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Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

Dear Citizen Concerned with Environmental Justice:

Thank you for your comments and input during development of the EPA/NEPA Environmental Justice Guidance. Your assistance was essential in our efforts to produce this document.

This guidance is designed to assist EPA staff responsible for developing compliance documentation, including Environmental Impact Statements and Environmental Assessments, with incorporating environmental justice issues into EPA's NEPA compliance process. It defines common environmental justice terms, illustrates the relevance of environmental justice in environmental analyses, presents methods for communication with the affected population throughout the NEPA process, and introduces environmental justice as a primary consideration in the NEPA process.

We are pleased to provide this final guidance to you and hope that you find it useful and responsive to your comments. We believe it adheres to the spirit of Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations."

Sincerely,

Richard E. Sanderson
Director,
Office of Federal Activities

GUIDANCE
FOR
INCORPORATING ENVIRONMENTAL JUSTICE CONCERNS
IN
EPA'S NEPA COMPLIANCE ANALYSES

April 1998

U.S. Environmental Protection Agency
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DISCLAIMER AND ACKNOWLEDGMENTS

The mention of company or product names is not to be considered an endorsement by the U.S. Government or by the Environmental Protection Agency. With the technical assistance of Science Applications International Corporation (SAIC), this document was prepared in partial fulfillment of EPA Contract 68-WE-0026, Work Assignment 72-IV.

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This guidance is intended to improve the internal management of EPA with respect to environmental justice under NEPA. It will not be deemed to create any right, benefit or trust obligation either substantive or procedural, enforceable by any person, or entity in any court against the agency, its officers, or any other person. Compliance with this guidance will not be justiciable in any proceeding for judicial review of agency action.

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1.0 PURPOSE

On February 11, 1994, President Clinton issued Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." This Executive Order is designed to focus the attention of federal agencies on the human health and environmental conditions in minority communities and low-income communities. It requires federal agencies to adopt strategies to address environmental justice concerns within the context of agency operations. In an accompanying Presidential memorandum, the President emphasizes existing laws, including the National Environmental Policy Act (NEPA) should provide opportunities for federal agencies to address environmental hazards in minority communities and low-income communities. In April of 1995, the U.S. Environmental Protection Agency (EPA) released the document titled "Environmental Justice Strategy: Executive Order 12898." The document defines the approaches by which EPA will ensure that disproportionately high and adverse human health or environmental effects on minority communities and low-income communities are identified and addressed. It establishes Agency-wide goals for American Indian, Alaska Native, and other indigenous peoples (e.g., Native Hawaiian). It also establishes Agency-wide goals for environmental protection, and lists actions the EPA would take to incorporate environmental justice into its mission.

In August 1997, the EPA Office of Environmental Justice released the "Environmental Justice Implementation Plan." The Implementation Plan supplements the EPA environmental justice strategy. It provides estimated time frames for undertaking revisions, identifying the lead agents and determining the measures of success for each action item. Several EPA offices are developing more specific plans and guidance to implement Executive Order 12898 and this Agency-wide strategy.

This document serves as a guidance to incorporate environmental justice goals into EPA's preparation of environmental impact statements (EISs) and environmental assessments (EAs) under NEPA. The National Environmental Policy Act of 1969 (42 U.S.C. §4321 et seq.) serves as the Nation's basic environmental protection charter. A primary purpose of NEPA is to ensure that federal agencies consider the environmental consequences of their actions and decisions as they conduct their respective missions. For "major Federal actions significantly affecting the quality of the human environment," the federal agency must prepare a detailed environmental impact statement (EIS) that assesses the proposed action and all reasonable alternatives. EISs are required to be broad in scope, addressing the full range of potential effects of the proposed action on human health and the environment. Regulations established by both the Council on Environmental Quality (CEQ) and EPA require that socioeconomic impacts associated with significant physical environmental impacts be addressed in the EIS.

Environmental assessments have also become very important components of the NEPA process. Originally intended to serve as a mechanism for determining whether an agency's action was significant, thereby meriting an EIS, EAs are important analyses on their own. As a matter of policy, EAs completed by EPA regularly address socioeconomic effects associated with environmental impacts of Agency actions.

The purpose of this guidance is to assist EPA staff responsible for developing EPA NEPA compliance documentation, including EISs and EAs, in addressing a specific concern – that of environmental justice.

Because analyzing and addressing environmental justice may assist in determining the distributional effects of environmental impacts on certain populations, it is entirely consistent with the NEPA process. This guidance is intended to:

- heighten awareness of EPA staff in addressing environmental justice issues within NEPA analyses and considering the full potential for disproportionately high and adverse human health or environmental effects on minority populations and low-income populations;
- present basic procedures for identifying and describing junctures in the NEPA process where environmental justice issues may be encountered;
- present procedures for addressing disproportionately high and adverse effects to evaluate alternative actions, and;
- present methods for communicating with the affected population throughout the NEPA process.

As seen throughout this guidance document, environmental justice issues can be and should be analyzed and addressed using many of the same tools currently intrinsic to the NEPA process.

1.1 BACKGROUND

1.1.1 What is Environmental Justice?

Environmental Justice has been defined by a variety of organizations interested in the topic. EPA's Office of Environmental Justice offers the following definition:

> *"The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies."*

The goal of this "fair treatment" is not to shift risks among populations, but to identify potential disproportionately high and adverse effects and identify alternatives that may mitigate these impacts.

1.1.2 Executive Order 12898

Executive Order 12898 and its accompanying memorandum have the primary purpose of ensuring that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of

its programs, policies, and activities on minority populations and low-income populations ..."[1] The Executive Order also explicitly called for the application of equal consideration for Native American programs. To meet these goals, the Order specified that each agency develop an agency-wide environmental justice strategy.

The Presidential Memorandum that accompanied the Executive Order calls for a variety of actions. Four specific actions were directed at NEPA-related activities, including:

1. Each federal agency must analyze environmental effects, including human health, economic, and social effects, of federal actions, including effects on minority communities and low-income communities, when such analysis is required by NEPA.

2. Mitigation measures outlined or analyzed in EAs, EISs, or Records of Decision (RODs), whenever feasible, should address significant and adverse environmental effects of proposed federal actions on minority communities and low-income communities.

3. Each federal agency must provide opportunities for community input in the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities and improving accessibility of public meetings, official documents, and notices to affected communities.

4. In reviewing other agencies' proposed actions under Section 309 of the Clean Air Act, EPA must ensure that the agencies have fully analyzed environmental effects on minority communities and low-income communities, including human health, social, and economic effects.

As noted earlier, the purpose of this guidance is to assist EPA personnel in identifying and evaluating disproportionately high and adverse human health or environmental effects in minority communities and low-income communities within the context of NEPA documents prepared by EPA for actions which EPA complies with the procedural requirements of NEPA (*e.g.*, research and development activities, facilities construction, wastewater treatment construction grants, EPA-issued National Pollutant Discharge Elimination System (NPDES) permits for new sources, and programs under the EPA Voluntary NEPA Compliance Policy), including instances where EPA satisfies its NEPA compliance obligation as a cooperating agency. It is also meant to improve the affected communities' access to the NEPA process.

1.2 Principles/Philosophy of this Guidance

This guidance highlights important ways in which EPA-prepared NEPA documentation may help to identify and address EJ concerns. The rationale and associated implications of the guidance will be described in the remainder of this document. This section provides a summary listing of the major implications.

[1] Throughout this guidance, the term "disproportionately high and adverse effects" is used interchangeably with the longer phrase "disproportionately high and adverse human health or environmental effects on minority populations and low-income populations." This is done purely for editorial ease.

- EPA officials should be vigilant in identifying where EPA actions may have disproportionately high and adverse human health or environmental effects on minority and/or low-income communities.

- Identification should occur as early as possible, preferably during any initial screening exercise. The screening exercise should identify the presence of minority or low-income communities and whether such communities are likely to experience adverse environmental or human health effects as a result of proposed EPA actions.

- The sensitivity to environmental justice concerns should sharpen the focus of the analysis. While the analytical tools to be used are similar, the analysis should focus both on the overall affected area and population and on smaller areas and/or communities within the affected area.

- It is desirable that EPA NEPA analysts tasked with identifying and addressing environmental justice issues work as a team. This team should be comprised of an interdisciplinary staff that includes individuals familiar with environmental justice issues, public participation mechanisms and outreach strategies, Native American concerns and issues and who are experienced in the risk assessment process. Additionally, the team should consult with EPA's Regional Environmental Justice coordinators (refer to Appendix A), who are valuable resources in identifying local community groups among other functions.

- Where proposed actions may affect tribal lands or resources (e.g., treaty-protected resources[2], cultural resources and/or sacred sites[3]) EPA will request that the affected Indian Tribe[4] seek to participate as a cooperating agency (40 CFR 1508.5). Where differences occur regarding the preferred alternative or mitigation measures that will affect tribal lands or resources, the affected Indian Tribe may request that a dispute resolution process be initiated to resolve the conflict between the tribe and the Agency.

- Environmental justice concerns may lead to more focused analyses, identifying significant effects that may otherwise have been diluted by examination of a larger population or area. Environmental justice concerns should always trigger the serious evaluation of alternatives as well as mitigation options.

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[2] The term 'treaty-protected resources,' as it is used in the guidance, includes those resources that are protected by treaty, statute and/or executive order.

[3] On May 24, 1996, the President issued Executive Order 13007 on Indian Sacred Sites to 1) accommodate access to and ceremonial use of Indian sacred sites, and; 2) avoid adversely affecting the physical integrity of such sacred sites.

[4] For consistency throughout the document, the guidance will use the term "Indian Tribe" when referring to federally recognized tribes and "indigenous population" or "community" when generally referring to Native American, American Indian, Alaska Native, and/or Native Hawaiian peoples. Under environmental justice, the Agency's policy is to interact with both the tribal government on a government-to-government basis, as well as with any affected or interested indigenous person(s) as public stakeholders.

- Identifying the "affected community" is particularly important. The effects of the proposed action will often vary depending on the distance of the affected community from the action and the type of effect created by the action (*e.g.*, airborne or waterborne pollution, increased traffic, etc.). Effects on the community should be discussed in terms of reasonable increments from the site of the action.

- Community involvement is particularly important in cases involving potential environmental justice issues. Early and sustained communications with the affected community throughout the NEPA process is an essential component of environmental justice.

- For meaningful community involvement to be achieved in circumstances where environmental justice is an issue, technical assistance supplied by EPA should be available to the community to assist in their full participation (e.g., interpretation of scientific documents, development of alternatives or mitigation measures).

- EISs and RODs, and EAs and FONSIs (Finding of No Significant Impact) should document the analyses used to identify the presence or absence of disproportionately high and adverse effects and present the results of those analyses. The ROD and the FONSI should document the conclusion of these analyses (i.e., whether the action will or will not have a disproportionately high and adverse effect on minority and/or low-income communities) and describe any mitigation that will be undertaken to avoid or minimize such effects.

1.2.1 EPA Actions Requiring NEPA Compliance

EPA is required to comply with NEPA for its research and development activities, facilities construction, wastewater treatment construction grants under Title II of the Clean Water Act and under certain Appropriations Acts, and EPA-issued National Pollutant Discharge Elimination System (NPDES) permits for new sources subject to new source performance standards. The Agency is exempted by statute for actions taken under the Clean Air Act and for most Clean Water Act programs. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), requires EPA to comply only with the substantive, not the procedural, requirements of other environmental laws for on-site responses. In the case of other EPA programs, the courts have found EPA procedures to be "functionally equivalent" to the NEPA process and therefore these EPA programs are exempt from NEPA procedural requirements. Also, EPA voluntarily prepares EISs for a number of actions pursuant to a long-standing statement of Agency policy.

Exhibit 1 identifies EPA's major program areas and indicates which actions are subject to NEPA, which Congress has exempted from NEPA, which have been found to be functionally equivalent to NEPA, and which receive NEPA-like analyses. This guidance is applicable solely to EPA programs and actions subject to NEPA and not those identified as "functionally equivalent" in Exhibit 1. However, this should not preclude its use as reference where "functionally equivalent" programs or actions processes may benefit from the information contained therein.

Exhibit 1. Summary of EPA Program NEPA Requirements and Equivalent or Voluntary Activities

EPA Program Areas	NEPA Requirement	Functional NEPA Equivalent (FE)	Voluntary EIS Policy
Air and Radiation Programs			
Clean Air Act Standard Setting Programs	Exempt per ESECA §7(c)(1)	Classification activities are functional equivalent	NSPS and NESHAP
EPA Approvals Under the Clean Air Act	Exempt per ESECA §7(c)(1)	SIP/TIP activities are functional equivalent	Not applicable
Atomic Energy Program	Exempt on basis of Functional Equivalency	Analyses, documentation, and review procedures	Radiation program.
Clean Water Act Programs			
State/Tribal Water Quality Standards Approvals	Exempt per CWA §511(c)(1)	Attainability analysis are functional equivalent	N/A
Nonpoint Source and Clean Lakes Grants	Exempt per CWA §511(c)(1)	Not identifiable	N/A
Water Quality Planning	Exempt per CWA §511(c)(1)	TMDL process is functional equivalent	N/A
National Water Quality Criteria	Exempt per CWA §511(c)(1)	Modification Procedures and Criteria Methodologies are functional equivalent	N/A
Section 404 Wetland Permit Reviews	Exempt per CWA §511(c)(1)	Section 404 process is functional equivalent	N/A
Section 404 State/Tribal Program Approval	Exempt per CWA §511(c)(1)	Delegated 404 process is functional equivalent	N/A
Municipal Wastewater Treatment Construction Grants (CWA Title II) [Phased out and superseded by State Revolving Loan Fund]	Required per CWA §511(c)(1); CEQ regulations, 40 CFR Parts 1500-1508; and 40 CFR Part 6, Subpart E	N/A	N/A
NPDES Permit Program	Required per CWA §511(c)(1) for new source NPDES permits.	See NEPA requirement	N/A

Exhibit 1. Summary of EPA Program NEPA Requirements and Equivalent or Voluntary Activities (continued)

