

**SECTION 1.0:
PURPOSE AND NEED**

1.1 INTRODUCTION

This environmental document evaluates the environmental consequences associated with granting/extending Department of the Army (DA) Permits under Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. Section 403) and Section 404 of the Clean Water Act (33 U.S.C. Section 1344) to commercial sand and gravel companies for the removal of sand and gravel between river miles 0 - 69.5 on the Allegheny River and between river miles 0 - 40 on the Ohio River (referred to as the *study area* in this report). As shown in Figure 1-1, the study area encompasses a series of river pools created by a system of locks and dams maintained by the U.S. Army Corps of Engineers (USACE). This document also evaluates the environmental consequences associated with obtaining sand and gravel from other sources within the State of Pennsylvania and neighboring states (referred to as *the region* in this report).

Dredging activities have taken place in the Allegheny River and Ohio River for over a century, providing needed sand and gravel, primarily from glacial deposits, for a wide variety of infrastructure projects throughout the region. Using a variety of procedures, dredging activities have extracted sand and gravel from the river bottoms at specified locations. The extracted material is processed either on the river using a floating processing plant, or on land at a fixed land based plant, for subsequent sale and distribution.

While the permits address dredging activities within the rivers in the geographic areas shown in Figure 1-1, it should be noted that significant restrictions are in place to limit dredging within the study area (e.g., set backs from shore, islands, docks, dams, and other structures; noise restrictions; and so forth [discussed further in Section 2.2]). Appendix A (Figures A-1 through A-12), presents the areas theoretically available for dredging in each pool under current permitting conditions. As most dredging currently is permitted in areas that were previously dredged at some time in the past, the permitted areas presented in Appendix A correspond roughly to areas of past dredging activity. Examples of dredged areas are presented in Appendix B.

If these permits are re-issued, it is estimated that over the next 10 years, approximately eight percent of the river bottom would be disturbed as a result of commercial river dredging. Current evidence indicates that there are few if any undredged areas left within the study area, under current permit restrictions. The degree of previous dredging varies from slight (< 10 feet difference from normal river bed elevation) to exhausted given currently used technology (approximately 50 feet deep). In any one year, commercial sand and gravel dredging would occur over an area of 0.3 to 3 percent of the river bottom depending on the depth of the material (on average, dredging would disturb approximately 100 acres or 0.8 percent of the river bottom each year). Given current combined production rates for the applicants, estimated volumes of sand and gravel available, and current permit restrictions on where dredging can take place, commercial dredging could conceivably continue for 20 to 25 years.

