

## 2. WHAT EPA NEEDS FROM APPLICANTS

### Issues which are important to EPA's environmental assessment

Many textbooks require hundreds of pages to explain all the issues and information which may be useful to an EA (see references at the end of this Handbook for some examples). This brief Handbook cannot provide EID preparers with such a comprehensive list of EA components. Instead, the emphasis is on pointing out important ideas and concepts which are at the heart of a good environmental assessment. The lists which are provided here are not the fill-in-the-blank type, but outlines intended to help the EID preparer think through the important issues of a project.

Table 2-1 is the first such list, and the starting point for the lists which follow. The table provides an overview of NEPA issues, by identifying the types of environmental changes which commonly occur as a result of projects. In effect, Table 2-1 is a checklist of impacts. However, most such checklists are organized by environmental subject - air impacts, water impacts, health impacts etc. Table 2-1 takes a different approach, and organizes the discussion according to where and how an impact occurs (e.g. site impacts, neighborhood impacts, resource uses, waste products).

### Six types of information in an EID

To address issues such as those listed in Table 2-1, EPA evaluates six major types of information about a project. Each type of information is discussed in subsequent parts of Chapter 2.

- An effective description of the project, with an emphasis on project features which cause environmental changes, and with alternatives to those features.
- A concise description of the environmental setting where the project takes place, with an emphasis on resources which are highly valued, very sensitive to change and/or certain to be affected by the project.

- Evidence that the project has been located and designed, and will be built and operated, to reasonably minimize adverse environmental changes and to improve environmental benefits. This can be shown through comparison of plausible alternatives about the project location and/or process, by presentation of measures considered and adopted to monitor and mitigate (reduce) adverse effects, and/or by measures which address pollution prevention (e.g. improved technologies; recycling).
- The Applicant's own assessment of environmental changes or impacts.
- Discussion of cumulative environmental effects which result from interaction of the project with other activities in the same neighborhood, same watershed, same airshed, or same economic region.
- Documentation that necessary coordination regarding special resources have taken place with certain Federal and state agencies (e.g. Corps of Engineers, U.S. Fish and Wildlife Service, State Historic Preservation Officer, Natural Resources Conservation Service, Federal Emergency Management Agency, and others).

### Project description

In order to prepare its environmental assessment, EPA needs to thoroughly understand the ways in which a proposed project will interact with project surroundings. There are two broad categories of information in a good project description. First, there are basic project data - facts which characterize the project as to purpose, location, facilities, schedule and so forth. Second, there is information specific to the impact-generating activities of a project - the features of project construction and operation which have the potential to cause environmental changes of the type listed in Table 2-1.

A checklist for project descriptions is provided in Table 2-2; it is divided into the two categories listed above. EPA does not expect nor want the EID to contain an annotated copy of this checklist; rather, ***the EID preparer should combine the checklist with the preparer's own experience and expertise to provide EPA with information which is relevant to assessing the environmental consequences of their project.*** For many projects, some items on the

checklist will not apply; information on a "non-issue" need not be provided. For other projects, the checklist will turn out to be incomplete: information on all issues of plausible environmental concern must be provided.

A common failing in EIDs is for the preparer to ignore a project feature which has the potential to cause an impact, on the belief that project control measures make the impact inconsequential. The law requires EPA to make the determination of significance. Therefore, it is important that those who prepare an EID identify any project feature which could cause an environmental change or effect.

- As an example, consider a mine at which blasting is conducted within regulatory limits, with full safety precautions and a pre-mining survey of near-by homes. Even with these considerations, the EID must identify blasting as a project activity. EPA will assess the EID information on blasting in reaching its own conclusion with respect to impacts.
- As a second example, consider a swine rearing facility; emissions of airborne pathogens are a possible effect. It may be that the facility has excellent control facilities which make this effect highly unlikely; and/or that the Applicant believes the issue to be exaggerated by persons who oppose the project, and not worthy of serious consideration. However, the law requires EPA to reach its own judgment about the significance of any impact. For this example, the role of the EID is to describe the source of this particular public health risk, what has been done to minimize the risk, and any other objective facts which bear on evaluation of the risk.

Most EIDs describe a single project, as it is being proposed. However, alternatives to the project which were considered during project planning also should be identified in the project description. These alternatives may relate to the location of the project, the processes used, and/or the means for handling waste materials. Procedures used to identify potentially significant adverse impacts should be identified, along with how the project was modified to reduce these impacts.

