceeded the 1986 EIS process (Questions 1, 2, 3, 4, 5, 8, 9, and 11), or was at the same level (Questions 6, 7, and 10). In three of the five questions in which the ecosystem management criteria were met, the ecosystem management response “improved” from the lowest ranking, “does not meet the criterion” to the highest ranking, “satisfies criterion” (Questions 2, 3, and 11). In no case, did the 1993 EIS process fall below the level of the 1986 EIS process. In all, there
was a net change of +8 (based on 11 ecosystem management questions) toward meeting the “ideal” ecosystem management criteria.

6.1.2 Francis Marion National Forest

6.1.2.1 NEPA Questions and Criteria
As shown in Table 6.1, the 1985 Francis Marion National Forest Final EIS and Forest Plan documents did not meet the “ideal” NEPA criteria in any area, whereas, the 1996 Final EIS and Forest Plan documents met the “ideal” NEPA criteria in the following six areas:

- Most identified critical impacts were discussed in the Final EIS and were either avoided through changes in management decisions or mitigated.
- Ecological information, based on the principles of ecosystem management, was integrated throughout the EIS documents, and it was evident that this information influenced the alternative selection process.
- The magnitude and significance of relevant impacts of the proposed alternatives were addressed, but, they were only discussed and estimated in general terms as this was considered a programmatic EIS.
- A monitoring and evaluation plan was developed as part of the Final EIS and ROD; many decisions in the 1996 EIS were the result of previous monitoring and evaluation efforts.
- The project was changed substantially to reflect the level of comments and concerns raised by agencies and the public after scoping and Draft EIS reviews.
- Environmental information was integrated throughout the EIS and Forest Plan documents, and it was evident that the environmental data influenced the selection of the final plan of action.

To summarize, the 1996 EIS process either met the “ideal” NEPA criteria or exceeded the 1985 EIS process (Questions 1, 2, 3, 4, 5, 7, 10, and 11), or was at the same level (Questions 6, 9, 12, and 13). In four of the six questions in which the NEPA criteria were met, the NEPA response “improved” from the lowest level, “does not meet the criterion” to the highest level, “satisfies criterion” (Questions 3, 4, 10, and 11). In one case, the 1996 EIS process fell below the level of the 1985 EIS process (Question 5). Overall, there was a net change of +7 (based on 13 NEPA questions) toward meeting the “ideal” NEPA criteria.

6.1.2.2 Ecosystem Management Criteria and Questions
The 1985 Francis Marion National Forest Final EIS and Forest Plan documents did not meet the “ideal” ecosystem management criteria in any area (refer to Table 6.1), whereas, the 1996 Final EIS and Forest Plan documents met the “ideal” ecosystem management criteria in the following five areas:
• The Forest Service proposed management procedures that would maintain viable populations of all native species in situ while preserving and enhancing the diversity of plant and animal communities.
• The agency demonstrated an understanding of ecological patterns and biological diversity within Forest boundaries, and this understanding was reflected in the decisionmaking process.
• Specific measures were proposed through ecosystem management principles to sustain ecosystem diversity, health, and productivity, and resilience of the land over time.
• The EIS process incorporated adaptive management by developing a monitoring and evaluation program based on the principles of ecosystem management that would be used to direct future planning and management decisions.
• The Forest Service evaluated and set priorities that not only met social/economic demands, but also recognized the importance of all natural resources.

The 1996 EIS process either met the “ideal” ecosystem management criteria or exceeded the 1985 EIS process (Questions 1, 2, 3, 4, 5, 8, 9, and 11), or was at the same level as the 1985 EIS process (Questions 6, 7, and 10). In three of the five questions in which the ecosystem management criteria were met, the ecosystem response “improved” from the worst case, “does not meet the criterion” to best case, “satisfies criterion” (Questions 2, 3, and 11). In no case, did the 1996 EIS process fall below the level of the 1985 EIS process. In all, there was a net change of +8 (based on 11 ecosystem management questions) toward meeting the “ideal” ecosystem management criteria.

Summary—NEPA analysis for the George Washington National Forest shows a net change of +6 (based on 13 NEPA questions) toward meeting the “ideal” NEPA criteria, and analysis for the Francis Marion National Forest shows a net change of +7. Similarly, ecosystem management analysis for both the George Washington and Francis Marion National Forests shows a net change of +8 (based on 11 ecosystem management questions) toward meeting the “ideal” ecosystem management criteria.

6.1.3 Forest Service Trends Toward NEPA’s Intent and Ecosystem Management Principles

The cases suggest that ecosystem management may be the catalyst for the Forest Service, and other federal agencies, to improve or modify their planning and decisionmaking processes (see Section 6.2 for further discussion). Tables 6.2 and 6.3 present Forest Service practices supporting ecosystem management principles and NEPA’s intent, respectively. Several key trends are noteworthy.
### Table 6.2. Forest Service Practices Supporting Ecosystem Management Principles as Evidenced in Case Study EISs and Forest Plans.

<table>
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<tbody>
<tr>
<td>• 1993 and 1996 Plans maintained biodiversity of all species.</td>
<td>• Limited incorporation of different geologic or long-term time scales in 1993 and 1996 EISs.</td>
</tr>
<tr>
<td>• 1993 and 1996 Plans provided measures to sustain ecosystem diversity/health.</td>
<td>• 1993 and 1996 EISs continued to delineate boundaries along jurisdictional boundaries.</td>
</tr>
<tr>
<td>• 1993 and 1996 EISs acknowledged ecosystem patterns and processes.</td>
<td>• No evidence in 1993 or 1996 EIS supporting a broad, integrative, interdisciplinary approach to planning process.</td>
</tr>
<tr>
<td>• 1993 and 1996 EISs integrated some new scientific research and technology.</td>
<td>• No evidence of two-way, consensus building stakeholder and public involvement in EIS process.</td>
</tr>
<tr>
<td>• 1993 and 1996 Plans incorporated adaptive management through monitoring and evaluation programs.</td>
<td>• No or minimal evidence of educational programs proposed in 1993 and 1996 EISs or Forest Plans.</td>
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<tr>
<td>• 1993 and 1996 EISs showed increased integration of ecological, economic and social considerations.</td>
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Table 6.3. Forest Service Practices Supporting NEPA’s Intent as Evidenced in the Case Study EISs and Forest Plans.

<table>
<thead>
<tr>
<th>Practices Supporting NEPA</th>
<th>Practices Not Supporting NEPA</th>
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<tbody>
<tr>
<td>• 1996 EIS emphasized earlier identification of critical impacts.</td>
<td>• 1993 and 1996 EISs had a lower estimation of the magnitude or significance of impacts.</td>
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<tr>
<td>• 1993 and 1996 Plans provided for better management of critical impacts.</td>
<td>• 1993 and 1996 EISs contained no discussion of irreversible/irretrievable resources.</td>
</tr>
<tr>
<td>• 1993 and 1996 EISs integrated ecological information and exhibited a broader understanding of sustainability.</td>
<td>• No evidence in 1993 or 1996 EIS supporting a broad, integrative, interdisciplinary approach to planning process.</td>
</tr>
<tr>
<td>• 1993 and 1996 Plans had increased provisions for monitoring and evaluation.</td>
<td>• No evidence of two-way, consensus building stakeholder and public involvement in EIS process.</td>
</tr>
<tr>
<td>• 1993 and 1996 EIS project decisions reflected reviewing agency and public comments and concerns.</td>
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</tr>
<tr>
<td>• 1993 and 1996 EIS project decisions reflected influence of environmental data.</td>
<td></td>
</tr>
<tr>
<td>• 1993 and 1996 EISs showed increased consideration of unquantifiable issues.</td>
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</tr>
<tr>
<td>• 1993 EIS showed evidence of increased integration of ecological, economic and social considerations through a decisionmaking framework.</td>
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</table>
First, management efforts to maintain viable populations of all native species in situ were included in the 1993 and 1996 EISs and Forest Plans, whereas, the earlier EISs and Forest Plans only provided management strategies for game species and threatened or endangered species, as mandated by the Endangered Species Act. The more recent case studies also looked beyond individual species management to habitat preservation and enhancement. If recent conservation biology and landscape ecology theories are valid, then this change in focus is critical to the sustainability of overall species diversity, health and productivity.

Second, the 1993 and 1996 EIS and Forest Plan documents showed evidence that the preparers understood ecological patterns and processes as discussed in the ecosystem management literature. In contrast, Forest Service personnel did not evidence understanding of ecological patterns and processes in the earlier cases. Consequently, those premises had very little influence on the earlier decisionmaking processes. According to ecosystem management theory, the more ecological patterns and processes are understood and incorporated into planning and management efforts, the more rational, inclusive, and holistic decisionmaking processes can become (refer to detailed discussion in Chapter 3.0).

A third trend supporting ecosystem management principles is the incorporation of adaptive management in the 1993 and 1996 case studies. Detailed and site-specific monitoring and evaluation plans were adopted and outlined in the RODs and Forest Plans. Adaptive management is one of the key components of ecosystem management. Further, the 1993 and 1996 EIS and Forest Plan documents referenced earlier monitoring and evaluation efforts for making management decisions for these EIS processes. Without a detailed and site-specific monitoring and evaluation plan, there is no means for determining which management practices are appropriate. Only through monitoring and evaluation of past and current planning and management practices is it possible to ascertain how to amend or change future planning and management practices.