EPA Program Areas	NEPA Requirement	Functional NEPA Equivalent	Voluntary EIS Policy
Clean Water Act Programs (continued)			
State Revolving Loan Fund	NEPA-like review by states required for all CWA §212 projects receiving federal funds. 40 CFR 35.3140.	N/A	N/A
National Estuary Program	Exempt per CWA §511(c)(1)	Environmental review for estuary designation and CCMP development are functional equivalent	N/A
Ocean Discharge Program	Generally exempt per CWA §511(c)(1)	§§301(h) and 403 processes are functional equivalent	N/A
Ocean Dumping Program	Exempt on basis of functional equivalency	MPRSA activities are functional equivalent	Ocean dumping site designations and revisions to ocean dumping criteria.
Effluent Guidelines Program	Exempt per CWA §511(c)(1)	Effluent Guidelines rule-making package is functional equivalent	N/A
Safe Drinking Water Act			
Drinking Water and Underground Injection Control (UIC) Regulations	SDWA procedures are functional equivalent	Regulation development process is functional equivalent	N/A
EPA and Authorized State Permitting - UIC Permits	Permitting process is functional equivalent	The UIC permitting process is functional equivalent.	N/A

(continued)

Exhibit 1. Summary of EPA Program NEPA Requirements and Equivalent or Voluntary Activities (continued)

EPA Program Areas	NEPA Requirement	Functional NEPA Equivalent	Voluntary EIS Policy
Safe Drinking Water Act (continued)			
State and Tribal Program Approvals: Public Water Supply Systems and UIC Primacy	SDWA procedures are functional equivalent	UIC permitting process and PWSS regulation implementation stage is functional equivalent	N/A
Pesticides and Toxic Substances			
Pesticides Regulation		Significant portions of pesticide program are functional equivalent	N/A
Regulation of Toxic Substances		Regulatory rule-making process is functional equivalent	N/A
PCB Permits		PCB permitting program is functional equivalent	N/A
New Chemicals Program		Issuance of §5(e) orders is functional equivalent	N/A
Resource Conservation and Recovery Act Programs (RCRA)			
Standard Setting under RCRA		Standard Setting process is functional equivalent	N/A
EPA Permits for Hazardous Waste Facilities Under RCRA		Permitting process is functional equivalent (see *State of Alabama v. EPA*)	N/A

Exhibit 1. Summary of EPA Program NEPA Requirements and Equivalent or Voluntary Activities (continued)

EPA Program Areas	NEPA Requirement	Functional NEPA Equivalent	Voluntary EIS Policy
CERCLA/SARA (Superfund)			
CERCLA/SARA (Superfund) (CERCLA 1980 as amended by SARA 1986)	Exempt per CERCLA requirement that EPA only comply with the substantive, requirements of other environmental laws for on-site responses (see *State of Ohio v. EPA*).	Remedial Investigation/ Feasibility Study (RI/FS)	N/A
EPA Research and Development Activities			
EPA Research and Development Activities	Subject per CEQ regulations and 40 CFR 6 Subpart G.	See NEPA requirement	N/A
EPA Facilities			
EPA Facilities Construction	Subject per CEQ regulations (40 CFR 1500-1508) and 40 CFR Part 6.	See NEPA requirement	N/A
Other EPA Programs			
International Activities	Governed by E.O. 12114, Environmental Effects Abroad of Major Federal Actions (as implemented at 40 CFR Part 6, Subpart J) and, in some cases, NEPA.	See NEPA requirement	US AID-funded projects.
Appropriations Acts may also result in NEPA requirements.			

Source: Adapted from "The National Environmental Policy Act and Environmental Protection Agency Programs," prepared by the EPA Workgroup on NEPA, October 12, 1993.

1.2.2 EPA Review of Proposed Actions Under Clean Air Act §309

As a result of §309 of the Clean Air Act, EPA has a key role in the overall implementation of NEPA. Specifically, §309 mandates that EPA "review and comment in writing on the environmental impact of any matter relating to duties and responsibilities granted pursuant to this chapter or other provisions of the authority of the Administrator, contained in any (1) legislation proposed by any federal department or agency, (2) newly authorized federal projects for construction and any major federal agency action (other than a project for construction) to which Section 4332(2)(C) of this title applies [subject to Section 102(2)(C) of NEPA], and (3) proposed regulations published by any department or agency of the Federal government. Such written comment shall be made public at the conclusion of any such review" (42 U.S.C. §7609(a)).

In conducting §309 reviews, EPA is further directed by the Presidential Memorandum that accompanied Executive Order 12898 to ensure that agencies fully analyze environmental effects of their proposed actions on minority and low-income communities, including human health, social, and economic effects. As a result of both §309 and the Presidential Memorandum, EPA is able to assist other federal agencies in evaluating proposed actions that are subject to NEPA by identifying possible environmental justice concerns that may result from such actions and by offering alternative solutions and mitigation measures for unavoidable impacts.

Although mention is made here of EPA's responsibilities under §309, this document is not intended to provide guidance for §309 reviews. EPA's §309 guidance should be used for that purpose. This guidance supplements the Council on Environmental Quality's *"Environmental Justice Guidance Under the National Environmental Policy Act"* and is tailored to EPA's conduct in actions for which EPA must comply with NEPA and where EPA has jurisdiction as a cooperating agency. It does not provide guidance related to other federal agencies' actions or for EPA's review of other federal agencies' EISs.

1.3 ORGANIZATION OF THIS GUIDANCE

The remainder of this guidance is organized as follows: **Chapter 2** describes key environmental justice terms and factors and the application of the key definitions and factors in the context of standard NEPA analyses; **Chapter 3** describes key steps in the NEPA process, including both EISs and EAs, where analyses of environmental justice concerns should be incorporated; **Chapter 4** discusses public participation approaches of direct relevance to minority and/or low-income communities; and **Chapter 5** provides a brief overview of methodological tools that can be used to identify and assess potential disproportionately high and adverse effects.

2.0 KEY TERMS AND FACTORS FOR CONSIDERATION IN EVALUATING ENVIRONMENTAL JUSTICE CONCERNS

The purpose of this section is to introduce key terms and concepts to heighten the EPA analyst's awareness of how disproportionately high and adverse effects may be identified. The discussion is based on guidance prepared by a task force of the Interagency Working Group on Environmental Justice (IWG). The IWG was created by Executive Order 12898 and is comprised of the heads (or representatives) of 17 departments and agencies.

The identification and analysis of disproportionately high and adverse human health or environmental effects on minority communities and low-income communities should occur throughout the NEPA process, from the initial phases of the screening analysis through the consideration and communication of all alternatives and associated mitigation techniques.

In conducting an EPA NEPA analysis that is sensitive to environmental justice concerns, the inter-disciplinary team of EPA NEPA analysts should have an understanding of key terms central to environmental justice and should understand what factors need to be considered to ensure that all relevant concerns are identified and evaluated in a direct and explicit manner. The team should include experts familiar with available and appropriate public participation procedures and strategies and, where such concerns may arise, individuals familiar with the unique concerns of Native American Tribes and populations. Developing a keen sensitivity to potential environmental justice concerns and modifying the scope of the analysis can have a dramatic impact on whether environmental justice concerns are identified and addressed adequately and appropriately. Therefore, the EPA NEPA analyst must be sensitive to what issues and factors to look for to avoid the possibility that disproportionately high and adverse effects may be inadvertently missed, incorrectly characterized, or inappropriately minimized. So as to avoid potential oversights of environmental justice concerns, the EPA NEPA analyst should work closely with the affected community in drafting an EIS or EA, and where the community's concerns warrant, EPA should formalize this interaction (e.g., community advisory boards).

Appendix A includes the Council on Environmental Quality's (CEQ's) "Environmental Justice Guidance Under the National Environmental Policy Act" which incorporates the IWG-developed guidance on key terms in Executive Order 12898 that are pertinent to environmental justice analyses. That guidance was developed to assist federal agencies in conducting analyses of disproportionately high and adverse effects of their programs, policies, and activities. The guidance is not static but provides for informed judgment in every case; this means that EPA NEPA analysts will need to make careful decisions to ensure that environmental justice concerns are identified and addressed.

The remainder of this chapter is organized into two sections. The first section addresses terms that should be considered in identifying the existence of minority communities or low-income communities. The second section identifies factors that often are associated with disproportionately high and adverse effects, including cumulative and indirect impacts, on minority or low-income members of the larger community. Methodological approaches for conducting analyses appear in Chapter 5.

2.1 DEFINING MINORITY AND/OR LOW-INCOME POPULATION

The purpose of this section is to assist the analyst in determining whether there is a minority community or low-income community that may be addressed in the scope of EPA's NEPA analysis.

2.1.1 Minority and Minority Population

The first part of the guidance on minority population provided by the IWG provides a numeric measure: over 50 percent of the affected area. The remainder of the guidance calls for the analyst to use his or her best judgment in evaluating the potential for EJ concerns. It is important that the EPA NEPA analyst consider both the circumstances of any groups residing within the affected area, as well as the percentage of the affected community that is composed of minority peoples.

Within its guidance, the IWG explains that a minority population may be present if the minority population percentage of the affected area is "meaningfully greater" than the minority population percentage in the general population or other "appropriate unit of geographic analysis." The term "affected area," although not defined by the guidance, should be interpreted as that area which the proposed project will or may have an effect on. The IWG guidance also advises agencies not to "artificially dilute or inflate" the affected minority population when selecting the appropriate unit of geographic analysis. Clearly, a key element here is the selection of the appropriate level of geographic analysis; that is, selecting a comparison population to which the population in the affected area will be compared to identify if there are "meaningfully greater" percentages. The selection of the appropriate unit of geographic analysis may be a governing body's jurisdiction, a neighborhood census tract, or other similar unit. This is done to prevent artificial dilution or inflation of the affected minority population. In an EPA NEPA analyses, the analyst should use the potentially affected population under various alternatives as a benchmark for comparison wherever possible. In addition, a simple demographic comparison to the next larger geographic area or political jurisdiction should be presented to place population characteristics in context and allow the analyst to judge whether alternatives adequately distinguish among populations. For example, all preliminary locations for a project could fall in minority neighborhoods, therefore, a comparison among them would not reveal any population differences. Consequently, an additional alternative would be necessary to allow any disproportionately high and adverse effects to be identified.

The fact that census data can only be disaggregated to certain prescribed levels (*e.g.*, census tracts, census blocks) suggests that pockets of minority or low-income communities, including those that may be experiencing disproportionately high and adverse effects, may be missed in a traditional census tract-based analysis. Additional caution is called for in using census data due to the possibility of distortion of population breakdowns, particularly in areas of dense Hispanic or Native American populations. In addition to identifying the proportion of the population of individual census tracts that are composed of minority individuals, analysts should attempt to identify whether high concentration "pockets" of minority populations are evidenced in specific geographic areas.

The IWG guidance also advises agencies to consider both groups of individuals living in geographic proximity to one another, or a geographically dispersed/transient set of individuals, where either type of group "experiences common conditions" of environmental exposure or effect within the guidance provided for minority population. This can result from cultural practices, educational backgrounds, or the median age of community residents (*e.g.*, disproportionate numbers of elderly residents, children, or women of child bearing age may be more susceptible to environmental risks).

A factor that should be considered in assessing the presence of a minority community is that a minority group comprising a relatively small percentage of the total population surrounding the project may experience a disproportionately high and adverse effect. This can result due to the group's use of, or dependence on, potentially affected natural resources, or due to the group's daily or cumulative exposure to environmental pollutants as a result of their close proximity to the source. The data may show that a distinct minority population may be below the thresholds defined in the IWG key terms guidance on minority population. However, as a result of particular cultural practices, that population may experience disproportionately high and adverse effects. For example, the construction of a new treatment plant that will discharge to a river or stream used by subsistence anglers may affect that portion of the total population. Also, potential effects to on- or off-reservation tribal resources (e.g., treaty-protected resources, cultural resources and/or sacred sites) may disproportionately affect the local Native American community and implicate the federal trust responsibility to tribes.[5] The EPA NEPA analyst should look at each situation on a case-by-case basis to determine if there may be disproportionately high and adverse effects on a minority population.

The EPA NEPA analyst should make every effort to identify the presence of distinct minority communities residing both within, and in close proximity to, the proposed project, and to identify those minority groups which utilize or are dependent upon natural resources that could be potentially affected by the proposed action. Non-traditional data gathering techniques, including outreach to community-based organizations and tribal governments early in the screening process, may be the best approach for

[5]A distinction must be made between Native American communities that live within their own governmental jurisdictions and those that do not. The CEQ regulations recognize the government-to-government relationship between the federal government and tribal governments, and encourage federal agencies to involve tribal governments in the NEPA process when a proposed project may affect a tribe or tribal lands. See sections 1501.2 [Apply NEPA Early In The Process]; 1501.7(a)(1) [Scoping]; 1502.16 [Environmental Consequences]; 1503.1(a)(2)(ii) [Inviting Comments]; 1506.6(b)(3)(ii) [Public Involvement]; and 1508.5 [Cooperating Agency]. Native American programs include those Federal programs which are to be guided, as appropriate, by the government-to-government relationship, the Federal trust responsibility to federally recognized Indian Tribes, and the role of tribes as governments within the Federal system.

NEPA Compliance Coordinators should consult with the regional Indian Program Coordinator and should request that the Indian Tribes seek participation as a cooperating agency when a tribal government, land, resources, or interest may be affected by a project. While such cases may or may not trigger an environmental justice review, EPA must act consistent with the federal government's trust responsibility to federally recognized Indian Tribes. Each case should be decided individually; if questions arise please consult with the American Indian Environmental Office and the Office of Federal Activities.

identifying distinct minority communities and/or tribal interests within the study area. See Chapter 4 for a discussion of public outreach techniques.

2.1.2 Low-Income Population

This guidance recommends that pursuant to the CEQ guidance, low-income populations in an affected area (that area in which the proposed project will or may have an effect) should be identified with the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty. In conjunction with census data, the EPA NEPA analyst should also consider state and regional low-income and poverty definitions as appropriate. In identifying low-income populations, agencies may consider as a community a group of individuals living in geographic proximity to one another or set of individuals (such as migrant workers or Native Americans) where either type of group experiences common conditions of environmental exposure.

As with the identification of minority communities, the level of aggregation of available data is an issue of concern when seeking to determine whether one or more low-income communities may be affected by a project. Also, as with minority communities, "pockets" of low-income individuals may be masked by aggregated data. The level of aggregation of data, as well as how current the available data are, should be taken into account by the EPA NEPA analyst.