The "No Action" alternative must be discussed. "No Action" means only that the Applicant's activity will not occur. Environmental impacts caused by existing activities, or by other activities which are expected to occur in an area, are included as part of the No Action alternative.

### Environmental setting

EIDs should provide a relatively concise discussion of the environmental setting which occurs at the project site and nearby areas (including areas downstream). EIDs should not provide lengthy discussions of environmental conditions which won't be changed by the project; nor long lists of "possibly occurring" plant and animal species,

The best EIDs often use a landscape or ecological approach in presenting environmental information; this approach is discussed in more detail in Chapter 3 of the Handbook. Organizing the environmental discussion around major landscape features usually results in a more concise and scientifically useful presentation. For example, riparian environments are a unique part of the setting for many projects. Thus, while the EID may contain separate sections on landforms, soils, hydrology, vegetation, wildlife etc., within each section it is useful to clearly distinguish riparian resources from other environments. The same statement can be made for other environmental settings, such as water bodies, floodplains, hillsides, etc.

The literature contains numerous checklists or outlines for sections on environmental setting, and no one such outline will apply to all EIDs. For this Handbook, Table 2-3 provides an overview of subjects which may be important to EIDs which are submitted to EPA Region 6; the table deliberately does not use an outline format, because it is not intended as any sort of suggested or mandatory checklist. The Table should be used only as a starting point for the environmental setting component of an EID. Subjects which are not critical to a particular project need not be discussed, even if they are in the table; and subjects which are critical to the project must be discussed, even if they are not in the table.

### Environmental protection measures

This Handbook does not contain a checklist of environmental protection measures as such, but presents them in narrative format below. The measures include alternatives, mitigation and pollution prevention.

One of the most important results of NEPA is that it has encouraged Federal agencies (and by extension, others) to evaluate different project

alternatives in terms of their relative environmental impacts. In some cases, actions which could have caused significant impacts are not done at all. Often, the result is the selection of the least damaging (or a less damaging) location, process or operational plan.

A second way to minimize impacts is through mitigation measures. These measures can include:

- avoidance of impacts, such as by relocating a project site to avoid an area of sensitive wetlands;
- minimization of impacts, as by scaling down the project site, or using advanced equipment or procedures to directly control impacts - such as measures to reduce air emissions, treat wastewater before discharge, muffle sound levels, etc.;
- activities which preserve special resources, or maintain project features in ways which reduce or eliminate impacts over time;
- restoration of damaged environmental areas after the project is completed;
- replacement of resources or replacement of damaged areas with new, equivalent areas which effectively compensate for some or all of the lost resources.

It does not count as mitigation to trade the benefits of a project against its impacts. For example, jobs that a project creates do not mitigate for loss of wetlands. Or, as another example, if a new reservoir will have significant impacts because it will drown out a valuable river corridor and its fish and wildlife habitat, those impacts do not become insignificant simply because the reservoir also creates new habitats in a lake.

A special category of mitigation is monitoring. Monitoring may be done as part of a regulatory requirement, or on a voluntary basis. It is a mitigation tool if monitoring results will be used to adjust and fine tune project operations so that impacts will be reduced. The EID should identify all monitoring measures which are proposed, and how the results will be applied to increase

environmental protection. For example, will ground water monitoring wells be provided; and if so, what "trigger" levels of contamination will be considered, and what will be done when those levels are reached?

Pollution prevention is a third basic method of environmental protection which involves designing and operating a project so that it has less potential to cause environmental changes - in effect, mitigation before the fact. Pollution prevention leads to projects which are efficient in their use of energy and resources, and which generate fewer and less toxic emissions to the air, water and soil. One common method of pollution prevention is to reuse waste products; another is for the project itself to use processes which require less toxic materials in the first place. The technique of Life Cycle Analysis is sometimes used to support pollution prevention, and provides an assessment of resource requirements and waste generation for all activities associated with a particular product or activity -- "cradle to grave"; see reference to SETAC (1991).

As noted in Chapter 1, mitigation and pollution control measures are an important consideration in EPA's Finding of No Significant Impact, or its recommendation to prepare an Environmental Impact Statement. It is important to this consideration that EPA have confidence that any proposed measures will be implemented and will be effective in avoiding or reducing adverse effects to the point that the impacts are not significant.

