3

DESCRIBING THE AFFECTED ENVIRONMENT

PRINCIPLES

- **Use natural boundaries.**
- **Focus on each affected resource, ecosystem, and human community.**

Characterizing the affected environment in a NEPA analysis that addresses cumulative effects requires special attention to defining baseline conditions. These baseline conditions provide the context for evaluating environmental consequences and should include historical cumulative effects to the extent feasible. The description of the affected environment relies heavily on information obtained through the scoping process (Chapter 2) and should include all potentially affected resources, ecosystems, and human communities. Determining the cumulative environmental consequences based on the baseline conditions will be discussed in Chapter 4. The affected environment section serves as a "bridge" between the identification during scoping of cumulative effects that are likely to be important and the analysis of the magnitude and significance of these cumulative effects. Specifically, describing the environment potentially affected by cumulative effects should include the following steps:

Step 5 Characterize the resources, ecosystems, and human communities identified during scoping in terms of their response to change and capacity to withstand stresses.

Step 6 Characterize the stresses affecting these resources, ecosystems, and human communities and their relation to regulatory thresholds.

Step 7 Define a baseline condition for the resources, ecosystems, and human communities.

Describing the affected environment when considering cumulative effects does not differ greatly from describing the affected environment as part of project-specific analyses; however, analyses and supporting data should be extended in terms of geography, time, and the potential for resource or system interactions. In project-specific NEPA analysis, the description of the affected environment is based on a list of resources that may be directly or indirectly affected by the proposed project. In cumulative effects analysis, the analyst must attempt to identify and characterize effects of other actions on these same resources. The affected environment for a cumulative effects analysis, therefore, may require wider geographic boundaries and a broader time frame to consider these actions (see the discussion on bounding cumulative effects analysis in Chapter 2).

COMPONENTS OF THE AFFECTED ENVIRONMENT

To address cumulative effects adequately, the description of the affected environment should contain four types of information:

- data on the **status** of important natural, cultural, social, or economic **resources and systems**;
- data that characterize important environmental or social **stress factors**;
- a description of pertinent **regulations, administrative standards, and development plans**; and
- data on environmental and socioeconomic **trends**.

The analyst should begin by evaluating the existing resources likely to be cumulatively affected, including one or more of the following: soils, geology and geomorphology, climate and rainfall, vegetative cover, fish and wildlife water quality and quantity, recreational uses, cultural resources, and human community structure within the area of expected project effects. The analyst should also review social and economic data (including past and present land uses) closely associated with the status of the resources, ecosystems, and human communities of concern. The description of the affected environment should focus on how the existing conditions of key resources, ecosystems, and human communities have been altered by human activities. This historical context should include important human stress factors and pertinent environmental regulations and standards. Where possible, trends in the condition of resources, ecosystems, and human communities should be identified. The description of the affected environment will not only provide the baseline needed to evaluate environmental consequences, but also it will help identify other actions contributing to cumulative effects. While describing the affected environment, the analyst should pay special attention to common natural resource and socioeconomic issues that arise as a result of cumulative effects. The following list describes many issues but is by no means exhaustive:

Air

- Human health hazards and poor visibility from the cumulative effects of emissions that lower ambient air quality by elevating levels of ozone, particulates, and other pollutants.
- Regional and global atmospheric alterations from cumulative additions of pollutants that contribute to global warming, acidic precipitation, and reduced ultraviolet radiation absorption following stratospheric ozone depletion.

Surface Water

- Water quality degradation from multiple point-source discharges.
- Water quality degradation from land uses that result in nonpoint-source pollution within the watershed.
- Sediment delivery to a stream or estuary from multiple sources of soil erosion caused by road construction, forestry practices, and agriculture.
- Water shortages from unmanaged or unmonitored allocations of the water supply that exceed the capacity of the resource.
- Deterioration of recreational uses from nonpoint-source pollution, competing uses for the water body, and overcrowding.

Ground Water

- Water quality degradation from nonpoint- and multiple-point sources of pollution that infiltrate aquifers.
- Aquifer depletion or salt water intrusion following the overdraught of groundwater for numerous uncoordinated uses.

Lands and Soils

- Diminished land fertility and productivity through chemical leaching and salinization resulting from nonsustainable agricultural practices.
- Soil loss from multiple, uncoordinated activities such as agriculture on excessive gradients, overharvesting in forestry, and highway construction.

Wetlands

- Habitat loss and diminished flood control capacity resulting from dredging and filling individual tracts of wetlands.
- Toxic sediment contamination and reduced wetlands functioning resulting from irrigation and urban runoff.

