Chapter 5

ENVIRONMENTAL FACTORS

This Chapter covers 15 environmental factors in three broad groupings. These environmental factors includes those which determine site suitability and those which may be affected by the development. When analyzing the availability of facilities, you must look at both at the availability of facilities to the site and at the affect of the development or the availability of those same facilities to others.

Measures of significance for a particular environmental factor should include a consideration of the intensity of the impact, the extent of the impact (e.g., numbers or values affected), and the time duration of the impact (short term vs. long term). In making a final determination on the significance of the environmental impact of the project, the reviewer must also consider the scarcity or uniqueness of the environmental factor affected and the importance or priority given to the factor.

The three broad groups of environmental factors are:

1. Land Use and Development Factors

   The factors included in this section enable the evaluator to make a judgment on the use of the selected project site and area, and arrive at a decision regarding the feasibility of using it for housing.

2. Infrastructure and Facilities

   The major necessities for the population of any urban community include an adequate water supply; provisions for sewage, waste water and storm water disposal, and a system of solid waste collection and disposal. The services may be provided by the public or private sector, but the local jurisdiction maintains some form of control.

   Project evaluation is based upon the adequacy of these facilities to serve the project and the impact of the project on the capacity of these facilities.

3. Natural Features and Resource Areas

   Undeveloped areas often represent valuable natural resources which must be conserved and protected. They are ecological reservations for animals, fish and wildlife. Water resources, including wild and scenic rivers, aquifers and any impounded supply represent sources of drinking water and recreational opportunities for large numbers of people, When evaluating a project involving natural features and resource areas the major consideration should be the impact the project will impose on them. Project modification or the use of mitigation measures should be used to minimize the impact where possible.

The assessment of the environmental factors should result in one of the following findings:

No Impact: Means the factor does not relate to the project or would not appreciably affect or be affected by the project.

Minor Impact Anticipated: Indicates the project could affect or be affected by the factor, but the impact is judged to be minimal.

Major Impact Anticipated: Means the impact of the factor is known and is rated as having a major impact on the project or that the project will have a major impact on the factor. This finding can result in an EIS being required or may be cause for rejection if the impact cannot be mitigated. The overall finding on the project must consider the severity and permanence of the impact as well as the importance of the factor.

Requires Mitigation or Modification: Some changes to mitigate impacts are recommended. This determination follows a finding of minor or major impact anticipated. The recommendations for mitigation or modification should be in sufficient detail so that they can be implemented by the responsible parties.

ENVIRONMENTAL FACTOR 1.1: PHYSICAL SITE SUITABILITY

1. Overview

The division of the environment into different subject areas (factors) is a convenient method for assessing and describing impacts. Care should be taken, however, not to isolate one factor from others which are related. Important impacts can be discovered by recognizing the relationship of a factor to those which are not the specific subject of the investigation. This relationship is particularly critical for the factor on Physical Site Suitability which deals with a composite assessment of the physical suitability of the site for the proposed project and which relates to many other assessment factors.

The major factors which are related to Physical Site Suitability are U/EF 1: Compatibility with Surrounding Development which assesses the relationship of the proposed project to the surrounding area; U/EF 2: Site Accessibility dealing with the ability to travel to the project and the extent to which project residents have access to jobs, shopping and services; EF 1-2 Soil Stability and Erodibility which is concerned with most of the soil aspects of the site; EF 1-3 Natural Hazards which assesses geologic hazards; EF 1-4 Hazards and Nuisances which cover mostly man-made site issues; and EF 3-2 Unique Natural Features and Areas which includes unique geological features and mineral resources. Additional issues covered by site suitability deal with geologic related concerns such as slope stability, subsidence and other physical conditions of the site.

2. Related Laws and Regulations

No Federal statute exists specifically concerned with the general topic "physical site suitability." Legal requirements are found primarily in State and local building codes, zoning requirements and subdivision

regulations. The legal principles of liability have been a motivating factor for controls and mitigation at the local level.

3. Assessment Questions

When considering site suitability, the following questions should be asked:

a. Will the proposed project be compatible with surrounding development?

b. Is the project site served with adequate roads and streets so that residents have acceptable access to employment, shopping, and services?

c. Will the site be affected by potential threats from natural or man-made hazards?

d. Does the proposed project create slopes by cut and fill?

e. Are subsurface minerals being extracted, such as coal, oil, gas or water?

f. Is there evidence that the site has been used as a sanitary landfill or mine waste disposal area?

g. Does the site have a high water table?

h. Are there potential hazards related to slope failure or falling rock?

i. Is there evidence of ground subsidence on the site or is there a history of ground subsidence in the area?

j. Are there other unusual conditions on the site?

(See also U/EF 1, U/EF 2, EF 1-2, EF 1-3, EF 1-4 and EF 3-2)

4. Analysis Methods

Initial Impact Screening

ALWAYS USE

FIELD/EXPERIENCE: Field observation can reveal much basic information, particularly in developing or built-up areas. In redeveloped areas it is more difficult and it may be necessary to use experienced staff or specialists to identify potential problems.

SOMETIMES USE

PRINTED: Sources of printed information include: U.S. Geological

Survey Maps, soils maps from soil scientists, maps from the U.S. Corps of Engineers, State and local geologic survey information and local planning maps.

Further Analysis

CONTACT: If potential problems are indicated and further analyses indicated, several sources are usually available. Local authorities include building officials, city or county civil engineers, planning officials, Federal and State civil engineers and geologists.

5. Evaluation of Impacts

If there are no problems with conditions on or near the site, then there is "no impact." If there are problems, but they have been reduced by mitigation measures or modified design a "minor impact" may remain. If there are major problems that cannot be solved, then there is a "major impact."

Deficiencies or impacts, that may or may not have been rated as "minor" or "major" in assessing the related factors (e.g. U/EF 1, U/EF 2, EF 1-2, EF 1-3, EF 1-4 and EF 3-2), cumulatively will influence the site suitability impact determination.

6. Mitigation Measures

Site suitability issues covering the physical conditions of the site is a summary of related factors. Likewise, the specific mitigation measures affecting the design, construction and location of buildings are found in the individual factors, e.g. U/EF 1, U/EF 2, EF 1-2, EF 1-3, EF 1-4 and EF 3-2.

7. Information Resources

a. Publications

Geological Survey, 1978. Nature to be Commanded. Geological Survey Professional Paper 950, U.S. Government Printing Office, Washington, DC, 97 pp.

Geological Survey, 1981. Facing Geologic and Hydrologic Hazards, Geological Survey Professional Paper 1240-B, U.S. Government Printing Office, Washington, DC 109 pp.

United States Geological Survey Yearbook, published annually by the USGS, U.S. Government Printing Office, Washington, DC.

Geological Survey, 1979, Relative Slope Stability and Land-use Planning: Selected Examples from the San Francisco Bay Region, California, Geological Survey Professional Paper 944, U.S. Government Printing Office, Washington, DC 96 pp.

Environmental Protection Agency. 1973. Processes, Procedures and Methods to Control Pollution Resulting from all Construction Activity. EPA 43O/9-73-007, U. S. Government Printing Office, Washington, DC, 234 pp.

Environmental Planning and Geology, HUD and the U.S. Geological Survey, 1971, U.S. Government Printing Office (Stock 2300-1195).

State geological maps and reports

b. Resource Persons

Geologist--State Department of Geological Survey

Civil Engineer or Geologist -- State Highway Department, County Road Department, City Street and Highway Division

Earth Scientist -- local University

HUD Regional Engineer

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ENVIRONMENTAL FACTOR 1.2: SOIL STABILITY AND ERODIBILITY

1. Overview

To be suitable for a building, a soil must be capable of adequately supporting its foundation without settling or cracking. The soil should be well drained so that basements remain dry, and so that septic systems can be installed in localities not served by sewers. Soil depth is an important factor and must be adequate for the excavation of basements, sewers and underground utility trenches. How well a soil is able to support development is a function of several factors including its composition, texture, density, moisture content, depth, drainage and slope.

There are soils with poor drainage and poor permeability qualities. There are also soils with high shrink-swell potential, high frost action potential and with high side seepage potential. Each of these is a characteristic which may cause problems for development if appropriate mitigation measures are not included in the project design.

Erosion, transport and sedimentation are the processes by which the land surface is worn away (by the action of wind and water), moved to and deposited in another location. Erosion can cause structural damage in buildings by undermining foundation support. It can pollute surface waters with sediment and increase the possibility of flooding by filling river or stream channels and urban storm drains. Some soils

are less stable than others and are consequently more susceptible to erosion. Loosely consolidated soils (e.g., sands) and those of small particle size (e.g., fine silts) are more susceptible to erosion. By contrast, soils with high moisture and clay content are more resistant to erosion.