Determining the existence and location of low-income and minority communities within the reaches of a projects' influence can be a difficult task. Several means of gathering this information are available; however, it is up to the EPA NEPA analyst to ascertain which techniques will best suit the project at hand. Further, the EPA NEPA analyst must be flexible and open to consider additional avenues which may be unique to select projects or geographic areas. The use of national decennial census data in depicting low-income/poverty and minority statistics is one of the most common methods used. While the census provides valuable information for the EPA NEPA analyst, there are often many gaps associated with the information. Therefore, it may be necessary for the EPA NEPA analyst to validate this information with the use of additional sources. The additional methods available in locating the populations of interest include contacting local resources, government agencies, commercial database firms, and the use of locational/distributional tools. (Please see Chapter 5 regarding the use of locational/distributional tools.)

Local resources should be sought for local and up-to-date knowledge of a given area and its inhabitants as well as a lead to other sources of information. Examples of local resources include: community and public outreach groups, community leaders, and state universities (i.e., economic departments).

State government agencies such as the Department of Economic Development, Planning and Development Department, State Minority Business Office, and State Enterprise Zone Offices are also valuable resources to contact. For example, if an area is designated as an "enterprise zone", unique economic and demographic data may exist in that particular area, access to which could enhance the EPA NEPA analyst's ability to assess the economic situation of a given area.

Local resources and state governments can both be contacted for information regarding factors that are characteristic of low-income communities and which may assist in identifying these communities. These factors may include: limited access to health care, an inadequate, overburdened or aged infrastructure, and particular dependence of the community, or components of the community, on subsistence living (*e.g.*, subsistence fishing, hunting, gathering or farming). In some cases, these factors can be evaluated directly from traditional information sources. For example, the age and condition of water treatment facilities and presence of lead service lines should be available from municipal utilities. Outreach to community groups may be the most reliable data collection method in other cases, such as those where the degree to which the cultural and dietary habits of low-income or minority families and their economic condition dictate subsistence living. Consequently, where the community median household income may exceed that of the poverty line, conditions generally associated with low-income communities may be present, resulting in cumulative effects that may meet the threshold for environmental justice concerns.

Commercial database firms are often capable of tailoring census data information of human communities and income/poverty level to specified areas of geographic detail. For example, by manipulating specified census bureau tract data with customized buffer areas, statistics can be generated to accommodate current growth estimates from local government agencies or planning departments. Locational/distributional tools are also capable of determining the locations of certain human communities. Examples include maps, aerial photographs, and geographical information systems (GIS). Further explanations of these tools are presented in Chapter 5.

2.2 CONSIDERING EFFECTS

This section discusses the term "disproportionately high and adverse human health or environmental effects" and provides an overview of some factors that should be considered in assessing the presence of such effects. It also addresses how the concept of environmental justice plays in conducting cumulative and indirect impact analyses in support of NEPA.

2.2.1 Disproportionately High and Adverse Effects

Disproportionately high and adverse effects encompass both human health and environmental effects. The IWG's guidance suggests the need for the analyst to exercise informed judgments as to what constitutes "disproportionate" as well as "high and adverse." This, in turn, suggests some level of comparative analysis with the conditions faced by an appropriate comparison population. As noted in Section 2.1.1, alternatives need to be drawn so that the potentially affected populations under various alternatives are distinctive and allow disproportionality to be assessed.

2.2.2 Cumulative and Indirect Effects

EPA NEPA analyses must consider the cumulative effects on a community by addressing the full range of consequences of a proposed action as well as other environmental stresses which may be affecting the community. Cumulative impacts are defined in 40 CFR 1508.7, as "the incremental impact(s) of the action when added to other past, present, and reasonably foreseeable future actions...." For example, when considering a project that will have a permitted discharge to the surrounding surface waters, it may be of concern to populations who rely on subsistence living patterns (*i.e.*, fishing) and already receive public water through lead service lines; the cumulative effects associated with both the discharge and the lead service lines must be taken into account. In such cases, mitigation measures need to be developed and analyzed to reduce an adverse cumulative effect. In addition, minority populations and low-income populations are often located in areas or environments that may already suffer from prior degradation. EPA analysts need to place special emphasis on other sources of environmental stress within the region, including those that have historically existed, those that currently exist, and those that are projected for the future. Common variables of concern may include:

- Number/concentration of point and nonpoint release sources, including both permitted and non-permitted.
- Presence of listed or highly ranked toxic pollutants with high exposure potential (*e.g.*, presence of toxic pollutants included within EPA's 33/50 program).
- Multiple exposure sources and/or paths for the same pollutant.
- Historical exposure sources and/or pathways.

- Potential for aggravated susceptibility due to existing air pollution (in urban areas), lead poisoning, existence of abandoned toxic sites.

- Frequency of impacts.

Source data, including historical, existing, and projected sources, yielding projected effects in concert with that from the resulting proposed action should be analyzed with respect to minority or low-income receptors. As noted above, these include cultural, health and occupation-related variables such as:

- Health data reflective of the community (*e.g.*, abnormal cancer rates, infant and childhood mortality, low birth weight rate, blood-lead levels).

- Occupational exposures to environmental stresses which may exceed those experienced by the general population.

- Diets, or differential patterns of consumption of natural resources[6], which may suggest increased exposures to environmental pathways presenting potential health risk.

The EPA NEPA analyst may have difficulty in determining the point at which stress levels become too great, exceeding risk thresholds. This lack of a definitive threshold should encourage the EPA NEPA analyst to compare the cumulative effects of multiple actions with appropriate community, regional, state, or national goals, standards, etc. to determine whether the total effect is significant.

With respect to natural resources, analysts should look to the community's dependence on natural resources for its economic base (*e.g.*, tourism and cash crops) as well as the cultural values that the community and/or Indian Tribe may place on a natural resource at risk. Further, it is essential for the EPA NEPA analyst to consider the cumulative impacts from the perspective of these specific resources or ecosystems which are vital to the communities of interest.

Several methods for determining cumulative effects are described within CEQ's January 1997 handbook entitled, "Considering Effects Under the National Environmental Policy Act." The EPA NEPA analyst may wish to consider these methods in assessing cumulative effects on low-income and/or minority communities.

In the process of determining future actions, for example, it is essential for the EPA NEPA analyst to apply judgment and experience, to go beyond the number of projects that are funded in the area, and predict which of the actions in the early planning stage have realistic potential to move forward. The EPA NEPA analyst should use the best available information from similar projects in the region and also consult with local government planning agencies which may have master development plans in the region. In addition, private land-owners and organizations may be willing to disclose their future land use plans.

Although cumulative effects analyses commonly involve assumptions and uncertainties, exhausting all applicable analyses will provide the greatest likelihood of accurately depicting the possibility of disproportionately high and adverse effects on low-income and/or minority communities. Analysts should be as resourceful as possible in addition to seeking information from traditional sources. Decisions should

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[6] The IWG key terms guidance describes differential patterns of consumption of natural resources as relating to "subsistence and differential patterns of subsistence, and means differences in rates and /or patterns of fish, water, vegetation and/or wildlife consumption among minority populations or low-income populations, as compared to the general population."

be supported by the best data currently available and/or the best data gathering techniques in conjunction with all appropriate analyses.

EISs and EAs must also address indirect impacts [40 CFR 1502.16(b), 1508.8(b) 1508.9], which are characterized as those that are caused by the action and are reasonably foreseeable, but that occur later in time and/or at a distance. Indirect effects include growth effects related to induced changes in the pattern of land use; population density and/or changes to infrastructure; or growth rates and related effects to the air, water and other natural systems, including ecosystems.

Increased urbanization may occur around a new facility due to increased employment or due to transportation system upgrades. This may result in disproportionately high and adverse effects to low-income communities due to increased air pollution, lower housing values, and reduced access to fishing/farming locations. In addition, recreational lands and water may be indirectly affected by government actions. In the case of activities potentially affecting Native Americans, potential impacts, both direct and indirect, can occur to sacred sites and/or other natural resources used for cultural purposes. For example, the loss of a sacred site, or other impacts to larger areas of religious and spiritual importance may be so absolute that religious use of the site abruptly ceases–a direct impact. However, discontinued use may result in other indirect impacts. Proposed actions may also result in business failures, and associated unemployment, erosion of tax bases, and reduced public services. These types of effects may be exacerbated for low-income communities and minority communities due to an inability to relocate, to travel long distances to find alternative means of employment, or to attract new industry or commerce.

The potential for indirect impacts to affect a community is best understood when the analytical team is thoroughly familiar with the local community. It is important that the EPA NEPA analyst gain a full understanding of potential cultural impacts to the community. This is best accomplished through direct communication using effective public participation and consultation. A discussion of public participation approaches appears in Chapter 4.

2.2.3 Environmental Exposure

Executive Order 12898 provides that environmental human health research, whenever practicable and appropriate, shall include diverse segments of the population in epidemiological and clinical studies, including segments at high risk from environmental hazards, such as minority and low-income populations and workers who may be exposed to substantial environmental hazards. The Executive Order further states that environmental human health analyses, whenever practicable and appropriate, shall identify multiple and cumulative exposures.

In addressing the term "environmental hazard" for the purpose of research, data collection and analysis provisions in the Executive Order, the IWGKey Terms guidance states that it is "a chemical, biological, physical or radiological agent, situation, or source that has the potential for deleterious effects to the environment and/or human health." The IWG points out that the factors that may be important in defining a *substantial*[7] environmental hazard are the likelihood, seriousness, and the magnitude of the impact. The IWG Key Terms provides guidance for "multiple environmental exposure" and "cumulative environmental exposure."

[7] It should be noted that the factors the IWG is providing for assessing environmental hazard were not necessarily developed in the context of NEPA analyses. These factors are, however, similar to the factors used in determining "significant" physical or natural environmental effects under NEPA.

The EPA NEPA analyst should include individuals who are familiar with collecting and analyzing data that assesses the potential environmental and human health risks potentially borne by minority and low-income communities as a result of the project or activity. EPA NEPA analysts gain a better understanding of potential environmental risks to the community by directly using effective public participation and consultation techniques. An assessment of such potential risks should then be used to determine whether disproportionately high and adverse effects may be borne by minority communities or low-income communities.

2.3 Summary of Factors to Consider in Environmental Justice Analyses

This section provides an overview of many of the factors that should be considered when identifying and evaluating environmental justice concerns. Given the subjective nature of some of the elements that are important to environmental justice analyses, some consideration of the *factors* or characteristics that may lead to disproportionately high and adverse effects to a community may prove to be useful when conducting such analyses. EPA's Office of Environmental Justice points out that an understanding of the underlying factors that contribute to environmental justice concerns allows for a more thorough identification of the concerns and the development of more effective mitigation measures.

In focusing the identification of environmental justice concerns, the EPA NEPA analyst may approach the analysis of environmental justice from three vantage points: 1) whether there exists a potential for disproportionate risk; 2) whether communities have been sufficiently involved in the decision-making process; and 3) whether communities currently suffer, or have historically suffered, from environmental and health risks or hazards. The factors listed in this section are provided within the context of these three approaches for identifying potential environmental justice concerns and provide the EPA NEPA analyst with a starting point in determining what factors to consider in an environmental justice assessment. However, almost every situation will have its own nuances. As such, the EPA NEPA analyst should be prepared to apply these factors flexibly to fit a specific situation, just as the IWG guidance provided above may require judgments to ensure that communities are defined in a fair manner (See Exhibit 3 for Summary of Factors).

Exhibit 2. SUMMARY OF FACTORS TO CONSIDER IN ENVIRONMENTAL JUSTICE ANALYSIS

FACTORS ASSOCIATED WITH POTENTIAL EXPOSURE TO/AND RISKS FROM ENVIRONMENTAL HAZARDS

The general factors that should be considered include DEMOGRAPHIC factors, GEOGRAPHIC factors, ECONOMIC factors, and HUMAN HEALTH and RISK factors. For each of these, specific variables for consideration are listed.

DEMOGRAPHIC FACTORS

Demographic factors are one of the key components of environmental justice. Race, ethnicity, and low-income status are some of the primary considerations of the environmental justice movement. However, numerous other demographic factors also may play vital roles in an environmental justice assessment. These include, but are not limited to:

Population Age	Older or younger populations may be more susceptible to risks, when taking into account special health concerns of the elderly and potential for greater exposure in younger populations (*e.g.*, ingestion of soil). In addition, children's immature bodily defense systems may make them more susceptible to toxic effects.
Population Density	High population density may promote a synergistic effect between industrial pollutants and typical urban pollutants (*e.g.*, ground level ozone), especially if industry is located in close proximity (5 miles or less) to high density populations. Low population density may lead the NEPA analyst to underestimate the actual environmental harm to the affected population when conducting a risk assessment.
Population Literacy	If documents are technically complex and not adequately explained communities with lower levels of education may encounter difficulty in its ability to understand or sufficiently identify and interpret risk and other factors.
Population / Economic Growth	Rapid or severe changes in population or economic growth rate may result in potential impacts to existing community or public services and infrastructure. Changes in growth rate may include: (1) an increase in low-income or minority population(s) in an area (*e.g.*, migration), (2) high birth rates, and (3) cumulative impacts due to multiple sources of population increases.

GEOGRAPHIC FACTORS

Certain communities may be at high risk from environmental hazards or exposed to substantial environmental hazards due to geographic factors that isolate them from other surrounding communities or that tend to allow pollutants to accumulate in the environment surrounding the community. Such factors include, but are not limited to:

Climate	Weather patterns (*e.g.*, prevailing winds) that may concentrate pollutants in a certain area, allow pollutants to migrate, increase certain exposure pathways (such as respiration), or cause pollutants to behave in a manner that differs from that expected under normal weather conditions.
Geomorphic Features	Mountains, hills, or other surface features, natural or human in origin, that may affect pollutant dispersal and may focus or funnel pollutants in particular directions or to particular locations.
Hydrophic Features	Presence of surface water and/or aquifers that may provide drinking water, subsistence fisheries, cultural significance and use, and recreational use.