Ecological Systems

- Habitat fragmentation from the cumulative effects of multiple land clearing activities, including logging, agriculture, and urban development.
- Degradation of sensitive ecosystems (e.g., old growth forests) from incremental stresses of resource extraction, recreation, and second-home development.
- Loss of fish and wildlife populations from the creation of multiple barriers to migration (e.g., dams and highways).

Historic and Archaeological Resources

- Cultural site degradation resulting from streambank erosion, construction, plowing and land leveling, and vandalism.
- Fragmentation of historic districts as a result of uncoordinated development and poor zoning.

Socioeconomics

- Over-burdened social services due to sudden, unplanned population changes as a secondary effect of multiple projects and activities.
- Unstable labor markets resulting from changes in the pool of eligible workers during "boom" and "bust" phases of development.

Human Community Structure

- Disruption of community mobility and access as a result of infrastructure development.
- Change in community dynamics by incremental displacement of critical community members as part of unplanned commercial development projects.
- Loss of neighborhoods or community character, particularly those valued by low-income and minority populations, through incremental development.

The cumulative effects analyst should determine if the resources, ecosystems, and human communities identified during scoping include all that could potentially be affected when cumulative effects are considered. This means reviewing the list of selected resources in terms of their expanded geographic boundaries and time frames. It also requires evaluating the system interactions that may identify additional resources subject to potential cumulative effects. If scoping addresses a limited set of resources and fails to consider those with which they interact, the analyst should evaluate the need to consider additional resources. The analyst should return to the list of resources frequently and be willing to modify it as necessary; furthermore, the analyst should be able to identify and discuss conflicts between the resources (such as competition for regulated instream flows between fishery interests and the whitewater boating community).

Status of Resources, Ecosystems, and Human Communities

Determining the status of the affected environment depends on obtaining data about the resources, ecosystems, and human communities of concern. The availability of information continues to vary, but the number of useful indicators of ecological condition has increased greatly in recent years. In particular, indicators of the health or integrity of biological communities are in widespread use by water resource management agencies (Southerland and Stribling 1995). The concept of "indices of biotic integrity" (Karr et al. 1986; Karr 1991) is a powerful tool for evaluating the cumulative effects on natural systems, because biological communities act as integrators of multiple stresses over time. By using biological indicators in conjunction with reference or minimally affected sites, investigators have described the baseline conditions of entire regions. This approach has been applied to many freshwater and estuarine environments. Figure 3-1 describes the status of benthic communities of estuarine organisms in the Chesapeake Bay (Ranasinghe et al. 1994). This kind of information can be used to describe the baseline conditions at both the site and regional scales.

A second major innovation in indicators of resource or ecosystem condition is the development of landscape metrics. The discipline of landscape ecology recognizes that critical ecological processes such as habitat fragmentation require a set of indicators (e.g., habitat pattern shape, dominance, connectivity, configuration) at the landscape scale (Forman and Godron 1986; Risser et al. 1984). Investigators at the Oak Ridge National Laboratory and elsewhere have developed several indicators that can be used in conjunction with remote sensing and GIS technologies to describe the environmental baseline for sites or regions (O'Neill et al. 1988, 1994). The comprehensive spatial coverage and multiple characterizations over time available from remote sensing make linking these measures to known environmental conditions one of the most promising approaches for assessing status and trends in resources and ecosystems.