Since erosion, slope stability and drainage characteristics depend not only on the steepness of the slope but also on the materials of which it is composed, soils suitability is an important consideration in the assessment.

(Assessment of farmlands is covered under EF 3.3: Important and Productive Farmlands.)

2. Related Laws and Regulations

There is no Federal legislation specifically addressing soils suitability issues. Some States and localities have established slope construction regulations. These usually deal with a combination of factors: hillside management in relation to land use, lot size, drainage, foundation design, and sewage disposal.

3. Assessment Questions

The following questions are pertinent:

a. Does the project involve development of an erosion sensitive area (near water, on a steep slope, on a sandy or silty soil)? If so, is erosion control included as part of the plan?

b. Is there any visible evidence of soil problems--foundations cracking or settling, basements flooding, etc.--in the neighborhood of the project site?

c. Have soil studies or borings been made for the area? Do they indicate marginal or unsatisfactory soil conditions?

d. Is there evidence of slope erosion on or near the site?

e. Does site clearance require vegetation removal? How many acres will be cleared and for how long? Are temporary control facilities provided?

f. Is there evidence of previous erosion or sedimentation on the site?

g. Is there evidence of high water table or poor soil conditions where septic systems are to be installed?

4. Analysis Methods

Initial Impact Screening

ALWAYS USE

FIELD/EXPERIENCE: A site visit will enable an evaluator to determine existing conditions, particularly in an area already built upon. In undeveloped areas it is more difficult and experienced staff will be required to identify potential problems

SOMETIMES USE

PRINTED: Topographic quadrangle maps are available from the U.S. Geological Survey are available for most areas and present slope gradients and hydrologic features (ponds, streams, etc.)

U.S. Soil Conservation Service soil survey maps can be used to classify soil types on a project site. The "Unified Classifications" included on the map legend indicates soil erosion potential.

Further Analysis

STUDY: Have a soils engineer of scientist conduct a detailed site soils analysis.

5. Evaluation of Impacts

The evaluation of the impact consists of estimating the extent to which existing or potential soil problems are a hazard to the project, its users and others, and the extent to which those problems will increase or decrease on and off the site as a result of the project.

There is "no impact" if an existing soil problem is demonstrably corrected as part of the project proposal or if problems are not present. There is a "minor impact" if they are present only to a very small degree.

There is a "major" impact if the soil problems are present and severe, or if the proposed project will increase the potential for building failure, erosion and sedimentation problems, and inadequate mitigation measures are proposed to correct these conditions.

6. Mitigation Measures

Steps which can be taken to mitigate soil suitability and foundation support problems include:

a. Installation of drainage facilities in low areas to make the soil stable for construction

b. Altering foundation design, by using pilings, or increasing the bearing areas of spread footings

c. Replacement of problem soil with more satisfactory fill

d. Possible alternative site land use configurations

Soil erosion is often most critical during land development and construction, before earthwork is completed and mitigation measures are in place. Temporary mitigation measures may be necessary during this phase. The measures suggested below are usually used in combination:

a. Phase grading so that extent and exposure time of distributed soils is limited

b. Create flow patterns so that runoff is slowed, erosion decreased, and on-site deposition of eroded sediments is increased

c. Divert surface runoff from erodible soils

d. Create berms on steep slopes to break up slope lengths and slow runoff

e. Install storm water management systems to control excess runoff water and project downstream areas

f. Use grassed waterways to retard erosion

7. Information Resources

a. Publications

Johnson, Sydney M. and Thomas C. Cavanagh, The Design of Foundation for Buildings, New York: McGraw-Hill Book Company, 1968.

EF 1.2: Soil Stability and Erodibility

Mitchell, James K., Fundamentals of Soil Behavior, New York: John Wiley and Sons, Inc., 1976.

Sowers, George C. and George F. Sowers, Introductory Soil Mechanics and Foundations, Third Edition, New York. The MacMillan Company, 1970.

Soil Conservation Service. 1970. Controlling Erosion on Construction Sites. Agriculture Information Bulletin 347, U. S. Government Printing Office, Washington, DC, 32 pp.

Soil Conservation Service. 1975a. Standards and Specifications for Soil Erosion and Sediment Control in Developing Areas. Prepared for Maryland Water Resources Administration, Annapolis, Maryland, 279 pp.

Soil Conservation Service. 1975b. Urban Hydrology for Small Watersheds. Soil Conservation Service Technical Release Washington, DC, 91 pp.

Soil Conservation Service. 1977. National Handbook of Conservation Practices. Soil Conservation Service, U. S. Government Printing

Office, Washington, DC

b. Resource Persons

Architect/Engineer -- Local Government, City or County Building Inspection Department

Soil Conservationist -- SCS County Office

Soils Engineer -- State Highway Department, County Road Department, City Street and Highway Division

Soil scientist from U.S. Geological Survey

HUD Regional Engineer

ASSESSMENT FACTOR 1.3: NATURAL HAZARDS

1. Overview

This factor is concerned with ensuring that a project is located and designed to reduce any potential risk to the public or project users from natural hazards such as landslides, earthquakes, bluffs, unprotected water bodies, forest fire prone areas.

2. Related Laws and Regulations

Specific laws dealing with natural hazards are usually found embodied in local codes. Local ordinances may establish requirements designed to minimize primary and secondary effects of natural hazards.

3. Assessment Questions

When considering the effects of natural hazards on a project the following questions should be asked:

a. Will the site be near a natural hazard involving a potential risk to project residents?

b. Can the project be protected by mitigation measures?

4. Analysis Methods

Initial Impact Screening

ALWAYS USE

a. FIELD/EXPERIENCE: Field observation may turn up evidence of past problems but may not be enough to determine potential for future problems.

b. PRINTED/CONTACT: Area soil maps, and consultation with local flood insurance personnel, local weather bureau and the Soil Conservation

Service will help to determine whether the site or adjacent area contains slopes with unconsolidated loose soils (i.e., a type of light wind-borne soil); the area is subject to extensive rainfall that could cause mudslides; or the site contains soil materials prone to liquefaction (i.e., quicksand)

Further Analysis

CONTACT: if it is uncertain that potential hazards exists through screening, the State Department of Natural Resources or Office of Geology can provide further information.

EF 1.3: Natural Hazards

5. Evaluation of Impacts

The evaluation of the impacts of natural hazards on the proposed project is usually based upon site examination or the history of the area where the project is to be located. Evidence of frequent disasters and previous destruction of properties and human life is sufficient to make a finding of "major impact." There are areas in the country where construction continues despite evidence of natural disasters, but in such cases mitigation makes structural safety a possibility.

In some cases, particularly those involving seismic faults, relocation or rejection may be the only possible final decision.

6. Mitigation Measures

Nearly all mitigation measures involve design and engineering, requiring a qualified expert to evaluate the extent of the problem, and suggest mitigation measures. High water tables and earthquake faults are examples of conditions which may render mitigation ineffective.

7. Information Resources

(see EF 1.4)

ENVIRONMENTAL FACTOR 1.4: HAZARDS AND NUISANCES

1. Overview

This factor is concerned with ensuring that a project is designed in a manner which reduces any potential risk to the public or project users from personal injury or property damage from man-made hazards.

Sources of hazards and potential nuisances are identified below: they include structural, physical and psychological sources, and some have been listed because they are potential irritations to project

residents:

a. Site hazards: inadequate street lighting, uncontrolled access to lakes and streams, improperly screened drains or catchment areas, drilling operations, pipelines, steep stairs or walks, overgrown brush, lack of access for emergency vehicles.

b. Traffic: circulation conflicts, heavy traffic, hazardous cargo transportation routes and road safety.

c. Neighborhood hazards/nuisances: vibration, glare from parking lots, odors and proximity of the project to aerial transmission lines, power plants, transformers, drainage canals, junk yards, and industrial activities.

Some hazards and nuisances are covered as separate compliance or environmental issues, such as: (a) noise; (b) air pollution; (c) toxic chemical disposal sites; (d) radioactive materials; (e) chemical and petrochemicals of an explosive or fire prone nature; (f) airport/ aircraft; and (g) natural hazards. Even though the project site may fall below the specific standards, there may be a residual nuisance value connected with the factor which should be indicated (e.g., a railroad line determined to be "acceptable" under the HUD noise policy).

2. Related Laws and Regulations

Local codes and ordinances, health and building codes apply to many of these categories. Local zoning ordinances are used to prevent incompatible uses from impacting on a residential areas. In addition, every community has a system for handling nuisances when complaints are registered by citizens.

