Proposed Water Treatment Residuals Management Process

Scope of Statement

Prepared for

Washington Aqueduct
Baltimore District, U.S. Army Corps of Engineers

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Contents

SECTION 1

Background and Purpose

1.1 Summary of Background

The U.S. Army Corps of Engineers, Baltimore District, Washington Aqueduct operates the Dalecarlia and McMillan Water Treatment Plants (WTPs) in Washington, D.C., serving over 1 million persons in the D.C. and Northern Virginia area with potable water. The solids removed during the treatment process have historically been returned to the Potomac River, but a recently reissued version of the Washington Aqueduct National Pollution Discharge Elimination System (NPDES) permit (Permit No. DC 0000019) effectively precludes the discharge of water treatment solids, or residuals, to the river. Consequently, Washington Aqueduct is in the process of evaluating new water treatment residuals management options. As part of this evaluation, and in compliance with the National Environmental Policy Act (NEPA), Washington Aqueduct is preparing a Draft Environmental Impact Statement (DEIS) to document the environmental implications of residuals management alternatives before a decision is made on the action proposed to comply with the NPDES permit.

The DEIS process was initiated in January 2004 with publication of a Notice of Intent and a public scoping process. A project web page (http://washingtonaqueduct.nab.usace.army.mil/aqueduct.htm) was developed to keep the public informed of progress on the project. Official documents and information related to the scoping process were posted on the page. The next step in the NEPA process was to identify and screen alternatives that met the project purpose and need. This was done as part of an Engineering Feasibility Study. The results of the screening process were documented in a Description of Proposed Action and Alternatives (DOPAA), which along with the Engineering Feasibility Study, is posted on the web page. The alternatives which will be evaluated in detail in the DEIS are:

- No Action Alternative
- Process Water Treatment Residuals at Dalecarlia WTP and Dispose in Dalecarlia Monofill. Process Forebay Residuals by Current Methods and Periodically Haul.
- Thicken Water Treatment Residuals at Dalecarlia WTP, Then Pump via a New Pipeline to Blue Plains. Process Forebay Residuals by Current Methods and Periodically Haul.
- Process Water Treatment Residuals at the Dalecarlia WTP and Dispose via Contract Hauling. Process Forebay Residuals by Current Methods and Periodically Haul.

In addition to the base alternatives described above, the DEIS will also evaluate several treatment options associated with these alternatives, as identified in the Engineering Feasibility Study. These options include items such as: alternate Forebay residuals processing facilities, alternate sedimentation options for the Georgetown Reservoir and the

Dalecarlia WTP, alternate residuals processing technology, etc. A complete summary of the treatment options that will be considered is provided in the Engineering Feasibility Study.

1.2 Purpose of the Scope of Statement

This Scope of Statement documents the approach for the evaluation and comparison of alternatives that will be followed in the DEIS. The approach is described for each major section of the DEIS which includes:

- Engineering Description of Alternatives
- Decision-Making Process (i.e., comparison of alternative actions)
- Description of Existing Conditions, presented separately for each resource of concern (air, cultural resources, traffic, land use, etc.)

The planned approach is being distributed to environmental regulators, interested stakeholders, and the public at large so that they know what to expect when the DEIS is released. It also provides an opportunity to comment on the planned approach in advance of the DEIS release.

SECTION 2

Engineering Description of Alternatives

An understanding of certain engineering and logistical details of an alternative is paramount to evaluating and understanding the environmental impacts and effects of an alternative. Thus, the first step in the environmental evaluation process is to develop a description of each alternative that provides such an understanding. A general engineering description of all identified alternatives, including those selected for detailed evaluation in the DEIS was presented in the Engineering Feasibility Study. The description is adequate to evaluate impacts in the DEIS in most cases, however additional detail may be necessary to fully evaluate potential impacts for certain aspects of some alternatives.

A 20-year period of examination will form the basis for the DEIS. Consequently, residuals quantities and sizing of facilities will be based on anticipated water production over the 20-year period. Similarly, the evaluation of impacts of the alternatives will be based on the 20-year period of examination.

Elements common to all or multiple alternatives will be evaluated to determine if the description provided in the Engineering Feasibility Study requires additional detail for impact evaluation. These include, but are not limited to:

- Modifications to Dalecarlia Water Treatment Plant sedimentation basins and Georgetown Reservoir for the collection of residuals
- River solids collection equipment and facilities for the Forebay
- Pump stations and other conveyances to transport collected residuals to processing units
- Residuals thickening facilities
- Architectural treatment of constructed facilities
- Footprint of dewatering facilities
- Lighting requirements of dewatering facilities
- Onsite materials handling plan
- Potential mechanical equipment where noise generation may be an issue
- Hours of operation

Alternative specific engineering or logistical information will also be required to evaluate impacts and compare alternatives. Examples of the information to be developed to support environmental evaluation of individual alternatives include:

- Residuals Processing And Disposal At Dalecarlia Monofill Alternative
  - General monofill operating plan (e.g., potential cell configuration, periodic and final cover requirements, etc.)

  - Footprint and approximate height of monofill and processing facilities
  - Types of equipment and operating hours at the monofill and processing facilities
  - Lighting requirements at monofill and processing facilities
  - Conveyance method and route to the monofill
  - General construction plan (e.g., need for excavation, liner, drainage, etc.)

- Thicken Residuals At Dalecarlia And Pump To Blue Plains Alternative

  - Method and alignment for constructing the pipeline to Blue Plains
  - Need and general location for above ground facilities within pipeline corridor
  - Method of pumping the residuals into the pipe
  - Mechanical processing facilities needed at Blue Plains
  - Potential locations for processing facilities at Blue Plains
  - Current truck routes from Blue Plains to major highways

- Residuals Processing At Dalecarlia And Contract Haul For Disposal Alternative

  - Truck routes to major highways
  - Onsite interim storage facilities description and location

The additional description of alternatives provided in the DEIS will not be identical for all alternatives, but it will be adequate to fully and fairly evaluate environmental impacts.

SECTION 3

Decision-Making Process

3.1 Understanding Trade-Offs and Selecting a Preferred Alternative

The alternatives will be evaluated in relation to a comprehensive set of subject areas as prescribed for a DEIS. The greatest differences between the impacts of the alternatives are likely to focus on just a few of the evaluation subject areas. Once these differences are described in the DEIS, the Washington Aqueduct, in consultation with the public and appropriate agencies, will need to select a preferred alternative from those evaluated in the DEIS. The process for the Aqueduct to determine the preferred alternative will follow a rational, documented and defensible process, so that tradeoffs between various alternatives can be easily understood.

Each evaluation subject will use a common rating scale consisting of three categories: no impact, insignificant impact, and significant impact. These ratings will be further quantified, if necessary, to measure differences between alternatives. Colored scales, corresponding to each level of impact, will be created to graphically illustrate the rating of each alternative within each subject area. The Washington Aqueduct can use this information as a basis for its selection of a preferred alternative by focusing its decision making on the evaluation factors that make the most difference. This level of structured decision making may be sufficient if the rating system indicates a clear choice for a preferred alternative. If significant tradeoffs are present between the alternatives, additional decision support structure may be added in the form of further criteria quantification or subject area weighting to express relative importance of one subject area to another.

3.2 Withdrawing an Alternative

During the course of the DEIS data collection and evaluation, information may be identified that helps determine an alternative's ability to meet the requirements of the Federal Facility Compliance Agreement, (FFCA). Such information may relate to difficulties in implementation such as permit requirements, constructability, or cost. This information may essentially serve as additional insight into the Engineering Feasibility Study prepared in May 2004. A proposed alternative may be withdrawn from full consideration in the DEIS if new information causes it to be screened by one or more of the criteria described in the Engineering Feasibility Study.

SECTION 4

Resources To Be Evaluated

The resources to be evaluated in the DEIS include:

- Air quality
- Biological resources, including threatened and endangered species
- Cost
- Cultural resources
- Geology, soils and groundwater
- Hazardous materials and wastes
- Implementability
- Infrastructure
- Land application
- Land use
- Noise
- Public Health
- Social and economic resources, including Environmental Justice and Protection of Children
- Surface water
- Transportation
- Visual resources

Each resource area will include identification and discussion of direct and indirect impacts, short and long-term impacts, and cumulative impacts. Cumulative impacts will be defined based upon the potential of a resource to be impacted by a project alternative in combination with other unrelated, but planned actions in the project area by either Washington Aqueduct or other private or government entities.

In this Scope of Statement, each resource is presented individually to facilitate an understanding of the definition of the resource, the methodology and data sources used to document existing conditions, and the methodology and criteria used for impact assessment.

In the DEIS, the resources will be discussed in separate chapters: Section 3.0 will describe the existing conditions and Section 4.0 will describe the impacts associated with each alternative.

The U.S. Army Corps of Engineers' procedure for implementing NEPA is described in Engineer Regulation (ER) 200-2. According to ER 200-2, the DEIS should not exceed 150 pages in length. This page length is accomplished by "being analytic rather than encyclopedic." Army directives also state that "Impacts will be discussed in proportion to their significance; and insignificant impacts will only be briefly discussed, sufficient to show why more analysis is not needed."

With this in mind, the following descriptions of how each resource will be treated in the DEIS vary in length. More detail is provided for resource areas that have the opportunity to differentiate between alternatives. This distinction amongst resources will be carried into the DEIS, in keeping with federal guidelines for being "analytic rather than encyclopedic".

4.1 Air Quality

4.1.1 Definition

This section evaluates the impact of each project alternative on regional air quality in the Metropolitan Washington Interstate Air Quality Planning Region. Specific comparisons will be made to air emission threshold levels for particulate matter, sulfur dioxide, carbon monoxide, lead, and ozone. The EPA currently classifies the air quality in this region as better than the ambient standard for all of these substances except ozone, for which it is in severe non-attainment with respect to the 1-hour air quality standard and moderate with the respect to the 8-hour standard.

State Implementation Plans (SIPs) prepared by the States of Maryland and Virginia and the District of Columbia include control strategies to reduce volatile organic compounds and nitrogen oxides that contribute to the formation of ozone.

4.1.2 Existing Conditions

The major threshold levels for the criteria pollutants in the Planning Region will be described. We will use data from the comprehensive air emissions inventory prepared for the Washington Aqueduct in March 2000 for the calendar year 1999 to describe existing emission levels specific to the Washington Aqueduct area as a baseline for comparison. These are the most current data available.