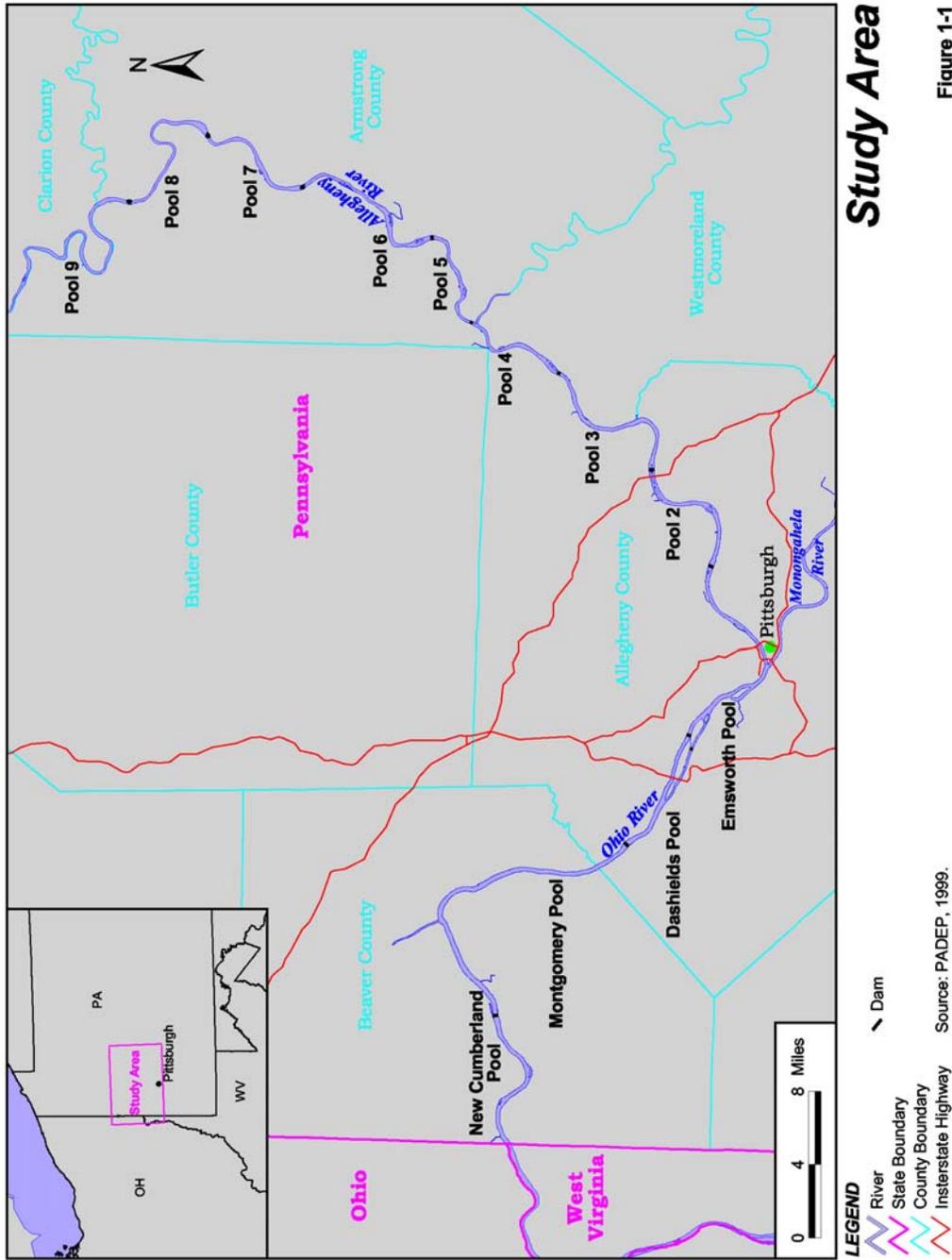


Figure 1-1

1.2 PURPOSE AND NEED

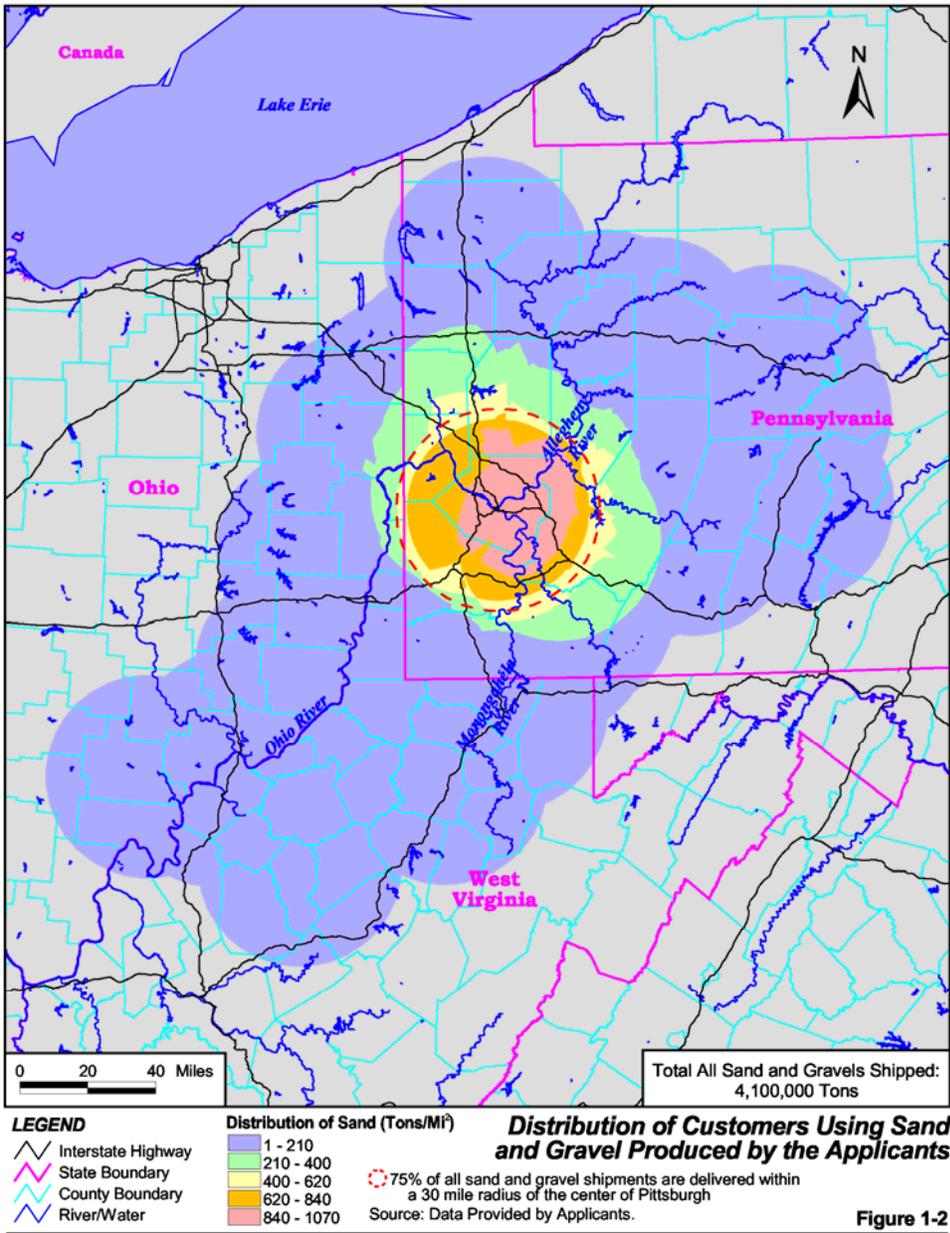
The commercial dredging companies seek extension of their existing permits from various permitting agencies including: USACE dredging permits; the Pennsylvania Department of Environmental Protection (PADEP) Water Obstruction and Encroachment Permits; and the PADEP Sand and Gravel License Agreements. These permits may be issued, suspended, or modified pending completion of the National Environmental Policy Act (NEPA) process. The purpose for this action described by these commercial sand and gravel companies, is the extraction of sand and gravel for commercial sale. These companies, referred to as the "applicants" include: Hanson Aggregates PMA, Inc. (formerly Pioneer Mid-Atlantic, Inc. and Davison Sand & Gravel); Glacial Sand and Gravel Company; and Tri-State River Products. The underlying need for this action, as stated by the applicants, is to provide materials supporting diverse infrastructure and construction requirements to a wide variety of customers in the region.