3. Assessment questions

When considering the hazards and potential nuisances in relation to the project, the reviewer should focus on existing installations and the location of the project in relation to them. Answers to the following questions will aid in making an evaluation:

a. Does the project involve any potential hazards such as those listed in 1 above?

b. Are there project users or neighboring populations whose special health and safety needs are not anticipated in the project design? Have actions been taken to protect children from "attractive" nuisances? Have measures been taken to reduce the potential risk to the elderly from dust, and to provide temporary walkways and traffic around construction sites?

c. Can the problems which may generate nuisances be alleviated by designs or plan changes?

d. Will the project need special design or engineering criteria which bring into question its feasibility?

4. Analysis Methods

Initial Impact Screening

ALWAYS USE

FIELD/EXPERIENCE: Field observation will usually give all the necessary information on existing hazards and an opportunity to estimate potential nuisances. Experience with other projects in the vicinity is also a good indicator of some types of potential problems.

SOMETIMES USE

CONTACT: Meetings with utility company engineers and field personnel will enable the reviewer to obtain information on plans for the project. County and municipal engineers and planners can also give valuable information on rights of way, traffic plans and programs which could cause hazardous situations and become nuisances. Useful maps include the USGS topographic series.

5. Evaluation of Impacts

A finding of "no impact" can be made when no hazards and nuisances are present. A finding of "minor" impact is made when impacts are not serious. When the safety and health of the residents will be jeopardized, a finding of "major impact" should be made.

6. Mitigation Measures

The most basic mitigation measure is proper location of the project in relation to the potential problems. Appropriate site planning and structural design can also make the project acceptable.

7. Information Resources

a. Publications

Plans from State and local planning departments, utility company plans and layouts

b. Resource Persons

Local engineers and planners, engineers from utility companies, Regional EPA staff

Local police, fire and emergency personnel

HUD Regional Engineer

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ENVIRONMENTAL FACTOR 1.5: AIR QUALITY

1. Overview

Air quality refers to the amount of pollutants in the atmosphere. It is the combined result of natural background and emissions from many individual pollution sources.

Air pollutants vary in their characteristics. Primary pollutants such as carbon monoxide (CO) are most dangerous in peak concentrations near their source. Others undergo chemical reactions to form harmful substances, known as secondary pollutants once in the atmosphere. An example of this is the creation of photochemical oxidants, known commonly as "smog."

There are three types of air quality problems:

a. Cumulative urban area effects resulting from both primary and secondary pollutants that can create large scale problems for a region.

b. A major source such as a power station or industry including the sources of "toxic" pollutants that may be subject to specific emission controls.

c. A local source such as an industrial operation, refinery, cement or asphalt plant, quarry highway, busy street, etc., directly affecting project livability.

The effect of air pollution on human health can vary from irritating the eyes and throat to contributing to three often fatal diseases--heart disease, lung disease and cancer. Air pollution can also damage plant growth, reduce visibility, dirty outdoor equipment, and erode buildings and monuments.

Some groups--the sick, the elderly, pregnant women, and children--are more susceptible to air pollution than are others. They suffer adverse effects at lower pollution levels than the general public. This fact should be remembered in considering the location and/or design of schools and parks, hospitals and housing.

2. Related Laws and Regulations

Air quality is an environmental factor for which specific Federal and, in some instances, State and local standards exist. The legal authority stems principally from the Clean Air Act, as amended, 1970

and 1977; Executive Order 11738; and implementing regulations.

The EPA Administrator is directed to adopt national primary and secondary ambient air quality standards (Title I, Sec. 110 of the Clean Air Act as amended). Primary standards are those required to protect public health and secondary standards are those required to protect human welfare.

State Implementation Plan (SIP) requirements (Title I, Sec. 109 of the Clean Air Act as amended) include a Non-Attainment Strategy Plan and a

Transportation Control Plan. The SIP's indicate how the State plans to attain and maintain ambient air quality standards. The SIP is administered either by a State or a regional air quality control agency.

3. Assessment Questions

For purposes of the environmental assessment, a set of simple questions will help to indicate if there is a potential problem and if expert advice should be sought. In many metropolitan areas this advice can be provided by the appropriate air quality control agency.

a. Is the project located in the vicinity of heavy industry, incinerators, power generating plants, oil refineries, parking facilities for 1,000 cars (inside an SMSA) or 2,000 cars (outside an SMSA), or near a highway with six or more traffic lanes?

b. Are the project users particularly sensitive to existing or projected air pollution levels? Has the project been designed to mitigate possible adverse effects?

c. Is the project located in the vicinity of a monitoring station where air quality violations have been registered?

4. Analysis Methods

Initial Impact Screening

ALWAYS USE

FIELD/EXPERIENCE: As with noise, this is useful to determine if the site is near a major source of pollution.

Further Analysis

SOMETIMES USE

a. CONTACT: The State and/or local air pollution control agency can provide data on existing air quality. The local planning department and local highway department should have data on future traffic patterns or industrial locations which will locate major

air pollution sources near the site.

b. STUDY: If field observation or review of plans has identified a potential problem, particularly for a project which will accommodate persons particularly susceptible to air pollutants, a special study may be required to determined the extent of the pollution problem and potential mitigating measures.

5. Evaluation of Impacts

The pollutant which is most likely to affect housing projects is carbon monoxide (CO) resulting from vehicular traffic. Sulfur Dioxide (SO {Sub 2}) may have an effect on projects located in the vicinity of power generating plants or heavy air polluting industries.

For sites exposed to major pollutants discussed above, the assessment methodology is to compare the estimated air pollution at a site with the National Primary Ambient Air Quality Standards. Since data from various analysis techniques, when compared to data from field monitoring stations, show considerable variation, a margin of error of up to 50 percent is likely. Therefore, sites where estimates indicate pollution levels from 50 to 150 percent of the national standard may or may not exceed the standards. Where estimates indicate the site pollution levels are less than 50 percent of the national standard it can be assumed that standards probably are not exceeded. Where estimates indicate the site pollution levels are between 50 and 150 percent, it can be assumed that the standards are possibly exceeded. If standards are exceeded by 150 percent, standards are probably exceeded frequently or by substantial amounts.

A finding of "no impact" can be made where site estimates are 50 percent or less of the national standard; "minor impact" can be made where site estimates are 50 to 150 percent of the national standard (if the population in the proposed project area is considered a susceptable one, e.g., the elderly or young children, upgrade the rating to "major impact"); and "major impact" can be made where site estimates are over 150 percent of the national standard and/or there is a susceptible population.

6. Mitigation Measures

In developing the design for a project there are recommended building and construction design practices, location criteria, and site plan design that can be followed to reduce air quality impacts at the project site. Briefly some practices which reduce or minimize air quality problems include: (a) separating, as far as possible, human activity from pollution sources; (b) arrangement of structure; (c) landscaping; (d) grading to eliminate low pit areas; and (e) building construction technology which reduces indoor air pollution from outdoor sources.

7. Information Resources

a. Publications

"Air Quality Considerations in Residential Planning," SRI HUD 1980. Volume 1, A Guide for Rapid Assessment of Air Quality at Housing Sites, HUD-PDR-524-1, Vol. 2, Manual for Air Quality Considerations in Residential Location, Design and Construction, HUD-PDR-524-2.

State Implementation Plans (SIPS) required to meet the Federal Ambient Air Quality Standards.

Metropolitan-wide Air Quality Maintenance Area (AQMA) Plans.

b. Resource Persons

Local and/or State Air Pollution Agency

Traffic Department or Engineer

Universities, usually Departments of Meterology or Chemical Engineering

Air Pollution Consultant, Meterologist or Engineer

EPA, Regional Office Staff

HUD, Regional and Field Office Environmental Officers

ENVIRONMENTAL FACTOR 1.6: DISPLACEMENT

1. Overview

Displacement refers to the dislocation of people, businesses, institutions or community facilities as a result of a project action. Direct displacement is the dislocation of a person, business or other activity occupying property that is acquired for a project or that must be vacated to comply with code or zoning enforcement. People and businesses directly displaced usually have no alternatives to that action.

2. Related Laws and Regulations

Only displacement by acquisition through condemnation is covered by the Uniform Relocation Act. Specific information concerning these requirements can be found in the following sources:

Uniform Relocation Assistance and Real Property Acquisition, 44 FR 30

946; Effective Sept. 26, 1979, 24 CFR Part 42.

HUD Handbook 1376.1, Revised, "Relocation and Real Property Acquisition," September 1979.

3. Assessment Questions

In many instances, such as subdivision development or single family housing development in rural areas, the likelihood of displacement is limited. The following questions will assist in determining whether there is any potential for displacement, particularly in urban and metropolitan areas.

a. Will the project require the demolition of existing occupied structures?

b. Will the project require current occupants of structures to leave?

c. Will the project displace business or other private, quasi-public or public uses?