TABLE 1
Estimated Actual Emissions for Calendar Year 1999 from Stationary Sources at the Washington Aqueduct Division

Pollutant	Dalecarlia Reservoir and Little Falls Raw Water Pump Station	Criteria Pollutant de minimus Threshold
Particulate Matter (PM)	0.15 tons/yr	100
Carbon Monoxide (CO)	0.22 tons/yr	100
Sulfur Dioxide (SO_2)	0.53 tons/yr	100
Nitrogen Oxides (NOX)	0.45 tons/yr	25
Volatile Organic Compound (VOC)	2.74 tons/yr	25
Lead (Pb)	0.000018 tons/yr	25
Total Hazardous Air Pollutants (HAPs)	0.33 tons/yr	--

Source: May 2000,"1999 Air Emissions Inventory for US Army Corps of Engineers Washington Aqueduct", prepared by Air Force Institute for Environmental Safety and Occupational Health Risk Analysis (AFIERA), Air Quality Branch

4.1.3 Evaluation of Impacts

Washington Aqueduct must determine if their proposed actions exceed de minimis thresholds listed in the regulations (40 CFR 93.153) and specific to the pollutant attainment status of the National Capital Interstate Air Quality Control Region. De minimis thresholds are not expected to be exceeded from the proposed alternatives either individually or cumulatively. If they are exceeded, the Washington Aqueduct will have to take the additional steps to demonstrate whether the proposed emissions are regionally significant in order to assure conformance with the region's SIP. The region's SIP is a matter of ongoing concern with particular attention being paid by the EPA and advocacy groups to implementation of the new ozone and fine particulate standards.

To make this comparison against de minimis thresholds, a worst case scenario will be developed to represent the largest emission factors from the components of the various alternatives. Stationary facilities and mobile sources (trucks) will be included in this estimate. These air emissions sources will be combined to produce a hybrid scenario with respect to the air emissions potential. Because this hybrid scenario will consist of the worst parts of each alternative, so to speak, its emissions estimates will exceed those of each alternative.

As noted above, the air quality evaluation will be based on the impacts of each alternative with respect to the existing air emissions inventory for the Washington Aqueduct and regional air quality regulations. Emissions from stationary and mobile combustion sources will be the main focus of the evaluation.

The contents and cover material for the monofill will consist of dewatered water treatment residuals (composed of aluminum hydroxide and river silt) and Forebay residuals (composed of river silt). It is inherently assumed, therefore, that the monofill would be operated according to standard industry best management practices to minimize dust generation so that offsite impacts do not occur. Therefore, fugitive emissions calculations from localized dust associated with operation of the monofill alternative will not be developed or further considered as part of the evaluation.

No Impact

The proposed alternatives will be considered to have no impact if the air emissions estimated for the hybrid scenario show that the de minimis thresholds are not exceeded.

Insignificant Impact

If the hybrid scenario should exceed one or more of the emission thresholds, an air emissions estimate for each alternative will be developed and compared to the de minimis thresholds to differentiate between alternatives. An insignificant impact determination will be made if an alternative exceeds the de mimimis thresholds, but it is not determined to be regionally significant. Truck traffic emissions are likely to be the primary source of air pollutants associated with the proposed alternatives, although preliminary investigations indicate that this is not likely to be a differentiating alternative.

Significant Impact

A significant impact would occur if the proposed emissions from an alternative are determined to be regionally significant and require compliance with the region's SIP.

4.2 Biological Resources

4.2.1 Definition

This section evaluates the impacts of each alternative on the biological resources at the proposed project locations as well as how these impacts affect the regional resources of the area. Biological resources to be considered at the potential project sites include special status species and protected and critical habitats such as wetlands or forested habitats. Examples of parameters that will be used to evaluate impacts to regional biological resources are wildlife corridors, habitat types in surrounding areas, and the potential for habitat fragmentation.

4.2.2 Existing Conditions

The principal data sources to be used are:

- Land use and wetland maps; other available mapping and imagery
- Environmental Data Resources (EDR) data base search results
- Existing documents (e.g., Final Environmental Baseline Report for the Dalecarlia, Georgetown, and McMillan Reservoirs, May 9, 1994)
- Consultations with applicable federal, state, and District of Columbia natural resource agencies
- Available natural resource data bases and literature
- Site visits

4.2.2.1 Special Status (Threatened and Endangered) Species

Federal, state, and local agencies will be contacted in order to determine the potential presence of any special status (e.g., threatened or endangered) species for plants and animals within or adjacent to the project area.

4.2.2.2 Protected and Critical Habitats

Specific habitats (e.g., those defined as critical for special status species), habitat types (such as streams and wetlands), and areas (such as floodplains) that are protected by statute or regulation will be identified and their specific status determined. Attention will be paid to Maryland's Forest Conservation Act of 1991 (FCA) and D.C.'s Urban Forest Preservation Act of 2002. The former protects the forests of Maryland by making the identification and protection of forests and other sensitive areas an integral part of the site planning process. The latter establishes an urban forest preservation program requiring permits for Special Tree removals or replacements and establishes a Tree Fund to be used to plant trees and defray costs associated with implementation of the Act. The purposes of the Urban Forest Preservation Act are to provide:

- Heat island effect mitigation and reduced energy use
- Better air quality and reduced water pollution
- Quieter and more beautiful neighborhoods

4.2.3 Evaluation of Impacts

Impacts will ultimately be defined as no impact, insignificant impact, or significant impact. If needed, the alternatives will be compared on a numerical scale to measure the type and amount of composite impact. This type of comparison will only be needed if this subject area distinguishes between alternatives.

4.2.3.1 Special Status (Threatened and Endangered) Species

Several criteria will be used to determine the significance of impact. These include the presence or absence of threatened and endangered species, the regulatory status (e.g., federal, state, or local, and endangered, threatened, or special concern), mobility, and habitat requirements:

No Impact

An alternative will have no impact if there are no affected special status species identified through agency coordination.

Insignificant Impact

If any species are identified, further communication with the relevant agency will be used to determine the proper methods that would need to be followed (i.e., surveys, relocation, best management practices, etc.) in order to avoid impacts to these species, taking into consideration mobility and habitat requirements. Significance of impact will be measured based on the level of effort needed to fully avoid or mitigate the potential impacts of the alternatives. If impacts can be fully avoided or mitigated then an alternative will be considered to have an insignificant impact.

Significant impact

In the event that an alternative cannot avoid impacting a protected species and mitigation measures would not be feasible and/or sufficiently protective, an alternative will be determined to have a significant impact.

4.2.3.2 Protected and Critical Habitats

Specific habitats (e.g., those defined as critical for special status species), habitat types (such as streams and wetlands), and areas (such as floodplains) that are protected by statute or regulation will be identified and their specific status determined. Impacts will be evaluated as follows:

No Impact

An alternative will be considered to have no impact if the following circumstances are met:

- there are no critical habitats or special habitat classifications
- there are no wetlands or waters of the U.S. involved
- there are no protected forested habitats impacted
- there are no regional considerations such as habitat fragmentation or protection of wildlife corridors.

Insignificant Impact

The most room for interpretation of impacts is in the subject of wetlands. The U.S Army Corps of Engineers currently has two commonly used levels of permitting for activities in wetlands and waters of the United States. The lower tier of permitting is known as the Nationwide Permit program and is generally reserved for projects with minimal impact to wetlands and waters of the United States. The threshold for determining whether the project has more than minimal impact to wetlands is when the wetland impacts are between one-tenth and one acre. The threshold for determining whether the project has more than minimal impact to waters of the United States is when the linear length of stream channel affected is greater than 300 feet. State wetland regulations will be considered here as applicable, particularly where there is a difference between DC and Maryland regulations.

When impacts exceed either of these thresholds, then the second tier of permitting takes precedence and an Individual Permit is required. In order to obtain an Individual Permit, an alternatives analysis must be performed and impacts must be minimized to the greatest extent practicable. Impacts at the level of the Individual Permit are significant enough to require compensatory mitigation.

If there are impacts, but the thresholds are not exceeded, and a Nationwide Permit will cover the activity, a conclusion of an insignificant impact would be reached.

Additional information will be evaluated if it is necessary to determine the levels of impacts between alternatives. This includes the type and total acreage of wetlands or linear feet of waters of the U.S. impacted by the project, the total number of these types of habitats in the project area and adjacent areas, and the quality of impacted habitat. For example, forested wetlands have higher value than emergent wetlands and therefore have higher replacement ratio requirements than emergent wetland impacts. Therefore, impacts to forested wetlands would be considered to have more negative environmental effects than impacts to emergent wetlands. In addition, if a certain type of wetland is impacted and this type of wetland exists in abundance in the project area, environmental impacts would be scored lower than if another type of wetland is impacted and this type of wetland does not exist (or is rare) elsewhere in the project area or in surrounding areas.

Significant Impact

A significant impact will be assigned to a project alternative if there are protected and critical habitats present or if an Individual Permit wetlands permit would be required.

4.3 Cost

4.3.1 Definition

This subject is evaluating the potential cost to the customers represented by the proposed alternatives. It will take into consideration both initial capital costs as well as long-term operational and maintenance costs.

4.3.2 Evaluation of Impacts

For each alternative, the initial capital cost and the estimated annual costs will be used to calculate the present worth, or present value of the project. A 20-year evaluation period will be used. For the analysis in the DEIS, it is assumed that present worth costs have a directly proportional impact on the rates charged to the Washington Aqueduct's customers. Specific rate impacts for each alternative will not be prepared for the DEIS. These figures will enable the Washington Aqueduct to compare the cost of each alternative for its entire life cycle and a ranked order of alternatives can be developed. This can then serve as one of many decision variables that the Washington Aqueduct can consider when selecting the preferred alternative.

4.4 Cultural Resources

4.4.1 Definition

Cultural resources can be defined as sites, structures, buildings, landscapes, districts, and objects that are significant in history, prehistory, architecture, archaeology, engineering, and/or culture. These resources are protected by a number of statutes and regulations at all levels of government and must be taken into consideration during the NEPA process and in a DEIS.

A primary concern in the DEIS will be the portion of the Dalecarlia Reservoir property proposed for construction of the monofill and its potential to contain archaeological resources. The location, topography, and undisturbed nature of this area have been noted in a previous study as having the potential to contain archaeological resources.