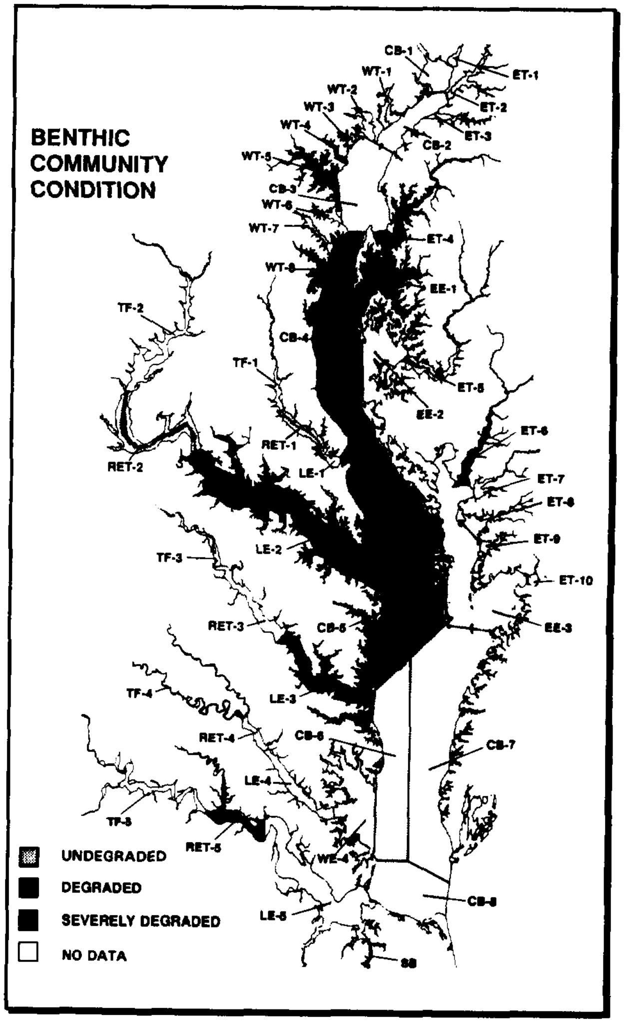

Figure 3-1. Status of benthic communities as a baseline of ecological conditions in the Chesapeake Bay (Ranasinghe et al. 1994)

Indicators have also been developed to gauge the well-being of human communities. Concern about human health and environmental conditions in minority and low-income communities has resulted in directives and guidelines for addressing environmental justice (see box). The structure, or societal setting, of human communities is analogous to the structure of a natural ecosystem. Human communities are integrated entities with characteristic compositions, structures, and functioning. The community profile draws upon indicators of these aspects to describe the integrity of the community (FHWA 1996). Community indicators can range from general variables such as "social service provision" to specific indicators such as "distance to nearest hospital." Indicators can also be composites of different factors. For example, the familiar "quality of life" indicator is an attempt to merge key economic, cultural, and environmental factors into an overall characterization of community well-being.

Environmental Justice

In 1994, President Clinton issued Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requiring federal agencies to adopt strategies to address environmental justice concerns within the context of agency operations. In an accompanying memorandum, the President emphasizes that existing laws, including NEPA, provide opportunities for federal agencies to address this issue. The U.S. EPA has stated that addressing environmental justice concerns is entirely consistent with NEPA and that disproportionately high and adverse human health or environmental effects on minority or low-income populations should be analyzed with the same tools currently intrinsic to the NEPA process. Specifically, the analysis should focus on smaller areas or communities within the affected area to identify significant effects that may otherwise have been diluted by an examination of a larger population or area. Demographic, geographic, economic, and human health and risk factors all contribute to whether the populations of concern face disproportionately high and adverse effects. Public involvement is particularly important for identifying the aspects of minority and low-income communities that need to be addressed. Early and sustained communications with the affected community throughout the NEPA process is an essential aspect of environmental justice.

Characterization of Stress Factors

Environmental impact assessment is an attempt to characterize the relationship between human activities and the resultant environmental and social effects; therefore, the next step in describing the affected environment is to compile data on stress factors pertaining to each resource, ecosystem, and human community. Table 3-1 lists 26 activities (both existing and proposed), in addition to the proposed action, that may cumulatively affect resources of concern for the Castle Mountain Mining Project (U.S. BLM 1990). For each activity in this example, anticipated cumulative effects are identified for each of 12 resource issues. The primary locations of expected effects are also listed. The analyst should use this kind of stress information to summarize the overall adverse effect on the environment. Analogously, other activities that benefit the environment (e.g., restoration projects) should be included to determine the overall net (adverse or beneficial) effect on the environment. Where activities contributing to cumulative effects are less well defined, a general stress level can be described. For instance, the affected environment discussion need not address every farm in the watershed, but it should note the presence of substantial agricultural activity.

Two types of information should be used to describe stress factors contributing to cumulative effects. First, the analyst should identify the types, distribution, and intensity of key social and economic activities within the region. Data on these socioeconomic "driving variables" can identify cumulative effects problems in the project area (McCabe et al. 1991). For example, population growth is strongly associated with habitat loss. A federal proposal that would contribute to substantial population growth in a specific region (e.g., a highway project traversing a remote area) should be viewed as a likely driving variable for environmental effects.