There were also dimensions in the 1993 and 1996 case studies that did not advance the principles of ecosystem management (Table 6.2). (1) There were no discussions of changes in forest conditions over time, nor were there any references to ecosystems or environmental impacts beyond forest boundaries, despite several comments that such information would be useful for planning and outcome prediction efforts. The Forest Service stated that it had no jurisdiction over lands beyond forest boundaries and that these EIS processes were programmatic and, therefore, not appropriate for that level of analysis (see Section 6.3.2 for a detailed discussion of this topic). (2) There was no evidence within the EISs that they had been developed on the basis of a broad, integrative, and interdisciplinary approach in the planning and management process. The Forest Service’s EIS groups each had a team called, “Interdisciplinary Team.” However, each team member contributed information individually according to his or her specialization; management decisions continued to be made by the “Management Team” (refer to Section 6.3.3...
for further discussion). (3) There was no evidence of direct stakeholder involvement nor ecosystem management educational programs geared to the general public within the EIS and Forest Plan documents. In the 1993 EIS, the Forest Service stated that it was within its purview to make all management decisions and that it would use public and other agency comments as it deemed appropriate (see Section 6.3.5 for a detailed discussion of this topic).

Forest Service decisionmaking and planning also evidenced movement toward NEPA’s intent (Table 6.3). Several key trends are discussed below. First, in the 1993 and 1996 EISs, ecological information was integrated throughout the EIS and Forest Plan documents. It was very clear that the ecological information contributed to the selection of the alternatives and played a major role in determining the final plan of action. This change was significant as NEPA considers the integration of ecological information as critical to the decisionmaking process. Within limits, the more extensive our knowledge base, the more informed our decisions will be.

Second, in the 1993 and 1996 EISs, project agendas were altered substantially during scoping and/or during Draft EIS review. More importantly, the changes reflected the comments of the public, organizations, and reviewing agencies. Public and agency comments made significant contributions to the alternative selection process, alternative modifications, and to the selection of the final plans of action as intended by NEPA. This incorporation of public and other agency comments represents a fundamental change in attitude within Forest Service personnel toward receiving input from outside the agency and recognition that other agencies and the public have valid concerns and information to contribute (see Section 6.3.3 for a more detailed discussion).

Third, the 1993 and 1996 Forest Plans contained detailed, site-specific monitoring and evaluation plans as opposed to the 1985 and 1986 Forest Plans, which only outlined general monitoring plans. The 1993 and 1996 EIS and Forest Plan documents also used previous monitoring and evaluation efforts prescribed by earlier planning and management efforts to make decisions during the EIS and Forest Plan processes. CEQ regulations recommend that detailed and site-specific monitoring and evaluation programs be included in the Final EIS and ROD with the hope that the information gleaned from such programs will be used to develop future management and planning efforts.

A fourth trend is the increased emphasis given to qualitative or unquantifiable environmental values, particularly as evidenced in the 1993 George Washington National Forest EIS process. Previously, some unquantifiable values were “quantified” and entered into FORPLAN models as “constraints,” while others were not addressed at all. NEPA specifically mandates that unquantifiable environmental values be considered along with quantifiable considerations. However, this mandate cannot be realized if only some qualitative environmental considerations are entered into quantitative model projections. The 1993 EIS process came closer to fulfilling NEPA’s intent by evaluating separately many of the qualitative or unquantifiable environmental
considerations from the quantifiable considerations that were entered into the FORPLAN model. This approach gave reviewers a clearer idea of how the various criteria were evaluated in the selection of the final plan of action.

There were also several dimensions in the 1993 and 1996 case studies that did not advance NEPA’s intent (Table 6.3). (1) There was no evidence that the Forest Service supported a broad, integrative, interdisciplinary approach as envisioned by NEPA. The Forest Service’s EIS teams had a team called, “Interdisciplinary Team.” However, each team member contributed information individually according to his or her specialization. Management decisions continued to be made by the “Management Team” rather than through an interdisciplinary decisionmaking process (refer to Section 6.3.3 for further discussion). (2) There was no evidence of interactive stakeholder and public involvement as interpreted from NEPA’s intent and CEQ regulations and memoranda. The Forest Service was within its purview, as mandated by NFMA, to make all management decisions; public and other agency comments were used as deemed appropriate (see Section 6.3.5 for a detailed discussion of this topic).

It is evident from the case studies that the EIS process has moved closer to meeting NEPA’s intent. It is equally evident that ecosystem management has been successfully incorporated into the Forest Service’s EIS process. However, a question remains: Is the movement toward NEPA’s intent attributable to Forest Service adoption of ecosystem management for its planning and decisionmaking process? Did the Forest Service specifically seek to improve its NEPA process by adopting ecosystem management? Or, was ecosystem management adopted for its own sake, resulting in, coincidentally, the Forest Service’s NEPA process moving closer to NEPA’s intent? The following section addresses these questions.

6.2 Relationship of Ecosystem Management to the NEPA Process Within the Forest Service

One way to address the questions raised in the previous section is to evaluate comparatively the NEPA process and ecosystem management principles. For the evaluation, I elected to compare the goals of NEPA to the goals of ecosystem management. Table 6.4 shows a comparison of the 12 NEPA goals to the 10 ecosystem management goals.

NEPA goals 1, 2, 4, 6, 7, 10, 11, 12, and 13 are substantially equivalent to ecosystem management goals 1, 2, 3, 6, 9, 10, 7, 11, and 8, respectively. If the individual criteria that make up each of the NEPA and ecosystem management goals are examined, it becomes evident that each of the ecosystem management goals can, in effect, be correlated to one or more of the NEPA goals. Since the NEPA and ecosystem management goals are so closely aligned, the successful incorporation of one set of goals (ecosystem management goals, for example) is likely to realize its counterparts aims as well. That is, there is evidence to support a relationship between the
### Table 6.4. Comparison of NEPA and Ecosystem Management Goals.

<table>
<thead>
<tr>
<th>NEPA Goals</th>
<th>Ecosystem Management Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To promote efforts which will prevent or eliminate damage to the environment.</td>
<td>1. Maintain ecosystem integrity.*</td>
</tr>
<tr>
<td>2. To enrich understanding of ecological systems and natural resources.</td>
<td>2. Manage based on natural processes.*</td>
</tr>
<tr>
<td>3. To identify and estimate magnitude and significance of relevant environmental impacts of alternative actions.</td>
<td>1. Maintain ecosystem integrity. 3. Sustain ecosystems for the long-term.</td>
</tr>
<tr>
<td>4. To enhance renewable resources and recycle depletable resources.</td>
<td>3. Sustain ecosystems for the long-term.*</td>
</tr>
<tr>
<td>5. To integrate NEPA into policymaking and the planning process.</td>
<td>4. Manage within context of an ecological hierarchical organization. 8. Integrate scientific research, policy, and management.</td>
</tr>
<tr>
<td>6. To utilize a systematic, interdisciplinary approach in decisionmaking.</td>
<td>6. Develop and adopt an interdisciplinary approach.*</td>
</tr>
<tr>
<td>7. To monitor and evaluate activities to protect and enhance the environment.</td>
<td>9. Incorporate adaptive management procedures.*</td>
</tr>
<tr>
<td>8. To mitigate unavoidable impacts.</td>
<td>1. Maintain ecosystem integrity.</td>
</tr>
<tr>
<td>9. To provide the public with relevant information.</td>
<td>10. Develop educational programs and provide for informational exchange.*</td>
</tr>
<tr>
<td>10. To encourage and facilitate public involvement in decisionmaking process.</td>
<td>7. Facilitate public involvement.*</td>
</tr>
<tr>
<td>11. To develop methods to ensure unquantified environmental amenities are given appropriate consideration.</td>
<td>11. Accommodate human use and occupancy.*</td>
</tr>
<tr>
<td>12. To elevate environmental considerations to full partnership with technical and economic factors.</td>
<td>8. Integrate scientific research, policy, and management.*</td>
</tr>
</tbody>
</table>

* Direct correlation.
movement closer to NEPA’s intent and the incorporation of ecosystem management into the Forest Service’s EIS process. Since NEPA and ecosystem management goals are so similar, successful Forest Service incorporation of ecosystem management into its EIS process, has allowed the agency also to meet many of NEPA’s goals, and thereby, move closer to realizing NEPA’s intent.

The linkage between the NEPA process and ecosystem management principles is thus evident. As discussed in Chapter 1.0, Introduction, several Congressional reports and CEQ documents have discussed how NEPA already contains language to address the biological diversity issue, promotion of interagency cooperation, and management within ecosystems vs. jurisdictional boundaries—all of which are principles of ecosystem management. However, the Forest Service has not formally recognized the linkage. Throughout my research, I was not able to find a single article or reference in any Forest Service document that recognized the implicit connection between the Forest Service’s adoption of ecosystem management and NEPA. In a 1993 memorandum, Ecosystem Management Questions and Answers (USFS 1993b), in response to the question—“What have you done to comply with NEPA in making this new policy on ecosystem management?”—the Forest Service responded that:

The Forest Service ecosystem management policy, principles, and guidelines outline a broad approach fully consistent with existing law and regulation, not specific actions. Specific proposed actions (such as a Forest Plan amendment or a project) implementing ecosystem management principles or utilizing an ecological approach will be subject to appropriate NEPA compliance and documentation, as in the past.

