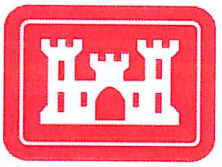
Draft

ENVIRONMENTAL ASSESSMENT
for
PERMIT APPLICATION NUMBER: 200001094

APPLICANT:
NORTHWEST AGGREGATES

January 2008



US Army Corps
of Engineers ®
Seattle District

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1 INTRODUCTION

This document constitutes the environmental assessment (EA) for the proposed replacement of a barge loading facility, in Puget Sound, Maury Island, King County, Washington, as described in the attached Public Notice dated December 13, 2004 and Erratum dated April 14, 2005.

2 FEDERAL ACTION

The Federal action would be the issuance of a Department of the Army (DA) permit. Pursuant to the Corps' NEPA implementation procedures for the Regulatory Project (33 CFR Part 325 Appendix B), the decision options available to the Corps are to: issue the permit, issue the permit with modifications or, deny the permit.

Under the Corps' decision option to issue the permit, an applicant's proposal must be demonstrated to be in compliance with the Corps' implementing regulations at 33 CFR 320-330. Under the Corps' decision option issue the permit with modifications, an applicant's proposal may be modified during the permit review process to minimize and/or avoidance adverse environmental impacts. These modifications can include changes to the design, changes to construction techniques and timing, and additional or alternative mitigation measures.

Under the Corps' decision option to deny the permit, an applicant's proposal would be found contrary to the public interest after consideration of factors in 33 CFR 320.4 or would be denied without prejudice indicating that except for other Federal, state, or local denial, the DA permit could be issued.

Under Appendix B (33 CFR Part 325), the ''no-action'' alternative is defined as one which results in no construction requiring a Corps permit. It may be brought by (1) the applicant electing to modify the proposal to eliminate work under the jurisdiction of the Corps or (2) by the denial of the permit.

3 AUTHORITY

The Secretary of the Army, acting through the Chief of Engineers, is authorized to issue permits, after notice and opportunity for public hearings, for construction of any structure in or over any navigable water of the United States. Various sections establish permit requirements to prevent unauthorized obstruction or alteration of any navigable water of the United States. In this case, Puget Sound is a navigable water of the United States and the proposed barge loading facility is covered by Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403). Section 10 prohibits construction, excavation, or deposition of materials in, over, or under navigable waters, or any work which would affect the course, location, condition, or capacity of those waters, unless such work has been authorized by the Corps.

Section 404 of the Clean Water Act authorizes the Secretary of the Army; acting through the Chief of Engineers, to issue permits, after notice and opportunity for public hearing, for the discharge of dredged or fill material into the waters of the United States at specified disposal sites. The selection of disposal or fill site would be in accordance with Guidelines promulgated by the Environmental Protection Agency (EPA) for evaluating discharges of dredged or fill materials into waters of the United States [40 CFR §230]. In this case, Puget Sound is a water of

the United States under Section 404. The proposed discharge would be the placement of clean pea gravel or sand in the any depressions or holes that remain from the pile removal.

4 PROJECT LOCATION

The proposed dock would be located on the southeast shoreline of Maury Island, King County, Washington (Figure 1). The upland mine is about 235 acres, mining activities would take place on 193 acres adjacent to the barge loading facility.