Table 3-1. Other activities (existing and proposed) that may cumulatively affect resources of concern for the Castle Mountain Mining Project (U.S. BLM 1990)

Description/Responsible Agency	Status	Anticipated Environmental Issues That Could Be Cumulative	Primary Impact Location
Utilities/Services			
1 AT&T Communication cable upgrading (BLMN)	E,P	4,1	IV
2 PacBell microwave sites (BLMN)	E,P	4,1	IV
3 Bio Gen power plant (SBC)	E	2	IV
4 Additional utility lines (1-15 corridor) (BLMN)	P	4,4	IV
5 Whiskey Pete's airstrip/waterline (BLMN)	P	4	IV
6 Solid waste landfill (UP Tracks near state line) (BLMN)	P	4,12	IV
7 Waste water ponds (Ivanpah Lake) (BLMN)	E	4,9	IV
8 Nipton waste site (BLMN)	P	4,9	IV
9 LA-Las Vegas bullet train (BLMN)	P	4,9,10	IV
Commercial and Residential			
10 Nipton land exchange (BLMN)	P	4,6,12	IV
11 Scattered residential units (BLMN)	E,P	--	LV
Recreation			
12 Ivanpah Lake landsailing (BLMN)	E	4,5,10	IV
13 Barstow to Vegas ORV race (BLMN)	E	4,5,10	IV
14 East Mojave Heritage Trail use (BLMN)	E	4,5,10	IV,LV,PV
15 Mojave Road use (BLMN)	E	4,5,10	IV,LV,PV
16 Clark Country Road A68P use (BLMS,CC)	E	4,5,10	PV
Mining			
17 Proposed Action/Alternative - precious metals (BLMN)	P	3,4,5,8,9	LV
18 Colosseum Mine - precious metals (BLMN)	E	3,4,5,8,9	IV
19 Caltrans borrow pits - aggregates (BLMN)	E	4,5	IV
20 Morning Star Mine - precious metals (BLMN)	E	3,4,5,8,9	IV
21 Vanderbilt - precious metals mill site (BLMN)	E	3,4,5,8,9	IV
22 Golden Quail Mine - precious metals (BLMN)	E	3,4,5,8,9	LV
23 Hart District Clay Pits (BLMN)	E	4,9	LV
24 Mountain Pass Mine - rare earth materials (BLMN)	E	3,4,5,8,9	IV
25 Exploratory activities (BLMN, BLMS)	E,P	4,5,9	LV,PV
Grazing			
26 Grazing leases (BLMN, BLMS)	E	4,5	IV,V,PV
Source of Information BLMN: BLM Needles BLMS: BLM Stateline SBC: San Bernardino County. Planning Department CC: Clark County. Planning Department	Status E: Existing P: Proposed	Issues 1 Earth 2 Air 3 Water 4 Wildlife 5 Vegetation 6 Transportation 7 Public Service/Utilities 8 Health/Safety 9 Visual Resources 10 Recreation 11 Cultural Resources 12 Land Use	Location PV: Piute Valley IV: Ivanpah Valley LV: Lanfair Valley

Second, the analyst should look for individual indicators of stress on specific resources, ecosystems, and human communities. Like the familiar "canary in the coal mine," changes in certain resources can serve as an early warning of impending environmental or social degradation (Reid et al. 1991). Indicators of environmental stress can be either exposure-oriented (e.g., contamination levels) or effects-oriented (e.g., loss or degradation of a fishery). High sediment loads and the loss of stable stream banks are both common indicators of cumulative effects from urbanization.

The goal of characterizing stresses is to determine whether the resources, ecosystems, and human communities of concern are approaching conditions where additional stresses will have an important cumulative effect. Simple maps (Figure 3-2) of existing and planned activities can indicate likely cumulative effects, as in the example of Seattle's Southwest Harbor (USACE et al. 1994). Regulatory, administrative, and planning information can also help define the condition of the region and the development pressures occurring within it. Lastly, trends analysis of change in the extent and magnitude of stresses is critical for projecting the future cumulative effect.

Regulations, Administrative Standards, and Regional Plans

Government regulations and administrative standards (e.g., air and water quality criteria) can play an important role in characterizing the regional landscape. They often influence developmental activity and the resultant cumulative stress on resources, ecosystems, and human communities. They also shape the manner in which a project may be operated, the amount of air or water emissions that can be released, and the limits on resource harvesting or extraction. For example, designation of a "Class I" air quality area can restrict some types of development in a region because the Prevention of Significant Deterioration (PSD) requirement establishes a threshold of cumulative air quality degradation.

In the United States, agencies at many different levels of government share responsibilities for resource use and environmental protection. In general, the federal government is charged with functions such as national standard-setting, whereas state governments manage implementation by issuing permits and monitoring compliance with regulatory standards. Each of the states handles environmental regulation and resource management in its own way. Most states have chartered specific agencies for environmental protection, resource management, or both. This information, along with contact names, can be obtained from the Council of State Governments (Brown and Marshall 1993). States usually have discretion under federal law to set standards more stringent than national ones. Land-use decisions are usually made by local governments. Local control may take the form of authority to adopt comprehensive land use plans; to enact zoning ordinances and subdivision regulations; or to restrict shoreline, floodplain, and wetland development. Data on local government issues and programs can be obtained through relevant local government agencies.