In a 1994 Congressional Research Service Report, Ecosystem Management: Federal Agency Activities, the Forest Service, in response to a question regarding policy level actions for ecosystem management, stated that ecosystem management followed a two-year experiment with “New Perspectives” and that ecological approaches were built upon 100 years of land management experience “supported by the direction provided by the Organic Act, the Multiple Use-Sustained Yield Act, the National Forest Management Act, and the forestry provisions of the 1990 Farm Bill” (Morrissey et al. 1994:13). NEPA was never cited in the document.

Even the Forest Service’s 1995 proposed rule change to incorporate ecosystem management into forest planning and management procedures did not make the connection. The document references NEPA numerous times, but generally in the context of “NEPA procedures define the analysis process used for resource decisionmaking” (Federal Register 1995:18919), and, “Procedures for public participation and government coordination must conform with NEPA requirements . . .” (Federal Register 1995:18921). The proposed rule also stated that, “Reviewers are cautioned not to confuse the concept of ecosystem analysis with the analysis of
evaluation of environmental effects which occur as part of the NEPA process” (*Federal Register* 1995:18903).

Nor was there any evidence in the 1993 or 1996 EIS and Forest Plan documents that either the George Washington or Francis Marion National Forest personnel made the correlation. Consequently, the movement toward further realization of NEPA’s intent, as evidenced through my literature review and the case analyses, can be deemed a *by-product* of the Forest Service’s adoption of ecosystem management.

The primary reason for the Forest Service’s failure to recognize the connection between ecosystem management and NEPA has to do with the way the “NEPA process” has been interpreted by most federal agencies, including the Forest Service. The “NEPA process” as defined in the Act includes the *substantive* statements found in Sections 101 and 102 plus the *procedural* guidelines for the detailed environmental impact statement [Section 102(2)(C)] (refer to Chapter 2.0, *NEPA*, for a complete discussion of this issue). Nevertheless, the “NEPA process” as interpreted by the Forest Service, and other federal agencies, has focused principally on the *procedural* elements of the Act—Section 102(2)(C), the environmental impact statement. Consequently, the Forest Service has viewed NEPA as a regulatory act, and not as a guide for decisionmaking. A second reason is because much of the National Forest Management Act of 1976 (NFMA) was in fact modeled upon NEPA. Many Forest Service personnel, however, are not aware of this linkage.

This dissertation began with the hypothesis that the incorporation of ecosystem management into Forest Service planning and management practices would likewise move those planning and management practices closer to NEPA’s intent. What was not anticipated at the outset of this research was that this movement toward NEPA’s intent would be simply a by-product of the Forest Service’s adoption of ecosystem management and not a result of a conscious decision by the agency to better its NEPA process. According to former Forest Service Chief Jack Ward Thomas, the Forest Service adopted ecosystem management in order to incorporate an ecological approach for the future management of the National Forests and Grasslands (USFS 1992).

### 6.3 Findings of the Forest Service Case Analyses

This section presents a summary of key findings of the case studies. Selected results are presented in Table 6.5. The findings are first presented from the perspective of the “ideal” NEPA and ecosystem management criteria. This is followed by a discussion of how the Forest Service responded to the idealized NEPA and ecosystem management criteria in its planning and management practices as evidenced through the case analyses. Finally, constraints of implementation and the reality of what can and cannot be executed are discussed.
Table 6.5. **Key Findings of Forest Service Case Analyses.**

- Ecosystem management based documents exhibited consideration of ecosystem processes in alternative development and selection of the preferred alternative.

- The Forest Service did not evaluate the full geographical scope of impacts (e.g., cumulative impacts) of its land and resource management decisions.

- Although the Forest Service is “interdisciplinary,” there was no evidence that the Forest Service used an integrated, interdisciplinary approach in its decisionmaking process.

- Ecosystem management based documents included provisions for adaptive management techniques.

- Public and agency comments influenced project outcomes. However, the Forest Service did not directly involve the public and other agencies in its decisionmaking through interactive processes.

### 6.3.1 Ecosystem Management Based Documents Exhibited Consideration of Ecosystem Processes in Alternative Development and Selection of the Preferred Alternative

NEPA mandates that environmental effects be considered at all stages of the decisionmaking process. To make sure that environmental considerations are appropriately assessed, NEPA calls for an ecosystem approach that provides an understanding of the functional dynamics of biological systems (Andrews et al. 1977). Ecosystem management is likewise based on the premise of maintaining ecosystem integrity and operating within ecosystem processes and patterns.

The 1985 (Francis Marion) and 1986 (George Washington) Final EISs were highly criticized by reviewing federal agencies, environmental organizations, and the public for not taking a more holistic approach to their respective alternative selection processes. Specific criticisms of the George Washington National Forest EIS included level of clearcutting, harvesting in riparian area, harvesting on steep slopes with poor soils, and proposed changes in vegetation composition. Since the late 1970s, ecosystem theories and research efforts have been increasingly disseminated in the scientific literature, substantiating the criticisms. In fact, “new” science, based on ecosystem principles, was the impetus for much of the criticism against the Draft EISs. In both cases, the Forest Service responded as if there were no substance to the criticisms.
I propose four scenarios as likely explanations—(1) Forest Service personnel were not aware of the “new” science or ecosystem literature; (2) the agency chose to ignore the “new” science research findings; (3) Forest Service staff felt that the ecosystem based science was contrary to the Forest Service’s traditional scientific approach that supported clearcutting as the preferred forest management tool; and (4) traditional management practices may be reasonable for certain management objectives on specific forest sites. Ackerman (1990) has proposed a fifth possible explanation: there may have been an attitude of “we know best” how to manage our Forests based on a history of unchallenged stewardship vs. input from those outside of forest management, including other federal agencies. From the tone of the responses to the criticisms in the Final EISs, I consider all four explanations to be valid. That is, each provides a partial explanation of Forest Service behavior.

Prior to passage of NEPA, the Forest Service was comprised almost exclusively of foresters who conducted and published their own research efforts. Management decisions based on these in-house scientific studies had maintained the Forest Service’s stature among federal agencies and the public for several decades (1930s to 1950s) (Ackerman 1990). Therefore, it is understandable that many within the Forest Service have continued to believe in the virtue of the agency’s own science and management decisions. While the agency was managing for even-aged harvesting of monocultures of specified timber species and for primarily game species, Forest Service scientific studies supported this type of management to maximize outputs. However, as the Forest Service’s mandate changed to multiple use and sustainable management, new scientific approaches were needed to accommodate a broader range of ecological issues. Therefore, the Forest Service sought to adopt management strategies that incorporated ecosystem principles; hence, the movement toward “New Perspectives” and ecosystem management.

In the 1993 (George Washington) and 1996 (Francis Marion) case studies, most federal agencies, environmental groups, and the public, generally supported the overall goals and objectives of the ecosystem management based EISs and Forest Plans. Sources of negative criticism were the inverse of the earlier EIS experiences. In the 1985 and 1986 EIS processes, state reviewing agencies generally supported the Forest Service in its management practices and in the selection of the preferred alternative. However, in the ecosystem management based EISs, most state agency reviewers were highly critical of the changes in Forest Service goals and the proposed objectives to achieve those goals. For example, W.H. Gillespie (Administrative Forester, Department of Commerce, Labor and Environmental Resources, West Virginia) opined that, “As to timber production, it seems to me that professional forestry has shown time and time again that only by harvesting can we preserve biological diversity, maintain a variety of wildlife habitats . . . .” (USFS 1993a:i-754).

Over the 8- to 10-year time difference between the earlier and more recent EIS processes, the Forest Service and its personnel have gradually changed their management perspective and
consequently adopted new policies such as “New Perspectives” in 1990 and ecosystem management in 1992. The lag time between ecosystem management theory that began in the late 1970s to implementation of ecosystem management programming by the Forest Service is a normal progression. The Forest Service had lost the leadership role and stature among other agencies and the public in the conservation movement during the 1970s and 1980s that it had enjoyed earlier (Kennedy and Quigley 1994). This loss is largely attributable to the four scenarios presented earlier for the agency’s insular attitude. Now the agency is again in a position to regain its leadership role through implementation of its ecosystem management program.

6.3.2 The Forest Service Did Not Evaluate the Full Geographical Scope of Impacts (e.g., Cumulative Impacts) of Its Land and Resource Management Decisions

Recognizing that environmental effects are rarely confined to discrete areas or time periods, CEQ regulations state that cumulative impact analysis should evaluate impacts traced to decisions or actions that may be expected to occur on federal and nonfederal adjacent lands (40 CFR 1508.7, 1508.8). Furthermore, the regulations require federal agencies to evaluate the full geographical scope of impacts accompanying land and resource management decisions [40 CFR 1508.8(b)]. In its 1993 annual report, the CEQ (1993a) recommended that cumulative and indirect impacts of individual projects be evaluated in a regional or ecosystem context. According to Keiter (1990:52), “NEPA, therefore, endorses the view that environmental analyses on the public domain should take account of the full ecological ramifications of resource management decisions regardless of existing boundary lines.”

In a study of EISs and Environmental Assessments (EAs), the CEQ (1993a) found that the majority of such documents dealt only with project-specific considerations, resulting in inadequate consideration of cumulative effects. Likewise, Sample (1991) found that the Forest Service in its forest plan EISs generally did not consider cumulative effects of its activities on adjacent lands, even when the adjacent land was another national forest. In support of these findings, none of the cases evaluated here were concerned with activities beyond forest boundaries and cumulative effects were not adequately addressed even within Forest Service boundaries.