4. Analysis Methods

Initial Impact Screening

ALWAYS USE

FIELD/EXPERIENCE: The reviewer's knowledge of the proposed project and a site visit should be sufficient for a determination for this factor.

5. Evaluation of Impacts

If there are no displacees, the proposed project can be rated as having "no impact anticipated" for this factor. If there are displacees, the

factor should be evaluated and rated in terms of the severity of the displacement, e.g., number of persons, businesses, and institutions and the hardships and costs involved. The Relocation Specialist should be requested to determine whether there is a "major" or "minor" impact anticipated.

6. Mitigation Measures

The Uniform Relocation Act provides for assistance to individuals displaced by public acquisition. The developer and/or jurisdiction may be able to also provide assistance to those not covered by the Act. Assistance can range from help with moving expenses to helping people find new homes.

7. Information Resources

a. Publications

HUD Handbook 1376.1, Revised, "Relocation and Real Property Acquisition," September 1979.

Uniform Relocation Assistance and Real Property Acquisition, 44 FR 30 946; Effective September 26, 1979, 24 CFR Part 42.

b. Resource Persons

Relocation Specialist or Community Planners at the local community development agency

HUD Field Office Relocation Specialist

ENVIRONMENTAL FACTOR 1.7: ENERGY CONSUMPTION

1. Overview

Energy is a scarce resource. It has become increasingly important to design and locate new facilities which minimize energy usage. Energy consumption should be viewed in a two-fold manner; energy consumed directly by the project for heating, cooling, and for hot water systems, and indirectly by the transportation of people and goods to and from the project.

Energy efficiency can be incorporated in nearly all phases of project planning: site selection, site planning, building design and density. The location of new facilities in central areas with close proximity to mass transportation, shops, schools, and services can reduce the energy consumed for transportation, the largest non-industrial use of energy in the U.S. This is also the most likely area to be served by a district heating system. Site planning should take into account the role which trees can play in sheltering a structure from climatic extremes (wind, heat and cold). Southward facing sites receive maximum solar exposure, an important consideration in northern climates during the colder months. The final consideration is the incorporation of energy saving measures in building design, such as the use of extra insulation; use of efficient heating, cooling and hot water systems, possibly solar; use of double-glazed windows which open and close, and the use of fluorescent rather than incandescent lights.

Electric service and gas lines to the site are normally supplied by public or private utility companies. Electricity must be available at the site for light and power, and for cooking and heating if gas is not available. At the beginning of residential development, it is common practice for the private utility company to charge a developer for the construction cost of main extensions and then to issue refunds as customers are added.

2. Related Laws and Regulations

The National Energy Policy and Conservation Act of 1975 (PL 94-162) outlines national policy and provides assistance to the States in

developing State plans. Many States and localities have revised building codes, subdivision requirements and zoning ordinances to include minimum energy efficiency standards.

3. Assessment Questions

The following are the major questions regarding this factor:

a. Does the location of the site have any special energy related advantages or disadvantages and can these be maximized or overcome?

b. Have the plans taken full advantage of potential energy saving measures, such as proper orientation, insulation, window design and

placement, lighting, heating, cooling and hot water systems? If district heating and cooling is available will it be used? Is the project in conformance with other applicable energy saving codes?

c. Are utilities already installed, and will they be available for use by the project? If district heating and cooling is a good future possibility can the building be adapted to use it without expensive retrofit costs?

4. Analysis Methods

Initial Impact Screening

ALWAYS USE

FIELD/EXPERIENCE: A site visit will usually determine the availability of the various utilities and forms of energy to the proposed site. Experience with other projects in the vicinity is also useful for initial screening.

SOMETIMES USE

a. CONTACT: Contact the utilities to determine plans for providing and improving service when necessary.

b. PRINTED: Building plans and specifications will indicate energy saving features.

FURTHER ANALYSIS

To determine if a site is adequately serviced with utilities (gas and electric), utility representatives may need to be consulted. Where a choice of utilities can be made, the reviewer should check to ascertain whether the developer has planned to use the most efficient and economical power services. Local street and transit maps can be used to determine whether the site has good access to schools, shopping, and public transportation.

5. Evaluation of Impacts

Analyzing impacts of energy are related to the cost of energy to the project and maximizing energy efficiency. In a situation where utilities are available and site plans and building designs incorporate energy considerations, a rating of "no impact anticipated" can be made.

6. Mitigation Measures

Mitigation measures involve avoiding inefficient energy supply and securing the most efficient energy saving practices.

7. Information Resources

a. Publications

Energy Conservation Program Planning Materials. U.S. Department of Interior, National Recreation and Park Association, Washington, DC, 1978 (Vol. IV Facilitation Manual)

Passive Solar Design Handbook. U. S. Department of Energy (2 Vols.) January, 1980

Landscape Planning for Energy conservation. Environmental Design Press, 1977.

b. Resource Persons

HUD Regional and Field Office Environmental Officers

HUD Regional Engineer

Engineer from local utility companies

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ENVIRONMENTAL FACTOR 2.1: WATER SUPPLY

1. Overview

Adequate water supply refers to the delivery to a housing project site of a sufficient amount of potable water at all times, with adequate pressure for fire protection and at affordable rates. In terms of quantity, a rule of thumb estimates 100 gallons per person per day for domestic consumption. Most places where HUD does business are urban

areas with water distribution systems already in place. The water system is usually owned and operated by governmental agencies although there are some privately owned water companies. Many proposed housing sites, however, are located at the edge of the urban or service area and it is often necessary to extend mains to serve them. These extensions will ultimately become part of the municipal water system and consequently will be required to be Constructed not just to serve the project, but to meet local and fire underwriters standards. Depending on local policy and requirements, the project may have to pay all or part of the costs.

2. Related Laws and Regulations

The relevant Federal laws are the Federal Water Pollution Control Act (P.L. 92-500) and the Safe Drinking Water Act (P.L. 93-523).

The Federal Water Pollution Control Act provides for two types of standards: effluent standards and water quality standards. Water quality standards describe the quality that will be required for particular bodies of water. An effluent standard is the amount of a pollutant that is allowed to be discharged in a time period or a maximum permissible concentration in the effluent.

Under the Safe Drinking Water Act, Federal assistance cannot be approved for any project that could contaminate an aquifer that has been designated by EPA as the sole drinking water source for an area. If it were to be contaminated, a significant hazard to public health would be created.

3. Assessment Questions

a. Will either the municipal water utility or on-site water supply system be adequate to serve the proposed project?

b. If a public system is not available, will individual wells meet HUD's standards?

c. Will the project affect a sole source or other aquifer?

4. Analysis Methods

Initial Impact Screening

ALWAYS USE

EF 2.1: Water Supply

CONTACT: If the project will be connected to a public system, and local approval has been obtained, no further analysis may be necessary. If the water service is by a private or individual system, proceed to further analysis.

Further Analysis

a. STUDY: If, on the basis of the initial screening, a determination cannot be made, a study by a civil or environmental engineer may be required to determine that the system and its water quantity and quality will be adequate and safe.

b. CONTACT: If the project affects a sole source aquifer designated by EPA, further coordination with EPA will be required.

Special Requirements for Projects Affecting Sole Source Aquifers

Section 1424(e) of the Safe Drinking Water Act of 1974 authorizes the EPA Administrator to designate an aquifer for special protection if it is the sole or principal drinking water resource for an area, and if its contamination would create a significant hazard to public health. The Administrator may make this designation on the basis of a citizen petition or upon EPA's own initiative. No commitment for Federal financial assistance, through a grant, contract, loan guarantee or otherwise, may be entered into for any project that the Administrator determines may contaminate such a designated aquifer so as to create a significant hazard to public health.

For aquifers designated under Section 1424(e), EPA negotiates an agreement with the HUD Regional Office setting forth the specific EPA review requirements.

Sole source aquifer designations (as of January, 1982) include: Edwards - San Antonio, Texas; Spokane - Washington; Nassau/Suffolk Counties - New York; Biscayne - Florida; Buried Valley - New Jersey; Ten Mile Creek - Maryland; Fresno County - California; and Northern Island of Guam, Where the project affects a sole source aquifer or aquifer recharge area, the Interagency Agreement between EPA and HUD Regional Offices will determine the procedure to be followed.

5. Evaluation of Impacts

If the existing public water supply system is not adequate to meet the project's demand, a determination will need to be made whether existing sources of supply can be expanded to meet project needs. When the existing system is not adequate and there are no improvements contemplated or alternatives which would provide adequate water supply meeting public health standards, this factor should be rated as "major" impact.