The affected environment section of a NEPA analysis should include as many regulations, criteria, and plans as are relevant to the cumulative effects problems at hand. Federal, state, and local resource and comprehensive plans guiding development activities should be reviewed and, where relevant, used to complete characterization of the affected environment. Agencies' future actions and plans pertaining to the identified resources of concern should be included if they are based on authorized plans or permits issued by a federal, state, or other governmental agency; highly speculative actions should not be included. Agency or regional planning documents can provide the analyst with a reasonable projection of future activities and their modes of operation. How project effects fit within the goals of governmental regulations and planning is an important measure of cumulative effects on the resources, ecosystems, and human communities of the region.

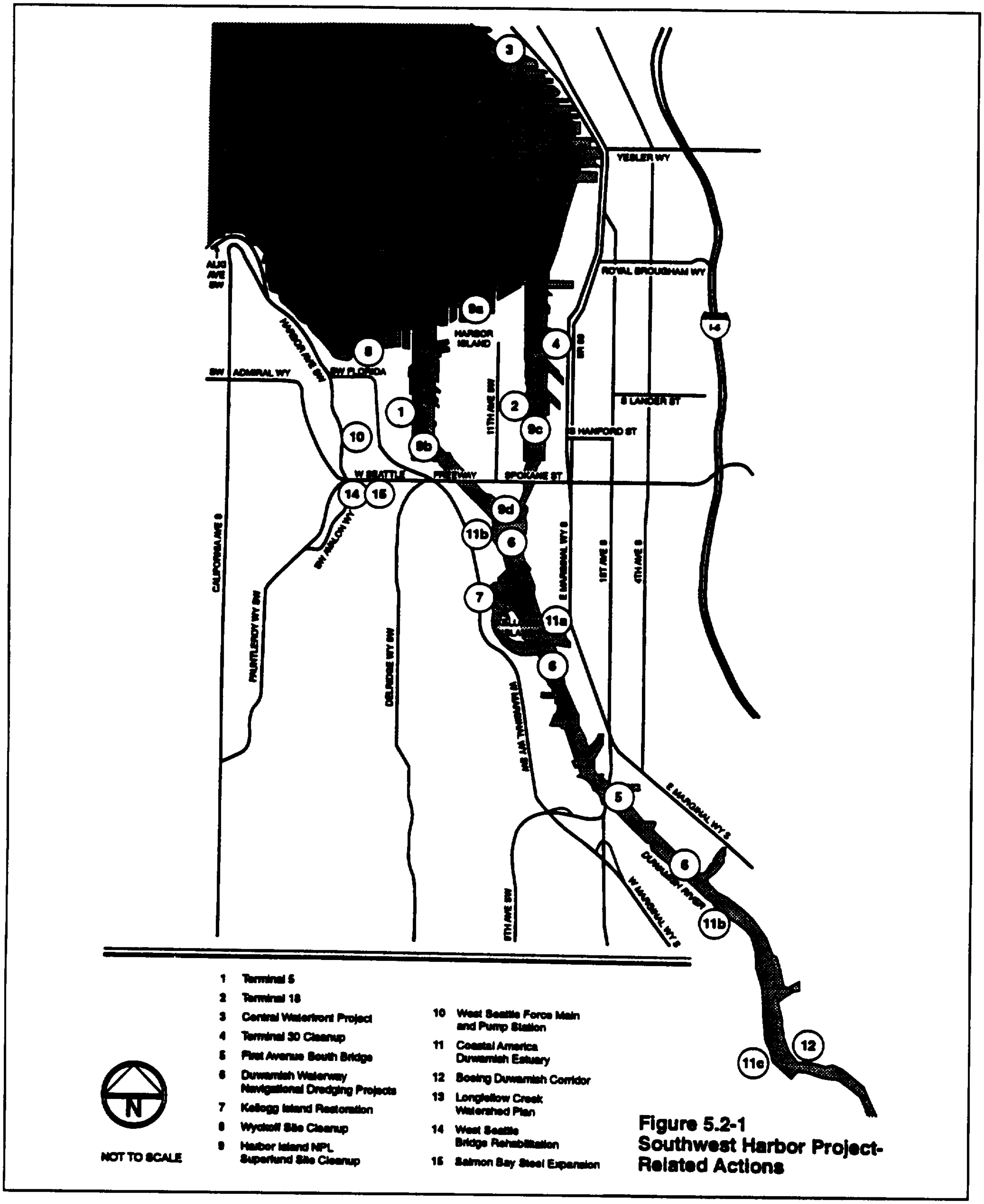

Figure 3-2. Regional map of projects and activities contributing to cumulative effects in Seattle's Southwest Harbor (USACE et al. 1994)