In the 1993 George Washington EIS process, the Environmental Protection Agency (EPA) was critical of the Forest Service for not undertaking landscape-level, cumulative impact analyses as this was a programmatic document and very suitable for such analyses. Other letters from the public were similarly critical of the Forest Service for not taking a broad ecosystem view of both short- and long-term environmental changes. The Forest Service’s response to EPA’s criticism was that cumulative impact assessment at the landscape level of analysis was outside the scope of a programmatic EIS. The Forest Service has interpreted the programmatic EIS to be something
quite different from EPA’s assessment (see Section 6.4.3 for a detailed discussion of the programmatic EIS). Furthermore, the Forest Service is mandated by NFMA to manage only within its boundaries. Many Forests have inferred that consideration of impacts resulting from agency activities on surrounding ecosystems or impacts resulting from activities beyond the forest are not to be dealt with in the EIS process. Additionally, if a Forest proposed to make cumulative impact assessments at the landscape scale, it would probably not have the staff nor the funds to do the job. Resource availability may, therefore, be key to agency capacity to undertake this responsibility.

The Forest Service’s proposed rule to adopt formally an ecosystem management perspective has the potential to change the agency’s narrow interpretation of the programmatic EIS. The proposed rule states that, “Even though a forest plan document itself is limited to administrative boundaries, the forest plan direction it contains can be derived from analysis and decisions at any appropriate scale or land area regardless of administrative boundaries” (Federal Register 1995:18898). Further, the proposed rule would permit forest plan direction to be established for more than one forest plan area by simultaneously amending or revising the appropriate forest plans to permit a “flexible approach to the spatial scale for planning and decisionmaking” (Federal Register 1995:18898). The interconnected data banking, described in Section 6.3.4, ideally would contain the information necessary to complete cumulative impact analyses at the project level as well as at the programmatic level of planning.

6.3.3 Although the Forest Service Is “Interdisciplinary,” There Was No Evidence That the Forest Service Used an Integrated, Interdisciplinary Approach in Its Decisionmaking Process

NEPA intended that federal agencies use an interdisciplinary and cooperative decisionmaking process with the lead agency (a federal agency) taking responsibility for the outcome of any decisions reached (40 CFR 1501.5). Direct input can and should come from the public, private organizations, state agencies, etc. As discussed in Chapter 2.0, NEPA has been interpreted to require not only the sharing of information with the public, but their direct involvement through interactive, consensus building processes in the development of that information. Ecosystem management similarly incorporates a broad, cooperative, and integrated approach to policymaking, planning, and management through the formation of interdisciplinary or transdisciplinary teams of researchers, managers, educators, and citizens.

A positive outcome of NEPA’s requirement for an interdisciplinary approach to planning and management is that the Forest Service and other federal agencies have found it necessary to hire persons possessing various types of expertise to complete NEPA environmental analyses. These newly hired specialists brought with them their values and skills into an organization dominated by one professional culture, i.e., foresters (Kennedy 1991). In Kennedy’s view, over
the last two decades these specialists have become “change agents” within the agency (Kennedy 1991). “It was not easy for a proud, successful, and cohesive agency to smoothly absorb change agents and to quickly adjust its organizational character and style, particularly when the motivation to change was largely external” (Kennedy 1991:174). As some of the “change agents” have moved up the Forest Service hierarchy, they have risen to positions where they could influence agency policy, and thereby, contribute to the agency’s adoption of “New Perspectives” and ecosystem management.

As noted in the case study results, the Forest Service used an in-house, “interdisciplinary team” to prepare the EIS and Forest Plan documents. Other governmental agencies were only consulted on a needs basis, e.g., permit requirements. Interdisciplinary team decisionmaking is generally defined as a process whereby members representing various disciplines come together as a group, contribute their individual expertise, and then formulate policy or management decisions collectively or an authoritative figure makes decisions based on the shared knowledge. However, from my experience with the EIS process and from informal conversations with Forest Service personnel, the phrase, “interdisciplinary team” is very deceiving as to actual Forest Service practice.

The preparation of the case study EISs and Forest Plans were managed by a very small group of individuals, the “management team” (e.g., five members for the 1986 George Washington National Forest EIS; six members for the 1996 Francis Marion National Forest), with numerous disciplinary specialists preparing individual sections on water quality, old growth, social analysis, etc. (refer to Appendices C and D for lists of specialists used in each case study). From the document examinations, I was not able to ascertain whether or not these disciplinary specialists had any substantive input, or whether their advice was sought, in the formulation of the alternatives or the selection of the preferred alternative. A study by Sample (1993) showed that the Forest Service’s decisionmaking process was generally one in which the Forest Supervisor (or another member of the Management Team) obtained background information or scientific data from others (the disciplinary specialists), and then decided on the solution; the information providers did not play a role in defining the problem or in generating or evaluating alternative solutions. If this was the case here, to maintain that federal agencies are “interdisciplinary” because of their in-house ensemble of varied disciplinary specialists is inaccurate and misleading.

But, an interdisciplinary approach has been in place at the national and regional level for a number of years. At the national level, the Forest Service is actively participating in joint committees and task forces with other federal, state, and local agencies, private organizations, universities, politicians, and members of the general public. For examples, Forest Service personnel are members of the Interagency Ecosystem Management Task Force, Interagency Ecosystem Management Coordination Group, Department of Agriculture’s Ecosystem
Management Coordination Team, the President’s Commission on Sustainable Development, and the National Biological Survey. The Forest Service has also joined other federal, state and local agencies and nonprofit and corporate organizations to prepare numerous cooperative management directives and multiple-scale management plans. Examples include the Vision for the Greater Yellowstone Ecosystem (1990), Canyon County Partnership (1994), and the recently completed Southern Appalachian Assessment (1996). The Forest Service has yet to incorporate such an integrative and cooperative approach to its own EIS process. This task, however, may be too daunting with 155 forests, the current Congressional climate, and a shrinking budget.

6.3.4 Ecosystem Management Based Documents Included Provisions for Adaptive Management Techniques

The 1978 CEQ regulations include a provision requiring that agencies monitor and evaluate their actions to ensure that their decisions were carried out as intended and to amend their actions as needed (40 CFR 105.3). The regulations also state that incomplete or unavailable information should be acknowledged with regard to significant adverse environmental effects (40 CFR 1502.22). However, because monitoring and evaluation were only suggested as appropriate and not mandated, only minimal attention has generally been given to monitoring and evaluation in the EIS process. On the other hand, monitoring and evaluation are key elements of adaptive management, which is a key principle of ecosystem management. Adaptive management acknowledges the uncertainties of science and social values, limited databases, and the dynamics of ecosystems (Grumbine 1994; et al.).

The earlier case studies outlined standardized monitoring and evaluation plans, while the more recent EIS procedures included monitoring and evaluation plans tailored to the individual forests and included elements specific to particular areas and management procedures. Additionally, the latter case studies outlined a 10-step planning process based on adaptive management techniques. The importance given to site-specific monitoring and evaluation and the inclusion of an adaptive management-based planning process in Forest Service EIS practices, therefore, can be directly attributable to the adoption of an ecosystem management perspective.

Neither the 1993 George Washington nor the 1996 Francis Marion National Forest Final EIS acknowledged that any information was incomplete or that there were any uncertainties with regard to available data. Two explanations are possible. First, both EIS processes were considered “programmatic,” and therefore, as interpreted by the Forest Service, it was not deemed necessary to deal with risks and uncertainties at the programmatic level. A second explanation, which I find more plausible, is that the Forest Service believed that all major relevant contingencies to address potential adverse effects had been accounted for through a combination of mitigation and monitoring.
The ecosystem approach, as mandated by NEPA and ecosystem management, relies on sophisticated data bases. However, the increased time, cost, and difficulty of developing and maintaining such data bases means that decisions often must be made without the quantity or quality of information or analyses desired (Ackerman 1990). In addition, the data bases used in the mid 1990s were probably developed in the early to late 1980s. Even before the 1993 and 1996 EISs and Forest Plans were completed, the data bases on which they were predicated may have been over 10 years old. Changing conditions and improved analytical techniques have made the older data inaccurate to current conditions. Even if a forest plan acceptably addresses all of the planning issues, the plan may be five to 10 years old when it is adopted (Ackerman 1990). This is particularly important because a forest plan is to establish the direction for a Forest for the next 10 to 15 years.

Largely in response to this problem, the Executive Office of the President, Congress, and many federal agencies have developed strategies to assess landscapes on a broader scale (regional or ecosystem management plans), to put existing data in an accessible form, and to develop interconnecting data banks. The resulting data are to be available for use by agencies and organizations at all levels. As new studies are completed, the research results will be entered into the data banks. Examples of such large-scale efforts include the National Biological Service (U.S. Geographical Survey), Gap Analysis (Fish and Wildlife Service), and EMAP (EPA’s Environmental Monitoring and Assessment Program). Data banking should lower field survey and research costs at the project level and avoid duplication of research efforts caused by overlapping agency jurisdictions.