4.4.2 Existing Conditions

The Dalecarlia Treatment Plant and Georgetown Reservoir sites both have buildings that have been placed on the National Historic Register. The U.S. Army Corps of Engineers, in its role as a federal agency, is responsible for the stewardship of these National Historic Landmarks and other cultural resources under its jurisdiction. Washington Aqueduct has followed the laws and regulations described in the National Historic Preservation Act of 1969, as amended, in Executive Order No. 11593, and the numerous subsequent federal laws and regulations when it drafted the existing Cultural Resources Management Plan for the entire site. This plan, written in June 1998, outlines both the history and significance of the site, and it suggests methods of minimizing adverse impacts in order to protect the historic resources located on Washington Aqueduct's property.

This document and others listed below will be used to draft the description of existing conditions. In addition, contact will be made with local and state historic preservation offices and commissions and the Project Manager for the Spring Valley site to ensure that the most up-to-date information and opinions regarding the Aqueduct properties are included. Documents to be used to describe the existing conditions include:

- Washington Aqueduct Cultural Resource Management Plan, R. Christopher Goodwin & Associates, Inc., June 1998, prepared for the U.S. Army Corps of Engineers, Baltimore District.
- Revised Washington Aqueduct National Historic Landmark Nomination, R. Christopher Goodwin & Associates, Inc., January 1999, prepared for the U.S. Army Corps of Engineers, Baltimore District.
- Final Environmental Baseline Report for the Dalecarlia, Georgetown, and McMillan Reservoirs, U.S. Army Corps of Engineers, Baltimore District, May 1994.
- Preliminary Impacts Investigation for Dalecarlia and Georgetown Reservoirs Residuals Disposal Facilities Report, Whitman, Requardt and Associates, November 1995, prepared for the U.S. Army Corps of Engineers, Baltimore District.

- National Register Nomination Form, Castle Gatehouse, Washington Aqueduct, U.S. Army Corps of Engineers, Baltimore District, May 1973.
- Zoning in the District of Columbia, D.C. Office of Zoning, www.dcoz.dc.gov.

4.4.3 Evaluation of Impacts

The criteria and methodology that will be used to determine the impacts of the proposed alternatives will be based on Federal Regulation 36 CFR Part 800 generally, and § 800.5 specifically, as described in the Cultural Resource Management Plan for the Washington Aqueduct. The proposed alternatives for this project will be determined to have no impact, insignificant impact, or significant impact upon the historic properties of the Washington Aqueduct.

No Impact

No impact means that no historic properties would be affected by the proposed undertaking.

Insignificant Impact

Insignificant impact on historic resources typically refers to actions such as routine building maintenance. There would be no adverse effect if the maintenance performed follows *the Secretary of the Interior's Standards for Rehabilitation* and the Washington Aqueduct Preservation/Maintenance Guidelines.

Significant Impact

Significant impact, in this case**,** refers to an "adverse effect" as defined in the National Historic Preservation Act, to mean an action that diminishes "the integrity of the property's location, design, setting, materials, workmanship, feeling, or association" (36 CFR 800.5(a)(1)). If an undertaking is determined to have a significant impact, action must be taken, according to the regulations, to either revise the specifications of the proposed project that will impact the resource, or mitigate the adverse effect of the proposed project in such a way that the essential historic value of the property is preserved, even though the property itself may be impacted.

4.5 Hazardous, Toxic and Radioactive Substances

4.5.1 Definition

The objective of the hazardous, toxic, and radioactive substances evaluation is to determine if there are any impacts that may occur to hazardous materials present at the site or by hazardous materials that would be added to the site as a result of implementing the proposed alternatives. Impacts could be caused by the storage, treatment, disposal, or accidental release of hazardous, toxic, and radioactive substances regulated by the Resource Conservation and Recovery Act (RCRA) or the Comprehensive Environmental Resource Compensation and Liability Act (CERCLA) [or other Maryland Department of Environment (MDE) or District of Columbia Department of Health (DC DOH) regulations].

Other, non-CERCLA environmental factors will be also be evaluated. These include polychlorinated biphenyls (PCBs), radon, asbestos containing materials (ACM), lead-based paints (LBP), and pesticides. Some of these factors may be associated with modification to existing buildings.

This section of the DEIS will also address potential project impacts related to the Spring Valley site and other contamination issues identified in the area. This DEIS will not include a separate hazardous waste investigation for sites currently under other federal or state programs but will rely exclusively on findings of ongoing investigations. Where investigations are incomplete, the DEIS will identify the potential for contamination and indicate a high level of uncertainty regarding the presence of and impacts associated with hazardous materials.

4.5.2 Existing Conditions

The existing conditions section will document the usage, storage, and disposal practices for federal or local regulated substances in the project area. This section will also include known areas of hazardous waste contamination associated with sites either abandoned, closed, or under active investigation or remediation that are relevant to the proposed alternatives.

Data sources will include:

US Army Corps of Engineers Baltimore District. *Final Environmental Baseline Report for the Dalecarlia, Georgetown, and McMillan Reservoirs*. May 9, 1994.

Environmental Data Resources, Inc. "Radius Map - Dalecarlia Reservoir, Washington, DC 20016". Preparation of the maps includes searches of Databases listed in Attachment A. February 3, 2004.

Environmental Data Resources, Inc. "Radius Map - Georgetown Reservoir, Washington, DC 20016". February 3, 2004.

Environmental Data Resources, Inc. "NEPA Check - Dalecarlia Reservoir, Washington, DC 20016". February 2, 2004.

Environmental Data Resources, Inc. "NEPA Check - Georgetown Reservoir, Washington, DC 20016". February 2, 2004.

Consultation with the Spring Valley personnel and data reviewed from the Spring Valley website - http://www.nab.usace.army.mil/projects/WashingtonDC/springvalley.htm

RCRA or other applicable hazardous materials permits held or required to be obtained by Washington Aqueduct

Current storage locations for hazardous materials and wastes

Additional chemicals (if any) that will be used for the proposed treatment alternatives

In addition to the above sources, the DEIS project team will coordinate closely with the Spring Valley site team to insure all current information is included in the environmental evaluation of all activities, particularly construction and operation of the monofill. In addition, the plans for future investigations and the current level of uncertainty for Spring Valley will be ascertained and included in the DEIS evaluation.

Existing reports documenting the environmental characteristics of the Water Treatment residuals and Forebay residuals will be reviewed. Additional chemical analyses of the residuals will be performed as necessary to develop a characterization of the residuals for evaluation in the DEIS; this will be included in the Public Health section of the DEIS. The procedures that will be followed are detailed in Section 4.10.

4.5.3 Evaluation of Impacts

The potential impacts associated with each of the alternatives will depend on the proposed areas of construction, demolition, or rehabilitation and the presence of USTs/ASTs, PCBs, radon, ACM, LBP, pesticides/herbicides/fertilizers, water treatment chemicals, or other hazardous substances.

Environmental impacts from hazardous waste and/or materials will be evaluated using the following criteria:

No Impact

Implementation of the proposed alternatives does not result in the production of additional hazardous materials within the project area or the releases of hazardous substances to the environment. Moreover, concentrations and flow regimes of contaminants already in the groundwater will not be changed by an action that has no impact.

Insignificant Impact

Implementation of the proposed alternatives results in a minimal increase in the production of hazardous waste or materials within the project area. State and/or federal permits will be obtained and followed as required for the storage and disposal of any hazardous substances that will be produced. Any potential releases to the environment would be prevented or responded to, in accordance with all applicable laws and regulations, to prevent risks to human health or the environment.

Significant Impact

Implementation of the proposed alternatives results in an adverse impact to human health and the environment. Examples of adverse impacts include increasing contaminants or changing the flow patterns of contaminants already in the groundwater and exposing workers to hazardous substances through contact with contaminated media. If the potential for contamination exists but currently available data is inconclusive and the planned investigation schedule is not compatible with the residuals management schedule it will be considered a significant impact.

4.6 Infrastructure

4.6.1 Definition

Infrastructure is defined as the region's resources for providing electric power, potable water, wastewater, solid waste (municipal solid waste and construction debris), and gas service. The goal of this evaluation is to determine if the proposed alternatives stress the region's capacity to provide these services during the 20-year life of the project.

4.6.2 Existing conditions

The existing demand of the Aqueduct's current operation will be developed as the baseline of assessment. To that end, the existing conditions section will describe the Aqueduct's use, sources, quantity, and general infrastructure configuration for electricity, wastewater, solid waste disposal practices, and fuel.

The wastewater section will be limited to municipal wastewater. The current water treatment residuals waste stream, since it is not a part of the regional infrastructure, will be described in a separate section entitled Final Land Disposal of Water Treatment Residuals. (In this Scope of Statement, it is described in the next section, 4.7). The future water treatment residuals waste stream, either the stream itself or wastewater discharges from the processing facilities or monofill, will be evaluated in the impacts section associated with this subject.

4.6.3 Evaluation of Impacts

Each project alternative will be categorized according to three categories: no impact, insignificant impact, and significant impact.

No impact

A project alternative will be considered to have no impact if it would neither reduce nor increase the demand for electric power, wastewater, solid waste (municipal solid waste and construction debris), and gas service.

Insignificant impact

A project alternative will be considered to have an insignificant impact if it would result in a slight increase in demand on these services, but the demand would be met by either existing capacity or with modifications to the existing infrastructure considered minor by the respective utilities.

Significant impact

A project alternative will be considered to have a significant impact if it would exceed the capacity of a component of the regional infrastructure system within the 20-year design period and require large and unplanned modifications to meet its infrastructure needs.

4.7 Final Land Disposal of Water Treatment Residuals

4.7.1 Definition

This section of the study will evaluate the impacts of contract hauling for land application at a licensed facility through the use of licensed contractors. This subject is relevant to two alternatives: thickening water treatment residuals at Dalecarlia Water Treatment Plant and pumping to Blue Plains Advanced Wastewater Treatment Plant through a new pipeline, and processing water treatment residuals at the Dalecarlia Water Treatment Plant. Both of these alternatives involve disposal of the processed residuals through contract hauling.