6. Mitigation Measures

Generally, the developer should consider those mitigation measures which encourage water conservation through the design and construction. Measures worth considering include using low flow fixtures and pressure reduction devices. For aquifer recharge areas, mitigation measures should focus on maintaining infiltration so as not to deplete groundwater supplies. Groundwater recharge techniques include on-site retention to delay runoff and engineering techniques that promote

infiltration by controlling runoff, and site design to minimize impermeable surfaces.

7. Information Resources

a. Publications

Keyes, Dale L. Land Development and the Natural Environment The Urban Institute, 1976. Washington, DC

Dunne, Thomas and Luna Leopold, Water in Environmental Planning, W. H. Freeman, San Francisco, 1978.

Sargent, Frederick and Blaine Sargent Rural Water Planning F.O. Sargent. 330 Spear Street, South Burlington, Vermont 05401

National Association of Homebuilders, Home Builders and Water Quality, NAHB, Washington, DC, 1979.

Memorandum to Heads of Federal agencies, Environmental Review Pursuant to Section 1424(e) of the Safe Drinking Water Act of 1974 and its Relationship to the National Environmental Policy Act of 1969, CEQ November 19, 1976.

b. Resource Persons

City Engineer or Superintendent of water department

HUD Regional Engineer

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ENVIRONMENTAL FACTOR 2.2: WASTE WATER

1. Overview

All new development must have a wastewater disposal system. Most new projects will be connected to an existing system. If, however, the existing system is at capacity or if the project is located too far away for connections to be feasible, some form of on-site disposal system will have to be employed. If the soil and other conditions are suitable, individual septic systems could be built. Or a developer may build same form of package treatment plant. Whatever system is used, it must be built and operated so that the effluent (treated water) does not cause pollution problems.

2. Related Laws and Regulations

The principal law related to this factor is the Federal Water Pollution

Control Act Amendments of 1972 as amended in 1977 (33 U.S.C. 1251-1376) and EPA implementing regulations (33 CFR Part 320-325 and Part 230). At the state and local levels, the State Water Control Board, various regional and local health and building codes may regulate waste disposal. EPA offers both financial assistance and technical advice in the construction of disposal plants. EPA also issues National Pollutant Discharge Elimination System (NPDES) permits limiting the place, kind, and amount of discharge of pollutants that will be allowed.

3. Assessment Questions

a. Will the existing or planned waste water disposal systems provide satisfactory service to the proposed development?

b. Will the design capacity of the treatment plant be exceeded by the project as proposed?

c. Will the proposed project be adversely affected by the proximity of sewage disposal facilities?

d. In areas remote from existing sewer systems are the soil conditions suitable for on-site septic systems?

4. Analysis Methods

Initial Impact Screening

ALWAYS USE

FIELD/EXPERIENCE: In some cases the reviewer's knowledge of local sewage treatment capacity may be sufficient to determine if the project will be able to hook up to existing system. There are indicators which will alert reviewers on field visits to conditions which may cause other problems and need further investigation. Indicators include, but are not limited to, the following:

Visible rock outcrop--excavation for sewer lines expensive.

Site remote from any existing sewer system.

Heavy soils with low percolation rates.

SOMETIMES USE

a. CONTACT: Municipal engineer, county agency, planning director can usually provide information on this factor.

b. PRINTED: Sewer maps, soil maps and USGS maps are useful resources.

Further Analysis

STUDY: If, on the basis of the initial screening, a determination cannot be made, a study by a civil engineer or environmental engineer may be required.

5. Evaluation of Impacts

Analyze to determine the location of the site in relation to services and infrastructure including: its location and design of waste water removal facilities, if any, and any on-site disposal plans to determine the potential for groundwater or surface water contamination. Determine the type and density of development in order to determine water use and the volume of waste water to be generated.

If the estimated sewage generation will exceed greatly the capacity of sewers or treatment facilities and no remedial actions are contemplated, or if the project will utilize on-site liquid waste disposal system in an area not suited for its use, or if waste water effluent may affect environmentally sensitive areas, a finding of "major impact" should be made.

If a public system will be used, local authorities (public works or sewage treatment authority) can determine whether the additional waste will exceed the capacity of the local system without degrading the receiving waters. If capacity will not be exceeded, a finding of "no impact" can be made.

6. Mitigation Measures

Developer should consider using water saving fixtures to reduce the amount of waste water. The developer (and local community whenever appropriate) should consider expanding waste water facilities. Proper construction of on-site facilities helps mitigate potential adverse effects. The 208 Water Quality Management Planning Agency or the local sewage authority will be able to provide guidance on other measures to reduce water pollution.

7. Information Resources

a. Publications

National Association of Homebuilders, Homebuilding and Water Quality, NAHB, Washington, DC, 1979.

Local infrastructure maps give the location and capacity of sewer and storm water drains. These are available from either the local planning or engineering departments.

The Soil Conservation Service Soils Maes indicate areas of impermeable soils and areas of highly permeable soils. The S.C.S. can also provide data on the depth of the water table which is useful in planning on-site waste water treatment facilities.

Areawide Wastewater Management Plans. Areawide 208 Agency.

Local Building and Health Codes, Local Building Department.

Soils Survey Ratings for On-Site Waste Disposal, U.S. Soil reservation Service.

b. Resource Persons

Engineer--local sanitary district/agency, city or county engineering department, 208 planning agency

HUD Regional Engineer

U.S. Soil Conservation Service soils scientist

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ENVIRONMENTAL FACTOR 2.3: STORM WATER

1. Overview

Storm water disposal is an essential service in urban areas, and the complexity of the system design is in direct proportion to the intensity of land use. A central business district where maximum land coverage is allowed will need a storm sewer system designed to remove most of the rainfall within a short time after the end of the storm and mostly in a closed system. At the other extreme, a low density area where homes are built on very large lots, will carry nearly all its surface run-off in its natural waterways. The only drainage structures needed will be bridges and culverts to carry water under roads. It is also important, and in many cases critical, that adequate provision be made to allow as much rainfall as possible to enter the soil to recharge the water table which supplies well water for domestic and other uses. Sending too much storm water into natural drainage channels can cause the start of erosion where the streambed formerly was stabilized. Storm water in cities washes over streets and picks up considerable amounts of surface pollution which is not biologically degradable, e.g. grease, rubber, metal, glass and dangerous metals such as lead and cadmuim which pollute ground and surface waters.

2. Related Laws and Regulations

Except for navigable waterways, which are under Federal control, lakes and streams are under State jurisdiction, and the laws adopted to meet conditions vary from State to State.

3. Assessment Questions

a. Will existing or planned system adequately service the proposed development?

b. Can storm water be disposed of on-site?

c. Will surface water be channeled directly into a closed storm drainage system rather than to recharge aquifers?

4. Analysis Methods

Initial Impact Screening

ALWAYS USE

FIELD/EXPERIENCE: Field observation should reveal any unusual drainage problems such as standing water, rills, gullies, or other indicators of water erosion.

EF 2.3: Storm Water

SOMETIMES USE

CONTACT: Civil engineer and local officials to insure that the local system has the capacity to accommodate the additional runoff.

Further Analysis

STUDY: A civil engineer should perform the analysis to determine if the system for storm water disposal is adequate.

5. Evaluation of Impacts

As stated previously, Factors 2.1, 2.2, 2.3 and 2.4 which deal with water and wastes are so interrelated that the reviewer is advised to become familiar with all of these before making a finding on any of them separately. Sole source aquifers require special care in any development over their points of water entry to assure their continuing use as water sources. If the capacity of storm sewers is overloaded to the extent that run-off for the project can not be accommodated, this factor should be rated as "major impact."

6. Mitigation Measures

There are three basic mitigation methods.

a. Control of runoff at the source through grading, retaining vegetation, reducing amount of paved or impermeable surfaces.

b. Treatment of runoff at the source. Temporary storage of runoff to allow suspended solids to settle out is one example. Diversion of runoff to land treatment areas for spraying or controlled overland flow is another. The fact that most runoff pollution results from the "first flush" of runoff should be considered when planning

source treatment facilities.

c. Treatment of runoff at a centralized plant downstream (probably the most costly method because of the vast volume of water requiring treatment). Consequently, consideration should be given to storage facilities that enable storm water to be released to treatment plants at a gradual rate after the runoff peak has passed.

7. Information Resources

a. Publications

U.S. Geological Survey maps and reports--the 7-1/2 and 15 minute quadrangle sheets are available for all urban areas.

Local infrastructure maps give the location and capacity of storm water drains.

Residential Erosion and Sediment Control. Urban Land Institute, American Society of Consulting Engineers, and National Association of Home Builders, 1978. 63 pages.