The Forest Service 1995 proposed rule states that monitoring and evaluation plans will include a strategy to address the compilation of information to serve as reference points for future evaluations, and directs that monitoring and evaluation be used to determine if new information exists that substantially affects the validity of the forest plan. “This deliberate outreach for new information is not generally recognized as part of the monitoring and evaluation under the existing rule . . . . this type of information is expected to be various ecosystem analyses, as well as information being gathered from various other sources” (*Federal Register* 1995:18911). This provision refers to programs such as Gap analysis, EMAP, and the National Biological Survey as discussed above (Section 6.3.1). The proposed rule would also promote the coordination of monitoring and evaluation efforts, as feasible, with other governmental agencies, private landowners, the scientific community, and the public (*Federal Register* 1995).
6.3.5 Public and Agency Comments Affected Project Outcomes. However, the Forest Service Did Not Directly Involve the Public and Other Agencies in Its Decisionmaking Through Interactive Processes

To meet NEPA’s intent, representatives of the public, organizations, and governmental agencies are to be involved in ongoing Forest Service planning and policymaking. Ecosystem management expands the role of public involvement further by requiring the incorporation of meaningful stakeholder and public involvement to facilitate collective decisionmaking. Under an ecosystem management approach, the Forest Service would make final decisions based on group consensus wherever possible. This approach is based on the premise of an ecosystem management educated public.

Studies by Blahna and Yonts-Shepard (1989) and Sample (1993) have shown that public participation activities within the Forest Service have consisted primarily of one-way communication efforts (vs. two-way or interactive communication): the problem is shared with stakeholders through scoping questionnaires, recording individual comments at public hearings, mailed comments to the Draft EIS. This approach concludes with the agency making the final decision. In each of the cases examined here, the Forest Service was the final decisionmaker with one-way public input. Public input was sought through public hearings, open houses, responses to surveys, and comments to the Draft EISs. It was not evident from the EIS documents that the public, organizations, or other governmental agencies were permitted to participate directly (through interactive or group consensus efforts) in the EIS decisionmaking process. The Forest Service reserved the discretion granted it by NFMA to make final decisions.

In response to comments to the 1986 George Washington National Forest Draft EIS that remarked that management of National Forests should be left to trained professionals, Forest Service personnel replied that, “The management of National Forests are governed by a number of legal constraints. The National Environmental Policy Act (NEPA), requires that public input be part of the decisionmaking process . . .” (USFS 1986:K-69). Several rationales have been offered to explain the Forest Service’s reluctance toward the public participatory process. Research by Ackerman (1990) showed that the Forest Service has been reluctant to give the public a role in decisionmaking because the agency, historically, had held unchallenged stewardship of the National Forests (Ackerman 1990). Another explanation offered by Soden et al. (1988) is that the Forest Service’s perception of the public’s knowledge has generally been quite low, particularly for wildlife habitat needs. A third explanation is that many within the Forest Service have felt that public involvement usurps the power of agency officials and denigrates the expertise of professionals and scientists.

The 1993 George Washington National Forest EIS document reflects a radical change by the Forest Service toward the NEPA process. This change reflects not only an increased awareness
of ecosystem processes by Forest Service personnel, but also a change in agency attitude toward using environmental information gleaned from the public and other governmental agencies. Again, the public was not interactively involved in the decisionmaking process; nevertheless, public input greatly influenced the outcome of the EIS processes. The 1993 EIS stated that public comments often pointed out new approaches to the Forest Service for the alternative selection process.

Interested publics often have substantive information and expertise that can be valuable to Forest managers and that can be most effectively taken advantage of through direct public involvement in the decisionmaking process. According to Sample (1993), some of the key benefits of interactive, participatory decisionmaking are improved decision quality and greater commitment by the public to the project. Involvement of stakeholders leads to increased commitment to the final decision because people tend to support what they have a role in building. Increased commitment to the final decision also dramatically lowers the chances for appeals or suits. On the other hand, Sample (1993) noted that autocratic decisions are often readily accepted by those affected because they acknowledge legal authority.

The Forest Service is faced with the dual mission of both protecting and developing natural resources. Areas of conflict arise between resource managers and the public because some of the public are only concerned with preservation, on the one hand, while others are only concerned with resource development, on the other. Additionally, over the last 25 years, stakeholders have become increasingly sophisticated at influencing or disputing Forest Service decisionmaking through public involvement, appeals, lawsuits, lobbying, and influencing public opinion through the media. Recent public involvement experience in the Forest Service has been largely unsuccessful at preventing appeals: in 1985, 163 appeals were filed, and in 1991, 1453 appeals were filed (Carroll and Daniels 1992). Sample (1993) viewed the conflict from an inverse perspective: “The challenge is to use disagreement effectively to explore new perspectives, to examine assumptions and rationales criteria” (Sample 1993:27). A study by Ehrenhalt (1994) showed that allowing disagreeing factions to present their cases in a participatory process often ameliorates conflicts. Of the various forms of participation, a study by Gericke and Sullivan (1992) of 96 national forests found that consensus-building group activities seemed to be particularly important factors in avoiding conflict and appeals.

Sample (1993) cited the contingent model developed by Vroom and Yelton in 1973 for participatory decisionmaking. Decision methods range from very autocratic to very participative. Selection among these alternative decision methods is based on a sequential analysis of several key decision attributes: (1) decision quality; (2) leader’s information; (3) problem structure; (4) importance of decision acceptance; (5) probability of acceptance; (6) congruence of goals; (7) conflict among participants. The sequential analysis leads to a feasible set of decision methods. From an analysis of many Forest Service planning and participatory
activities using the above attribute analysis, Sample (1993) suggests two alternative decision methods as appropriate for Forest Service decisionmaking—either (1) the agency shares the problem with stakeholders in interactive group meetings, who offer ideas and suggestions, and the agency then makes the final decision; or (2) the problem is shared with stakeholders as a group, and alternatives are generated and evaluated to reach group consensus on a solution. Sample (1993) supports the adoption of the group consensus method by the Forest Service as the most effective form of public involvement. He further suggests that this process be institutionalized by setting up informal advisory groups of key stakeholders\(^1\) outside the EIS process (Sample 1993). Representatives of key stakeholder groups may be sufficient for informal advisory groups, but, involvement of members of all stakeholder groups and the general public is essential for a meaningful decisionmaking process at the EIS and Forest Plan levels. However, Forest Service personnel have generally not been adequately trained in communications or conflict resolution, nor is there funding to do so (Gericke and Sullivan 1994).

Blahna and Yonts-Shepard (1989) developed five criteria for meeting the legal mandates for public involvement of NEPA as well as the NFMA:

1. Public involvement should be conducted early in the planning process.
2. Public participation should also occur throughout the planning process.
3. Input should be representative of all interested citizens; an active effort must be made to identify and recruit participants who represent a broad range of interests and backgrounds so that those who are typically omitted from the planning process are heard from.
4. Forests should implement personal forms of public involvement through interactive methods or two-way communication.
5. Planning agencies must demonstrate how the input was considered and used in the planning process.

For the public to participate effectively in decisionmaking—to achieve higher degrees of public involvement—the public must be informed. “An effective transfer of power requires an effective transfer of knowledge” (Sinclair and Diduck 1995:228). According to the First Annual Report of the CEQ (1970:226), “Each of the national goals outlined in NEPA has an educational component from which specific environmental educational policies can be derived. Eventually these national goals must be translated into regional, state, community, and local environmental education objectives.” The CEQ (1970:226) proposed that environmental education include:

- An understanding of how the natural world works.
- An appreciation of man’s dependence on and contribution to ecosystem functions.
- An understanding of the ways and degrees man’s activities alter ecosystems.

\(^1\) Key stakeholders are a few individuals who are leaders or representatives of certain key interests that have a stake in the planning process (Blahna and Yonts-Shepard 1989).
• An increased understanding of how our economic systems and political institutions influence the choices that set off chain reactions within our environment.
• An awareness that a shift in personal values is necessary to make us willingly pay the price of controlling pollution, etc.

Ecosystem management likewise supports education as it considers an educational program to be an integral component of the decisionmaking process. Educational programs should include the general public, organizations, and industry, as well as governmental agency employees. Ecosystem management also promotes the development of better mechanisms for informational exchange.

Sinclair and Diduck (1995) found that education should be an integral component of public involvement. Education is a combination of (1) information dissemination and (2) general instruction. The Forest Service views public participation, in part, as a means to educate interested parties about agency activities (Sample 1993). However, according to Sinclair and Diduck’s two-fold criterion, Forest Service policy only marginally fulfills the information dissemination component. None of the case studies evaluated included instructional programs as part of their EIS processes. The 1996 Francis Marion National Forest EIS, in response to a Draft EIS comment, agreed that the current level of public information and education was not adequate. However, it did not address the criticism by establishing more effective information dissemination and instructional programs.

The CEQ educational program discussed above was primarily concerned with environmental education. For public involvement to move to the group consensus level of decisionmaking as proposed by Sample, the public must be cognizant of all facets of the decisionmaking process. Sinclair and Diduck (1995) suggest that individual citizens must be:

• Familiar with the policy and decisionmaking processes.
• Savvy to politics and legalities involved.
• Attuned to administrative procedures.
• Familiar with NEPA and CEQ regulations.
• Able to review EIS documents and understand the data and analyses presented.