In addition to the applicants' stated purpose and need, there are recognized societal needs for this product which must be met regardless of whether the permits are granted, extended or modified. The feasibility of meeting these needs through means other than dredging (e.g., land based operations or importation of aggregate material from other locations) is evaluated in the environmental document.

The applicants seek to continue this mineral extraction to ensure a continuous supply of relatively inexpensive, high quality aggregate used by their customers for highway building, construction, and maintenance; commercial and private construction; related infrastructure development; and other uses. In calendar year 1998, the applicants extracted over four million tons of sand and gravel material. Table 1-1 presents a summary of material produced by the applicants in 1998. This material was sold and distributed to customers throughout western Pennsylvania, portions of northern West Virginia (primarily northern panhandle and Morgantown area) and eastern Ohio (primarily counties east of Interstate 77). Although the customer base includes a relatively large geographic area, the majority of the material was used in southwestern Pennsylvania. As shown in Figure 1-2, approximately 75 percent of the product material was used within a 30-mile radius of Pittsburgh.

Table 1-1
Tons of Sand and Gravel Produced by the Applicants, 1998

Material	Tons Produced
Sand (Type A)	1,500,000
Coarse Aggregate (SRL E)	680,000
Other Coarse Aggregate	1,900,000
Total Sand and Gravel	4,100,000



Glacial deposits of natural sand and gravel occurring in the bed of the Allegheny and Ohio Rivers are commercially valuable because of their physical properties. The sand and gravel dredged from the river bottom are particularly suitable as sources of material required in road construction and aggregate in bituminous asphalt and in concrete. The sand meets the Pennsylvania Department of Transportation (PennDOT) specifications for Type A quality requirements (the highest quality requirements) for fine aggregate, and the gravel meets not only the Type A quality requirements for coarse aggregate, but also receives the highest rating for skid resistance.

The Skid Resistance Level (SRL) is an aggregate friction guideline for bituminous wearing surfaces. Skid resistance refers to the degree to which a type of aggregate used in a road surface affects the risk of skidding. In theory, a soft, homogenous rock that polishes easily and quickly should form a slick surface that would promote skidding, especially when the surface is wet; the skid resisting properties of a highway surface should be improved if the aggregate retains a rough surface in use (Schenck and Torries, 1983). According to PennDOT, bituminous wearing surfaces must meet a certain SRL based on the Average Daily Traffic count (ADT) of a particular road. The SRL is determined by conducting several exams on a sample of aggregate, including a petrographic exam, the British wheel, and the British pendulum test. Other information such as accident investigations, skid resistance inventories, and field data are used in rating an aggregate source (Howe, 1976). For roads with ADTs of 20,000 and above, an SRL of excellent (E) must be met. Physical properties especially important in determining SRL E quality aggregate include abrasion, soundness (freeze-thaw resistance), specific gravity and absorption factor, gradation, and particle shape.