Trends

Cumulative effects occur through the accumulation of effects over varying periods of time. For this reason, an understanding of the historical context of effects is critical to assessing the direct, indirect, and cumulative effects of proposed actions. Trends data can be used in three ways: (1) to establish the baseline for the affected environment more accurately (i.e., by incorporating variation over time), (2) to evaluate the significance of effects relative to historical degradation (i.e., by helping to estimate how close the resource is to a threshold of degradation), and (3) to predict the effects of the action (i.e., by using the model of cause and effects established by past actions).

The ability to identify trends in conditions of resources or in human activities depends on available data. Although data on existing conditions can sometimes be obtained for cumulative effects analysis, analysts can rarely go back in time to collect data (in some cases, lake sediment cores or archaeological excavations can reconstruct relevant historical conditions). Improved technologies for cost-effectively accessing and analyzing data that have been collected in the recent past, however, have been developed. Historical photographs and remotely sensed satellite information can be efficiently analyzed on geographic information systems to reveal trends. The analyst may use these tools to characterize the condition of a resource before contemporary human influences, or the condition at the period when resource degradation was first identified. As shown in Figure 3-3, remote sensing imagery was used to record the change in the condition of the Jemez Mountains, New Mexico (Allen 1994). The 1935 map (left) shows the location of railroads, dirt roads, and primitive roads in the landscape surrounding the Bandelier National Monument. By 1981 (right) the increase in roads and the appearance of several townsites is striking.

This 12-fold increase in total road length is an effective measure of cumulative environmental degradation resulting from the accompanying fire suppression, motorized disturbance of wildlife, creation of habitat edge in forest interiors, and introduction of weedy species along road corridors. The U.S. Forest Service has been using this landscape-scale GIS and remotely sensed information in planning efforts for the Bandelier's headwaters area to ensure that desired forest conditions are maintained (e.g., area and distribution of old growth and densities of snags).

OBTAINING DATA FOR CUMULATIVE EFFECTS ANALYSIS

Obtaining information on cumulative effects issues is often the biggest challenge for the analyst. Gathering data can be expensive and time consuming. Analysts should identify which data are needed for their specific purpose and which are readily available. In some cases, federal agencies or the project proponent will have adequate data; in other cases, local or regional planning agencies may be the best source of information. Public involvement can often direct the analyst to useful information or, itself, serve as an invaluable source of information, especially about the societal setting, which is critical for evaluating effects on human communities. In any case, when information is not available from traditional sources, analysts must be resourceful in seeking alternative sources. Table 3-2 lists some of the possible types and sources of information that may be of use for cumulative effects analysis.

Although most information needed to describe the affected environment must be obtained from regional and local sources, several national data centers are important. Census Bureau publications and statistical abstracts are commonly used for addressing demographic, housing, and general socioeconomic issues, as are several commercial business databases. Currently, an extensive inventory of environmental data coordinated by

The Nature Conservancy through state Natural Heritage Programs (NHPs) and Conservation Data Centers (CDCs) provides the most comprehensive information available about the abundance and distribution of rare species and communities (Jenkins 1988). NHPs and CDCs are continually updated, computer-assisted inventories of the biological and ecological features (i.e., biodiversity elements) of the region in which they are located. These data centers are designed to assist in conservation planning, natural resource management, and environmental impact assessment. Another promising source of data is the U.S. Geological Survey's Biological Resources Division, created by the consolidation of biological research, inventory and monitoring, and information transfer programs of seven Department of Interior bureaus. The mission of the Division is to gather, analyze, and disseminate the biological information necessary to support sound management of the nation's resources. The U.S. Geological Survey itself was originally created in response to the demands of industry and conservationists for accurate baseline data. Although substantial information can already be obtained from USGS, the implementation of the National Biodiversity Information Infrastructure (NAS 1993) may provide even greater access to comprehensive biological data.