Based on a study of what has worked in the Canadian environmental assessment experience, Sinclair and Diduck (1995) determined that public education is best facilitated through a combination of:

• Citizen training programs, lectures, and workshops.
• Computer based participation.
• Open houses.
The Forest Service has made the first step toward developing a substantive educational program. Educational programs and materials explaining ecosystem management are being developed at the national level and by local Agricultural Extension Services, e.g., the University of Tennessee Agricultural Extension Service’s *Managed Forests for Healthy Ecosystems*. The Forest Service has prepared several ecosystem management memoranda for agency staff that describe ecosystem management principles and how ecosystem management will be used in land and resource management planning. The Washington, D.C., office has also prepared a “glossy” informational booklet explaining the principles of ecosystem management for dissemination to organizations and the public. Specific direction for incorporating ecosystem management will also be available through Forest Service regulations (the proposed rule change), Forest Service manuals and handbooks, Forest Plans, and in strategic plans developed by the regions and experiment stations (USFS 1993b). And as discussed in Section 6.3.3, many Forest Service personnel participate in interagency ecosystem management related committees and task forces. Through these efforts, Forest Service personnel at all levels will be trained in ecosystem management. Agency educational efforts must not emphasize only the management and planning procedures of ecosystem management, but all ecosystem management principles, including an understanding of ecosystem patterns and processes and social and economic issues. In turn, these agency personnel have the responsibility to educate the general public concerning ecosystem management principles. Effective educational programs for the general public that include information on federal policy and decisionmaking processes, administrative procedures, and NEPA and CEQ regulations, as outlined by Sinclair and Diduck above, need to be developed as well.

### 6.4 Deficiencies and Constraints of the Forest Service EIS Process

During analysis of the cases, several deficiencies and constraints within the Forest Service EIS processes became apparent that were not specifically related to the NEPA or ecosystem management questions. These deficiencies and constraints are discussed below.

#### 6.4.1 The “Environmental” Alternative is a “Custodial” Alternative

One area of concern is the Forest Service’s interpretation of the “environmentally preferred” alternative. The agency considers the “environmentally preferred” alternative to be a “hands-off” or “custodial” alternative. For example, the 1985 Francis Marion National Forest EIS stated that the objective of the environmentally preferred alternative is to manage the Forest “in a custodial
manner.” There were six major goals associated with this alternative in the 1985 EIS process, but provision for wildlife management was not among them. An examination of other sections of the 1985 EIS, revealed that the environmental alternative did not address wildlife management because Forest Service personnel believed that wildlife management could only be accomplished through timber harvesting techniques; and, managing in a “custodial manner” precluded timber harvesting. Similarly, the 1993 George Washington National Forest environmentally preferred alternative precluded all timber harvesting activities, only allowed a minimal level of habitat manipulation, and did not permit active wildlife or fish management, except for endangered or sensitive species.

CEQ regulations require agencies to “Identify all alternatives considered by the agency in reaching its decision, specifying the alternative or alternatives which were considered to be environmentally preferable” (italics are mine) [40 CFR 1505.2(b)]. Question 6a. of CEQ’s Forty Most Asked Questions (CEQ 1986) states that:

The environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA’s Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources.

Nowhere do NEPA or CEQ regulations specify that human activities, including recreational use and some level of harvesting, should be precluded in the environmentally preferred alternative. In fact, management activities have been determined to be the best means sine qua non by the Forest Service to protect, preserve, or enhance historic, cultural, and natural resources. The environmental alternative was not intended to be a “hands off” alternative, particularly for forest lands that had been drastically altered by pre-Forest Service activities. “Least impact” as defined by NEPA does not equate to “no impact” by human activities as interpreted by the Forest Service. In fact, the “environmentally preferred” alternative as defined in the case studies is actually worse for forest ecosystem viability than some of the proposed “management” alternatives. For example, under the current “environmentally preferred” alternative scenario, no or minimal management activities would occur in the forest, therefore, species diversity would decrease because edges, corridors, or other types of habitat would not be maintained; forest “pests” would proliferate, which would lead to losses of vegetation and wildlife habitat, because pesticide management would not occur.

The Forest Service typically develops a range of alternatives from best to worst case based along the lines of public input—i.e., mainly stakeholder groups composed of environmental preservationists on the one end and strong economic interests on the other. Hence, the range of alternatives is based on levels of timber production (0 to 100 percent timber harvesting) and an
emphasis on one resource over another, such as “recreation” or “wilderness experience.” This approach does not allow for a more holistic or inclusive development of alternatives. In other words, not all combinations of “reasonable” alternatives are analyzed and the “best” alternatives selected from among the possible reasonable alternative choices. Instead, with a range of alternatives from one end of the spectrum to the other, only the middle range of alternatives that focus on multiple resource issues are considered viable alternatives because the “ends” are considered “extremes”—with the “no action” and “environmentally preferred” alternative on the one end and clearcutting the entire forest on the other end. This practice severely limits the number of “reasonable” alternatives actually considered.

What would a more inclusive alternative, and one that NEPA would consider an “environmentally preferred” alternative, look like if specific goals from several of the proposed alternatives were combined? For example, in the Francis Marion 1985 EIS process, what if goals 2 and 4 of Alternative F (the environmentally preferred alternative) had been combined with goals 2 and 5 of Alternative D (emphasis on high level of timber and balanced wildlife program), and goals 1 and 6 of Alternative P (the preferred alternative), then the “new” alternative would look like this:

1. To prevent environmental damage to lands or resources of adjoining lands or other ownerships or downstream areas (Alt. F).
2. To conserve soil and water resources (Alt. F).
3. To increase quality habitat and populations of indigenous plant and animal species. Decrease the need for classification of additional species as endangered, threatened or sensitive (Alt. D).
4. To increase plant and animal diversity (Alt. D).
5. To sustain a moderate yield of timber over the planning horizon (Alt. P).
6. To preserve important historic, cultural and natural values (Alt. P).

Compare this scenario to the preferred alternative (Alternative P) goals:

1. To sustain a moderate yield of timber over the planning horizon.
2. To maintain viable populations of plant and animal species.
3. To reach the recovery level of red-cockaded woodpecker populations.
4. To provide a balance of other forest resources.
5. To protect, maintain and/or improve soil productivity and water quality.
6. To preserve important historic, cultural and natural values.

With the new “environmentally preferred” alternative, rather than just maintaining viable populations of species, quality habitat and species diversity would increase, and rather than reaching recovery levels of red-cockaded woodpecker, the need to classify additional species as
endangered, threatened or sensitive would decrease. Yet under both scenarios, a moderate yield of timber is sustained. It is important to note that only the “new” alternative and the existing “environmentally preferred” alternative (Alternative F) include a goal of “preventing environmental damage to lands and resources of adjoining lands or other ownership or downstream areas.”

I suggest that the Forest Service reevaluate its alternative development process to one that only considers “reasonable” alternatives as defined by NEPA and CEQ regulations. Additionally, the agency should reconsider its interpretation of the “environmentally preferred” alternative. As outlined above, the “environmentally preferred” alternative does not preclude management activities.

6.4.2 Land and Resource Management Planning is “Issues” Oriented

All four case studies stated that National Forest land and resource management planning is “issue oriented.” While there is no problem with an “issues” orientation per se, as used by the Forest Service, it has become problematic. A review of all four sets of EIS documents suggests that undue importance had been given to the categorization of a multitude of issues and concerns raised during scoping and Draft EIS review into 11 or 13 general issue topics.

This approach was particularly troublesome in the 1985 and 1986 EIS case studies. In a 1986 study of the Forest Plan EIS process, Blahna and Yonts-Shepard (1989) found that issue statements were generally broad statements or questions directed toward timber, recreation, wildlife, and so forth. For example, a common issue statement relating to timber harvesting was “How should timber be harvested on the National Forest?” Thus, instead of scoping major public issues, the statements simply rephrased the general mandate of NFMA (i.e., How should the forest be managed?) (Blahna and Yonts-Shepard 1989). The actual issues could usually be found buried in the text that described each major issue.

Comments received during the 1986 George Washington National Forest issues identification phase indicated that about one third of the respondents either were opposed to even-aged management or wanted tight controls on even-aged harvest practices, especially clearcutting. The 1986 issue statement read: “How should timber be managed on the National Forest to provide for the benefit of all resources?” In the Francis Marion 1985 case study, harvesting methods were not addressed under any issue topic.

Although there has been little agency guidance for issue identification, evidence from several forests in the Blahna and Yonts-Shepard (1989) study suggested that it was possible to identify issues in a way that was useful for planning. After the initial draft Forest Plans became controversial, some regional offices required that forests prepare conflict summary documents.
These were short summaries of the real public issues, the parties and their positions on all sides of the issues, potential areas of compromise, and suggested public involvement activities that would address the issues. These documents were never made public or incorporated in the forest plans. They did, however, serve as the basis for organizing many of the successful consensus group meetings that took place during the revisions of the draft forest plans. The Blahna and Yonts-Shepard (1989) study also concluded that public issues may be used as a means to perpetuate institutional values rather than for describing the controversial public issues relating to the forest plans. By burying the issues during the planning process, however, the Forest Service merely postponed having to deal with them until late in the planning process (Blahna and Yonts-Shepard 1989).

A second concern, is the disparate handling of quantitative vs. qualitative subissues. In the 1985, 1986 and 1996 case studies, representative subissues of each general issue topic that could be quantified were entered into the FORPLAN model to produce a range of alternatives. In each case, the FORPLAN model was the primary means for making alternative selections. The model can only analyze resource data that are quantifiable and for those for which a relationship with other resources can be established (Ackerman 1990). Consequently, the subissues for each general issue topic that were not readily quantifiable were not included in the FORPLAN model. The outcome was that the range of alternatives did not address many of the unquantifiable subissues. For example, under the major issues category, Recreation, “number of campsites” or “miles of hiking trails” were entered into the FORPLAN model, but subissues such as “visual aesthetics” or “the hiking experience” were not. Nor do these qualitative subissues appear in the summary tables comparing effects of the alternatives. Additionally, the Forest Service personnel selected only representative quantitative subissues to satisfy each of the general issue topics. For example, under general issue topic, Soil and Water Protection, the only subissue measured was “sediment production in metric tons,” and for general issue topic, Wildlife and Fisheries, the only subissue measured was “wildlife habitat improvement in acres.”