In 1998, the applicants produced and sold approximately 700,000 tons of SRL E coarse aggregate material, the highest rated skid resistance material identified by PennDOT. In addition, the applicants produced and sold approximately 1,500,000 tons of Type A sand aggregate, the highest quality type of sand. River aggregate is suitable in the production of concrete. However, certain land-based minerals (especially limestone and some sandstones), cannot be used for concrete as it reacts with the cement. Also, aggregate produced from slag or ash (cinders) does not meet PennDOT specifications.

It should be noted that PennDOT has no preference for aggregate obtained from the river or from land-based sources so long as their source material has been demonstrated through laboratory testing and appropriate certifications and approvals to produce material meeting PennDOT's strict specification requirements for its intended use. The main factors in selection of a supplier of a particular type of aggregate are proximity to the work site and volume of material available, so long as the material has been certified to meet Type A and/or SRL E standards (Basso, personal communication, 1997). As such, river-based sources are principally utilized within the Pittsburgh metropolitan area for SRL E and Type A aggregate because land-based sources within the immediate vicinity of the city are not glacial deposits and do not meet PennDOT's standards for SRL E and Type A material, while river-based sources in the area received deep glacial deposits from erosion forces over the centuries and meet the SRL E and Type A requirements. In general, land-based glacial deposits can be found in the northwest regions of the State but, due to their distance from the

city, they cannot compete with river-based sources because of the added cost of transporting material. Furthermore, there has been some resistance to the establishment of new land-based quarries because of public opposition.

1.3 SCOPE OF THE ENVIRONMENTAL DOCUMENT

This document was developed in accordance with:

- The NEPA statutory requirements,
- The NEPA implementing regulations issued by the President’s Council on Environmental Quality (CEQ)
- Other applicable Federal regulations for implementing NEPA for Federal actions involving navigable waters under the jurisdiction of the USACE as presented in 33 CFR Parts 230 and 325

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This Environmental Impact Statement (EIS) will provide the Commander/District Engineer, USACE, Pittsburgh District, with information regarding environmental impacts to consider as part of the public interest review of the applications in accordance with Corps of Engineers regulations. This EIS will also serve to provide information to other regulatory and commenting agencies and the general public about the likely environmental consequences of the proposed action and alternatives. The NEPA process ensures that the public has an opportunity to raise issues and concerns to the District Engineer.

An interdisciplinary team of environmental scientists, aquatic and terrestrial biologists, toxicologists, ecologists, geologists, planners, economists, engineers, and cultural resource specialists have analyzed the proposed action and other alternatives in light of existing conditions. The team has identified relevant beneficial and adverse effects associated with the action. This document analyzes both the direct effects (those caused by the action and occurring at the same time and place) and the indirect effects (those caused by the action and occurring later in time or farther removed in distance but still reasonably foreseeable), as well as the effects from secondary actions (reasonably foreseeable actions taken by others). The potential for cumulative effects is also addressed, and mitigation measures are identified where appropriate.

This environmental document evaluates four possible alternatives:

- Alternative 1: the “no action” alternative, i.e., cessation of commercial river dredging within the study area.
- Alternative 2: extraction of sand and gravel from the rivers by dredging under existing permit conditions.
- Alternative 3: issue dredging permits using revised permit conditions and additional site-specific permit conditions formulated using an adaptive management process and mitigation.

- Alternative 4: obtain sand and gravel from sources other than dredging within the study area, including: (a) land-based sources within the region; (b) importation of sand and gravel; and (c) recycled materials.

Section 2.0 describes these four alternatives in further detail. Section 3.0 describes existing environmental conditions that could be affected by the proposed action, and Section 4.0 identifies potential environmental effects that could occur upon implementation of each alternative.

In reviewing this environmental document it is important to note that over the past 200 years, human activity has profoundly altered the characteristics of the Allegheny River and Ohio River within the study area. In addition to dredging, human activities which have altered these rivers include: agricultural development and deforestation, urbanization, mining, industrial waste discharges, canalization, navigation, and others. This report evaluates the environmental consequences associated with river dredging activities as the rivers currently exist rather than relative to virginal conditions (i.e., pre-colonial periods). In addition, the environmental document addresses cumulative impacts associated with river dredging activities that have occurred in the past, present, and foreseeable future.