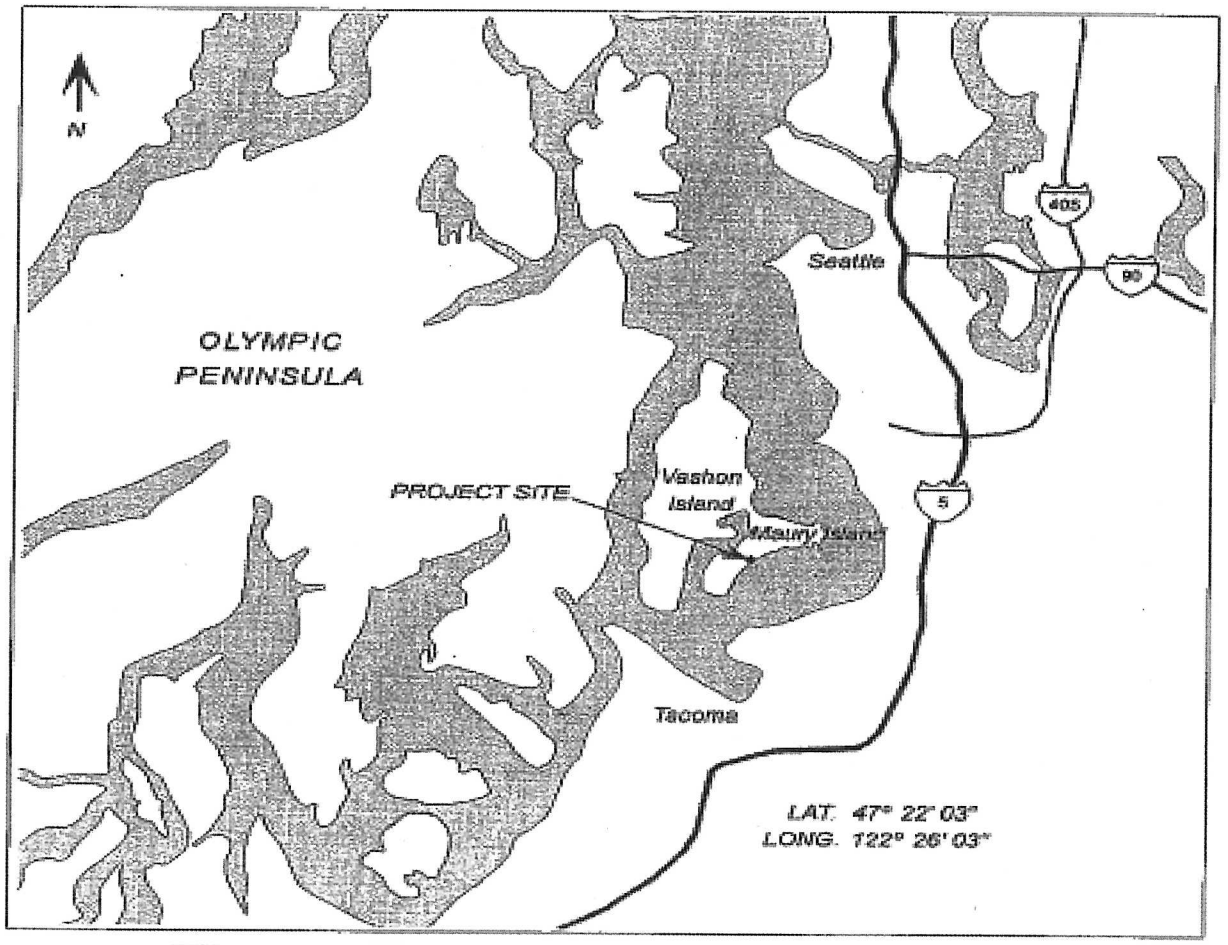

Figure 1. Project Location Map

5 PROPOSED PROJECT

Northwest Aggregates (hereafter "applicant") proposes to replace and extend the existing barge loading facility (dock). The proposed work consists of the removal of the existing conveyor trestle, walkways, pier structures, eight dolphins, and four submerged piling. The demolition work includes removal of 228 timber piling and backfilling any depressions left by their removal with clean pea gravel or sand. The existing sunken barges located near the southwest end of the existing dolphin alignment would remain in place. The proposed work includes construction of a barge-loading conveyor tube with three 4- to 6-pile support bents; seven 6-pile berthing dolphins with fenders and aluminum catwalks. A maximum of 56 24-inch steel piles will be installed to support the new trestle and seven berthing dolphins. The replacement dock would extend up to

305 feet waterward of the Mean High Water (MHW) line and would run 510 feet parallel to the shoreline. The replacement dock would cover 7,796 square feet (compared to 8,940 square feet of existing dock). Steel grating with 75% open area would cover the dock. To prevent gravel spillage from the mine to the barge, the conveyor tube would be completely enclosed with telescoping spout attached to the discharge end of the conveyor to lower the material into the barge. The spout would have a retractable chute and spoon to prevent dust and help distribute the material into the barge. A haul-back system (i.e. a system of winches, cables and pulley wheels used to position the barge during loading operations) would be attached to the top of the dolphin frames.