The market for contract hauling and disposal of water treatment residuals is expected to evolve to meet changing demand, location and regulations during the 20-year design life of the project. An evaluation based solely on the permits and capacity of specific locations is unable to accommodate a variety of land disposal practices that may take place in a dynamic market place over a period of two decades. For this reason, the DEIS will take a more programmatic approach to this particular evaluation to determine the ability of the marketplace to meet increasing demand within an approved regulatory environment. The evaluation will be based largely on the recent history of land application and disposal of residuals in the Washington, D.C. metropolitan area.

4.7.2 Existing Conditions

The current volume of water treatment residuals generated in the region will be documented. Their current and historical (within the past ten years) methods of disposal will also be described.

Typical permitted and licensed land application and landfill operations for water treatment residuals will be described through interviews with the contract hauling companies and/or licensed disposal operations. The description will include existing capacity of current, planned future and recently closed operations It will also include a discussion of how willing landowners are to take these kinds of residuals for land application, and what the local/regional "market" has been in the recent past.

The regulations in place in Maryland, Washington, D.C., and Virginia governing these operations will be described and future trends in the regulatory environment will be identified.

4.7.3 Evaluation of Impacts

The procedure for implementing the contract hauling operation will be described. This may include issuing bid packages with conditions addressing hauling routes, performance and environmental responsibilities.

The description of impacts will be developed in the context of the regulatory environment and observed ongoing practices for water treatment residuals in Maryland and Virginia. This will include evaluating whether protective programs are in place such as:

- Contractor or hauler certification requirements
- Residuals characterization
- Primary nutrient loading evaluation

- Limited application rates
- Routine submittals required to ensure effective controls
- Changes in operation requiring resubmission
- Record keeping requirements
- Penalties for violation
- Requirements for groundwater evaluation
- Required inspections
- Regulation of truck traffic
- Issuance and compliance with Clean Water Act permits

A general description of the types of impacts associated with a range of disposal options will be developed. This will include a description of how impacts will be avoided, minimized and/or mitigated through permitting process and bid package conditions.

The purpose of the impact section is to fully inform stakeholders of the types of impacts that could reasonably be expected from typical contract hauling and licensed land application/disposal activities. It would also identify the potential for avoiding or mitigating any identified impacts. Impacts will be scored as follows:

No Impact

No impacts have been identified from existing residuals land application/disposal operations and existing permitting requirements are determined adequate to avoid adverse impacts, both now and in the future.

Insignificant Impact

Impacts at ongoing operations have been noted or existing permitting requirements are not judged adequate to avoid impacts, but hauling contracts can be written to avoid or significantly mitigate any potential impacts.

Significant Impact

Impacts at ongoing operations have been noted or existing permitting requirements are not judged adequate to avoid impacts, and, hauling contracts can not be written to avoid or significantly mitigate any potential impacts.

4.8 Land Use

4.8.1 Definition

The land use section addresses the existing use of properties on which a project alternative is located. It will also address the use of properties immediately adjacent to a project alternative. Land uses along the truck haul routes that are being evaluated will also be described as well.

The goal of this subject is to characterize the existing land uses and assess how they would be altered by the alternatives. This assessment will include determining whether an alternative would conflict with adopted plans and goals of the community, or whether it would substantially alter the present or planned land use of an area.

A primary concern in this subject is the portion of the Dalecarlia Reservoir property proposed for construction of the monofill. The DEIS will examine whether the proposed monofill represents a fundamental change in the historical use of this parcel of land and whether it is consistent with the adjacent, surrounding residential land uses and with District of Columbia zoning policy.

4.8.2 Existing Conditions

Several sources of information will be used to identify existing land use. Publicly available Geographic Information Systems (GIS) data will be used to identify existing land uses for the targeted project areas. GIS data will be supplemented by data sources including the National Capital Planning Commission (NCPC), the Government of the District of Columbia Office of Zoning, the National Park Service, and information and data from Montgomery County, Maryland and the State of Maryland. The description of existing conditions will identify the zoning for the properties and its intended future uses as expressed in local land use or comprehensive development plans.

Table 2 below presents some of these potential sources and their applicable information.

TABLE 2
Primary Sources of Land Use Data and Information

Source	Information Provided
http://www.webgis.com/index.html	Land Use data for Washington, D.C. and Maryland
http://arcdata.esri.com/data/tiger2000/tiger_download.cfm	Applicable U.S. Census data
D.C. Office of Zoning (http://www.dcoz.dc.gov)	Zoning information/data for Washington, D.C.
National Capital Planning Commission (http://www.ncpc.gov)	Supplemental information specific to planning and land use in the District of Columbia

4.8.3 Evaluation of Impacts

Impact assessment will be based on whether an alternative would conflict with adopted plans and goals of the community (i.e., zoning, master plans, etc.), or if whether it would substantially alter the present or planned land use of an area. Such changes would be considered direct impacts. If an alternative would result in new development or prevent new development elsewhere it could have an indirect impact.

Assessments of impacts on compatible land uses will incorporate the nature of the impact in addition to the estimated number of individuals impacted.

Significance criteria that will be used for the Land Use portions of the DEIS will incorporate land use compatibility, zoning, and the overall use of land within the immediate project area and the surrounding areas. Furthermore, alternatives presented in the DEIS will be assessed as having no impact, insignificant impact, or significant impact.

No Impact

An alternative will be considered to have no impact if it is consistent with existing land use plans and ordinances or does not change the local practice of land use and zoning in the local area.

Insignificant Impact

An alternative will be considered to have an insignificant impact if it represents a minor alteration of existing or planned land use, and does not create a direct conflict among neighboring land use activities.

Significant Impact

An alternative will be considered to have a Significant Impact if it violates existing Land Use/Zoning Plans and Ordinances, substantially alters existing or planned land use, or creates a direct conflict among neighboring land uses or land use activities. An alternative that would be in direct conflict among neighboring land uses would likely cause significant opposition from neighboring land use areas and would likely require a change or variance in land use planning or zoning policies.

4.9 Noise

4.9.1 Definition

This section of the study will identify and document outdoor ambient noise levels at off-site locations near the Dalecarlia Treatment Plant and the Georgetown Reservoir. This data will be used to assess the potential noise impact, if any, created by the construction and operation of the new residuals treatment operations and as a basis for comparison with District of Columbia Municipal Regulations for noise (Title 20, Chapters 27, 28, and 29).

Special attention will be paid to the noise generated by truck traffic, particularly as trucks climb the grade of Loughboro Road adjacent to Sibley Hospital. To carefully characterize truck traffic noise, measurements may be taken of the trucks associated with the construction of the hospital's parking garage that are currently climbing the slope of Little Falls Road. This data could serve as a point of comparison (in addition to desk-top noise characterization from the trucks) in the effort to describe potential noise impacts in this area.

This analysis will focus on the off-site noise impacts of the proposed alternatives. On-site exposure will be limited to levels allowed by the Occupational Safety and Health Administration. For instances that exposure exceeds the acceptable threshold, ear protection will be required. No quantification of this exposure is planned.

4.9.2 Existing Conditions

A survey will be conducted to characterize the noise environment offsite (on property not owned or leased by Washington Aqueduct) and outdoors on adjacent recreational and commercial property.

Sound level measurements will be made with a sound level meter (SLM) that meets Type 11 specifications per ANSI S1.4-1971 (Specifications for Sound Level Meters) or equivalent. Equipment used will meet the requirements specified in Section 2901 of the DC noise regulations and any applicable Maryland regulations, and be calibrated according to Section 2902 (Attachment 1). A microphone windscreen will be used when making all test measurements. Instruments will be acoustically calibrated per the equipment manufacturer's instructions using a sound level calibrator or piston phone of known sound pressure level. These field calibrations will be performed both before and after each measurement series/session. Any test series will be repeated if the before-and-after calibration level change exceeds ±1.0 dBA.

In general, field measurements of noise levels will be conducted in a manner consistent with ANSI S1.13 (Measurement of Sound Pressure Levels in Air). The sound level meter will be set to the "A"-weighted filter response and to the "slow" time constant meter setting (the "C" scale and "fast" response will be used for impulsive type sounds). Random-incidence microphone response measurement techniques, as specified by ANSI, will be used for all measurements.

Exterior measurements will be made with the microphone approximately five feet above the ground and 10 feet or more from the nearest reflective surface. In cases where these criteria cannot be met or are not appropriate, the rationale for the changes will be explained.

Outdoor measurements will not be conducted in the presence of wind speeds greater than 12 miles per hour, nor in the presence of precipitation or fog. Preferred wind directions are from the southeast (SE) to southwest (SW).

The offsite noise survey will be conducted at four sites:

- Residential area (Windward and Leeward Place) at the northwest corner of the Dalecarlia project site
- Capital Crescent Trail near the water fountain area on the Dalecarlia Treatment Facility site
- Loughboro Road near Sibley Hospital
- Northwest corner of Georgetown Reservoir

4.9.2.1 Noise Survey Schedule

Noise levels will be measured at each location for five 15-minute periods. Three of the measurement periods will be during the day (7:00 a.m. to 9:00 p.m.) and two of the measurement periods will be during the night (9:00 p.m. to 7:00 a.m.). Each monitoring location and the time periods of measurement will be described in the study report. The existing noise sources will be identified if obvious (e.g., highway). Noise descriptors reported will include the L_n, L_d, L_{eq}, L_{10}, L_{50}, and L_{90} (as defined in 20 DCR 2999).

TABLE 3
Noise Survey Schedule

Survey Time	Residential Area near Dalecarlia Facility	Capital Crescent Trail location	Dalecarlia Parkway near Sibley Hospital	Residential Area near Georgetown Reservoir
Daytime Sampling Activities				
10:30 – 10:45	X			
11:00 – 11:15		X		
12:30 – 12:45			X	
13:00 – 13:15	X			
13:30 – 13:45		X		
14:00 – 14:15			X	
14:30 – 14:45	X			
15:00 – 15:15		X		
15:30 – 15:45			X	
17:45 – 18:00				X
18:05 – 18:20				X
18:25 – 18:40				X

TABLE 3
Noise Survey Schedule

Survey Time	Residential Area near Dalecarlia Facility	Capital Crescent Trail location	Dalecarlia Parkway near Sibley Hospital	Residential Area near Georgetown Reservoir
Nighttime Sampling Activities				
23:30 – 23:45	X			
00:00 – 00:15		X		
00:30 – 00:45			X	
1:00 – 1:15	X			
1:30 – 1:45		X		
2:00 – 2:15			X	
3:00 – 3:15				X
3:20 – 3:35				X

4.9.2.2 Additional data sources will include:

Final Environmental Baseline Report for the Dalecarlia, Georgetown, and McMillan Reservoirs, May 9, 1994

Environmental Assessment for Consolidation of the National Imagery and Mapping Agency, May 25, 2001

Environmental Assessment – Proposed Relocation of the National Imagery and Mapping Agency Headquarters Fairfax, Virginia, October 1997

4.9.3 Evaluation of Impacts

For a typical suburban environment, noise levels are normally about 50 to 60 dBA of background noise and about 70 dBA near sidewalks adjacent to roadways. Construction of new facilities and operation of treatment processes may contribute to background noise levels for various alternatives. Some sounds may be broad-spectrum sounds, others may be pure tones. Potential noises that may be associated with the proposed alternatives will be evaluated.