Residential Storm Water Management, Urban Land Institute, American Society of Consulting Engineers and Department, Publication Orders, 15th & M Streets, N. W., Washington, DC 20005.

b. Resource Persons

Engineer--city or county engineering department, local or district storm water treatment/disposal agency or local planning department

HUD Regional Engineer

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ASSESSMENT FACTOR 2.4: SOLID WASTE

1. Overview

Solid waste disposal is an essential service in urban areas. Solid wastes are usually managed by local government which, or through their contractor, collects and disposes of waste. States now exercise authority over disposal of municipal solid wastes. Solid waste materials are generally transported by trucks to a common, usually

remote site for either recycling (rarely), incineration (where allowed), or disposal in a sanitary landfill.

2. Related Laws and Regulations

Under the Resource Conservation and Recovery Act of 1976 (42 U.S.C. 6901-6987) as amended, several regulatory programs with significant land development implications have been established. In particular, the Act sets out site selection criteria for hazardous waste disposal facilities. State or regional solid waste management is mandated for the siting of sanitary landfills and the closing of open dumps.

EPA regulations, 40 CFR 257.3-1, prohibit hazardous waste disposal sites in a number of sensitive ecological areas (e.g., floodplains, sole source aquifers). Also, under EPA guidelines for state solid waste management plans, State environmental management agencies are developing procedures for the closing or upgrading of open dumps and for the siting and maintenance of sanitary landfills. Included among the criteria for the development of sanitary landfills are criteria on leachate control, gas control, surface water runoff control, operation, and monitoring.

3. Assessment Questions

a. Will the existing or planned solid waste disposal system adequately service the proposed development?

b. Will the proposed development overload these facilities?

c. Will the proposed project be adversely affected by proximity to these facilities?

d. Does the community provide collection service either directly or by contract?

4. Analysis Methods

Initial Impact Screening

ALWAYS USE

EF 2.4: Solid Waste

EXPERIENCE: The evaluator may be familiar with the municipality's disposal program through experience with other projects in the vicinity.

Further Analysis

CONTACT: Information can be obtained from the Department of Public Works or other local agency responsible for solid waste disposal. (In some areas, this service is provided by private contractors operating under municipal license.)

5. Evaluation of Impacts

Where the project will not substantially affect the quality of solid waste service or where the project will affect the capability of the existing services but plans have been developed to expand the system, a finding of "no impact" can be made. Where the estimated solid waste generation will overtax the landfill or existing collection system, a finding of "impact anticipated" should be made. The severity of the problem will indicate whether it should be rated as "minor" or "major."

6. Mitigation Measures

Mitigation measures will vary according to the specific problem. They may include: expansion of existing land fill sites, better compaction methods, incineration, recycling, or provide for contract collection, increase collection capacity.

7. Information Resources

a. Publications

Clark and Toftner, Land Use Planning and Solid Waste Management, Public Works Magazine, March-1972 pp. 79-80

b. Resource Persons

Engineer--local solid waste disposal agency, or city or county engineering department

HUD Regional Engineer

ENVIRONMENTAL FACTOR 3.1: WATER RESOURCES

1. Overview

There are two principal aspects of water resources: the quantity of water that is available, and its quality. Previous discussions have dealt with the distribution of water through the supply system, and the disposal of solid and water borne wastes (see also Factors 2.1. 2.2, 2.3 and 2.4).

Water resources can be divided into two subcategories: (a) groundwater and (b) surface water.

(a) Groundwater refers to all of the water found below the ground's surface. While most groundwater comes directly from rainwater, some results from seepage from the sides and bottoms of lakes and streams. The area in which the groundwater is stored is called an aquifer. The supply of groundwater depends upon a balance between the amount of water entering the ground and the amount being withdrawn. Excessive well pumping can induce infiltration from streams and ponds, causing surface water levels to drop. If these

surface waters are polluted, groundwater quality will be degraded.

(b) Surface waters range from very large rivers and lakes to small ponds and streams. Urban development can have a serious negative impact on water quality, specifically from the effects of pollution generated by factories, urban sewerage systems, power plants and runoff from paved areas. Degraded surface water quality can have short-term and long-term human health implications, can affect aquatic habitats and species and can have aesthetic and other consequences.

2. Related Laws and Regulations

There are many laws and regulations governing the appropriation of surface and underground water. Every state has a water control board by that or a similar name. Public and private utilities supplying water for domestic use are regulated by State Public Utility Commissions which control service areas, rates, extensions and other matters. At the Federal level there are the Clean Water Act of 1977, the Safe Drinking Water Act (P.L. 93-523), and the Federal Water Pollution Control Act (P.L. 92-500). (See Assessment Factor 2.1.) In addition, HUD-assisted housing projects are required to comply with HUD Handbook 4940.2 Minimum Design Standards for Community Water Systems. EPA has regulations governing Sole Source Aquifer Agreements. The Federal Government also issues discharge permits (NPDES) - National Pollution Discharge Elimination Systems - to local sewage treatment agencies into waters under Federal control. Compliance with 208 Wastewater Plans is required. Local building, plumbing, and health codes must be observed.

Two related laws concerned with water resources, not addressed in the other assessment factors are: (a) the Fish and Wildlife Coordination Act (16 U.S.C. 662) and (b) the Wild and Scenic River Act (16 U.S.C. 1271-12S7); these are included as part of the water resource analysis.

EF 3.1: Water Resources

3. Assessment Questions

a. If the project is to use groundwater from the site is there evidence that supplies are adequate and free from pollution?

b. Are there visual or other indications of water quality problems on or near the site?

c. Will the project involve discharge of sewage effluent into surface water bodies? If so, will the effluent meet state, Federal and other applicable standards?

d. Will the project involve a substantial increase in impervious surface area, and, if so, have runoff control measures been included in the design?

e. Will the project affect surface water flows or water levels in ponds as a result of groundwater well pumping?

f. Will the project involve the impoundment of over 10 acres or divert or change a stream or lake?

g. Will the project affect a Wild and Scenic River or a river in the Nationwide Rivers inventory?

4. Analysis Methods

Initial Impact Screening

ALWAYS USE

FIELD/EXPERIENCE: If the reviewer is familiar with local conditions, this knowledge coupled with a site visit may be sufficient.

SOMETIMES USE

a. CONTACT: The county engineer, 208 agency staff or other local officials who are familiar with the area.

b. PRINTED: USGS maps, storm drainage maps. The above information sources will alert the reviewer with potential problems and conflicts or indicate there are none.

Further Analysis

Requirements for compliance with the Wild and Scenic Rivers Act (16 U.S.C. 1271-1257

Detailed instructions are contained in a Memorandum to Heads of Agencies from the Council on Environmental Quality, dated August 10, 1980 entitled "Interagency Consultation to Avoid or Mitigate Adverse Effects in Rivers in the Nationwide Inventory."

Essentially these requirements are as follows:

Wild and Scenic River System

Determine if proposal could be defined as a "water resource project" (check with HCRS if necessary). If so, determine if proposal could affect a listed river and, if it does, provide HCRS with project information and request cements.

Rivers Inventory

Determine if proposal could affect listed river. If so, notify HCRS and request any comments/information HCRS may have at this time.

Determine the nature of the effect on the river and, if it is not adverse, document and provide HCRS with a copy of the analysis. Identify alternatives that would avoid or mitigate the adverse effects and provide HCRS with a copy of the analysis and request comments. (A Federal agency is not prohibited from taking action that would result in an adverse impact on a river in the Nationwide Rivers Inventory--but consultation is required first.)

Requirements for Compliance with the Fish and Wildlife Coordination Act (16 U.S.C. 662)

If the project involves impounding more than 10 acre feet of water or diverts or deepens a body of water, coordination with the Fish and Wildlife Service and the State wildlife agency will be required.

5. Evaluation of Impacts

If the project will have no significant effect on either the quantity or quality of water entering the groundwater stratum, and there are no serious site problems which would adversely affect the construction or use of the project rate this factor "no impact." If problems are identified as serious the project design should be altered to solve or avoid them.

If the project does not impound 10 acres of water area or divert a river or stream or impact on a river in the DOI "rivers inventory" rate this factor "no impact." A finding of "minor impact" or "major impact" will be based on results of the required interagency coordination procedures.

6. Mitigation Measures

Groundwater

In areas where pumping poses a problem, the amount of pumping should be limited to safe annual yields. In locations with high water problems, underground spaces need to be designed to withstand pressure of ground water and provision made to pump out seepage. Also, special design may be required of wastewater disposal systems to fraction properly in high water table conditions.

EF 3: Water Resources

Surface Water

The objective of impact mitigation on surface water is twofold: to reduce the hazards of the project posed by polluted water and to reduce contamination of local surface waters by the project. In many cases the overloading of public wastewater treatment facilities can only be remedied by expanding those facilities. Proper construction of on-site facilities helps mitigate potential adverse effects. Runoff control measures--such as on-site storage or routing to settling basins prior to discharge into surface waters--can be induced in site design.