The barge loading facility and mine would operate 5 days a week from 7 a.m. to 7 p.m. Mining activities on adjacent uplands may expand to produce 1.5 to 2.0 million tons of sand and gravel per year. The actual future rate of extraction will depend on market conditions, as limited by the hours and days of the dock's operation. Based on predictions of future demand and the quantity of available product at the site, the mine would be expected to operate over several decades should it produce up to 1.5 to 2.0 million tons per year.

Only one bin-walled barge ranging in size from 2,500 to 10,000-tons (deadweight) would be moored and loaded at a time. Tugboats would typically deliver four 4,500-ton barges per day for loading within the 12 hour workday (weekdays only). On rare occasion, 10,000 ton barges and 2,500 ton barges may be delivered. When this change in barge sizes occurs, then a maximum of two 10,000-ton barges or maximum of five 2,500-ton barges would be delivered and loaded within the 12 hour workday. Typically, the maximum number of trips for tugboat and barge (4,500-ton barge) would be 8 per day. Tugboat engines and propellers would operate only during the arrival and departure of the barges. During the loading process a cable haulback system operated by an electric motor powered system of pulleys on the pier would shift the barges beneath the conveyor belt discharge to distribute gravel in the barge. At mean lower low water (MLLW), a minimum of 3 ft would be maintained between the bottom of the loaded barges and the seabed.

5.1 Proposed Construction Methods

The applicant proposes the following construction methods for on-shore and off-shore removal of the existing conveyor system and dock and the installation of the new conveyor system and dock (PIE et al 2002; Hall 2005).

5.1.1 On-shore work (Uplands)

The majority of the on-shore work would be landward of the MHW line and of the 200 feet shoreline buffer and would occur within a 60 foot wide corridor (conveyor corridor). The on-shore work would require typical construction equipment including a small crane, backhoe, front-end loader, work truck and dump trucks. The on-shore work would also require cutting, drilling, welding, and touch-up painting.

Vegetation within the conveyor corridor would be removed and the surrounding ground would be regraded and surfaced with crushed rock to provide a safe and stable surface for access. The existing conveyor and transfer platform would be removed in sections by a small land based crane and transported from the site for disposal in trucks. This work would require some cutting

of steel structures using oxyacetylene cutting torches. The existing conveyor and conveyor supports would be replaced with a similar system. As much of the new conveyor system would be preassembled off-site as possible. The new system would consist of steel channel conveyor frames and a steel framed platform at the conveyor transfer point. A steel framed take-up tower which keeps tension on the barge-loading conveyor belt and cast-in place concrete foundations would be installed.

Additional work outside the 60 foot wide conveyor corridor but within the 200 foot shoreline buffer includes power lines and grading of existing access roads. About five power poles with power lines would be replaced (north of dock, parallel to the shoreline, and adjacent to the existing access roads). Some of the existing poles would be re-used. Road work would be confined within limits of the existing roadways and would be limited to smoothing ruts. Site fencing, straw bales and other sediment and erosion control measures would be used to prevent material from entering the water. Exposed soils would be re-vegetated with approved native plant species to prevent soil erosion.

Upland mining operation would start in the central and southern portions of the existing mine site. Mining would proceed with clearing in scheduled phases of about 32 acres each. No more than two phases, up to 64 acres of mining/reclamation activities would be in process at any one time. Site reclamation would be accomplished in discrete segments as mined areas are depleted of sand and gravel. Consistent with Washington Department Natural Resources (WDNR) requirements, the applicant proposes reclamation in four steps: 1) pre-mining site preparation; 2) slope stabilization and erosion control, including stormwater control and temporary erosion control measures; 3) final contouring and topsoil replacement; and 4) revegetation with grasses, shrubs and trees. A detailed reclamation plan would be developed in the latter phase of each mining stage in accordance with specifications stipulated by WDNR (King County DDES 2000).