The noise modeling to evaluate the potential impact of the proposed alternatives consists of spreadsheet-based, logarithmic calculations. Impacts are categorized as

No Impact

An alternative whose construction or operation noise will not exceed noise levels established as a maximum limit for residential areas will be considered to have no impact.

Insignificant Impact

An alternative whose construction or operation noise will be less than 10 dBA above background noise levels, but does not exceed maximum limits for residential areas (see below), will be considered an insignificant impact. Numerically, an increase by 10 dBA in the sound power level is a double of the acoustical power. Human perception varies, but for many people, the minimum perceptible change is 3 dBA. Thus, an increase in the sound pressure level of less than 3 dBA will be considered to have no impact.

Significant Impact

An alternative whose construction or operation noise exceeds noise levels established as maximum limits for residential areas will be considered to present a significant impact. Assuming the ambient noise levels are below 60 dBA during the day and 55 dBA at night, exceeding these levels will classify a proposed action as a significant impact. If background noise levels are already above these levels, exceedance must be over 10 dBA to be considered significant.

4.10 Public Health

4.10.1 Background conditions

There is potential concern over public health impacts associated with the chemical and pathological characteristics of the Forebay and Water Treatment Residuals. No single test, or list of criteria, has been developed for the specific purpose of determining whether water treatment residuals could be detrimental to public health when applied to land. Generally, water treatment residuals are not viewed as hazardous due to the nature of the compounds produced through the use of coagulation chemicals, the historical track record of the water industry, and the relatively high quality of water used to produce potable water. The Federal government has not developed regulations that specifically address this issue, and individual states handle the issue in a number of different ways, depending on how the residuals are being applied.

To answer this question, samples of Forebay and Washington Aqueduct water treatment residuals will be collected for analysis using a variety of different tests and criteria. The tests were originally developed for related purposes, and are sometimes required by regulatory agencies for the land application or disposal of water treatment residuals. The samples will be analyzed using tests and standards originally developed for the Resource Conservation and Recovery Act (RCRA) and the final "Standards for the Use and Disposal of Sewage Sludge," promulgated by the EPA in 40 CFR 503, EPA, 1993a (also known as the Part 503 Rule).

4.10.1.1 Toxic Substances

The Toxicity Characteristic Leaching Procedure (TCLP) is generally viewed as the industry standard for evaluating the mobility of both organic and inorganic constituents within a soil medium. Therefore, its use is applicable the monofill alternative and the two alternatives that would result in the land application of dewatered residuals.

The TCLP test was developed for use in conjunction with RCRA, which governs the proper management of both hazardous (Subtitle C) and nonhazardous (Subtitle D) waste, including municipal waste. It is the responsibility of the waste generator to document that the waste material is not hazardous.

Toxicity is one of four characteristics used to determine whether a solid waste (i.e., a waste material that is not listed as a hazardous waste) should be classified as hazardous. The other characteristics are ignitability, corrosivity, and reactivity. Since the development of the RCRA regulations, toxicity has been defined by the extraction procedure associated with the TCLP.

For disposal of residuals within a monofill, TCLP sampling will be required. Some states also require TCLP testing for residuals that are be land applied. In some cases, the testing may only be required as part of the initial permit application process. TCLP testing of water treatment residuals usually results in the finding that the residuals are not toxic.

The TCLP determination is part of the Toxicity Characteristic (TC) rule. The TC of a waste material is established by determining the concentrations of 8 metals and 31 organic constituents in the leachate from a waste sample.

Four steps are involved in the TCLP procedure:

- Sample preparation for leaching
- Sample leaching
- Preparation of leaching for analysis
- Leachate analysis

Table 1 summarizes the list of constituents sampled for the TCLP and the maximum allowable leachate concentration (i.e., regulatory level) of each constituent.

TABLE 1
Constituents of the Toxicity Characteristic Leaching Procedure

Constituent	Regulatory Level (mg/L)
Metals	
Arsenic	5.0
Barium	100.0
Cadmium	1.0
Chromium	5.0
Lead	5.0
Mercury	0.2
Selenium	1.0
Silver	5.0
Volatiles	
Benzene	0.5
Carbon Tetrachloride	0.5
Chlorobenzene	100.0
Chloroform	6.0
1,2-Dichloroethane	0.5
1,1-Dichloroethane	0.7
Methyl ethyl ketone	200.0
Tetrachloroethene	0.7
Trichloroethene	0.5
Vinyl chloride	0.2
Semi-Volatiles	
Cresols (total cresols or combination of o-, p-, m-cresols)	200.0
1,4-Dichlorobenzene	7.5
2,4-Dinitrotoluene	0.1

TABLE 1
Constituents of the Toxicity Characteristic Leaching Procedure

Constituent	Regulatory Level (mg/L)
Hexachlorobenzene	0.1
Hexachlorobutadiene	0.5
Hexachloroethane	3.0
Nitrobenzene	2.0
Pentachlorophenol	100.0
Pyridine	5.0
2,4,5-Trichlorophenol	400.0
2,4,6-Trichlorophenol	2.0
Pesticides	
Chlordane	0.03
Endrin	0.02
Heptachlor	0.008
Lindane	0.4
Methoxychlor	10.0
Toxaphene	0.5
Herbicides	
2,4-D	10.0
2,4,5-TP (Silvex)	1.0

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4.10.1.2 Metals

The Part 503 regulations provide standards for application of metals to land. While the regulations were developed for biosolids, and not for water residuals, they can be used to provide approximate boundary limits for the land application of all types of residuals, since no written standards are available for land application of water treatment residuals. However, the application rates (i.e., kg/hectare, etc.) for biosolids listed in the Part 503 regulations are specific to biosolids, and should not be used to develop application rates for water treatment residuals. Application rates for water treatment residuals are dependent on the assimilative capacity and the agronomic needs of the soil and crops to which the materials will be applied. These application rates are generally developed on a case-by-case basis.

Water treatment residuals do not usually contain high concentrations of metals, other than aluminum, which is not listed as a metal of concern. Generally, the range of metals concentrations for water treatment residuals are similar to the background range exhibited by typical soils.

The Part 503 standards for metals are summarized in Table 2.

TABLE 2
Standards for Metals from the Part 503 Regulations

Metal	Ceiling Concentration (mg/kg)	Cumulative Pollutant Loading Rates (kg/hectare)	Monthly Average Concentration (mg/kg)	Annual Loading Rate (kg/hectare)
Arsenic	75	41	41	2.0
Cadmium	85	39	39	1.9
Copper	4,300	1,500	1,500	75
Lead	840	300	300	15
Mercury	57	17	17	0.85
Nickel	75	420	420	21
Selenium	420	100	100	5.0
Zinc	7,500	2,800	2,800	140

All values are on a dry weight basis

4.10.1.3 Pathogens

Water treatment residuals generally contain few or no pathogens due to the relatively good quality of the source water and the use of various disinfection or inactivation processes as part of the water treatment process. As with metals, the Part 503 regulations could cautiously be used as guidelines for the allowable maximum concentration of pathogens for land application.

Subpart B of the 503 Rule prescribes operational standards that designate the level of pathogen reduction required for certain wastewater biosolids management methods.

Biosolids that can be designated as either "Class A" or "Class B" are suitable for land application. Class A biosolids can be used on a lawn or garden, sold, or distributed to the general public as fertilizers. Class B biosolids are generally applied to agricultural lands, subject to certain buffer and public access restrictions.

To achieve either designation, biosolids must achieve certain pathogen reduction goals through either a prescribed treatment process, or by demonstrating that the required pathogen reduction goals have been achieved.

Table 3 summarizes the maximum allowable pathogen concentrations for both Class A and Class B biosolids.

TABLE 3
Maximum Allowable Pathogen Requirements for Biosolids

Class A Biosolids
Use one of six EPA-approved means/methods for achieving Class A treatment of biosolids, plus demonstrate pathogen reduction to the following levels:
<1,000 most probable number (IMPN) fecal coliforms per gram of total solids
Or, >3 MPN Salmonella per four grams of total solids
Class B Biosolids
Use one of three EPA-approved means/methods for achieving Class B treatment of biosolids. One of the methods includes demonstration of pathogen reduction to the following levels:
<2,000,000 MPN or coliform-forming units of fecal coliforms per gram of total solids

4.10.2 Evaluation of Impacts

The potential public health impacts will be evaluated by comparing the residuals characteristics to the benchmarks and criteria described above. The chemical benchmarks and criteria to be considered will be those associated with land application permits and concentrations determined to be protective of the environment and public health through various regulatory programs. Impacts will be determined as follows:

No Impact

Analytical results which indicate that the Forebay and water treatment residuals are suitable for disposal in a monofill or through beneficial reuse by land application will be used to make a determination that the residuals are of no impact to public health.

Insignificant Impact

Analytical results which indicate that there is a limited potential for the disposal in a monofill or through beneficial reuse by land application, or that additional treatment of the residuals would be required before monofilling or land application, will be used to make the determination that the residuals could be of insignificant impact to public health.

Significant Impact

Analytical results that indicate that there is no potential for the disposal of the Forebay or water treatment residuals in a monofill or through beneficial reuse through land application will be used to make the determination that the residuals could be of significant impact to public health.

4.11 Implementation Uncertainty

4.11.1 Background Conditions

As part of the Engineering Feasibility Study, the alternatives that will be evaluated in detail in the DEIS have been determined to be feasible using a screening-level analysis. Within this definition of feasibility, however, there are varying levels of uncertainty regarding engineering, construction, and regulatory permitting.