I believe that the concerns raised here contributed to the ultimate rejection of the 1985 George Washington National Forest EIS process. The reliance on the FORPLAN model did not allow the Forest Service the flexibility needed to consider all of the subissues that the public and reviewing agencies argued were critical to the alternative selection process. Many of the same subissues were raised during scoping, and again during Draft EIS review and Supplemental EIS review, e.g., clearcutting, level of timber harvesting, below cost timber sales, change in vegetative mix, harvesting on steep slopes and poor soils, effects on wildlife, and degradation of water quality. Many of these subissues were discussed in responses to Draft EIS comments, but they were not entered into the FORPLAN model. Consequently, these subissues had little impact on the selection of the preferred alternative. Furthermore, because many of these subissues were categorized under a general issue topic that the Forest Service addressed through other subissues
(e.g., RPA quotas, sediment production in metric tons), the agency was satisfied that it had sufficiently dealt with that particular general issue topic.

The 1993 George Washington National Forest EIS process was more successful at integrating subissues into the decisionmaking equation, particularly qualitative subissues. The comparative matrix and text presented in the ROD clearly indicated that qualitative issues were considered in the alternative selection process and in the selection of the preferred alternative. The EIS process also gave greater weight to those subissues agency personnel, the public, and reviewing agencies deemed as contributing to the overall goal of the forest planning effort—to use an ecological approach for achieving multiple use management and to stress the need for a high quality environment while producing needed goods and services (USFS 1993a, 1996a).

6.4.3 Cumulative Impacts Are Outside the Scope of Programmatic EISs

Consistent with Forest Service policy, the 1993 George Washington and 1996 Francis Marion National Forest Final EISs were designated “programmatic” EISs. The 1996 Francis Marion National Forest Final EIS stated that, “The purpose and need for the Forest Plan is to provide a Forest-wide, programmatic, integrated framework for analyzing and approving future site specific projects and programs” (USFS 1996a:I-1). In response to criticisms of the 1993 George Washington National Forest EIS’s lack of both landscape level analyses and spatial and temporal cumulative impact assessment, the Forest Service stated that such analysis is outside the scope of the programmatic EIS (USFS 1993a). The EIS further stated that during Plan implementation, specific activities and projects would be proposed, and site-specific evaluations for each would be made (USFS 1993a). There are two problems with the Forest Service’s response: (1) cumulative impact assessment is not beyond the scope of the programmatic EIS, and (2) programmatic level planning is the ideal venue for landscape levels of analyses.

Programmatic EISs, as intended by CEQ regulations [40 CFR 1502.4(b)] and as interpreted in the literature (Barney 1981; Hapke 1985; Sigal and Webb 1989), are to be prepared on “broad federal actions,” such as the adoption of a regulation, policy, plan, or program. A programmatic EIS is appropriate for related actions that are well defined but general in nature or broad in scope (Sigal and Webb 1989). Because CEQ regulations do not provide specific examples of programmatic EISs, it is understandable that federal agencies have not always interpreted CEQ regulations and the literature properly as to what constitutes a programmatic EIS. The Forest Service is a case in point. Figure 6.1 (taken from Sigal and Webb 1989) shows the relationship of programmatic-level EISs to project-level EISs. Forest Plans do not meet the criteria for a national program or policy, nor for a regional or basinwide action.
The CEQ regulations and the response to Question 24b. of the “Forty Questions” memoranda, did not distinguish individual requirements for the two levels of environmental statements. This has been interpreted in the literature to mean that they should be handled identically (Barney 1981). The regulations apply to EISs of any scope, whether programmatic or individual projects (Sigal and Webb 1989).

According to CEQ regulations, one dimension of programmatic EISs is that they provide federal agencies the opportunity to evaluate the potential cumulative impacts of all reasonable and foreseeable actions under those programs or within those geographic areas. For example, in its 1993 annual report, the CEQ promoted programmatic EISs for their usefulness in estimating total biodiversity, particularly where programs consist of a number of projects that have been determined individually to have insignificant effects on biodiversity. Question 24b. of the “Forty Questions” memorandum (CEQ 1986) states that “. . . the overview or area-wide EIS would serve a valuable and necessary analysis of the affected environment and the potential cumulative impacts of the reasonably foreseeable actions under that program or within that geographical area.” Barney (1989) opined that the type of action most important to the programmatic EIS is cumulative actions. Barney (1989:28) further stated that, “By making clear that the overall or cumulative impact of several agency [project] actions can be sufficient to justify an EIS, the regulations deal with one of the more frequently overlooked concerns which a complete [programmatic] statement should speak to.”

Since authorization of the “programmatic” George Washington National Forest 1993 Final EIS and Forest Plan, there has been one EIS approved that references the 1993 documents: Suppl. EIS for the Revised Land and Resource Management Plan, GWNF-Oil and Gas Lease in Laurel Fork
Special Management Area. Numerous Environmental Assessments (EAs), which resulted in Findings of No Significant Impact (FONSI), and Special Use Authorizations have also been filed that reference the 1993 Final EIS documents. A review of five recent George Washington National Forest EAs shows that the EAs described direct, indirect, and cumulative effects of the alternatives specific to the project areas, or, at most, effects on adjacent George Washington forest project areas, or, more generally, they reference the 1993 programmatic EIS documents—e.g., “all alternatives are consistent with the Forest Plan” (USFS 1996b:52).

None of the case study programmatic EISs evaluated here, nor the five George Washington National Forest EAs reviewed, looked beyond forest boundaries for information for making management decisions, nor did either the 1993 or 1996 EIS process evaluate the effects of their actions on surrounding lands or in combination with activities occurring outside their boundaries. For example, the George Washington Forest is within the same bioregion as the Jefferson National Forest. In fact, part of the George Washington is contiguous with the Jefferson National Forest. Yet, the 1993 EIS failed to evaluate any expected impacts to, from, or in conjunction with the Jefferson National Forest. Both EIS processes stated that this would be done at the project level. However, as discussed above, none of the five George Washington project-level EAs reviewed, adequately addressed cumulative impacts beyond project area boundaries. This is consistent with a study by McCold and Holman (1995) of 89 EAs, representing 13 federal agencies. The authors found that cumulative impact analysis was given adequate attention only 39 percent of the time. Unfortunately, the Forest Service was not one of the federal agencies evaluated in the study.

McCold and Holman’s study and my findings raise several questions—If the Forest Service relies on EAs at the project level rather than programmatic EISs to evaluate cumulative effects, and a study has shown that cumulative effects are only adequately addressed 39 percent of the time during the EA process, are cumulative impacts ever really evaluated? Also, if the Forest Service only looks at project-level cumulative effects during the EA process, when are forest-wide or regional cumulative effects identified and discussed? In other words, if the project level EA states that its impacts are within the management criteria established by the programmatic Forest Plan EIS, and that it will have no cumulative impacts beyond that, and the Forest Plan EIS states it does not look at cumulative impacts because it is programmatic, then in actuality, cumulative effects are never sufficiently discussed or evaluated beyond project level boundaries.

Clearly, the Forest Service Forest Plans are not programmatic as denoted by CEQ regulations and the literature, but more importantly, even if they were, the agency’s interpretation of a separate set of rules for the programmatic vs. project-level EIS is incorrect. The NEPA process is intended to help federal officials make decisions that are based on an understanding of environmental consequences and to take actions that protect, restore and enhance the
environment (Section 1500.1). However, if cumulative impacts are not adequately dealt with in the EIS process, then NEPA’s intent has not been fulfilled.

The Forest Service’s EIS process still faces many appeals and suits largely due to the agency’s narrow interpretation of the programmatic EIS and its lack of cumulative impact analysis (Hapke 1985). While earlier court decisions have upheld the Forest Service’s interpretation (e.g., Kleppe v. Sierra Club), more recent decisions have supported NEPA and CEQ regulations [e.g., National Wildlife Federation v. United States Forest Service (1984) and Thomas v. Peterson (1985) as cited in Hapke 1985]. The Forest Service initiated the programmatic EIS process, with its tiered EISs and EAs, to save time and money. However, due to the number of appeals and suits filed, possibly more time and money would be saved by a thorough programmatic EIS process in which cumulative impacts and landscape levels of analysis are included accompanied by an interactive public and agency participatory process. From here, project-level EISs and EAs could legitimately be tiered to and supported by the programmatic EIS.

6.4.4 Constraints Affecting Forest Service Ecosystem Management Policy

There are many constraints affecting the Forest Service’s implementation of ecosystem management, including internal organizational difficulties, legislative actions, political inconsistencies, and financial or budgetary obstacles.

6.4.4.1 Organizational Constraints

Ackerman (1990) noted that the Forest Service implements NEPA at the national level through Chapter 1950 of the Forest Service Manual and in the Forest Service Handbook 1909.15. Additional NEPA policies and procedures are established through regional forest supplements to the manual and handbook, and miscellaneous informal guidance through letters, checklists, advice, and prototypes. The informal guidance varies widely among regions, from forest to forest, and among agency staff areas. The same can be said for ecosystem management guidance. The 1995 proposed rule change to NFMA was not only to adopt formerly an ecosystem management approach, but also to outline specific ecosystem management-based policies and procedures to be used by the Forest Service at all levels of the decisionmaking process.