5.1.2 Off-shore work

The off-shore work would occur waterward of the MHW line and require a barge mounted crane, several flat deck work barges and pile driving equipment. Off-shore work would require cutting, drilling, welding, and touch-up painting. Tarps or other suitable materials would be hung below structures that require cutting, drilling, grinding, welding or touch up painting in order to catch any waste material. A containment boom would be placed around the perimeter of the work areas to capture wood debris and other material that enters the water. Any accumulated debris would be collected and disposed of at an approved upland disposal site. Eelgrass beds would be marked with buoys prior to the start of construction. Anchors or spuds used to secure the barges would not be placed in eelgrass beds. Barges would be secured to the structure when possible. Above-water work and in-water work would occur 16 July through 14 October of any year. If no surf smelt and/or no sand lance are spawning, the proposed work may occur from 15 October through 15 February of any year.

The existing timber dock, trestle, conveyor and dolphins would be removed using water borne equipment. The above-water portions of the structure would be disassembled and removed in section using a barged mounted crane. This work would require cutting treated timber wood with mechanical saws and steel structures with oxyacetylene cutting torches. The removed structure would be placed on a barge for transport to an off-site upland work area where it would

be unloaded, cut into smaller pieces, and either recycled or trucked to an approved disposal site. The in-water work would involve the removal of 228 creosote treated timber piles including 26 piles for the trestle, 71 piles for the dock, 105 piles for the dolphins and 26 piles for the submerged dolphins. The piles would be completely removed unless the pile breaks off at or below the mud-line. If the pile breaks off at the mud-line, an attempt would be made to remove the broken pile with a clamshell bucket. If the pile cannot be removed completely, it would be broken off or cut off a minimum of two feet below the mud-line use an underwater hydraulic or pneumatic cutoff saw. Depression left in the bottom would be backfilled with clean pea gravel or sand.

The proposed new barge berthing area would be located 82 to 104 feet seaward of the existing structure, which would result in at least 3 feet of water depth at MLLW between the barge and the seabed when loading, and a greater buffer distance (no closer than 104 feet) from the existing eelgrass beds. The new conveyor system would be completely enclosed to eliminate sand and gravel spillage between the shoreline and dock. The 56 new steel piles (24-inch diameter) would be vibrated in place using a vibratory hammer. An impact hammer would be use to "proof" the final installation of the piles. If the geotechnical conditions at the site prevent the use of vibratory method then the piles would be proofed using an impact hammer. When the impact hammer method is used, a bubble curtain would be placed around the work area to attenuate the noise. As much as practical the new structures and components would be assembled and painted off-site and installed in sections. The sections would be transported to the site by barge and lifted into place by a barge-mounted crane. Some painting may occur on site after the sections are installed.

6 Proposed Mitigation Measures

The applicant submitted a mitigation plan entitled, "Mitigation Plan: Maury Island Barge-Loading Operations (Extended Dock), Northwest Aggregates", dated 2 June 2004, describing measures to mitigate for potential impacts from barge-loading operations. The mitigation plan addresses impacts from sand/gravel spillage, shading, prop wash, and noise associated with operation of the barge-loading dock. In addition to the avoidance and minimization measures discussed previously, the proposed mitigation measures include:

- Allowing only one barge at the dock at any one time;
- Requiring empty barges to remain 2,500 ft waterward of the dock while waiting to load;
- Restricting operation of gravel barges and tugboats to areas waterward of the line of the proposed dolphins and tugboats to the waterward side of barges at the dock;
- Requiring tugboat/barge configurations to approach and depart the dock at the slowest speed practical and as weather conditions allow;
- Using a haul-back system to move the barge during loading to minimized the need for tugboats to use their engines to maneuver the barge;
- Using tugboats to "back" the barge away from the dock as weather conditions allow;
- Restricting tugboats operations to no closer than 120 ft of the eelgrass beds;
- Requiring tugboat operators to avoid directing prop wash towards the shore or use of excessive thrust;
- Maintaining a minimum distance of 3 ft between the bottom of barges and the seabed;