Using the assumption that uncertainty usually equates to a schedule delay, a qualitative evaluation will be conducted for each alternative to identify aspects of project implementation that have some uncertainty associated with them. This measure of uncertainty may include an evaluation of factors such as how common are the proposed construction methods; is the permitting process standardized; and what is the relative number of easements or inter-municipal agreements that need to be secured to allow construction of an alternative.

4.11.2 Evaluation of Impacts

The alternatives will be ranked on a relative basis as to the uncertainty associated with their implementation

4.12 Social and Economic Environment

4.12.1 Definition

This subject area describes background conditions and addresses potential impacts to the following:

- Population and labor force
- Employment structure
- Employment trends
- Income and cost of living
- Washington Aqueduct contribution to the local economy
- Housing
- Schools
- Shops and services
- Police, fire and medical
- Recreation
- Environmental Justice: Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" February 11, 1994
- Protection of Children: Executive Order 13045, "Protection of Children from Environmental Health Risks and Safety Risks" April 12, 1997

4.12.2 Existing Conditions

4.12.2.1 Population and Labor Force, Employment Trends, and Other Economic Aspects

If there were any potential for the proposed action or alternatives to have a significant impact on regional population or economy, the Economic Impact Forecast System (EIFS) input-output model developed by USACE Construction Engineering Research Laboratory (CERL) would be used to forecast the direct and indirect impact on population, employment, wages and business volume. However, since this project will not involve any change in population and, because construction expenditures and employment are not of a magnitude likely to have appreciable effects on the regional economy of the Washington PMSA, the EIFS model will not be used. In keeping with this approach, only enough detail will be provided in background data for the region of influence (ROI), to support this point. More detail will not be required to assess the significance of impacts. Most of this background data can be presented in one or two tables, comparing D.C. to the MWCOG region (D.C. and 12 surrounding counties/cities) and/or the Washington DC-MD-VA-WV Primary Metropolitan Statistical Area (PMSA) (D.C. and 24 surrounding counties), as appropriate and available in the published sources referenced above.

Data sources for these subject areas will include:

- Census 2000; Metropolitan Washington Council of Governments (MWCOG) Round 6.3 Cooperative Forecasting estimates and projections (2000-2030) for the expected project timeframe

- MWCOG 2003 reports *Economic Trends in Metropolitan Washington 1998-2002* (job growth, unemployment, inflation, retail sales, etc.) and *Commercial Construction Indicators 2002 Annual Summary* (new construction data) for D.C. and "urban core" counties
- MWCOG's monthly Regional Economic Monitoring System (Feb 2004) or 2003 BLS annual unemployment rates
- MWCOG *Economic Trends in Metropolitan Washington* and 2003 BEA REIS employment and wage data for region
- Income: MWCOG or REIS

4.12.2.2 Housing, Schools, and Other Services

Since the project is producing very few new jobs, no long-term population-driven change in demand for these services will occur. Consequently, only a minimal level of detail in background data about resources in D.C. or the region will be presented, similar to population and economic data. Planning factors from the Urban Land Institute's publication *Development Impact Assessment Handbook* (Burchell, Listokin, et al., 1994) can be used to evaluate potential (if any) for short-term, construction-related demand for fire/police/medical services. Evaluation of the potential for any disruptive impacts due to construction on nearby businesses and medical and recreational facilities will be qualitative and based on the findings of the relevant sections, such as Noise, Traffic, Land Use, Visual/Aesthetics, and Hazardous Materials.

Data sources or data to be developed in this section include:

- 2000 Census and MWCOG projections
- Location of public and private schools in immediate vicinity of construction sites: maps and visual reconnaissance
- Local/adjoining businesses (if any) that could be impacted by construction
- Local/adjoining recreational resources that could be directly or indirectly affected by construction

4.12.2.3 Environmental Justice, Protection of Children

Data sources or data to be developed for this section include:

- Census 2000 data for poverty and minority population, as defined by Executive Order 12898 for the block groups adjoining all proposed construction sites and along designated truck haul routes
- Presence of schools, day care centers and playgrounds in immediate vicinity of construction sites and along truck haul routes, as defined in Executive Order 13045.

4.12.3 Evaluation of Impacts

Because of the nature of the proposed alternatives, the size of the metropolitan Washington, D.C. area, and the demography along the proposed haul routes, the subjects below are not expected to differentiate between alternatives. For this reason, distinctions are not being

made between the no impact and insignificant impact categories. To demonstrate no impact in the DEIS, the data will be compared to the threshold criteria for significance in each element of this resource area. These thresholds are described below.

Population and Labor Force:

Causing regional population to exceed historic rate of growth/decline (no population change is expected)

Employment Trends:

Generating construction jobs substantially above recent trends

Causing regional employment to exceed historic rate of growth or reduce jobs enough to affect regional unemployment

Employment Structure:

Substantial change in employment by industry

Income and Cost of Living:

Substantial change in income or customers

Substantial change in fees for Washington Aqueduct Customers

Washington Aqueduct Contribution to the Local Economy:

Substantial increase or decrease in jobs or expenditures

Housing:

Substantial increase or decrease in demand for housing due to population change

Schools:

Substantial increase or decrease in demand due to population change

Schools as a sensitive receptor in proximity to construction site or haul routes will be described in the Protection of Children section

Shops and Services:

Substantial increase or decrease in demand for services due to population change

Police, Fire, Medical:

Substantial increase or decrease in demand due to population change

Recreation:

Taking a substantial amount of land out of recreational use without in-kind replacement

Substantial increase in demand due to population change

Environmental Justice:

Health and Safety effects (if any) disproportionately affecting minority or low-income population. Census data will be collected for the facility locations associated with each alternative as well as the truck haul routes and referenced to the public health, noise, air quality, and transportation sections of the DEIS for determination of any environmental justice impacts.

Protection of Children:

This will measure the presence of schools, day care centers and playgrounds in immediate vicinity of facility locations or haul routes. Impact determination is based on the potential for uncontrolled health and safety risks affecting children.

4.13 Soil, Geology, and Groundwater Resources

4.13.1 Definition

This section will evaluate the soil, geology and groundwater resources that may be impacted by the proposed alternatives. This section is of particular importance for evaluating the potential impact of constructing and operating the monofill. For this alternative, issues related to slope stability, depth to bedrock, and the potential for interaction with existing surface soil and groundwater contamination, may affect the facility permitting process and the implementation schedule.

4.13.2 Existing Conditions

The principal data sources to be used are:

- Soil Survey of District of Columbia, USDA, Soil Conservation Service
- Soil Survey of Montgomery County, MD, USDA, Soil Conservation Service
- Existing NEPA documents
- Geology and Groundwater Resources of Washington, D.C. and Vicinity, USGS Water Supply Paper
- Other existing groundwater data related to the Spring Valley Site

4.13.2.1 Geology, Soils, and Topography

A summary description of the physical attributes of the project area including geology, soils, and topography specific to the proposed alternatives will be developed for the DEIS. Soil surveys will be used in order to determine the geologic formations and the types of soils present within the areas subject to construction. Protected soils such as prime farmland soils and soils on steep slopes (greater than 15 percent), will be identified.

4.13.2.2 Groundwater

The hydrologic conditions underlying the area proposed for the monofill will be described using existing information. This will include information on the depth to groundwater and groundwater flow direction. As discussed in the hazardous materials section, (Section 4.4) information developed in support of the Spring Valley site investigation will be used where applicable and available. If the hydrologic conditions in the monofill area cannot be adequately characterized with existing information, the degree of uncertainty will be noted.

This data will be used to determine if the groundwater will be intercepted during construction, and what the potential impacts will be.

4.13.3 Evaluation of Impacts

Potential impacts will be defined as no impact, insignificant impact, or significant impact.

4.13.3.1 Geology, Soils, and Topography

Information regarding the physical and engineering properties of the soil types will be reviewed in order to determine the impacts of construction on the soils. Significance will be measured based upon the presence or absence of protected soils and the amount of each that will potentially be impacted. Significance will also be measured by whether the physical properties of the subject soils support the construction and facility operation of the proposed alternatives.

No Impact

If the properties of the soils do not conflict with the proposed action, no impact will be concluded.

Insignificant Impact

If properties of the soils do conflict with the proposed action, a level of significance will be assigned depending on the type of conflict. If the conflict can be avoided by modifying the design of the alternative or mitigated in a cost –effective manner, then an insignificant impact will be assigned.

Significant Impact

If a substantial portion of the project site conflicts with the physical properties of the soils and these conflicts cannot be mitigated by routine engineering methods, than an alternative will be determined to have a significant impact.

4.13.3.2 Groundwater

The current assumption is that all construction activities will be designed so that groundwater will not be intercepted and that appropriate steps will be taken so that any storm water runoff from the monofill will not infiltrate into the groundwater.

No Impact

For the Dalecarlia processing and Blue Plains alternatives, no impact will be determined if there is no interception of groundwater for the operation of the facility. In the case of the monofill, no impact will be determined if the stormwater runoff is not allowed to infiltrate into the groundwater.

Insignificant Impact

An insignificant impact may be determined if a project alternative intercepts the groundwater table during construction and typical engineering steps can be taken to provide for the safety of the operation and prevent groundwater contamination. This maybe likely if a new underground pipeline to Blue Plains is constructed.

Significant Impact

As stated above, if the hydraulic characteristics of the Dalecarlia reservoir area cannot be adequately characterized with existing information, than a significant degree of uncertainty will be noted. This degree of uncertainty may lead to the assignment of a significant impact to the groundwater resource for this proposed alternative.

4.14 Surface Water

4.14.1 Definition

The evaluation of surface water impacts will focus on the Potomac River and any water bodies that might be crossed during pipeline construction. Also included in the discussion will be any surface waters that might be impacted by runoff during construction or as a result of changed drainage conditions.

4.14.2 Existing Conditions

Extensive investigations of Potomac River quality have been done as part of the NPDES permitting process and results from these studies will be summarized to describe existing conditions in the River. For other bodies impacts on surface water will be temporary (i.e. during construction), minor or both. Thus, existing conditions in other water bodies will be described from observations and readily available information.