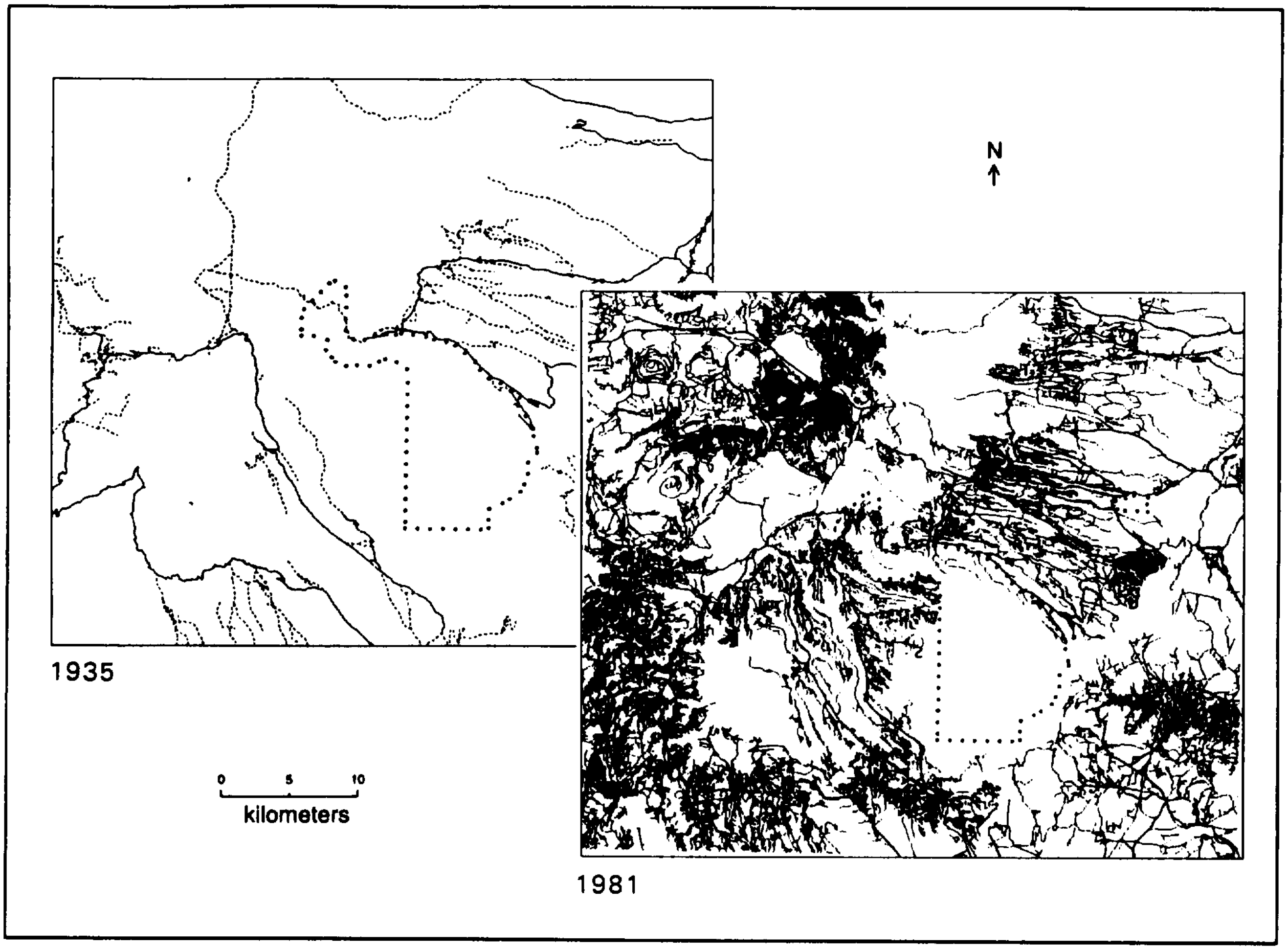

Figure 3-3. Remote sensing imagery illustrating the cumulative increase in roads between 1935 and 1981 across the same 187,858 ha of the Jemez Mountains, New Mexico. The crosshatched line is a railroad; the solid lines are dirt roads; the thin dashed lines are primitive roads' and dotted lines show the current boundary of Bandelier National Monument (Allen 1994).

Table 3-2. Possible sources of existing data for cumulative effects analysis	
Individuals	▪ former and present landholders ▪ long-time residents ▪ long-time resource users ▪ long-time resource managers
Historical societies	Local, state, and regional societies provide: ▪ personal journals ▪ photos ▪ newspapers ▪ individual contacts
Schools and universities	▪ central libraries ▪ natural history or cultural resources collections or museums ▪ field stations ▪ faculty in history and natural and social sciences
Other collections	Private, city, state, or federal collections in : ▪ archaeology ▪ botany ▪ zoology ▪ natural history
Natural history surveys	▪ private ▪ state ▪ national
Private organizations	▪ land preservation ▪ habitat preservation ▪ conservation ▪ cultural resources history ▪ religious institutions ▪ chambers of commerce ▪ voluntary neighborhood organizations
Government agencies	▪ local park districts ▪ local planning agencies ▪ local records-keeping agencies ▪ state and federal land management agencies ▪ state and federal fish, wildlife, and conservation agencies ▪ state and federal regulatory agencies ▪ state planning agencies ▪ state and federal records-keeping agencies ▪ state and federal surveys ▪ state and federal agricultural and forestry agencies ▪ state historic preservation offices ▪ Indian tribal government planning, natural resource, and cultural resource offices
Project proponent	▪ project plans and supporting environmental documentation