Of particular importance is evidence that alternatives, mitigation measures and/or pollution prevention were considered early in project planning, and that decisions were made based on sound principles of environmental management. For example, a FNSI is more likely if wetlands at a project site were identified early, and avoided, than if a project was designed without consideration of wetlands impacts and there are last-minute attempts to deal with such impacts.

### Environmental impacts

EPA is ultimately responsible for the assessment of environmental impacts. Nonetheless, it expects the EID to include the Applicants' assessment of impacts. This assessment should demonstrate that a good effort has been made to consider environmental effects in project planning; and it should point EPA to any special environmental issues which arise because of a particular project, or the setting in which the project is located.

Ideally, the identification and quantification of impacts is done by an interdisciplinary team of environmental professionals which considers how project features interact with environmental resources to produce environmental changes:

$$\begin{array}{ccccc} \text{PROJECT} & + & \text{SETTING} & = & \text{IMPACTS} \\ (\text{Table 2-2}) & & (\text{TABLE 2-3}) & & (\text{TABLE 2-1}) \end{array}$$

The interdisciplinary team predicts impacts based on established principles of environmental science and the best available data. Because each project and project setting are different, the impact evaluation of each project is different; no one listing can be provided which anticipates the full spectrum of possibilities. But, in general terms, the evaluation of environmental impacts is in the form of cause-effect statements: predictions, based on experience, that the project will or may directly or indirectly cause a particular environmental response.

Most such cause-effect relationships involve 'projects which: 1) modify the structure of the environment; 2) alter the processes which are responsible for the flow of energy and materials in the environment; 3) release energy and material into the environment; or 4) otherwise change the way the environment functions to support life or to provide pleasing surroundings. Cause-effect relationships typically have both time and space dimensions: impacts vary with location and over time.

Appendix C of this Handbook is a checklist of subjects for possible inclusion in an EID. Topics identified in the Appendix include project features, resource categories and impact types which may need to be discussed in order to assess a particular project. An EID preparer could review the Appendix and check the various entries to see if they belong in the EID. While not every possible subject is included in the Appendix (and project-specific geography is excluded), the list in Appendix C is extensive enough to help improve the coverage of almost any EID.

of course, the fact that a subject is listed in Appendix C does not mean it must be included in each EID. For example, terms like "odor" are included in the list. An EID about dairies would need to discuss odor sources but one about a coal mine would not (unless the mine is, for some reason, a source of odor problems).

In short, subjects which aren't critical to a particular project need not be included in an EID just because they are in Appendix C; and subjects which are critical to the project must be discussed, even if they are not on the checklist.

### Cumulative effects

Cumulative effects are those that are additive (the combined impacts of two or more activities), synergistic (impacts from multiple activities which are greater than the sum of the impacts of the individual activities), or interactive (two activities interacting to cause a third type of impact). Where there are multiple facilities, cumulative effects are possible and usually do occur. This is most likely when the facilities are similar in character, but it also happens when facilities of one type interact with those of another type; for example, feedlots can combine with farming to cause cumulative impacts.

Geographical boundaries may limit the extent of cumulative effects; for example, water-resource impacts usually occur within a particular watershed or aquifer. Within such boundaries, EPA's review of other activities typically extends to a 10-mile radius, though larger areas can be considered when case specific evidence indicates the need.

Few of the EIDs which are submitted to EPA Region 6 provide an effective discussion of cumulative effects. This situation will be improved if those who prepare EIDs give careful thought to ways in which the environment is already changing, or ways in which it may change, because of other existing and reasonably foreseeable projects. This means that impacts are not judged only on what the current environmental setting is, but on what that setting will be in the future as other developments mature.

Consider the example of a land application site in which there is a carefully constructed nutrient balance which minimizes the addition of nitrate to the local ground water. Even with the best system, some nitrate loading of an aquifer is likely to occur following heavy rains. By itself, one such project might not cause nitrates to exceed drinking water standards. But if other projects (farm fertilizers, wastewater lagoons, other feedlots) also contribute nitrogen to the same ground water, the cumulative effect may result in adverse effects to water quality.