4.14.3 Evaluation of Impacts

Impact on the Potomac River from the No Action alternative will be a summary of the work that was done as part of the NPDES permitting process. The potential impacts from pipeline crossings (if open trench construction is used) will be evaluated assuming permit conditions are met and standard measures are used to minimize impacts during construction. Similarly, storm water impacts will be evaluated assuming standard erosion control and NPDES permitting requirements are met.

4.15 Transportation

4.15.1 Definition

This subject will evaluate the potential traffic impacts of the construction and long-term operation of the proposed alternatives. Seven haul routes have been identified to convey the treated residuals to either Interstate 495 or 395 from the Dalecarlia Treatment Plant. The routes use high volume, commercial roads in the District of Columbia, Maryland and Virginia. They have been selected to help Washington Aqueduct decision makers and other stakeholders understand the range of potential impacts associated with trucking the residuals to offsite, permitted facilities. The routes provide a variety of truck hauling options to give the Washington Aqueduct sufficient operational flexibility should trucking be determined to be a necessary component of the preferred alternative. Figure 1 summarizes the truck hauling routes that have been identified.

This analysis is particularly relevant to the proposed alternative involving contract hauling form the Dalecarlia Treatment Plant property. While contract hauling will be an element of the Blue Plains alternative, trucks are expected to quickly access adjacent Interstate 295 and not pass through residential neighborhoods.

4.15.2 Existing Conditions

The basic approach for evaluation of the existing conditions of the routes includes:

- Conducting windshield surveys along each route to asses its functional and service characteristics, peak and off peak traffic flow conditions, vehicle mix and speeds, abutting land uses, and sensitive and susceptible land uses.
- Obtain from the DC DOT, VDOT, and MSHA data on Average Daily Traffic (ADT) volumes, vehicle classifications, accident history, and planned transportation improvements
- Conduct machine/continuous mechanical vehicle volume classification and speed counts over a typical three-day period at select sites, or conduct peak period traffic turning movement counts at key study intersections. Five locations have been identified for these types of counts. These locations represent potential congestion points for local traffic or residential areas representative of those encountered along the haul routes. The locations are:
  - Residential area along River Road, near the Little Falls Parkway
  - Residential area along Western Avenue, near Fort Bayard Park
  - Residential area on Massachusetts Ave in Maryland
  - Loughboro Road, near Sibley Hospital
  - The intersection of MacArthur Boulevard and Arizona Avenue.

4.15.3 Evaluation of Impacts

Impacts of truck traffic ranging from eight trucks per day under average conditions (5 days per week) to 33 trucks per day under peak conditions (6 days per week) will be evaluated for each route. The routes are designed to enable an evaluation of potential local traffic impacts. For the purposes of this local analysis, they will start at the entranceway to the Dalecarlia Water Treatment Plant facilities and continue until they access a highway, either Interstate 495 (Capital Beltway) or Interstate 395 (Henry Shirley Memorial Highway).

The analysis of the potential traffic impacts will be based primarily on the results of the capacity/level-of-service analyses undertaken for the existing and future traffic conditions including the proposed residuals hauling activity. (On the Washington, D.C. side, consideration will also be given to compliance with the proposed Washington, D.C. truck traffic management plan.) The analysis will use the Highway Capacity Manual (HCM) procedures as required by DDOT. "Level of Service" is a qualitative measure that describes operational conditions within a traffic stream or at an intersection, and reflects their perception by drivers and other roadway users. Principal considerations are factors such as speed and travel time, delay, freedom of maneuver, traffic interruptions, comfort, convenience, and safety.

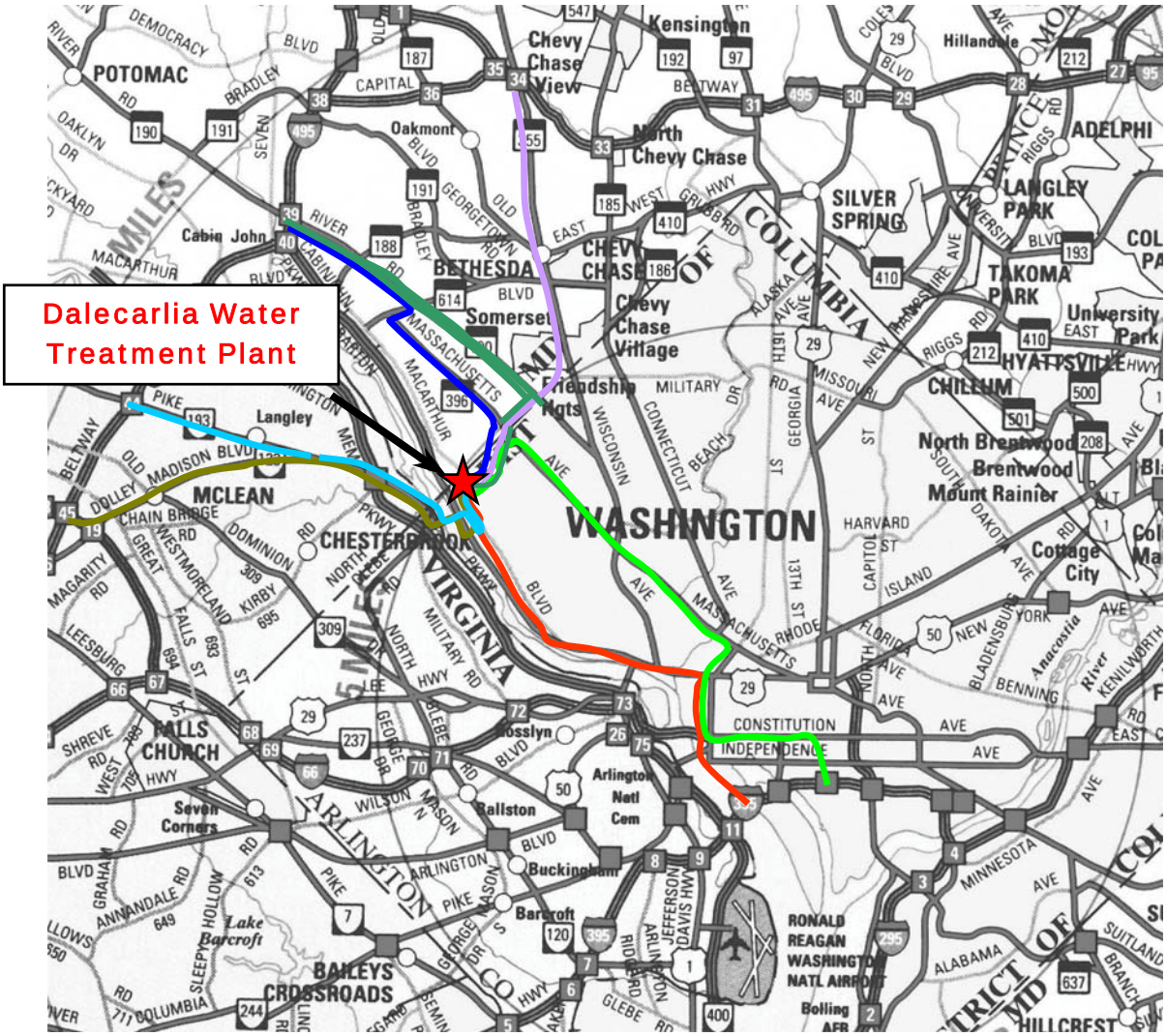
Current engineering practice defines six Levels of Service (A-F) with an "A" representing best operating conditions, and "F" representing worst operating conditions. The D.C. Ward 3 plan indicates Level-of-Service C as the desired standard. However, Level-of-Service "D" is generally considered by DDOT as the minimum acceptable standard for planning and design purposes.

If the analysis indicates that the residuals trucking operation would cause a decrease from a current Level-of-Service, mitigation measures may be evaluated. Mitigation measures may include directing the traffic to different routes or restricting the traffic to certain time periods.

The routes evaluated in the DEIS will be those designated for Washington Aqueduct use on a day–to–day basis. Other routes could be used on a temporary basis if the Washington Aqueduct must accommodate unusual operational factors.

As described in Section 4.7 (Final Land Disposal of Water Treatment Residuals), specific final disposal/land use sites will not be designated as part of the DEIS and the issue will be addressed programmatically and incorporate examples, future plans, and permitting requirements. Traffic at the final disposal/reuse facility will be addressed in the same manner. Traffic related permit requirements will be documented and evaluated, as will current traffic conditions at existing facilities. The potential for traffic related impacts (if any) will be identified (or documented in the cases of existing facilities) and measures to mitigate impacts evaluated. As appropriate, contract hauling/disposal conditions to mitigate impacts be evaluated in the DEIS. The results of the evaluation will be used by Washington Aqueduct to formulate a procurement process for residuals hauling/disposal that assures impacts are within the limits evaluated in the DEIS

FIGURE 1
Potential Haul Routes



LEGEND
Haul Routes that will be Evaluated in the DEIS

N
SCHEMATIC
NOT TO SCALE

- MacArthur-Arizona-Chain Bridge-Dolley Madison-I 495
- MacArthur-Dalecarlia-Western-River-I 495
- MacArthur-Dalecarlia-Western-Wisconsin-I 495
- MacArthur-Arizona-Chain Bridge-Georgetown Pike-I 495
- MacArthur-Dalecarlia-Massachusetts-Goldsboro-River-I 495
- MacArthur-Dalecarlia-Massachusetts-Constitution-I 395
- MacArthur-Canal-Whitehurst-23rd St-I 395

4.16 Visual Impacts

4.16.1 Definition

Visual or aesthetic resources are generally defined as the natural and built features of the landscape that can be seen and that contribute to the public's appreciative enjoyment of the environment. The goal of this section of the analysis is to characterize the baseline aesthetic conditions in the project area and assess how they would be altered by the proposed project. This visual study employs assessment methods based, in part, on the U.S. Department of the Transportation Federal Highway Administration (FHWA) (US DOT 1988) and other accepted visual analysis techniques as summarized by Smarden et al. (1986). The analysis includes a systematic documentation of the visual setting, an evaluation of visual changes associated with the project and measures designed to mitigate the project's visual effects.

4.16.2 Existing Conditions

Based on insights gained from review of local plans and policies, and fieldwork conducted in the project area, locations representing the most important areas from which the project is likely to be seen have been identified.