Although federal data sources are critical for compiling baseline data, they have substantial limitations. For the most part, federal environmental data programs have evolved to support a specific agency's missions. They are not designed to capture the interconnections among environmental variables or generate information needed for analyses that cut across sectorial and disciplinary lines. The fact that federal databases are often generated by monitoring programs designed to track progress in meeting regulatory goals further inhibits integration of data (Irwin and Rodes 1992). The only comprehensive effort to develop estimates of baseline ecological conditions across the United States has been the Environmental Monitoring and Assessment Program (EMAP). EMAP has successfully developed indicators for many resources and has applied them in regional demonstration programs to provide statistically rigorous estimates of the condition of ecosystems. Fully implemented, this program would be invaluable for analyzing cumulative effects (see box).

Defining Baseline Ecological Conditions Through EMAP

Over the last decade, EPA has led a multiagency effort to assess the condition of the nation's ecological resources (Messer et al. 1991). The Environmental Monitoring and Assessment Program (EMAP)'s goal is to identify the extent and magnitude of environmental problems on regional and national scales and to provide information that policy makers, scientists, and the public need to evaluate the success of environmental policies and programs (Thornton et al. 1994). EMAP has developed a scientifically rigorous monitoring design (Overton et al. 1990) within which appropriate indicators (Barber 1994) can be sampled to provide the types of information required to address these questions. EMAP has successfully field tested many of the indicators, sampling protocols, and assessment methods required to evaluate the condition of individual ecological resources (Larsen and Christie 1993; Summers et al. 1993; Weisberg et al. 1993; Lewis and Conkling 1994). Although estimates of the condition of certain resources have been developed for certain regions, EMAP has not yet been implemented on a large scale.

EMAP differs from other monitoring programs in the following ways:

- EMAP focuses on assessing ecological condition by measuring biological indicators. Biological indicators provide integrated measures of response to natural and human-induced stress that cannot be obtained from traditional chemical and physical indicators of environmental stresses such as pollutants and habitat modification. The program maintains a core set of indicators that are implemented nationally with uniform methodology and quality control.
- EMAP uses a statistically rigorous sampling design. By measuring indicators within a network of probability samples rather than from sites selected using subjective criteria, EMAP produces unbiased estimates of the status of and changes in indicators of ecological condition with known confidence.
- EMAP takes an ecosystem-oriented approach to monitoring by sampling several ecological resources. EMAP maintains monitoring efforts in agricultural lands, rangelands, forests, estuaries, and surface waters (i.e., lakes and streams). It also maintains cross-cutting activities in landscape characterization, indicator development, and atmospheric deposition.

These attributes make EMAP uniquely suited to addressing cumulative effects. Where regional estimates of ecological condition have been developed, they can be used as baseline conditions for evaluating the effects of new projects. Although EMAP monitoring is currently limited to a few regions of the country, the EMAP approach is being applied to state monitoring efforts that will establish baseline conditions (see Southerland and Weisberg 1995 for application to Maryland streams).

AFFECTED ENVIRONMENT SUMMARY

The description of the affected environment helps the decisionmaker understand the current conditions and the historical context of the important resources, ecosystems, and human communities. The analyst uses this phase of the NEPA process to characterize the region and determine the methodological complexity required to adequately address cumulative effects. In describing the affected environment, the cumulative effects analyst should

- identify common cumulative effects issues within the region;
- characterize the current status of the resources, ecosystems, and human communities identified during scoping;
- identify socioeconomic driving variables and indicators of stress on these resources;

- characterize the regional landscape in terms of historical and planned development and the constraints of governmental regulations and standards; and
- define a baseline condition for the resources using historical trends.

The affected environment section should include data on resources, ecosystems, and human communities; environmental and socioeconomic stress factors; governmental regulations, standards, and plans; and environmental and social trends. This information will provide the analyst with the baseline and historical context needed to evaluate the environmental consequences of cumulative effects (Chapter 4).