Exhibit 2. SUMMARY OF FACTORS TO CONSIDER IN ENVIRONMENTAL JUSTICE ANALYSIS

ECONOMIC FACTORS

Economic factors can be divided into two categories: the economic condition of the individuals in the community in question, and the overall economic base of the community. The economic condition of the individuals in the population, if poor, may exacerbate risk factors and may preclude avoidance of risk factors. The economic condition of the community at large may result in situations that preclude the local government's ability to adequately protect the population or may promote the acceptance of disproportionately high and adverse effects. Such factors include, but are not limited to:

Individual Economic Conditions **Income Level / Health Care Access**	This includes such issues as whether affordable or free quality health care is available and, whether any cultural barriers exist to seeking health care. Many low-income and/or minority communities lack adequate levels and quality of health care, often due to lack of resources or lack of access to health care facilities.
Infrastructure Conditions	Consideration should be given to whether existing infrastructure provides sufficient protection from adverse impacts (*e.g.*, protection of domestic water supply, especially if the community relies on public or non-public drinking wells or surface water; adequacy of sewage facilities) and the effect that new facilities may have on the ability of existing infrastructure to be reliable and provide adequate protection. In many low-income and/or minority communities, historic allocation of resources has resulted in inadequate infrastructure development and maintenance.
Life-Support Resources	This includes subsistence living situations (*e.g.*, subsistence fishing, hunting, gathering, farming), diet, and other differential patterns of consumption of natural resources. If a community is reliant on consumption of natural resources, such as subsistence fishing, an additional exposure pathway may be associated with the community that is not relevant to the population at large. Similarly, dietary practices within a community or ethnic group, such as a diet low in certain vitamins and minerals, may increase risk factors for that group.
Distribution of Costs	Consideration of the distribution of costs to pay for environmental projects to the extent that regulations and programs are paid for by user fees on necessary goods and services (e.g., sewer and water bills, garbage services, electric bills, gasoline taxes). These have a substantial negative effect on low-income families who must pay a disproportionate fraction of their income for these goods and services, the addition of user fees for another plant or facility may add to the disparate treatment of those individuals.
Community Economic Base **Industrial**	Reliance on polluting industries for jobs and economic development. If the community is reliant on polluting industries for jobs and tax revenue, there may be reluctance to take actions that would avoid risk to health and the environment at a cost to the industry. In addition, minority or low-income communities may not enjoy other benefits in proportion to the risks or impacts they bear.
Brownfields	Communities with low revenues may be unable to finance economic rehabilitation efforts that would improve the physical environment of a community.
Natural Resources	Reliance on natural resources for economic base (*e.g.*, tourism, crops; use of resources to create salable items, such as woven baskets among Native Americans; subsistence and commercial fisheries).
Other	Other indirect effects which a low-income or minority population, due to economic disadvantage, may not be able to avoid, that will have a synergistic effect with other risk factors (*e.g.*, vehicle pollution, lead-based paint poisoning, existence of abandoned toxic sites, dilapidated housing stock).

Exhibit 2. SUMMARY OF FACTORS TO CONSIDER IN ENVIRONMENTAL JUSTICE ANALYSIS

HUMAN HEALTH AND RISK FACTORS

Evaluation of human health and risk factors relevant to environmental justice concerns may prove to be complicated when detailed technical analyses of risk factors and interaction of toxic chemicals are undertaken. However, the following include, but are not limited to, factors which allow for consideration of whether more detailed risk assessments or analyses specific to minority or low-income populations are appropriate:

Emissions	Number of point and nonpoint sources of emissions including permitted and non-permitted (violations) releases.
Toxics	Presence of or exposure to highly toxic pollutants.
Exposures	Multiple exposure sources and/or paths for the same pollutant.
Pollutants	Exposure to multiple pollutants.
Pesticides	Exposure to pesticides by workers and to the misuse of pesticides.
Locations	Exposure through multiple locations (*e.g.*, workplace, home, school, ambient).
Concentrations	Exposure to emissions from concentrated locations of the same type of industry (or industries).
Health Data	Health data for population in question (*e.g.*, abnormal levels of cancers, asthma, emphysema, birth defects, low birth weight, infant and childhood mortality blood-lead levels asbestosis). This data could indicate historical hazards and health risks which, in concert with the effects of the proposed action could cumulatively or indirectly raise environmental justice issues.
Research Gaps	Research gaps (*e.g.*, subsistence consumption, demographics dietary effects, synergistic effects of chemicals).
Data Collection	Data collection/analysis reliability and validity.

Exhibit 2. SUMMARY OF FACTORS TO CONSIDER IN ENVIRONMENTAL JUSTICE ANALYSIS

FACTORS RELATED TO CULTURAL AND ETHNIC DIFFERENCES AND COMMUNICATIONS CONCERNS

When determining whether communities have been afforded opportunity for meaningful involvement, broad factors for consideration include the following. Other considerations for public participation are discussed in Chapter 4 of the *" Guidance on Environmental Justice in EPA's NEPA Compliance Analyses."*

Public Access	Whether community members have access to the decision-making process (*i.e.*, whether the community is fairly represented on commissions, boards, etc., and whether the community is fairly made aware of their role in the decision-making process).
Cultural Expectations	Cultural expectations and understanding of the decision-making process.
Meaningful Information	Access to meaningful and understandable information, such as clear presentation of what a facility produces, what pollutants it releases, how these are managed, and the potential risk to the population.
Job Security	Potential for fear within the community that participating in the process may jeopardize job security.
Literacy Rate	If a low literacy rate exists, consideration should be given to the clarity and accuracy of presentations to the community and whether non-written materials, such as videos, have been considered for use in presentations.
Translations	Consideration of non-English translations, both written and oral during community presentations or public meetings.
Community Representation	Consideration should be given to whether representatives were selected by community decree or by outside sources without proper consultation with the community.
Community Identification	Whether identification of minority and/or low-income communities took into account all potentially-impacted communities. If communities were geographically defined rather than culturally defined, certain communities that are impacted, given other cultural factors, may be unfairly excluded.
Indigenous Populations	In addition, when projects or activities may affect tribal lands or resources or Native American communities, the NEPA analytical team should include one or more analysts familiar with Native American issues and culture, and the Agency should formally request the affected Indian Tribe(s) to seek participation as a cooperating agency. Specific factors to consider in such situations include, but are not limited to: • The trust responsibility to and treaties, statutes and executive orders with federally-recognized Indian Tribes. • Effect of insufficient financial and technical resources for the development and implementation of tribal environmental programs. • Impacts to treaty-protected resources, cultural use of natural resources, and/or sacred sites. • Government-to-government relationship with affected Indian Tribes as well as meaningful participation of the affected tribal community. • A dispute resolution process may be appropriate to ensure that resources are not diminished. • Health and socioeconomic effects due to cultural, subsistence, and commercial use of natural resources. • Potential for risk assessment to underestimate relationship between environmental degradation and human health concerns, especially in low population density areas. • Fundamental differences in "world view" ; where the values placed on resources vary significantly between cultures (i.e., some Native American cultures dispute the ability to "own" land and other resources.

Exhibit 2. SUMMARY OF FACTORS TO CONSIDER IN ENVIRONMENTAL JUSTICE ANALYSIS

FACTORS RELATED TO HISTORICAL AND POLICY ISSUES

Environmental justice assessments may require looking at historical conditions, existing conditions, and the impact of future actions. Many of the factors discussed above, such as cumulative risk, will necessarily address this question, but certain other factors may also require consideration, including:

Industrial Concentration	Concentration of industries that may create a high risk of exposure to environmental hazards for the community's economic base. Factors that may lead to such a result include government/industry arrangements that may reduce available public funding for adequate protection of low-income or minority populations (*e.g.*, tax breaks provided to certain industries to encourage the location of such industries to a certain area).
Inconsistent Standards	Non-uniformity in enforcement and site-selection standards across communities including methods for pursuing enforcement targeting, compliance actions and compliance initiatives.
Research Gaps	Research gaps and past data collection practices and validity. For example, data relevant to low-income communities may not be adequately collected and analyzed given the potential for inadequate resources within the community to collect and analyze data.
Program Gaps	Program gaps between tribal, state, and federal programs (such as asbestos worker protection programs) that may have subjected communities to high risk of exposure to environmental hazards. Such gaps include the lack of explicit Congressional authorization for tribal participation in and delegation/authorization of certain EPA programs and the sufficiency of funding and technical assistance for the development of tribal environmental programs.
Non-Inclusive Processes	Decision-making and documentation processes that were non-scientific, and/or non-inclusive in nature (*e.g.*, selection of community representatives by potentially-affected industry rather than by community decree).
Past Practices	Adequacy of past resource allocation practices.
Cultural Diversity	Past and present cultural diversity or lack thereof on decision-making boards, within agencies, commissions, etc.
Obligations	Adherence to prior agreements, such as treaties, statutes and executive orders with tribes. EPA should be particularly careful not to diminish tribal resources, including cultural and natural resources and treaty rights, without tribal concurrence and EPA should ensure the protection of such resources from environmental harm.

3.0 INCORPORATING ENVIRONMENTAL JUSTICE INTO THE NEPA PROCESS

3.1 OVERVIEW OF THE NEPA PROCESS

A general framework for implementing NEPA requirements is presented in regulations (40 CFR Parts 1500 through 1508) promulgated by the Council on Environmental Quality (CEQ). Federal agencies, in turn, have developed their own rules for NEPA compliance that are consistent with the CEQ regulations while addressing the specific missions and program activities of each agency. EPA's regulations are found at 40 CFR Part 6. Over the past 25 years, the NEPA framework for environmental review of proposed federal actions has been substantially refined, based on further congressional directives, action by CEQ, and an extensive body of case law.

As stated in Section 1.0, an EIS is required for major federal actions significantly affecting the quality of the human environment. The basic analytical planning process for EISs required under NEPA and its implementing regulations for assessing the environmental impacts that may result from a government action includes:

1. **Definition:** Define the purpose and need for the action.

2. **Screening:** Preliminary delineation of potential impacts.

3. **Scoping:** Outline proposed action; define objectives; define scope; identify decisions that need to be made; focus resources; initiate public participation.

4. **Affected Resources:** Define the resources that may be affected if the action meets the proposed objectives.

5. **Alternatives:** Identify and define practical alternatives for meeting objectives.

6. **Mitigation**: Identify possible mitigation measures to minimize or avoid potential impacts.

7. **Consequences:** Predict the environmental impacts and other consequences of the proposed action and alternatives.

8. **Decisions:** Make decisions regarding a course of action, including mitigation measures developed to address environmental effects threatened by proposed actions.

9. **Monitoring:** Observing, recording, and documenting mitigation measures to evaluate their effectiveness.

CEQ regulations (40 CFR Part 1502) dictate the process that federal agencies must follow for all EISs, except where compliance with the regulations would be inconsistent with statutory requirements or where agency procedures allow for exceptions for national security reasons. Public participation and involvement is required throughout the NEPA process, beginning with scoping.

Proposed actions predicted to present less significant impacts often are analyzed in environmental assessments (EAs). As mentioned in Section 1.0, EAs are important analytical tools, originally intended to aid in the determination of significance of the effects of a proposed action. Compared to EISs, there are

fewer detailed regulatory requirements for EAs as to content, format or public participation. The scale of EAs usually depends on the relative significance of the projected impacts.

Environmental justice issues encompass a broad range of impacts covered by NEPA, including impacts on the natural or physical environment and interrelated social and economic effects. The CEQ implementing regulations define "effects" or "impacts" to include those that are "ecological...aesthetic, historic, cultural, economic, social or health, whether direct, indirect or cumulative." In preparing EISs, NEPA requires EPA to consider both impacts on the natural or physical environment and interrelated social and economic impacts. In analyzing social and economic impacts, unique cultural aspects should also be reviewed. EPA, as a matter of policy, will consider interrelated social and economic impacts in EAs. This serves as a base to further the goals of the Executive Order. Environmental justice concerns may arise from impacts on the natural or physical environment, such as human health or ecological impacts on minority populations and low-income populations, or from inter-related social or economic impacts.

Moreover, EISs and EAs should document the extent to which environmental justice issues have been identified and addressed. The initial step in the analysis of potential effects is to assess whether there indeed will be potential physical or natural environmental impacts. If it is determined by the analytical team that there will be no environmental effects, and thus no disproportionately high and adverse effects, then this finding should be documented and no further analysis of effects is necessary.

If preliminary analysis indicates that there is a potential for environmental effects, then a more detailed assessment is conducted to estimate the level of those effects. There are occasions in which "grey areas" may be encountered. The EPA NEPA analyst may be unsure as to whether the environmental effects are *de minimis*, meaning when there are very small effects, or something greater than *de minimis* yet less than significant natural or physical impacts demanding an EIS. This guidance suggests that when the EPA NEPA analyst is unsure whether these environmental impacts are *de minimis* or something more than *de minimis* but less than significant, the EA should include an analysis of interrelated social and economic effects (and, as described in Section 3.2 below, there now should be an EIS-like scoping process if the screening analysis indicates that there may be disproportionately high and adverse effects on minority and/or low-income communities). The EA should include socioeconomic analyses scaled according to the severity of the impacts.

Following an EIS or EA, the Agency must announce its decision in a Record of Decision (ROD) or a FONSI. The ROD, and where appropriate the FONSIs, should document the conclusion of the findings presented in the EIS or EA (i.e., whether the action will or will not have a disproportionately high and adverse effect on minority and/or low-income communities) and include a description of those mitigation measures that the Agency is committing to implement to reduce or avoid environmental consequences associated with the proposed action.

3.2 Incorporating Environmental Justice Concerns into this Process

One of the most important means by which EPA can ensure that disproportionately high and adverse effects on minority and/or low-income communities are identified and analyzed, is to "institutionalize" the process of identification and analysis. The next sections of this Chapter describe the screening-level analysis that begins the process, and how environmental justice considerations can be integrated into later steps and activities required under CEQ and EPA regulations.

As noted in Chapter 1, one effect of incorporating environmental justice considerations into NEPA analyses will be to more sharply focus these analyses. To do this, it is necessary to assess the distribution of environmental impacts demographically and/or geographically, as well as to assess the overall impacts to the affected communities. As described in Chapter 5, the analytical tools commonly used for analyzing potential impacts may have to be modified to allow this more refined focus. Overall, the evaluation of environmental justice concerns raises a number of issues related to "significance" and to other NEPA procedures. The discussion below describes several issues that are relevant to the determination of significance and the consequent level of analysis; also included are discussions of how consideration of such issues should affect the determination and subsequent analyses. The analytical team should keep in mind that the presence of disproportionately high and adverse effects may or may not necessarily change the final decision, but will change the focus of the analysis and may result in additional mitigation measures.

3.2.1 Environmental Justice Screening Analysis

In preparing for any proposed action, one of the first actions is a preliminary delineation of potential impacts and of the potentially affected area. A screening for environmental justice concerns should be incorporated into this initial NEPA screening analysis. This section describes a two-step screening process, the results of which then guide subsequent actions related to environmental justice.