For the residuals processing facility we will evaluate two views:

1) The Capital Crescent Trail bridge looking onto the proposed facility location.
2) The Frank Phillips Building parking lot on MacArthur Blvd, overlooking Windward Place residences and the proposed facility location.

For the monofill we will evaluate three views:

1) MacArthur Blvd looking across the reservoir to the proposed location.
2) A residential area east of Dalecarlia Parkway.
3) A residential area northwest of the reservoir (e.g., Chalfont Place).

For the Georgetown reservoir we will evaluate one view to illustrate the potential continuous dredging operation:

1) MacArthur Blvd at Reservoir Road

For the pipeline to Blue Plains, we will not evaluate any views, unless it is determined that there are areas where the installation of the pipeline has the potential to result in significant permanent alteration to features of scenic importance.

Because the dewatering facility at Blue Plains would be consistent with the existing land use (i.e., it would be located on a site that is already heavily developed with large infrastructure facilities) a simulation of the additional facility at Blue Plains will not be prepared. However, possible host areas at the Blue Plains facility will be identified and the surrounding visual context evaluated.

The assessment of scenic quality for the existing conditions will be made based on professional judgement that takes a broad spectrum of factors into consideration, including:

- Natural features, including topography, water courses, rock outcrops, and natural vegetation;
- The positive and negative effects of man-made alterations and built structures on visual quality; and
- Visual composition, including an assessment of the vividness, intactness, and unity of patterns in the landscape.

The final ratings assigned to each view will fit within the rating scale summarized in Table 4. Development of this scale builds on a scale developed for use with an artificial intelligence system for evaluation of landscape visual quality (Buhyoff et al., 1994), and incorporates landscape assessment concepts applied by the U.S. Forest Service and the U.S. Department of Transportation.

TABLE 4
Landscape Scenic Quality Scale

Rating	Explanation
Outstanding Visual Quality	A rating reserved for landscapes with exceptionally high visual quality. These landscapes are significant nationally or regionally. They usually contain exceptional natural or cultural features that contribute to this rating. They are what we think of as "picture post card" landscapes. People are attracted to these landscapes to view them.
High Visual Quality	Landscapes that have high quality scenic value. This may be due to cultural or natural features contained in the landscape or to the arrangement of spaces contained in the landscape that causes the landscape to be visually interesting or a particularly comfortable place for people. These landscapes have high levels of vividness, unity, and intactness.
Moderately High Visual Quality	Landscapes which have above average scenic value but are not of high scenic value. The scenic value of these landscapes may be due to man-made or natural features contained within the landscape, to the arrangement of spaces, in the landscape or to the two-dimensional attributes of the landscape. Levels of vividness, unity, and intactness are moderate to high.
Moderate Visual Quality	Landscapes that are common, or which have average scenic value. They usually lack significant man-made or natural features. Their scenic value is primarily a result of the arrangement of spaces contained in the landscape and the two-dimensional visual attributes of the landscape. Levels of vividness, unity, and intactness are average.
Moderately Low Visual Quality	Landscapes that have below average scenic value, but not low scenic value. They may contain visually discordant man-made alterations, but the landscape is not dominated by these features. They often lack spaces that people will perceive as inviting and provide little interest in terms of two-dimensional visual attributes of the landscape.
Low Visual Quality	Landscapes that have below average scenic value. They may contain visually discordant man-made alterations, and often provide little interest in terms of two-dimensional visual attributes of the landscape. Levels of vividness, unity, and intactness are below average.

Note: Rating scale based on Buhyoff et al., 1994; U.S. DOT Federal Highway Administration, 1988, and United States Department of Agriculture Forest Service. 1995.

In addition to describing the views and rating view character and quality, the assessment of each viewing area will include a consideration of seasonal variations in viewing conditions,

and will note the kinds of viewers who experience the view, their numbers, and their presumed level of sensitivity to view change.

4.16.3 Evaluation of Impacts

For each of the analysis views selected, computer modeling and rendering techniques will be used to produce simulation images that depict the view as it would appear after the development of the project, but during its operating life. Existing topographic and site data will provide the basis for developing an initial digital model. Project engineers will provide site plans and digital data for the proposed project. These will be used to create three-dimensional (3-D) digital models of the facilities. These models will be combined with the digital site model to produce a complete computer model of the project changes. This model will then be used in combination with digital photographs of the views from each viewpoint to create accurate and realistic photo simulations of the appearance of the project.

Comparison of the "before" photos with the simulations of the completed-project conditions will provide the basis for determining project impacts on aesthetics and views. The following criteria will be used:

- **Degree of View Change:** the extent to which the project-related modifications will be visible, and the degree to which the project will alter the vividness, intactness, and unity of the view. The degree of change will be rated using a numerical scale that reflects both positive and negative changes. For example, zero will be used to indicate no change, while positive numbers will reflect positive changes, and negative numbers will reflect negative changes.
- **View Sensitivity:** The extent to which people are impacted by the changes. This includes the sensitivity of the view and the numbers and kind of viewers who would experience it. This will include an estimation of the number and sensitivity of the various classes of viewers who would experience each view, including residential viewers, recreational viewers, office and institutional viewers, and the number of viewers experiencing the view from vehicles. In visual impact analyses, it is commonly assumed that residential viewers are the most sensitive, that recreational viewers have a moderate degree of sensitivity (but that varies depending on the activity), and that viewers in vehicles have a lower degree of sensitivity (although it might be higher if they are on a designated scenic route).

To integrate the various numerical scores assigned in the visual impact assessment process, we may use the equation:

View Sensitivity × Degree of Visual Change × Numbers of Viewers

This equation will be run for each of the views for each alternative. For each of the alternatives, the scores for all the views will be totaled to create an overall indicator of the relative degree of visual impact. A particular value of this approach is that it provides an explicit way to account for and to compare and contrast the numbers of viewers who would experience the impacts associated with each of the alternatives.

The determination of whether the visual changes associated with a given alternative constitutes a significant visual impact will take into account the existing level of visual

quality of the views affected, the degree of change, the numbers of viewers affected, and their degree of sensitivity.

As for the existing conditions, Table 4 describes the quality scale that will be used to rate the completed-project view in order to determine whether the effects of the proposed facilities on the view will have no impact, an impact that is insignificant, or a significant impact.

No Impact

An alternative will be considered to have no visual impact if it either results in no permanent changes to the visual environment or if it is occurring in an existing moderately low to low area of visual quality.

Insignificant Impact

An alternative will be considered to have an insignificant impact if it occurs in an existing area of moderate visual quality and either results in no change to that area or decreases it to a lower level of visual quality.

Significant Impact

An alternative will be considered to have a significant impact if a permanent change occurs in an area of outstanding or high visual quality, or it decreases an area of moderately high, high, or outstanding visual quality to a lower level on the rating scale.

Attachment A

DATA SOURCES FOR ENVIRONMENTAL DATA REVIEW

FEDERAL ASTM STANDARD

NPL	National Priority List
Proposed NPL	Proposed National Priority List Sites
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CERCLIS-NFRAP	CERCLIS sites designated "No Further Remedial Action Planned"
CORRACTS	Corrective Action Report
RCRIS-TSD	Resource Conservation and Recovery Information System RCRIS includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA)
RCRIS Lg.Quan.Gen	Large quantity generators (LQGs): generate over 1,000 kilograms (kg) of hazardous waste
RCRIS Sm.Quan.Gen	Small quantity generators (SQGs): generate between 100 kg and 1,000 kg of hazardous waste per month
ERNS	Emergency Response Notification System records and stores information on reported releases of oil and hazardous substances

STATE ASTM STANDARD

MD SHWS	Notice of Potential Hazardous Waste Sites
DC SHWS	This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.
VA SHWS	This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.
VA LF	State Landfill
MD LF	State Landfill
DC LUST	Leaking Underground Storage Tank Incident Reports
VA LUST	Leaking Underground Storage Tank Database
VA UST	Underground Storage Tank database contains registered USTs
MD UST	Underground Storage Tank database contains registered USTs
DC UST	Underground Storage Tank database contains registered USTs
VA VRP	Voluntary Remediation Program
MD OCPCASES	
MD SWF/LF	Permitted Solid Waste Disposal Facilities
MD VCP	Voluntary Cleanup Program Applicants/Participants
DC VCP	Voluntary Cleanup Program Sites
VA LTANKS	
MD SWRCY	Recycling Directory

FEDERAL ASTM SUPPLEMENTAL

CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Record of Decision
Delisted NPL	National Priority List Deletions
FINDS	Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail
HMIRS	Hazardous Materials Incident Report System contains hazardous material spill incidents reported to the Department of Transportation
MLTS	Material Licensing Tracking System is maintained by the Nuclear Regulatory Commission
MINES	Mines Master Index File
NPL Liens	Federal Superfund Liens
PADS	PCB Activity Database
DOD	Federally owned or administered lands, administered by the Department of Defense

INDIAN RESERV	Indian Reservations
FUDS	Formerly Used Defense Sites
US BROWNFIELDS	A Listing of Brownfields Sites
RAATS	RCRA Administration Action Tracking System contains records based on enforcement actions issued under RCRA and pertaining to major violators
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
SSTS	Section 7 Tracking Systems
FTTS	Tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA

STATE OR LOCAL ASTM SUPPLEMENTAL

MD Historical LUST	Recovery Sites
MD AST	Permitted Aboveground Storage Tanks
DC AST	Aboveground Storage Tank database contains registered ASTs.
VA AST	Aboveground Storage Tank database contains registered ASTs.
VA Spills	Pollution Complaint Database from The Department of Environmental Quality
VA CEDS	Comprehensive Environmental Data System
MD Historical UST	

EDR PROPRIETARY HISTORICAL DATABASES

DC Coal Gas	Former Manufactured Gas (Coal Gas) Sites
VA Coal Gas	Former Manufactured Gas (Coal Gas) Sites
MD Coal Gas	Former Manufactured Gas (Coal Gas) Sites

BROWNFIELDS DATABASES

US BROWNFIELDS	A Listing of Brownfields Sites
VA VRP	Voluntary Remediation Program
MD VCP	Voluntary Cleanup Program Applicants/Participants
MD INST CONTROL	Voluntary Cleanup Program Applicants/Participants
DC VCP	Voluntary Cleanup Program Sites
VA INST CONTROL	Voluntary Remediation Program Database