7. Information Resources

a. Publications

American Public Health Association, American Water Works Association, and Water Pollution Control Federation. Standard Methods for the Examination of Water and Wastewater, 13th ed., New York, APHA, 1971.

U.S. Federal Water Quality Administration (FWPCA). Water Quality Criteria: Report of the National Technical Advisory Committee to the Secretary of the Interior. Washington, DC, GPO, 1968.

Dunne, Thomas and Luna Leopold, Water in Environmental Planning, W.H. Freeman, San Francisco, California, 1978.

Keyes, D.L. Land Development and the Natural Environment. The Urban Institute, Washington, DC, 1976.

National Association of Homebuilders, Home Builders and Water Quality, NAHB, Washington, DC, 1979

b. Resource persons

Planner and/or engineer--208 water quality planning

Hydrologist--USGS Geological Survey or State Geological Survey

Soil Scientist--U.S. Soil Conservation Service

Engineer--Local water supply agency or city and/or county engineering department

HUD Regional Engineer

ENVIRONMENTAL FACTOR 3.2: UNIQUE NATURAL FEATURES AND AREAS

1. Overview

This factor includes two separate but related natural environmental conditions--unique geological features and mineral resources.

Unique natural features are produced by normal geological processes. Their uniqueness stems from their infrequent occurrence, their aesthetic value, or their information content. Examples of such features include exposures of fossil-bearing or mineralogically interesting rock formations, special formations such as glacial drumlines and eskers, and such aesthetically pleasing features as coastal dunes and bluffs.

Mineral resources are usually divided into three categories: fossil fuels, metals, and non-metals. The categories reflect more how they are used rather than how they were formed. Mineral resources are

extracted from the earth by various methods. Each technique has certain kinds of effects on the ground above and around it which sometime affect nearby development; thus, there may be a potential conflict between mineral resource production and the well-being of nearby communities. Conversely, the presence of these communities can prevent the development of some valuable mineral resources.

2. Related Laws and Regulations

There is no Federal legislation which protects unique natural features other than features which might qualify for historic preservation or endangered species protection. Some unique features may be protected by State and local legislation.

The National Surface Mining Control and Reclamation Act of 1977 includes specific restrictions on surface mining around or near certain urban features. State laws and local codes which address this factor should be considered. These varied laws may have a bearing on land use conflicts, past extraction, and mineral rights, all which should be observed.

3. Assessment Questions

a. Will the project location, construction, or activities affect unique natural features or resource extraction on or near the site?

b. Will the project either destroy or isolate the unique natural feature from public or scientific access?

c. Will the unique feature or resource extraction activity pose safety hazards for a proposed development?

4. Analysis Methods

Initial Impact Screening

EF 3.2: Unique Natural Features and Areas

ALWAYS USE

FIELD/EXPERIENCE: In some cases the reviewer's knowledge of local conditions may be sufficient.

Often unique natural features or areas can be observed during a field inspection.

Indicators of these features include, but are not limited to, the following:

-- Coastal bluffs, cliffs, waterfalls, gorges, earthquake faults

-- Unusual rock form or colors, fossils

-- Public or private scenic parks or areas

-- Obvious active or inactive mine pits or mine entrances

-- Mine refuse piles or tailings. These make unusual mounds and are sometimes grown over

-- Ore bearing trucks or railcars near the site

Subsidence on or near the site as indicated by irregular land surface; unusual surface depressions; leaning fences, power poles, houses and barns and cracks across roads or open areas where the gradient of the land changes

SOMETIMES USE

a. CONTACT: Contact the county engineer or city manager, local planning director, or other local official likely to be knowledgeable.

b. PRINTED: Mineral maps, USGS maps or other natural resource maps may be helpful.

Further Analysis

a. CONTACT: Contact the county engineer or city manager, local planning director, or other local official likely to be knowledgeable.

b. PRINTED: Mineral maps, USGS maps or other natural resource maps may be helpful.

Further Analysis

CONTACT: More detailed information may be obtained from the State Department of Natural Resources or the Office of Geology if required to complete the analysis.

5. Evaluation of Impacts

The conditions listed below are indicative of potential adverse influences on unique natural features and areas.

a. Structures or roadways located adjacent to or atop unique natural features

b. Grading, cutting or filling on unique natural features

c. Construction of tall or massive buildings near or around unique natural features which will alter visual quality and access

d. Restricted physical access to a unique area or mining site

If no unique features or past or present mining activities exist on or

near the site, if a proposed project will not restrict access to unique natural features or resources that do exist, or if a proposed project will not destroy or alter existing natural features or resources, rate this factor "no impact." At the other extreme, if any important natural feature or area will be destroyed or altered, or if access (physical and visual) to it will be restricted, rate this factor "major impact."

If hazards posed by existing mining features exist or if the proposed project will limit future extraction of valuable mineral resources, and if inadequate mitigation measures are proposed to correct these mineral resources impacts, rate this factor "major impact."

6. Mitigation Measures

Mitigation measures oriented to minimizing impacts on the feature necessarily focus on modification of the project plans rather than alteration of the natural feature itself. They include:

a. Alter project plans to preserve feature or resources

b. Provide visual and physical access to unique features

c. Set unique feature aside as park or natural area

d. Allow scientific excavation of fossil bed or other features before destruction of feature is allowed

e. Fence off areas which may create a site hazard

7. Information Resources

a. Publications

Geologic Reports and Maps, U.S. Geological Survey and State Geological Surveys (specific titles and dates of publication vary)

EF 3.2: Unique Natural Features and Areas

General Plans, local planning departments

Topographic Quadrangle Maps, U.S. Geological Survey (7.5 and 15 minute series)

Aerial Photos are also helpful in identifying unique natural features and resources

b. Resource Persons

State and Federal Park Service, naturalists and/or geologists, U.S. Bureau of Mines

Local university natural scientists, geologists, mining engineers

HUD Regional Engineer

Engineer or planner from local agencies

ENVIRONMENTAL FACTOR 3.3: IMPORTANT AND PRODUCTIVE FARMLANDS (AGRICULTURAL LANDS)

1. Overview

U.S. farmland is a unique natural resource which provides food and fiber. These agricultural lands include lands currently used to produce agricultural commodities or lands that have the potential for such production. These lands have the favorable combination of soil quality, growing season, moisture supply and accessibility.

Highly productive or potentially productive agricultural lands are important due to their relatively limited occurrence and their long-term value for efficient production of food and fiber. Each year large amounts of farmland are converted from actual or potential agricultural use to non-agricultural use. As urban expansion moves outward from cities into surrounding agricultural regions, highly productive lands are often converted to or adversely affected by urban development.

Farmlands are limited. Due to the importance of agriculture to the national economy and the importance to agricultural of maintaining the very best farmlands in production, many local and State governments are adopting policies and regulations to preserve farmlands in the face of urban development pressures. The term farmlands or agricultural lands for this assessment factor refers to three specific categories: prime farmland., unique farmland, and farmland of statewide or local importance.

2. Related Laws and Regulations

The Farmland Protection Policy Act (FPPA) of 1981 (Subtitle I of the Agriculture and Food Act of 1981) requires Federal agencies to minimize the extent to which their programs contribute to the unnecessary and irreversible commitment of farmland to nonagricultural uses. It further requires that where practical, Federal programs will be administered in such a manner that they will be compatible with State, local and private programs and policies to protect farmland.

USDA Regulations (7 CFR Part 658) implementing the FPPA requires Federal agencies to conduct a farmland conversion impact rating (using USDA Form AD-1006) when a proposed project may convert farmlands to non-agricultural uses. This impact rating should be done when the impacts of a proposed project will affect farmlands in the following categories:

- prime farmland - the highest quality land for food and fiber production having the best chemical and physical characteristics for producing;

- o unique farmland - land capable of yielding high value crops such as citrus fruits, olives, etc., and;

- o farmlands designated as important by State and local governments, with the approval of the Secretary of Agriculture.

EF 3.3: Important and Productive Farmlands

Neither the Act nor the regulations apply if:

- o the proposed project site does not contain farmland in categories identified above.

- o the proposed project is on prime farmland that is already "committed" to urban development or water storage (applies to prime farmland only -- see 7 CFR 658.2(a)).

- o projects were beyond the planning stage prior to August 6, 1984.

- o projects involving grants, loans or mortgage insurance for purchase or rehabilitation of existing structures.

In some States and localities agricultural lands are protected from development activity through State legislation, local codes, zoning or taxing policies.