The first step in identifying potential environmental justice concerns should be a screening-level analysis to determine the existence of a low-income and/or minority population. Depending on the outcome, it may then be necessary to enhance public participation to gain a fuller understanding of the potential environmental justice issues (see Chapter 4), initiate development of alternatives and mitigation options, and/or initiate analyses to identify and assess disproportionately high and adverse human health or environmental effects (see Chapter 5). In addition, if the proposed project may affect tribal lands or resources, then EPA, in keeping with federal and EPA policies of government-to-government relations, will formally request that affected Indian Tribe(s) seek to participate as a cooperating agency.

The screening analysis should occur as soon as the proposed action is well understood, around the time planning for scoping begins for EISs and planning begins for EAs. Although neither the impacts nor the full area to be affected may be fully understood at this point, it is usually possible to make fair approximations. In the screening analysis, two questions should be addressed, as described below.

Question 1

Does the potentially affected community include minority and/or low-income populations?[8]

If yes, this should trigger both an enhanced outreach effort to assure that low-income and minority populations are engaged in public participation and analysis designed to identify and assess the impacts. Also, a positive response to this question should increase the team's sensitivity to the potential for cumulative impacts.

In general, census and other data should be used to characterize the population within the affected area, in terms of minority (*i.e.*, racial or ethnic), economic, and educational demographics. However, it should be noted that census data have been shown to be unreliable in some cases, in part because the level of aggregation may not offer a fine enough mesh to identify the existence of such communities. Also, census data are based on self-reporting. These data are not always consistent and are prone to undercounting minority populations and low-income populations due to a perceived reluctance for certain populations to divulge information (see Section 2.1.1). This is a screening-level analysis, so extensive efforts to validate census data should not be necessary at this stage, unless there is substantial uncertainty in (a) the answer to the screening question or (b) the ability to delineate the affected area at this early stage. Because the applicability of the census data can only be determined on a case-by-case basis, the EPA NEPA analyst should supplement this information with data from other sources. For example, additional information can be obtained from: local resources through questions, interviews, and research; geographical mapping system (GIS) or other similar overlay mapping systems; and economic impact analyses.

Environmental effects are often realized in inverse proportion to the distance from the location or site of the proposed action (i.e., the closer the population is to the action, the greater the potential impacts). As a result, an effort should be made to correlate the demographic analysis to the area most likely to bear environmental effects. On the other hand, depending on the resource affected, and the users of that resource, proximity to the site may not correlate with the likelihood of disproportionately high and adverse effects on minority communities or low-income communities.

It also is important during the initial screening stages to locate all minority communities or low-income communities within the region surrounding a proposed location. The analytical teams should keep in mind that sometimes distinct minority communities or low-income communities may be geographically located within another minority community or low-income community. In some cases, a minority community or low-income community that is surrounded by another minority community or low-income community may bear disproportionately high and adverse effects compared to the surrounding communities. In addition, the EPA NEPA analyst should be sensitive to situations where the affected community represents the majority population over the extended area. For example, locations along the United States-Mexico border include entire counties where minority populations represent a majority of the population in the county. These areas are predominantly Latino, although when the county population is compared to the population of the entire state, the proportion represents a much smaller percentage of the population. Similarly,

[8] Guidance on the terms "minority population" and "low-income population" is contained in Appendix A.

counties in the Mississippi Delta region represent areas where African Americans comprise a majority of the total population.

Question 2

Are the environmental impacts likely to fall disproportionately on minority and/or low-income members of the community and/or tribal resources?

A positive response should trigger both an enhanced outreach effort to assure that low income and minority populations are engaged in public participation and an analysis designed to identify impacts on both the larger population and on minority and/or low-income members of the population. A positive response could result from any of several factors, including the following:

- Within a potentially affected area, minority and/or low-income populations could be unevenly distributed, thus subject to different levels or intensity of impacts than the larger population. This pattern should cause concern for cumulative impacts. An example would be subsistence dependence on an affected resource by members of a community.

- The impacts may affect a cultural, historical, or protected (*e.g.*, treaty) resource of value to an Indian Tribe or a minority population, even when the population is not concentrated in the vicinity.

If the answer to both screening questions is "no," then the environmental justice screening analysis should be documented in scoping notices and in EISs/EAs and RODs/FONSIs. In addition, certain unique cultural, geographic, or economic factors may exist within an area that could warrant additional investigation. Also, later information and analyses may show that the screening analysis was mistaken. Indeed, analysts should re-examine the screening questions (and the key factors identified in Chapter 2) at key steps in the NEPA process (*e.g.*, following scoping, in drafting the EIS/EA, in soliciting comments on draft EISs, in responding to comments, and in preparing RODs and FONSIs).

3.2.2 Environmental Justice and the Determination of Significance

CEQ regulations (40 CFR 1508.27) detail factors that should be considered in making a determination of whether a proposed action is significant, thereby requiring a "detailed statement" (*i.e.*, an EIS). Economic or social effects alone do not trigger an EIS [40 CFR 1508.14].

According to CEQ's *Guidance for Considering Environmental Justice under the National Environmental Policy Act*, the "...Executive Order does not change the prevailing legal thresholds and statutory interpretations under NEPA and existing case law. For example, for an EIS to be required, there must be a sufficient impact on the environment to be "significant' within the meaning of NEPA. Agency consideration of impacts on low-income populations, minority populations or Indian tribes may lead to the identification of disproportionately high and adverse human health or environmental effects that are significant and that otherwise would be overlooked." CEQ requires that significance be evaluated in terms of "intensity" or "severity of impact." Here too, the narrowed focus could affect the determination. Several factors that affect the evaluation of intensity are relevant to situations involving environmental justice issues. These include the degree of scientific controversy, uncertainty (since distributional analysis is relatively new in the NEPA context and this introduces an element of uncertainty in impact assessment), and cumulative significance of related actions.

Environmental justice concerns should sensitize EPA NEPA analysts to the need to focus analyses on relevant contexts. Focusing the analysis may show that potential impacts, which are not significant in the NEPA context, are particularly disproportionate or particularly severe on minority and/or low-income communities. As mentioned previously, disproportionately high and adverse effects should trigger the serious consideration of alternatives and mitigation actions in coordination with extensive community outreach efforts.

3.2.3 Scoping and Planning

Scoping consists of identifying and defining the range of actions, alternatives and impacts that will be considered in an environmental impact statement (40 CFR 1508.25). During the scoping phase of the EIS process, EPA must consider connected, cumulative and similar actions to the proposed action, identify alternatives to the proposed action that may mitigate or avoid potential environmental consequences, and assess potential impacts (direct, indirect, and cumulative). A similar planning process is used for EAs.

The identification of environmental justice concerns and the incorporation of these concerns into the scoping analysis can have implications for the nature and extent of the scoping analysis, the EIS and/or the EA.[9] Indian Tribe representation in the process should be sought in a manner that is consistent with the government-to-government relationship between the United States and tribal governments, the federal government's trust responsibility to federally-recognized tribes, and treaty rights. This will help to ensure that the NEPA process is fully utilized to address concerns identified by tribes and to enhance protection of tribal environments and resources. As defined by treaties, statutes, and executive orders, the federal trust responsibility may include the protection of tribal sovereignty, properties, natural and cultural resources, and tribal cultural practices.

3.2.3.1 Incorporating Environmental Justice Concerns into EA Development

If the environmental justice screening analysis does not identify minority communities or low-income communities, and suggests no disproportionately high and adverse effects on those communities and/or on tribal resources, then the EA and FONSI should describe the analysis and note the conclusion.

If the initial screening analysis identifies an affected community that is minority and/or low-income or identifies a disproportionately high and adverse effect upon a minority community, and/or on tribal resources, or on a low-income community, then a smaller scale scoping analysis (than that undertaken for an EIS) should be conducted and some level of public participation should be designed and implemented to solicit community involvement and input, and to develop alternatives and mitigation measures. Mitigation measures should be developed and alternatives should be crafted so as to allow an evaluation of the relative disproportionality of impacts across reasonable alternatives. The EA also should include a comparative socioeconomic analysis that is scaled and tailored to evaluate the potential effects to the minority and/or low-income community (*i.e.*, in the case of environmental justice concerns, the EA should include socioeconomic analyses scaled according to the severity of the impacts).

3.2.3.2 Incorporating Environmental Justice Concerns in EIS Scoping

If the environmental effects of a project are deemed significant, the scoping notices (including the notice of intent for the EIS) should include a description of the results of the environmental justice screening analysis. If the results of the screening analysis are negative (i.e., any potentially affected population is not

[9] See CEQ "*Environmental Justice Guidance Under the National Environmental Policy Act*" page 10, Helpful Information to Inform the Public During the Scoping Process.

a minority community or low-income community and the effects are not likely to fall disproportionately on a minority and/or low-income community, and/or on tribal resources), then the scoping notice should state this finding and request additional information on whether there may be disproportionately high and adverse effects that were overlooked during the screening analysis.

If the environmental justice screening analysis concludes that there is a potential for disproportionately high and adverse effects, then the EPA NEPA analyst should ensure that the EIS scoping process raises environmental justice concerns and that sufficient data and information are generated to evaluate these potential effects. Prior to the full-scale scoping process, public outreach strategies should be developed and implemented. The public participation process should be used to define and evaluate environmental justice concerns by:

- Consulting with community leaders and members of the surrounding communities to seek their assistance in identifying all minority and/or low-income communities that may be affected by the proposed action.

- Consulting with officials in tribal, state and/or local government agencies over the environmental and human health concerns within the region and who may be familiar with the demographics of the affected populations. Where environments of Indian tribes may be affected, agencies must consider pertinent treaty, statutory or executive order rights and consult with tribal governments in a manner consistent with the government-to-government relationship.

- Soliciting information from the local community on potential environmental justice issues through public participation efforts (see Chapter 4 for a discussion of public participation).

- Soliciting public comment on environmental issues through formal public notice and comment procedures tailored to the community (see Chapter 4).

- If the proposed activity is deemed significant to warrant the development of an EIS, or if the community has raised significant concerns to be addressed in an EA, EPA should establish a community advisory board to work with EPA in the development of the respective NEPA documents.

The public participation efforts designed as part of the scoping effort for an EIS should clearly describe any environmental justice concerns identified by EPA, and should specifically ask the public to suggest alternatives and mitigation measures aimed at reducing or avoiding disproportionately high and adverse effects. The Agency also should design comparative socioeconomic, environmental and health analyses of all reasonable alternatives and mitigation measures that are tailored and/or scaled to evaluate the impacts to the affected minority and/or low-income community and/or tribal resources.

3.2.4 Identification of Affected Resources

CEQ regulations state that an EIS is required only when there is a significant impact on the physical or natural environment. Notwithstanding, early in the EA and/or EIS process, the EPA NEPA analyst should identify the physical environment and all natural resources that could be potentially affected by the proposed action and by alternative actions. The EPA NEPA analyst should develop a full understanding of baseline demographic, socioeconomic, and environmental conditions so that a comprehensive assessment of the types of impacts that may be imposed upon all human and natural resources (*e.g.*, air, water, soils, wildlife) can be conducted and an understanding of how these impacts may translate into human health concerns can be developed. For a detailed discussion on how effects to human health and natural resources might be determined, please reference Section 2.2.

To account for potential environmental justice concerns, EPA NEPA analysts should be sensitive to identifying whether affected resources are used by a minority or low-income community. In addition, analyses of potential effects on all surrounding resources should be focused narrowly or specifically toward how potential effects to these resources may translate into disproportionately high or adverse human health and/or environmental effects on minority and/or low income communities.

The EPA NEPA analyst should use all means available to identify particular natural resources that, if affected by the proposed action, could have a disproportionately high and adverse effect on minority and/or low-income communities. In particular, natural resources that support subsistence living (*e.g.*, hunting, fishing, gathering) should be identified. In addition, Indian Tribes may have treaty-protected resources on or off reservation lands and may hold some natural resources sacred due to religious beliefs and/or social/ceremonial ties. Alternatives and mitigation measures should be explicitly solicited from the affected community early in the process, such as during scoping. Throughout the process, but especially beginning in this phase, the Agency should provide affected communities with technical assistance to ensure that the communities thoroughly understand the proposed action and have meaningful participation and input. All resources that could be affected should be thoroughly developed and documented. A discussion of all findings should be shared with potentially affected communities during public participation phases of the NEPA process to ensure full disclosure and to solicit additional public comment and input.

3.2.5 Identification of Alternatives

NEPA and the CEQ regulations require the identification and development of a reasonable array of alternatives. In addition, CEQ requires that all reasonable alternatives, including a "no action" alternative, must be analyzed rigorously and objectively. The selection of potential alternatives should begin early in the evaluation and, in fact, should be part of the scoping process. In addition, if environmental justice issues are identified, then alternatives should be drawn so as to allow an assessment of the disproportionate nature of the effects, as well as the magnitude of the effects, on the communities of concern.

An evaluation of potential environmental justice issues should be conducted for all reasonable alternatives. In addition, for each alternative that may result in potential environmental justice concerns, mitigation measures aimed specifically at those impacts should be identified and analyzed. The results of all analyses of environmental justice issues, including study results that identify no environmental justice issues, should be described fully in scoping documents, EISs and EAs. All results should be fully disclosed during public participation procedures, and public comment and input on the analyses and conclusions should be solicited. Chapter 2 provides an overview of the factors that should be evaluated to identify and define potential environmental justice concerns. These factors will also be helpful in understanding the need for mitigation or additional alternatives and identifying mitigation or alternative options.

The EPA NEPA analyst should keep in mind that the goal of identifying and developing alternatives for mitigating disproportionately high and adverse effects is not to distribute the impacts proportionally or divert them to a non-minority or higher-income community. Instead, alternatives should be developed that mitigate or avoid effects to both the population at large and any disproportionately high and adverse effects on minority or low-income communities. In other words, the goal of developing reasonable alternatives is not to move the impacts around, but to identify viable alternative actions that meet program goals and avoid or reduce the environmental, socioeconomic, human health and/or ecological effects associated with the preferred action. Generally, the types of alternatives that may potentially lead to the avoidance or reduction of effects include: a) the identification of alternate locations or sites where impacts to susceptible populations or environments will be avoided; b) altering the timing of planned activities or periodic emissions to account for seasonal dependencies on natural resources; c) the adoption of pollution prevention practices and policies to reduce or mitigate emissions and/or impacts; d) reducing the size or intensity of an action; and e) taking no action.