For the above example, cumulative effects are assessed by: 1) evaluating background data on water quality to see if a potential problem is already evident; 2) identifying potential sources which discharge the same kinds of contaminants as the project being evaluated; and 3) mapping the flow of ground water to determine which of the projects are part of the same flow system. If the assessment suggested that nitrates might exceed the drinking water standard (10 mg/l as N), then it might be prudent to relocate the project; go to a more protective land application system; or, at a minimum, install monitoring wells up gradient and down gradient on the site, to ensure that there is no incremental pollution.

Different impacts could require different approaches. However, in all cases the basic strategy is to not consider a project as an isolated part of the environment. One measure of cumulative effects is whether the project is "sustainable": can it maintain a specified level of productivity indefinitely, with a minimal level of management. Most projects are not sustainable, and the reasons why may reflect impacts which belong in the cumulative category. Other impact measures which may suggest cumulative effects include: "irrevocable use of resource"; "permanent change in environmental condition"; and "precedent".

### Coordination

Federal laws require that agencies other than EPA review certain environmental impacts of projects. For some impacts - especially to wetlands, historic/archeological sites, and threatened/endangered species - EPA is mandated to undertake coordination prior to reaching its decision on the NPDES permit. An example is that EPA cannot complete its environmental evaluation,

unless and until the State Historic Preservation Office has been consulted regarding archeological and historical sites which may occur within the project site.

For projects which involve an EID, EPA expects the project sponsor to initiate all necessary coordination with Federal agencies, and to complete the coordination to the extent possible. The first step in this process is to identify the different kinds of resources for which coordination may be required, and to contact the appropriate agency/office to determine whether or not the environmental resource is present at or near the project site and could therefore be impacted.

Table 2-4 identifies the most common coordination requirements imposed by Federal laws and outlines key elements of the coordination process. Resources discussed in the table are:

- cultural resources
- threatened and endangered species
- construction in a waterway
- wetlands
- floodplains
- prime agricultural farmlands
- air quality
- other permits/approvals
- coastal zone areas
- coastal barriers
- National Natural Landmarks
- Wild and Scenic Rivers
- other

The most recent addresses and contact points for each identified agency are provided in Appendix D. Any list like that in Appendix D is likely to become out of date rather quickly, but hopefully the Appendix will be a useful starting point for EID preparers. Note that the Appendix concentrates on agencies which are contacted most routinely; , agencies from the "other" category in Table 2-4 are not included. Note also that the appendices to CEQ's NEPA regulations contain extensive information about Federal and State agencies with jurisdiction and/or expertise on environmental regulations.

If there is a potential for one of the above resource impacts to occur, applicants should involve EPA in the coordination process up-front, rather than at the end. Table 2-4 helps identify some of the situations which are most likely to require these kinds of special studies or early- EPA involvement. Contact points at EPA were provided in Chapter 1 of this Handbook.

Note that while Table 2-4 lists the environmental coordination efforts which are most commonly required by Federal law, project sponsors and their consultants may benefit from additional coordination with agencies and groups which have an interest in an area. This may include wildlife agencies (other than those responsible for threatened and endangered species), local governments, Councils of Governments, water districts, river authorities, agricultural extension agents, university research institutes, and others who have information on environmental resources, issues and management programs.

If the result of the coordination determines that the feature is not present, or for some other reason would not be effected by the project, the coordination requirements usually are over. But if impacts may occur, the agency being contacted will usually provide specific requirements to be met in order to satisfy Federal law. Such requirements often include site investigations and design of mitigation measures, and must be determined and clarified through discussions with the appropriate agency and/or with EPA.

The role of the EID is to document the coordination so that EPA can make an independent determination whether its NEPA obligations have been satisfied. The EID must contain a clear explanation of the consultation process and the results of the process; and, for at least some resources, it should contain written documentation from the Federal and other agencies which were consulted (see list of documents, Chapter 3).

It is not uncommon for EIDs and NPDES permits to be delayed because one or more of the required consultations was not initiated or accomplished by an applicant and, therefore, had to be completed by EPA; or because the applicant's resolution of the issue did not satisfy EPA's obligations under Federal law. Therefore, it is important that applicants undertake the necessary agency coordination as early as possible, so that if any site surveys or special studies are required, they can be completed prior to submittal of the EID (or, at a minimum, prior to EPA's completion of its Environmental Assessment).