3. Assessment Questions

a. Will the proposed project be located on or directly adjacent to land that is categorized as prime, unique, or of State or local importance?

b. Will the project location, construction, or activities of project users adversely affect farmland on or near the site by conversion?

c. Will drainage from the project adversely affect farmland?

d. Will the project create problems by introducing nuisance species of vegetation which may spread to adjacent farmland?

4. Analysis Methods

Initial Impact Screening

ALWAYS USE

a. PRINTED: USDA, Soil Conservation Service (SCS) Natural Resource Inventory or Countywide inventory maps, Form AD-1006, and the Site Assessment Criteria (7 CFR 658.5(b)).

(1) These maps are the primary resource for determining whether or not the proposed project site will be located on prime unique, or statewide or locally important farmlands.

(2) Maps and forms are available for the entire United States from the SCS District conservationist.

(3) Site Assessment Criteria is contained in 7 CFR 658.

(4) The comprehensive land use or development plan.

b. CONTACT: The District Conservationist at the USDA Soil Conservation Service Office (SCS). State and local authorities and County Planners can also be contacted.

5. Evaluation of Impacts

a. A determination that the Act (and Regulations) does not apply must be documented.

b. Rate the "Impact Anticipated" as "None" when a proposed project site falls into one or more of the four cases where the Act does not apply. Note the appropriate circumstance in the supporting documentation column.

c. Rate the "Impact Anticipated" as "major" or "minor" when a proposed project site converts "farmlands" subject to the Act to nonagricultural use. Note that we have not set the number of points for determining "major" or "minor" impact. The 160 point threshold recommended by USDA can be used as the lower threshold to indicate "minor" impact. The point threshold of "major" impact depends to a large extent on your judgment of the importance of the farmland in the area. Other factors which could be considered in making a "major" impact finding may involve the following situations: (1) a developer may have received special zoning consideration for a project (2) the project is not consistent with the local comprehensive land use plan or represents sprawl or leapfrog development. Document the supporting information in the appropriate column.

Findings should always be documented; in those instances when the Farmland Conversion Impact Rating (Form AD-1006) is used it should be attached to HUD Form 4128.

6. Mitigation Measures

Protecting special cropland through agricultural districting provisions, special zoning provisions or tax abatements is the responsibility of local or State governments.

Actions which a developer can take to minimize some of the adverse effects of projects adjacent to agricultural lands include:

a. Minimizing impervious surfaces and design the drainage system so that site runoff will be led to storm sewers or existing drainage

ways rather that spread out on agricultural land adjacent to the project

b. Limiting human and pet access from project to adjacent agricultural lands with fencing, road patterns, and general site design

c. Avoiding the use of species in landscaping that are invasive and likely to establish themselves in adjacent croplands

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7. Information Resources

a. Publications

National Agricultural Land Evaluation and Site Assessment Handbook (LESA). U.S. Department of Agriculture, Soil Conservation Service. February 3, 1983.

Natural Resource Inventory or County-wide Inventory Maps

b. Contacts

SCS, State Conservationist, USDA

SCS, District Conservationist, USDA

County Planning Department

State Departments of Natural Resources, of Planning and Development, or of Agriculture

HUD Regional or Field Office Environmental Officer

ENVIRONMENTAL FACTOR 3.4: VEGETATIVE AND ANIMAL LIFE

1. Overview

The dying out of plant and animal species is certainly not a new or even an unnatural phenomenon. It is however a phenomenon that occurs with much greater frequency today than in the past. As man's influence and activities cover more and more of the globe, the natural habitats of thousands of species are destroyed or irrevocably altered. It has been estimated that half the species of plants and animals (including birds, fish and insects) alive today could be extinct by the year 2000. One of the scientists' major concerns is that there is so much we don't know about most of the world's plants and animals. Through ignorance alone, we may be causing or allowing the extinction of species that could have enormous value to us.

Most of the projects HUD is involved with probably do not pose any threat to existing species since most projects are located in urbanized areas where development will have already had its effect. If, however, a project is located in a less developed area where there are lands that are still mostly in their natural state, endangered species or their habitats may be encountered.

2. Related Laws and Regulations

As a result of concern over the loss of many species, Congress passed the Endangered Species Act of 1966, 1969 and 1973. Many States have also passed endangered species legislation. This legislation may protect specific species but not their habitat, unless in designated wildlife sanctuaries. Thus the key factor is the effect which a proposed development will have on the habitat of endangered species.

3. Assessment Question

a. Will the project damage or destroy existing plant communities, listed as rare or endangered species?

b. Will it damage or destroy trees without replacement and landscaping?

c. Will the project create environmental conditions which might threaten the survival of existing vegetation, particularly changes in the native plant community habitats?

d. Will it create conditions favorable to nuisance species.

The assessment question on animal life encompasses the following five topics: disruption, habitat alteration or removal, endangered species, pest species and game species.

a. Will the project create special hazards for animal life? What types of animal will be affected and how?

EF 3.4: Vegetative and Animal Life

b. Will the project damage or destroy existing Wildlife habitats?

c. Will the project threaten any animal species listed by either state or Federal agencies as rare or endangered?

d. Will the project damage game fish habitats or spawning grounds?

e. Will the project create conditions favorable to the proliferation of pest species?

f. Will excessive grading alter the groundwater level and thus cause the destruction of trees and ground cover which serves as animal habitats?

4. Analysis Methods

Initial Impact Screening

ALWAYS USE

a. FIELD/EXPERIENCE: Observation may indicate whether the site is likely to contain any important plant or animal species. For example, a cleared inner-city tract is not likely to while an undeveloped area may contain such life.

b. PRINTED: Check the existing lists of endangered species from the Bureau of Fish and Wildlife, Department of Interior, to determine whether any endangered species live in the area.

Further Analysis

CONTACT: If an endangered species or habitat may be affected, further coordination with the Fish and Wildlife Service is required.

According to procedures mandated by the Endangered Species Act of 1973 (PL 93-205) as amended in 1978 and 1979, Federal agencies must determine whether projects affect endangered species designated and listed periodically under Section 4 of the Act. If such finding is made, the agency must consult with the Department of Interior (DOI-terrestrial) or the Department of Commerce (DOC-marine life) in compliance with the procedure of Section 7 of the Act to ensure that a proposed project will neither jeopardize the continued existence of an endangered or threatened species nor result in the destruction or adverse modification of critical habitats of plants and animal life. Designation of such areas must be based on cost benefit analyses by DOI and on a determination that failure to designate would result in the extinction of the species.

5. Evaluation of Impacts

An initial determination can be made by analyzing the project proposal, the site and its environs, applicable documentation, and field data.

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Rate this factor "major impact anticipated" if:

a. Structures or roadways are located adjacent to or atop known locations of protected species or critical habitats.

b. Grading, cutting or filling will take place on locations of protected species of critical habitats.

c. There is a wetland area which supports a population of protected species.

d. Drainage is to be redirected toward a population of protected species.

e. There is potential for intense noise, vibration or activity at or near the location of a protected wildlife species or its critical habitat.

f. The proposed project will directly destroy a species or vegetation population dependent on the site or preempt a critical habitat.

6. Mitigation Measures

Mitigation measures will require modification of the project plans. The exception would be transplanting a particular species of plant or animal life to a new suitable location.

Mitigation measures include:

a. Altering project plans to avoid impact on critical habitat area

b. Planting native vegetation to feed or shelter protected wildlife species

c. Setting aside the critical habitat area as a park or natural area

d. Avoiding (a) construction in wetland areas; (2) terracing downhill slopes; and (3) planting native vegetation in landscaped and open space areas of project site

7. Information Resources

a. Publications

Biotic Surveys, Local Universities/Colleges (specific title and dates of publication vary).

Biotic Surveys, State Fish and Game Departments (specific titles and dates of publication vary).

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Biological Field Guides, Local Universities/Colleges (specific titles and dates of publication vary).

Threatened and Endangered Species Lists, U.S. Fish and Wildlife Service

Threatened and Endangered Species Lists, State Fish and Game Department (availability varies)

Vegetation Maps, State Forestry Department (availability varies)

General Plans, Local Planning Department (availability varies)

U.S. Department of the Interior, Bureau of Sport Fisheries and Wildlife, Threatened Wildlife of the United States. USDI Resource

No. 114, Washington, DC, US GPO, 1973. (Provides a list of game species in danger of extinction which sportsmen are urged to protect)

Endangered Species Technical Bulletin, USDA publication

Federal Endangered Species Act of 1973 (amended 1978 and 1979): Defines and extends Federal jurisdiction over all federally designated endangered and threatened species.

b. Resource Persons

Biologist/Ecologist - State Fish and Game Departments, Universities

Technical staff - Staff and Local Departments of Natural Resources or Environment

Endangered Species Specialist - U.S. Fish and Wildlife Service