3.2.6 Prediction of Environmental Consequences

CEQ regulations require government agencies to identify, predict and describe reasonably foreseeable beneficial as well as adverse changes to existing conditions that may result from implementing either the proposed action or alternative actions. Impacts across alternatives must be compared. The prediction and description of potential disproportionately high and adverse effects must begin during the screening and scoping stages of the process, as noted above. Throughout the NEPA process, environmental justice concerns should be identified, disclosed, and discussed with affected communities.

In preparing an EIS or EA, ecological and human health risk assessments are conducted to identify and evaluate potential environmental and human health impacts that may be imposed. In addition, interrelated socioeconomic impacts that would result from a proposed action and alternatives are analyzed. Chapter 5 provides an overview of the types of analyses and analytical tools that may be used to analyze these issues and approaches that may be appropriate to assess disproportionately high and adverse effects. Again, throughout the development and public disclosure of EPA NEPA analyses and findings, full discussions of the analytical process undertaken to identify environmental justice concerns and all findings and conclusions should be disclosed to and discussed with all affected and interested parties.

In evaluating the environmental impacts of the proposed action and alternative actions in an EIS, CEQ regulations (40 CFR 1508.25) require EPA to consider: three types of actions (connected actions, cumulative actions, and similar actions); three types of alternatives (no action, other reasonable course(s) of actions, and mitigation measures not in the proposed action); and three types of impacts (direct, indirect, and cumulative). Environmental justice concerns should be identified and analyzed within the context of all actions, alternatives and impacts. Exhibit 4 provides examples of how environmental justice issues could arise and/or be considered for each of these variables.

Exhibit 3. Scoping Considerations and Examples of Environmental Justice (EJ) Issues

Considerations	Examples and Approaches to EJ Issues
TYPE OF ACTION	
Connected	Installation of sewers (*e.g.*, effects on communities affected by installation, communities served) to feed new treatment plant discharge is properly in scope of discharge permit action, since actions and effects are connected. Thus, potentially affected communities would include those along lines and served by lines.
Cumulative	Potential cumulative impacts associated with additive/synergistic effects of pollutant loadings from new discharges and existing sources and reasonably foreseeable future sources could be significant issue.
Similar	Multiple similar actions (*e.g.*, permits) for different industries in "industrial park" in low-income area could need to be addressed in single EA/EIS.
TYPE OF ALTERNATIVE	
No action	Description of existing population, environment, and socioeconomic conditions is necessary for no action alternative. For population, include education, income, racial/ethnic (minority) status.
Other reasonable courses of action	If disproportionately high and adverse effects possible, should identify/develop reasonable alternative(s) that have less impact or less disproportionate impact.
Mitigation measures (not in the proposed action)	Mitigation measures (*e.g.*, timing of actions, medical screening, added communication) may be designed in order to address EJ concerns. Both physical and socioeconomic measures are appropriate.
TYPE OF IMPACTS	
Direct	Immediate and local impacts on affected minority/low-income individuals/communities would be direct.
Indirect	In many instances, social, cultural, and economic impacts would also be indirect, since they are likely to occur over time rather than immediately.
Cumulative	Have to consider historical, current, and reasonably foreseeable future circumstances of minority/low-income communities to assess cumulative impacts of new action.

Source: 40 CFR 1508.25 identifies the types of actions, alternatives, and impacts.

3.2.7 Mitigation Measures

Regulations require that mitigation measures be developed to address environmental effects, including cumulative impacts, threatened by proposed actions (40 CFR 1502.14(f) and 1502.16(h)). In addition, mitigation measures should be developed specifically to address potential disproportionately high and adverse effects to minority and/or low-income communities. When identifying and developing potential mitigation measures to address environmental justice concerns, members of the affected communities should be consulted. Enhanced public participation efforts should also be conducted to ensure that effective mitigation measures are identified and that the effects of any potential mitigation measures are fully analyzed and compared (see Chapter 4). Mitigation measures may include a variety of approaches for addressing potential effects and balancing the needs and concerns of the affected community with the requirements of the action or activity. For example, potential mitigation measures for addressing disproportionately high and adverse effects could include:

1. Reducing pollutant loadings through changes in processes or technologies.

2. Reducing or eliminating other sources of pollutants or impacts to reduce cumulative effects.

3. Planning for and addressing indirect impacts prior to project initiation (*e.g.*, planning for alternative public transportation alternatives if the project may result in increased population growth).

4. Providing assistance to an affected community to ensure that it receives at least its fair (i.e., proportional) share of the anticipated benefits of the proposed action (*e.g.*, through job training, community infrastructure improvements).

5. Relocating affected communities, upon request or with concurrence from the affected individuals.

6. Establishment of a community oversight committee to monitor progress and identify potential community concerns.

7. Changing the timing of impact-causing actions (*e.g.*, noise, pollutant loadings) to reduce effects on minority communities or low-income communities.

8. Conducting medical monitoring on affected communities and providing treatment or other responses if necessary.

If mitigation measures are determined to be necessary to reduce disproportionately high and adverse effects on minority and/or low-income communities, and/or tribal resources, then the measures should be committed to in the FONSI or ROD. This provides an additional avenue for public notice and involvement. Other steps that can be considered to ensure that mitigation measures are effective and are implemented include the following:

- Establishing the mitigation measure as a requirement in the permit or authorizing document.

- Requiring financing at the outset of the project for both implementing the measure and monitoring its effectiveness. Ensure clearly defined monitoring guidelines are in place.

- Requiring monitoring reporting, which should be made available to the public.

- Identifying clear consequences and penalties for failure to implement effective mitigation measures.

3.2.8 Decisions

The two NEPA decision documents identified in CEQ regulations are: 1) a ROD following an EIS and, 2) a FONSI following an EA. All EPA NEPA decision documents should include a concise summary of all steps undertaken to identify environmental justice concerns and the results of those steps. In cases where environmental justice concerns are identified, the decision documents should fully discuss these concerns, explain all alternatives and mitigation options that were analyzed, and explain how environmental justice concerns factored into the decision. In cases where effects to tribal lands or resources have been identified and the Indian Tribe and EPA disagree as to the preferred alternative or mitigation measures, the Indian Tribe may request that the EPA initiate a dispute resolution process to resolve this conflict. In addition, public participation efforts related to environmental justice concerns should be documented in the decision document. Finally, mitigation measures that are evaluated, disclosed to the public, and chosen in conjunction with the alternative to be implemented should be identified and discussed. If no concerns are identified, this finding should be stated along with the basis of EPA's conclusion.

4.0 PUBLIC PARTICIPATION

Adequate public participation is crucial to incorporating environmental justice considerations into EPA's NEPA actions, both to enhance the quality of the analyses and to ensure that potentially affected parties are not overlooked and excluded from the process. Public participation under NEPA involves two-way communications, with EPA receiving information, comments, and advice, as well as disseminating information on possible approaches, analyses, and decisions. This is particularly important when there are potential environmental justice issues involved. To sufficiently and adequately address potential environmental justice concerns and communicate with potentially affected communities, the EPA NEPA analyst should include one or more persons who are familiar with environmental justice issues and appropriate communications strategies. It is important that EPA take steps to encourage and facilitate more active participation by low-income communities and minority communities in its NEPA process. This goal can be accomplished through careful identification of target audiences and aggressive community outreach beyond the traditional forms.

There are established procedures for public participation in NEPA actions and decision-making processes (as in other federal actions). However, these procedures have not always been successful in informing or gaining participation by minority communities and low-income communities. Although they may be most affected, they may be the least informed, simply because of the means of communications used; this can be for any number of obvious reasons, such as language, culture, educational level or geographic location. In most cases, relatively simple approaches–well within the purview of "standard" public participation techniques–can overcome most barriers to informing and seeking involvement of interested or affected communities. This in turn can ensure that federal decisions are consistent with Executive Order 12898 and enhance the actual and perceived fairness of federal actions.

The first subsection below briefly describes public participation that is required during the NEPA process by CEQ and EPA regulations. The next subsection then identifies a number of the special concerns and unique issues that may arise in addressing environmental justice issues, and identifies several mechanisms that may be used in EPA's NEPA process to address those special concerns and issues.

4.1 PUBLIC PARTICIPATION UNDER NEPA

Public participation is one of the hallmarks of NEPA, and is reflected in CEQ's and EPA's NEPA regulations. According to 40 CFR 6.400(a), "EPA shall make diligent efforts to involve the public in the

environmental review process...." There are several clearly defined steps in public participation under NEPA, and these are described below.

Scoping. CEQ regulations require "scoping" following the publication of a notice of intent to prepare an EIS, but before the EIS is prepared. CEQ regulations define scoping as "an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action" (40 CFR 1501.7). In general, scoping has three broad purposes: identifying public and agency concerns with a proposed action, defining issues and alternatives to be examined in detail, and saving time by ensuring that relevant issues are identified early and drive the analyses (see 40 CFR 1500.4(g), 1500.5(d)). A public meeting is held during scoping, with notice of the meeting made in the *Federal Register*, local newspapers, and utilizing other means of announcing public meetings, depending on case-specific circumstances.

Scoping for EAs is not addressed in either CEQ or EPA regulations. In practice, EA scoping can range from a process more or less identical to that used for EISs, to relatively minimal involvement of outside parties.

CEQ has indicated that the scoping process ends "once the issues and alternatives to be addressed in the EIS have been clearly identified," usually "during the final stages of preparing the draft EIS..." (CEQ "Guidance Regarding NEPA Regulations"). It is emphasized that public participation does not end here, but continues throughout the NEPA process, as described below, and even beyond.

Public review of EISs and EAs. As with scoping, CEQ and EPA NEPA regulations clearly specify the means by which the public is involved in reviewing draft and final EISs. EPA regulations require at least one public meeting on all draft EISs (40 CFR 6.400(c)). The meeting is generally announced in the *Federal Register* and in local newspapers and by other means. Regulations also provide other means of soliciting comments and information. Comments must be solicited from other appropriate federal, tribal, state, and local agencies, and from the public, specifically including a request for comments from "those persons or organizations who may be interested or affected" (40 CFR 1503.1(a)(4)).

EPA then has to consider and address all comments received on the draft EIS in preparing the final EIS, and final EISs must include responses to comments. As with draft EISs, final EISs are noticed in the *Federal Register* and elsewhere. Again, interested parties may submit comments on final EISs prior to EPA's final decisions.

EAs must be made available to the public (40 CFR 1506.6: C.E.Q. 40 Questions, #38). A combination of methods may be used to provide notice of availability; the methods should be tailored to the needs of particular cases. Traditionally there has been limited public involvement before and during EA preparation by EPA unless there is a question of significance (*i.e.*, some question as to whether an EIS is necessary) or some particular public interest.

Public review of RODs and FONSIs. Records of Decision on EISs must be disseminated to all those who commented on the draft or final EIS (40 CFR 6.400(e)). No public review is required prior to or after issuance of the ROD. Findings of No Significant Impact on EAs, in contrast, must be made available for public review before they become effective (40 CFR 6.400(d)), and this involves at least local notice and advertising. The FONSI and "attendant publication" must state that comments disagreeing with the decision may be submitted, and any such comments must be considered by EPA (40 CFR 6.400(d)).

4.2 MECHANISMS TO ENHANCE PARTICIPATION

The public participation provision in Executive Order 12898 and its accompanying memorandum are designed to ensure that there is adequate and effective communication between federal decision makers and affected low-income communities and minority communities. This is consistent with the NEPA mandate to involve the public. The involvement of low-income communities and/or minority communities, however, presents some challenges to what has come to be the "normal" pattern of formal public participation under NEPA. In order to establish trust with all types of stakeholders, interaction with the affected community should:

- Encourage active community participation.
- Recognize community knowledge.
- Utilize cross-cultural formats and exchanges.

In all cases where EPA's initial screening indicates that there is a potential for disproportionately high and adverse effects on low-income and/or minority communities, the Agency should make a concerted effort to identify stakeholders in the affected community and include the following groups and organizations in their outreach efforts:

- Environmental organizations and agencies
- Minority businesses, associations and trade organizations
- Civic associations and public interest groups
- Grassroots/community-based social service organizations
- Federal elected officials and agencies
- Homeowners' or tenants' associations, neighborhood watch groups and resident organizations
- Labor unions and organizations
- State and local elected officials and agencies
- News media, the Internet and other electronic media
- Tribal governments and Tribal organizations
- Religious groups and organizations
- Libraries, vocational and other schools, colleges and universities
- Medical community
- Legal aid providers
- Rural cooperatives

- Civil rights organizations
- Senior citizen's groups

Other sources of advice are ethnic and cultural-based environmental justice networks (*e.g.*, Indigenous Environmental Network, Southwest Network for Environmental and Economic Justice, Southern Organizing Committee). The *People of Color Environmental Groups Directory*[10] is a valuable major source of information on such local groups and individuals. Similarly, Historically Black Colleges and Universities, Tribal Colleges and Universities or other higher education institutions located in areas with or serving predominantly minority or low-income areas, may be able to assist EPA in designing (and participating in) public participation strategies. Exhibit 5 identifies a number of particular communications challenges and possible approaches to overcoming these challenges in addressing environmental justice issues. These should be supplemented by case-specific advice--on challenges and on solutions--that are solicited from local experts and others familiar with both the proposed action and the affected community.

10 Environmental Justice Resource Center. *People of Color Environmental Groups: 1994 - 95 Directory.* Prepared by Dr. Robert D. Bullard, Clark Atlanta University, Atlanta, Georgia. 1994.