In a study of Forest Service planning practices, based on interviews and documentation review at six forests, Blahna and Yonts-Shepard (1989) found that most forests met the minimum NEPA and NFMA requirements for public involvement by using the least confrontational methods possible. Input was received in the form of written or one-way communication, and interactive public involvement was used only when it was “safe” to do so (i.e., during issue identification) or when the agency was forced to do so because of public controversy. There are several operational barriers discussed in the literature to gaining two-way or interactive public involvement within Forest Service planning and management processes:
1. The fear of litigation; fear that Forest Service staff may say something inappropriate or litigious if they deviate from scripted speeches; this is more likely to occur during two-way communication (Sample 1993).

2. The planning process is long and complex; it is not always clear how the public should be used to supplement the technical data required by the computer models (FORPLAN) (Blahna and Yonts-Shepard 1989).

3. There is a lack of staff training to deal with interactive public involvement methods (Kennedy and Quigley 1994).

4. NFMA mandates that agency staff are responsible for making all management decisions.

In response to the first barrier, a study by Sample (1993) of Forest Service public involvement practice types and the number of appeals and suites found that the number of suites and appeals decreased dramatically with two-way, or interactive public involvement techniques vs. the agency’s traditional one-way, public hearing format.

To address the second barrier, Blahna and Yonts-Shepard (1989) proposed that computer analysis requirements should be reduced and streamlined so that draft plans could be released earlier in the planning process, while there was plenty of time, energy, and money left to produce several subsequent drafts that were responsive to public concerns. If this were not feasible, then the agency should develop methods for working cooperatively with the public during the middle stages of planning when alternatives were being developed, analyzed, and revised. Unfortunately, both options require a great deal of effort on the part of the Forest Service staff and the public.

Although working cooperatively with key interest groups is an important element in the planning process, the fact is that this input is biased. Often it is only the most organized and visible interests that are represented at group meetings, and consequently, the interests of unrepresented groups are not always considered in the decisionmaking process. Understanding where gaps in representation occur requires an objective assessment of the social environment (Blahna and Yonts-Shepard 1989). Blahna and Yonts-Shepard (1989) suggested that social subgroups be identified through the use of objective social analysis techniques, such as surveys or ethnographic research methods. This analysis should then form the basis for designing the public involvement program and assessing potential social conflicts and consequences for each proposed alternative. Thus, public involvement and social impact assessment in the EIS process can be viewed as complementary functions (Blahna and Yonts-Shepard 1989).
The Forest Service has determined that only it and cooperating federal agencies can make management decisions. The basis of this interpretation within the Forest Service comes from NFMA. However, in a 1993 memorandum that responded to questions regarding ecosystem management, the Forest Service stated that the agency “actively forms and encourages partnerships and achieved shared goals” and “promotes grassroots participation in National Forest decisions and activities” (USFS 1993b:3). The Forest Service’s 1995 proposed rule, however, reverses the expanded role of grassroots participation by limiting interdisciplinary team membership to Forest Service and other federal agency personnel. “This limitation is primarily due to the Federal Advisory Committee Act, which imposes extensive requirements on the creation and use of committees that include non-federal personnel for the purpose of advising federal agencies” (Federal Registrar 1995:18904) (see the following section for a more detailed discussion of this point).

6.4.4.2 Legislative Constraints
Based on federal agency staff surveys and issue groups, the Interagency Ecosystem Management Task Force (1996) found that statutes and regulations that micromanage agency planning decisions were generally criticized as requiring an inefficient use of administrative resources and creating opportunities for litigation. The 1974 Forest and Rangeland Renewable Resources Planning Act (RPA) was premised on timber quotas, whereas, the Multiple-Use and Sustained-Yield Act (MUSYA) was based on multiple resource management that included recreation, water and wildlife resource management, as well as timber management. Regardless of its multiple resource mandate, Forest Service staff and the public have continued to perceive the focus of the agency to be timber harvesting and grazing. In an effort to change this perception, the Forest Service in its 1990 RPA Strategic Plan stated that timber harvesting and grazing were only two of a multiple list of resources management issues with which the agency would be concerned. However, Forest Service timber quotas are also set by Congress through Congressional Committee actions including trade agreements.

The Interagency Ecosystem Management Task Force (1996) proposed that NFMA may actually allow the Forest Service to plan on an ecosystem scale. Flexibility exists already under the Act because it does not require a separate forest plan for each national forest. The 1995 proposed rule change to NFMA substantiates this interpretation. The proposed rule further states that the Forest Service “recognizes the benefits that can be gained from taking a more ecological approach to establishing the area to be encompassed by a forest plan. In the long run, a realignment of plan boundaries should be considered. In the short-run, however, there are practical considerations for continuing the current approach” (Federal Register 1995:19989).

According to the findings of the Interagency Ecosystem Management Task Force (1996), the ability of the Forest Service to coordinate activities and information with nonfederal agencies and organizations in a way conducive to the ecosystem management approach is hampered by two
federal laws, the Freedom of Information Act (FOIA) and the Federal Advisory Committee Act (FACA). The FOIA is regarded as a significant threat to any agency that collects information about the location of sensitive or overexploited species. Moreover, data shared with or among government scientists could be used by outside scientists before originators could publish findings for professional credit (Interagency Ecosystem Management Task Force 1996).

FACA places a number of procedural restrictions on advisory committees, e.g., every advisory committee must file a charter; its meetings must be open to the public; it must keep detailed minutes; and it must generally permit interested persons to attend, appear before the committee, or file statements; and it must make publicly available its records, reports, transcripts, minutes, appendices, working papers, drafts, studies, agenda, or other documents [5 USC App. 2 9(c), 10(a)(2); 10(a)(1); 10(c); 10(a)(3); 10(b)]. FACA also imposes a number of requirements on federal officials regarding the creation and use of advisory committees. As a result, FACA is generally regarded as a hindrance to agencies’ efforts to obtain information from the scientific community and stakeholders (Interagency Ecosystem Management Task Force 1996).

Both pieces of legislation should be amended to respond to the apparent shortcomings of the acts and to facilitate ecosystem management implementation. FOIA should be amended so that if factual or other information must be withheld under another statute (e.g., Archaeological Resources Protection Act, Endangered Species Act), then it is exempt from disclosure under FOIA. FACA should be amended to exclude ad hoc agency efforts to obtain information from the public, local and state agencies, and scientists.

6.4.4.3 Political Constraints
Forest Service decisions are inevitably political in nature, resulting in the inability of the Forest Service decisionmaking process to reach effective and permanent solutions to broad public issues (Ackerman 1990). Yaffee (1996) has argued that ecosystem management is itself a political process, because it involves allocation decisions between different interests in society. Ecosystem management will not occur without political concurrence that requires in its stead, a shared understanding of the importance of healthy ecosystems, and how humans can benefit from the long-term economic and ecological sustainability that come from them (Yaffee 1996).

The CEQ (1993b) proposed that the NEPA process be used as a framework for regional interagency ecosystem-based EISs, with coordinated efforts among several agencies providing input to planning and analysis for all participating agencies. NEPA is sufficiently flexible to allow for various configurations in developing regional frameworks (CEQ 1993b). Benefits from this approach would include: tailoring analysis, including cumulative effects analysis, to a regional or local ecosystem scale; improving interagency coordination, including information and resource sharing, and collaboration with state, tribal, and local governments; improving public
participation in decisionmaking; and establishing coordinated monitoring and adaptive
management approaches (Interagency Ecosystem Management Task Force 1995).

However, each federal agency currently has separate jurisdictions and differing missions. This
compartamentalization of missions often yields a division of disciplines within and among
agencies makes it very difficult to establish an ecosystem-based approach. For the most part
agencies are not organized, formally or informally, around an ecosystem model. There has been
little experience in bringing together the necessary components at the agency level for successful
ecosystem approaches, such as expertise, information, technical capabilities, and appropriate
mandates from within and outside the agency. Additionally, the process of developing
interagency, intergovernmental, or public-private relationships to gather information and address
concerns across such boundaries can be initially time-consuming and costly, despite both the
need and the potential for making better and more efficient decisions.

6.4.4.4 Financial and Budgetary Constraints
Since the 1994 Congressional election, the Forest Service and many other federal agencies have
been operating under reduced budgets and staffs. Forest Service budget was reduced by 12
percent and number of personnel was reduced by 14 percent from 1992 to 1995 (USFS 1997b).
Former Forest Service Chief, Jack Ward Thomas (1996) acknowledged that to accomplish
ecosystem management with reduced budgets and significantly fewer people will be a challenge to
all federal land management agencies. Even with a smaller work-force, Forest Service personnel
must be educated to understand ecosystem concepts and principles and how to apply them.
Training modules and courses are being developed to provide the necessary levels of expertise
(Thomas 1996).

Section 611 of the Treasury Postal Appropriations Act of 1994 (PL 103-123) prohibits
interagency financing of “boards, commissions, councils, committees, or similar groups (whether
or not they are interagency entities) which do not have a prior and specific statutory approval to
receive financial support from more than one agency or instrumentality” (107 Stat. 1261). This
requirement could be a significant impediment to agency coordination and cooperation because it
requires each agency either to find a statutory basis for work that is generally accepted to be
within the agency’s scope, or to coordinate with other agencies by some other means
(Interagency Ecosystem Management Task Force 1996). NEPA provides such a statutory basis,
as well as a mandate, for interagency coordination. NEPA also requires agencies to consult with
other agencies and to take their views into account.