Exhibit 4. Communications Issues of Particular Concern in Low-Income and/or Minority Communities

Challenge	Possible Approaches to Overcoming
Language or Communication barriers	• Provide assistance to hearing or sight impaired individuals • Provide simultaneous translation of meetings • Use local translators where possible • Translate key documents in entirety (notices, summaries, etc.) • Establish "comment line" (*e.g.*, 800 number) for callers to leave recorded comments • Advertise meetings/process in alternative-language medium • Design communication strategy to reach all segments of population • Use facilitated meeting rather than conventional stand-up comments to encourage comments
Distance to meeting or inconvenient access (e.g., rural or cross-town)	• Arrange for "comment line" (*e.g.*, 800 number) to provide remote access to meeting or to allow callers to leave recorded comments • Arrange for telephone tie-in from several locations (*e.g.*, from several schools, religious centers) • Hold series of shorter meetings (down to 1-2 hours each) in multiple locations • Arrange for alternative transportation (possibly through proponent) • Ensure location is accessible to public transportation and identify itinerary in notices • Use local cable-channel broadcast with telephone call-in • Have proponent provide transportation vouchers • Seek advice of local groups/individuals • Arrange for satellite link-up (perhaps funded by proponent)
Unfamiliar surroundings (government buildings, luxury hotel, etc.)	• Use schools or other local facilities including religious centers, churches, temples, mosques • Have several smaller decentralized meetings, including open-air meetings (possibly with tent backup) in season • Seek advice from local groups/individuals • Use local facilitator • Establish "comment line" (*e.g.*, 800 number) for callers to leave recorded comments or to participate from remote locations
Outside normal EPA communications loops (i.e., *Federal Register*, newspapers)	• Use pro-active approach to identify stakeholder (both groups and affected individuals). Consult with local advocates/public interest groups to identify outreach mechanisms and refer to the *People of Color Environmental Groups Directory*. • Disseminate information through alternative media (neighborhood organization newsletters, religious centers, fliers, local cable access channel, local radio broadcasts, etc.). • Co-sponsor public meetings with local community groups to nurture trust and credibility. • Make announcements to those on the mailing list; make follow-up phone calls to encourage attendance. • Direct consultation with tribal governments and public meetings at tribal facilities or on/near tribal lands.
Format of Meetings	• Use town hall type meetings. • Avoid "panel of experts" • Use small focus-group seminars or workshops. • Use community "experts" and comments as part of communication strategy • Seek advice of local groups. • Use a trained facilitator who is sensitive to environmental justice issues.
Schedule conflicts (i.e., conflict with working hours, working days)	• Conduct personal interviews using audio or video recording devices • Hold after-hours and/or weekend meetings or sessions • Hold meetings on successive days • Hold multiple shorter meetings at diverse times/days • Establish "comment line" (*e.g.*, 800 number) for callers to leave recorded comments • Arrange for child-care (possibly funded by proponent)
Technically complex issues	• Provide sufficient background explanations beyond the usual means • Use plain language in meetings and printed material • Seek advice of local groups/individuals • Provide hands-on demonstrations/participation (*e.g.*, tours of similar facilities/locations) • Use visual presentations (*e.g.*, pictures, videos) • Provide two-way communication - Q & A • Use background summary reports, fact sheets, and abstracts • Provide technical and/or financial assistance to community, local organization, and/or tribal government to review, evaluate, and comment on the NEPA documents and provide meaningful input throughout the NEPA process.
Trust	• Clearly present goals of NEPA, the proposed action, the public involvement process, and what is expected to be gained from the process • Do not oversell: present uncertainties and limitations • Goals should be written and in clear language • Present experiences and track record, successes and failures

EPA-anticipated impacts and community perceptions of those impacts (and their fairness) can be very different, so both must be considered. When perceptions are the concern, an effort to involve and inform the community can go a long way toward building confidence that EPA's analyses and actions are well-intended and balanced. When actual impacts (i.e., disproportionately high and adverse human health or environmental effects) are the concern, the participation can serve to educate the Agency and help identify the means to identify alternatives and/or mitigate the impacts.

Although EPA and CEQ public participation regulations focus primarily on public meetings, there are other mechanisms that can also facilitate public input. Once community leaders and stakeholders have been identified and a dialogue established, a mailing list should be assembled so that information can be sent to this group, as well as formal announcements of a public meeting.

Another mechanism for providing information to the public is the establishment of information repositories which are accessible to members of the affected community. Locations can include libraries, churches, community centers, etc. Technical documents should contain a summary written to the lay public and translated, if necessary, into the dominant language of the affected community.

Meaningful public participation is based on the proposition that people should have a say in decisions which affect their lives in a significant way. Thus, for the public participation process to be effective, it must:

- Seek out and facilitate the involvement of those potentially affected;
- Contain the implicit commitment by decision makers to seriously consider the input of the public; and
- Communicate to participants how their advice was or was not utilized.

Minority communities and low-income communities are no different than any other in that there are nearly as many opinions as there are people. Thus, it is important not to focus exclusively on one mechanism (or one person or one group) for disseminating or soliciting information. Rather, it is important to use as many avenues as possible to solicit participation and to disseminate information. For example, when there are formal or informal representatives that purport to speak for a wider population, it is always advisable to seek divergent opinions.

Dr. Robert Bullard, Director of the School of Arts and Sciences at Clark Atlanta University, provides a framework for public participation when addressing environmental justice concerns during the NEPA process. Dr. Bullard points out that effective public involvement strategies have four common characteristics: inclusiveness, representation, parity, and communication. Inclusiveness refers to the assurance that all affected communities and stakeholders are represented and involved in the decision-making process. In terms of representation, he points out that it is crucial that the persons who are representing a specific community or stakeholder group truly reflect that community's, stakeholder's, and constituent's views, values, and norms. Parity involves all stakeholder groups having equal opportunity

and capacity to provide input and full participation, as well as an equal voice in the decision-making process. Dr. Bullard further points out that an effective communications strategy accounts for different groups weighing and acting upon government actions and policies differently. An effective communications strategy recognizes, respects, and values cultural diversity of communities and stakeholders that represent a specific race, ethnic group, gender, age, geographic region, and a host of other characteristics.

As mentioned above, a recommended approach to ensure adequate public participation by minority and/or low-income communities when the screening analysis indicates there may be disproportionately high and adverse effects is to include a person familiar with environmental justice public participation issues on the "project review team." CEQ "Guidance Regarding NEPA Regulations" recommends that an interagency project review team be used when appropriate, with the team functioning as a source of information, a coordination mechanism, and an expert review team. When environmental justice issues must be faced, the review team should consult with the local community (including but not limited to organized groups concerned with environmental justice) during and following scoping, and should provide specialized expertise to EIS preparers.

The following are additional mechanisms for enhancing participation in the NEPA process: 1) allow public review of RODs; 2) government-to-government consultation with tribal governments, including formal requests for Indian Tribes to seek participation as cooperating agencies; 3) Community Advisory Boards for the development of NEPA documents; 4) community consultants; and 5) technical assistance to affected communities to enhance understanding of proposed action, technical documents, and full range of potential alternatives and mitigation measures.

In general, the effort expended in actively soliciting community involvement after the initial screening process should reflect the potential significance of the effects. As noted above, however, there should be some effort to communicate with stakeholders in all cases, including EAs, where the screening analysis identifies potential disproportionately high and adverse effects. Although the health or environmental impacts analyzed in EAs may not be "significant," from the NEPA standpoint, they may be perceived as significant by affected parties. Although this concern would not trigger an EIS, it should trigger more EIS-like scoping and public participation prior to and following EA preparation. To the extent practicable and consistent with regulations, an EIS-like public participation process should be undertaken for EAs when social or economic impacts will be or are perceived to be substantial, even when the impacts are not expected to be significant.

5.0 METHODS AND TOOLS FOR IDENTIFYING AND ASSESSING DISPROPORTIONATELY HIGH AND ADVERSE EFFECTS

A fundamental step for incorporating environmental justice concerns into EPA NEPA compliance activities is identifying minority and/or low-income communities that may bear disproportionately high and adverse effects as a result of a proposed action. Once these minority and/or low-income communities are identified and located, the potential for disproportionately high and adverse effects to these communities must be assessed. It is important to understand where such communities are located and how the lives and

livelihoods of members of these communities may be impacted by proposed and alternative actions. Minority communities and low-income communities are likely to be dependent upon their surrounding environment (*e.g.*, subsistence living), more susceptible to pollution and environmental degradation (*e.g.*, reduced access to health care), and are often less mobile or transient than other populations (*e.g.*, unable to relocate to avoid potential impacts). Each of these factors can contribute to minority and/or low-income communities bearing disproportionately high and adverse effects. Therefore, developing an understanding of where these communities are located and how they may be particularly impacted by government actions should be a fundamental aspect of the EA and EIS development process.

Currently, EAs and EISs generally evaluate and compare potential environmental, ecological, economic and/or human health risk impacts among and between broadly defined affected areas and populations. Potential impacts to smaller populations, individual communities, neighborhoods, census tracts, or environments (*e.g.*, single lake or watershed within a larger affected area) are not generally isolated, or disassociated from total impacts.

Minority and/or low-income communities are often concentrated in small geographical areas within the larger geographically and/or economically defined population center targeted for study. Minority communities and low-income communities may comprise a very small percentage of the total population and/or geographical area. Therefore, the assumptions and inputs used in conjunction with traditional analytical tools for studying potential impacts under NEPA, and the results of the analyses, may not fully reflect the impacts that may be borne by these smaller communities or populations. An analysis of disproportionate impacts will develop an understanding of how the total potential impacts vary across individual communities. This allows analysts to identify and understand what portion of the total impacts may be borne by minority or low-income communities, to assess whether they are disproportionately high and adverse, and to develop alternatives and mitigation measures if necessary.

As described in Chapter 3, the first step in identifying the potential for environmental justice concerns is to characterize the population affected by the proposed action in terms of racial and ethnic composition and in terms of relative income distribution. The composition of the population should then be compared to the characteristics of the population (*e.g.*, percentage of minority populations residing near a proposed project versus the percentage of minority populations located within a single or multiple-county area surrounding the proposed project). Populations surrounding the proposed project should be characterized in terms of income distribution levels, as well as in terms of racial and ethnic diversity.

Many of the potential effects that may be borne by minority and/or low-income communities may be analyzed or assessed using the same analytical tools that are currently used in the development of EAs and EISs. However, once a potential environmental justice issue is identified, these tools may need to be modified or more likely, the scope of the analyses may need to be narrowed to focus on a smaller affected area or population.

Several types of analytical tools are currently available and are being refined and/or modified to assist analysts and decision makers in identifying potential environmental justice concerns and assessing potentially disproportionately high and adverse effects on minority and low-income communities. The

following sections provide an overview of some of the available tools and the types of analyses that may be useful for identifying and assessing disproportionately high and adverse effects (by evaluating both total effects and effects on a smaller scale). It is not an exhaustive listing of available tools, since many tools for identifying and assessing environmental justice concerns are still being developed, and it is not meant to promote or endorse one type of tool or analysis over any other. The application of any tool is dependent upon the type of study, the particular attributes of the area under study, and the data available to undertake the study.

5.1 LOCATIONAL/DISTRIBUTIONAL TOOLS

Maps, aerial photographs, and geographical information systems (GIS) can be used to locate geographical areas where potential environmental justice issues may exist. Local maps and aerial photographs may provide a "snap shot," or general overview, of the locations of minority or low-income populations or communities and the proximity of the proposed project to these populations or communities. They also can identify key natural resources that may be affected. Although such tools are relatively simplistic, they may be useful for identifying distinct communities within a geographical area surrounding a candidate site, and for identifying clusters of facilities or sites that may contribute to cumulative impacts to a given region or community. By consulting maps or photographs that depict the locations of minority or low-income communities, as well as maps of the same geographical area that depict the locations of hazardous waste facilities, Superfund sites, Toxics Release Inventory facility sites, and/or wastewater discharges, analysts and EPA decision makers can gain a general understanding of the spatial relationships between the proposed project and the surrounding communities. These tools can assist the EPA NEPA analyst in identifying existing sources of environmental pollution and their proximity to minority and/or low-income communities.

By consulting maps or photographs that depict the locations of minority or low-income communities, as well as maps of the same geographical area that depict the locations of hazardous waste facilities, Superfund sites, Toxics Release Inventory facility sites, and/or wastewater discharges, analysts and EPA decision makers can gain a general understanding of the spatial relationships between the proposed project and the surrounding communities. Aerial photographs can be used to effectively depict the boundaries of an identified community and the spatial relationship that exists between the community and natural resources and known pollutant sources.

Geographic information systems provide a much more powerful tool for identifying and locating populations of concern. GIS technologies are useful for characterizing environmental justice issues by identifying the locations of minority communities that potentially may be affected by proposed actions and providing a visual understanding of how potential impacts may be distributed within a geographical area. GIS provides the technology for displaying and overlaying locational information and population and site characterization information on one or more maps. GIS allows for the visual display of vast amounts of spatially oriented information. In addition, GIS systems can be used to display alternative "what if" scenarios and provide for relatively quick and easy general comparisons of the potential impacts presented by alternative locations.

Several EPA Headquarters and Regional offices are using and/or investigating the use of GIS technologies for identifying and analyzing environmental justice issues. GIS systems such as ARCINFO and Landview II are geographic references or computerized atlases. These systems can create maps using digitized geographical boundary files such as the U.S. Census Bureau TIGER/Line '92 files, and other commercially available digitized boundary files (*e.g.*, zip code boundaries, county boundaries, water body boundaries) to display locational information and geographical areas. GIS systems also can incorporate, and graphically display on computer-generated maps, other population and demographic information that is available in digitized format. Landview II includes 1990 demographic and economic data from the Bureau of Census, including population and housing characteristics and summary information on income, education levels, employment, race, and age. The census data are available in two databases, STF1A and STF3A, which contain digitized data files. The census databases are then spatially linked to the TIGER files that contain geographic and political boundaries. Each county in the census database is divided into several census tracts that are subdivided into census blocks. The blocks are aggregated into block groups containing between 250 to 550 housing units. This level of data aggregation allows the user to identify locations of relatively small, homogeneous communities and to visualize, on the computer screen, the relative proximity of these communities to the proposed project and mitigation activities.

GIS allows users to easily display, on a single map, general locational and demographic information (*e.g.*, zip code boundaries, proposed facility site locations, pollutant concentrations, income level, ethnic background, population density). GIS also will allow a user to display data in terms of policy or decision criteria. For example, income distribution data for individual census tracts may be segregated by percent of population below the poverty level (*e.g.*, census blocks shaded differently to correspond to areas where 0 - 25 percent of the population is below the poverty level, 25 - 50 percent is below the poverty level, etc.). GIS also can integrate additional census information on education, employment, race, and age to produce graphic depictions of all of this information on a single map to obtain a comprehensive profile of the communities surrounding the proposed project. More than one project can be displayed on a single map to allow for a comparison of population characteristics surrounding the proposed project. Again, the maps generated by the GIS are useful tools for identifying minority and/or low-income communities that should be targeted for further study due to potential environmental justice concerns.

Although the availability of census demographic information in digitized format can significantly enhance NEPA analytical capabilities, and can be particularly useful for environmental justice analyses, the EPA NEPA analyst should keep in mind that there are limitations associated with the accuracy of census information due to the manner in which the data are collected and tabulated. Census data are useful for screening analyses, but results should always be validated through public participation mechanisms, other data sources, or by touring the community and talking with local officials and community leaders.

Many other types of information pertinent to NEPA project evaluations also are available for use in GIS systems. For example, EPA has made available portions of the Toxics Release Inventory (TRI) database (including facility locations), the Biennial Reporting System (BRS) database, the Aerometric Information Retrieval System (AIRS), the CERCLA Information System (CERCLIS), and the Permit Compliance System (PCS), in digitized data files for use in GIS applications. DOT's chemicals in transit information is also available for GIS applications.

To enhance the applicability of GIS technologies to NEPA assessments, including the assessment of potential cumulative impacts from existing and proposed projects, the geographical and demographic information provided in Census databases can be integrated with other available EPA information (*e.g.*, facilities located within particular zip codes or counties that reported releases or emissions of a particular chemical in TRI reports, locations of NPL sites, etc.) and integrated with other NEPA factors using digitized data sets on soils, power lines, roads, streams, sources of electricity, locations of threatened and endangered species, and existing archaeological sites. These additional data sets are readily available from the U.S. Forest Service, the U.S. Geological Survey, the Department of Commerce, and state and local government agencies. Additional maps depicting community-specific issues (*e.g.*, locations of subsistence farmers and locations of water bodies supporting subsistence fishing activities) also can be compiled, digitized and incorporated into a GIS system to further depict and analyze more specific environmental justice issues and concerns.

Other GIS, or computer mapping, systems that may enhance NEPA analyses of environmental justice concerns include CAMEO (Computer-Aided Management of Emergency Operations), ALOHA (Aerial Locations of Hazardous Atmospheres) and AILESP (American Indian Lands Environmental Support Project). CAMEO includes chemical-specific information, facility-specific information from EPA's Chemical Inventory database and TRI database, and transportation information. CAMEO integrates MARPLOT, a mapping application tool that generates maps from U.S. Bureau of Census TIGER files. ALOHA is a modeling tool for estimating the movement and dispersion of gases and estimating pollutant concentrations downwind from the source of a potential spill or emission. ALOHA files can be saved and used in a format compatible with CAMEO. AILESP includes permitted facilities on or near Indian lands from various EPA databases (e.g., AIRS, BRS, NCDB, PCS, RCRIS, TRI, CERCLIS), pounds of chemicals released, 1994 spill and one time release data, pesticide use by county, toxic weighting factors for TRI chemicals, two year inspection and compliance information, 1990 population and census statistics, and stream reaches with fish advisories, contaminated sediments and contaminated fish tissue.

5.2 Ecological and Human Health Risk Assessments

Executive Order 12898 provides for agencies to determine if a proposed action will result in disproportionately high and adverse effects to minority or low-income populations. Due to the fact that the characteristics of these populations may differ significantly from the characteristics of the larger affected population, analyses should address both the minority or low-income population and the comparison populations. See Chapter 2 for a discussion of the environmental and socioeconomic factors that should be considered in identifying and assessing disproportionately high and adverse effects.

EPA has a formal risk analysis process which consists of two related, but separate, processes: risk assessment and risk management. Risk assessment characterizes the likelihood for a chemical or substance to cause adverse health effects to humans and can provide a means for assessing the possible impacts on a population, if exposure occurs. Risk assessment provides an estimate of the probability that human exposure to a chemical agent will result in an adverse health effect to the exposed individual, or an estimate of the incidence of the effect upon an exposed population. Risk management is the process whereby it is decided what actions are appropriate, given an estimate of potential risks and due consideration to other

relevant factors. Information developed in the risk assessment process is used to guide decision makers in determining the appropriate action to take within the risk management process. When making risk management decisions in the context of environmental justice concerns, a number of factors should be considered along with human health risk calculations or evaluations. These include social concerns, economic concerns, and acceptance of the proposed action by the affected communities. Within the context of risk management, there is an opportunity to consider relevant environmental justice issues. In the risk management process, decisions are made regarding acceptable levels of exposure and risk.

Risk assessment, as conducted by EPA, conforms to the Agency's published guidelines that include four distinct parts: Hazard Identification, Dose-Response Analysis, Exposure Assessment, and Risk Characterization. These four parts provide the analytical tools for identifying disproportionately high and adverse effects. During the risk management process, criteria must be developed to guide the weighing of information. These criteria provide the basis for risk-based decisions with regard to disproportionately high and adverse effects. For example, risk assessments usually do not account for exposure traits of racial and ethnic groups or accurately account for actual environmental harm to human health where the population density is low (*e.g.*, rural communities, Indian Country). Human activity patterns governed by customs, social class, and ethnic and racial cultures may be introduced and considered during the risk management process to allow for the identification of disproportionately high and adverse effects.

To ensure that environmental justice concerns are considered within the risk management process, risk assessments should be conducted to determine exposure pathways and potential effects and the affected community should be involved in the development and implementation of the process. This can then be overlaid with information obtained from locational analyses using GIS and census data during the risk management process to identify minority or low-income populations that are located within the identified exposure pathways. Racial, ethnic, and cultural information can then be used to further refine the risk management process to account for disproportionately high and adverse effects.

To enhance the analysis of disproportionately high and adverse effects within EPA's health assessment studies, several efforts are underway to make relevant health and exposure information available to these studies. EPA's Office of Research and Development is currently developing the National Human Exposure Assessment Survey (NHEXAS). This survey is designed to generate a human exposure database to address some of the geographic and demographic questions relevant to environmental justice issues. NHEXAS will address exposure concerns by providing information on the magnitude, extent, and causes of human exposure.

EPA's Office of Policy, Planning, and Evaluation is currently developing an environmental justice database that will integrate health effects data from the National Health and Nutrition Examination Survey III (NHANES-III), demographic data from the 1990 Census, environmental data from air monitoring stations, and the Toxic Release Inventory database. This database integration will assist EPA staff in developing disease correlations with air exposure data in high impact populations.

Ecological assessments conducted as components of EAs and EISs generally involve identifying the natural resources (*e.g.*, air, water, soils) that will be used by proposed project or activity and the potentially

affected environments (*e.g.*, watersheds, wetlands, wildlife habitats) that may be impacted by the proposed project (including alternatives). After a general cataloging and description of the surrounding environmental and ecological resources is compiled, the potential changes and impacts of the proposed action and alternative actions are assessed. Often, these analyses do not fully substantiate the beneficial or adverse effects on the surrounding geographical area or communities within the area. Instead, impacts may be described generally, with an assumption that they are distributed equally across all communities or residents within the affected region or area. As a consequence, the analysis may overlook or ignore environmental justice concerns. If adverse impacts are not quantified, then special consideration should be given to whether potential impacts could be borne by minority communities or low-income communities residing within the larger area and, if necessary, separate analyses should be designed and conducted to assess this. As discussed above, GIS systems can sometimes be used to identify such populations and to characterize the environments where the populations reside. In addition, county and state planning agencies and housing authorities may be useful sources of information for characterizing the unique aspects and vulnerabilities of these populations.

If environmental, ecological, or human health impacts to the affected geographical area are quantified, the distribution of such impacts should be assessed. The study should attempt to estimate the proportion of impacts borne by low-income and/or minority populations within the area of a project's impact compared to the general population in and around the project, or the project's region of influence. While traditional risk modeling may not always be used in the NEPA process, impact assessments and risk management tools should be tailored to reflect the characteristics of these communities and study assumptions should reflect the characteristics of the individuals residing in low-income communities and minority-populated communities (*i.e.*, model assumptions should reflect the general health of these individuals and their general living conditions and unique locations relative to pollutant sources). When tailoring risk management tools to consider the distribution of impacts to low-income and/or minority communities, differential patterns of subsistence consumption of natural resources should be considered, including differences in rates of consumption for fish, vegetation, water, and wildlife among ethnic groups and among cultures. Further, it should be recognized that land and water resources not predominantly used by the general population may be important sources of consumption , economy, cultural use, and/or recreation for minority and/or low-income communities. Degradation of these resources may result in direct and disproportionately high and adverse effects to minority and/or low-income communities.

5.3 SOCIOECONOMIC ANALYSES

The analysis and understanding of potential socioeconomic impacts is also important. CEQ regulations note that economic or social effects alone do not trigger an EIS (40 CFR §1508.14). However, if environmental justice concerns are identified during the screening analysis or during the development of an EA, the potential interrelated socioeconomic impacts to both the total affected population (or a "control" population) and to the low-income and/or minority communities of concern should be evaluated, to the extent practicable. Cultural or Social Impact Assessments are additional tools that can be used for analyzing specific socioeconomic impacts to a community that shares a common cultural or spiritual environment.

In the development of EAs and EISs, deterministic models are generally used to predict potential impacts that a particular action may have upon particular economic indicators (*e.g.*, the level of employment and changes to income distribution or property values) for the community surrounding the proposed project. Standard models provide for analyses of the potential effects that an action may have upon the local economy in both the short term, due to transient or temporary activities (*e.g.*, construction, facility planning and startup activities), and the long term, due to sustained impacts to the area (*e.g.*, permanent employment opportunities, reduction in housing quality, degradation of existing environment). Generally, NEPA modeling activities measure potential shifts in indicators such as income distribution and employment levels across general income distribution categories (*e.g.*, percentage change in annual income to portion of affected population earning less than $15,000, between $15,000 to $20,000, etc.). Standard socioeconomic models also can be used to predict impacts that proposed actions and alternatives may have upon available housing stock, housing quality, and property values.

Generally, standard socioeconomic models are employed to predict shifts and changes in particular socioeconomic indicators such as employment, income levels, and housing quality upon a large geographical area or population center, often a standard, pre-defined economic trade area. The data and information provided as inputs to the model and assumptions made in employing the model (including economic conditions and multipliers) broadly characterize the entire population of the large geographical area or population center surrounding the proposed project. The results of these modeling efforts may include potential impacts to various categories within the overall population characterized by income level or by housing category. However, these models generally do not allow (or at least have not been used so as to allow) for a distributional analysis of potential impacts to specific communities, individual populations, or to small geographical areas.

To predict or characterize more accurately the potential disproportionately high and adverse effects to minority or low-income communities and account for potential environmental justice concerns, standard socioeconomic models currently used for EAs and EISs may have to be modified or specifically tailored to account for an array of new variables, such as subsistence living, treaty-protected resources, cultural use of natural resources, sacred sites, dependence on public transit, community cohesion, and a relatively unskilled labor base. Environmental justice issues and concerns may be integrated into some traditional socioeconomic analyses by first employing scoping activities and screening tools to identify potential minority and/or low-income communities prior to the employment of specific modeling techniques. It then may be possible to tailor modeling assumptions and input data on specific populations or targeted communities, rather than apply standard modeling techniques to large economic trade areas or standard metropolitan areas and using average input parameters that may not reflect adequately the characteristics of minority or low-income communities (*i.e.*, alter model assumptions to characterize the population affected by the environmental justice concern, rather then characterize the average individual in the entire study area). As noted above, Census databases contain demographic information (*e.g.*, income levels, race, age, employment levels) at the census tract and census block levels. Other potential sources of information include tribal, state and local planning agencies, and state housing, commerce, and welfare agencies. EPA analysts should keep in mind that some information on the characteristics of local communities and environments may be available only from community leaders, local government offices, and/or members of the community. Some information may be available from transcripts of public concerns raised at

hearings for other government projects within the same region. In some cases, analysts may need to conduct interviews of local community leaders and members of the targeted population.

One option for modifying or tailoring socioeconomic analyses to identify and evaluate environmental justice concerns is to develop index or ranking systems for identifying and scoring potential disproportionately high and adverse effects to minority and/or low-income communities. Such an index or ranking system could be applied to specifically defined or targeted areas and used as a screening tool to identify environmental justice concerns in communities surrounding one or more candidate locations. Candidate locations that result in high index scores or rankings can either be dropped from consideration, targeted for additional and more thorough socioeconomic and risk analyses to investigate further potential disproportionately high and adverse effects, or development of additional alternative actions or projects designed to mitigate identified impacts.

An environmental justice screening index may be as simple as defining several levels or categories of potential impacts (*e.g.*, changes in employment levels, changes in income levels, and changes in overall health levels) or defining and scoring several socioeconomic indicators (*e.g.*, dependence on subsistence farming or fishing, percent of population below poverty level, average property value) and weighing each category of impact as to its importance to contributing to environmental justice issues. Decision criteria (*e.g.*, undertake further detailed social impact analyses, drop candidate location from consideration) could then be set for different ranges of index scores or rankings. The index also may combine preliminary information on potential economic impacts with information on other potential impacts (*e.g.*, environmental degradation, air emissions) to assign decision criteria for additional targeted analyses or studies.

EPA Region 6[11] developed a relatively sophisticated ranking scheme to determine whether an environmental justice indicator exists. The formula provides a means for determining whether an environmental justice situation exists and includes factors such as population exposed, degree of impact and degree of vulnerability.

Region 6 evaluates sites using an environmental justice formula and ranks facilities or actions on a scale of 0 to 100. Regional officials point out that although higher scores can indicate greater potential environmental justice concerns, the population density, percent minority population, and percent of economically depressed household data are the more important analytical factors. When evaluated independently, they often provide greater insight into potential environmental justice concerns and can be used alone to rank sites. Also, the user should realize that even a location with an index ranking of zero can have significant environmental justice concerns. For example, an unpopulated area will rank a zero, but if owned and/or used by minority and/or low-income groups, the site may have significant environmental justice importance. Recent examples of EPA's use of the EJ index include the draft EIS for Eagle Pass Mine, in Maverick County, Texas, and the Supplemental Draft EIS for Expansion of the Oak Hill Surface Lignite Mine into the DIII Area, Rusk County, Texas. Utilizing the EJ index on a scale of 1

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11 U.S. EPA Region 6, Office of Planning and Analysis. "Computer Assisted Environmental Justice Index Methodology." July, 1994.

to 100 wherein higher values indicate more concern, neither EIS warranted a closer examination into EJ issues.

APPENDIX A
Council on Environmental Quality
Guidance for Addressing
Environmental Justice Under the National Environmental Policy Act

APPENDIX B
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APPENDIX C
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