- Completely enclosing the gravel conveyor with telescoping spout with retractable chute and spoon to reduce dust and place the gravel in the center of barge;
- Installing a manual limit switch on the conveyor to prevent the conveyor from operating when a barge is not in place to accept material;
- Loading only barges with bin wall with material at least 2 ft below the top of bin walls;
- Requiring a trained dock worker to remain stationed on the dock to observe barge-loading operations;
- Training tugboat crews to watch for situations in which the barge and conveyor are misaligned;
- Monitoring barge-loading operations by video cameras;
- Requiring periodic monitoring and reporting to verify that barge-loading procedures are being followed and to confirm that the mitigation measures are successful;
- Hours of operation are limited to 7:00 am to 7:00 pm Monday through Friday;
- Annual eelgrass monitoring and macroalgae surveys conducted prior and after construction;
- Annual bathymetry surveys conducted prior to construction and at one year intervals for the first four years after project construction;
- Planting Plan for revegetation of the shoreline once the new conveyor is installed; and Additional protection of shoreline buffs by excluding mining from 400 feet boundary along the shoreline buffs. Originally a 200 foot boundary from the shoreline had been proposed for the shoreline buffs. See Figure 2 for mining setbacks and property line boundaries.

Many of these mitigation measures, including hours of operation and monitoring have been included in the local and state permits issued for the proposed project. These include the King County shoreline and grading permits and Washington Department of Fish and Wildlife's Hydraulic Project Approval and Washington Department of Ecology's Water Quality Certification.

7 BACKGROUND OF ACTION

The Corps received an application from the applicant for the proposed repairs and upgrades to the existing dock on 14 August 2000. In September 2000, the Corps informed the applicant that the proposed work would require an individual Section 10 Department of the Army permit. The applicant began the King County permit process two years earlier with a request for a shoreline exemption for the proposed repairs. Details of the King County permit process is presented below.

7.1 King County Permit Process

The applicant applied for a grading permit and requested a shoreline exemption for repairs and upgrades to the existing dock in 1998. King County subsequently evaluated the application under the State Environmental Policy Act (SEPA) via an environmental impact statement that was finalized in June 2000. For the applicant's proposed action, the EIS concluded that there were no significant unavoidable adverse impacts regarding land use and shoreline use under SEPA.

In August 2000, the applicant requested a shoreline exemption for the SEPA proposed action. On 31 May 2002 King County denied the applicant's request for the shoreline exemption. In September of 2002, the applicant submitted an application for a Shoreline Substantial Development (SDP) and Shoreline Conditional Use Permit (SCUP) for the SEPA proposed action.

Figure 2. Shoreline setbacks and property boundary lines map. (White dash line show the property boundary lines and Yellow solid line show the Mining setback lines.)

Through the King County's permit process, the proposed project was modified and a number of mitigation measures were incorporated. On 16 March 2004, King County issued a SEPA EIS addendum, which concluded that the applicant's revised proposal did not substantially change the analysis of significant impacts and alternatives in the previous SEPA EIS. Along with the EIS addendum, King County issued a denial of the shoreline permits (SDP and SCUP). King County indicated that the applicant's "principal use" was gravel mine operation and this use was not reliant on a land-water location. It was determined that the proposed project was not "water

dependent" based on this principal use. Therefore, the proposed project did not meet the county code and the county denied the shoreline permits. The applicant appealed the shoreline permit denials to the State Shoreline Hearings Broad.

On 3 November 2004, the State Shoreline Hearings Broad ordered King County to reverse the denials of the shoreline permits. King County issued the shoreline permits with a number of conditions in June 2005.

7.2 Corps' Public Involvement Process

The applicant revised the 2000 proposed project in November 2004 to include all the changes developed during the King County permit process from September 2002 through November 2004.

The Corps circulated a public notice for project proposal (described in Section 5) on 13 December 2004. The expiration date for public comments was 13 January 2005. During the public comment period, the Corps received numerous comments and requests for a public hearing. The Corps decided to hold a public hearing to allow the public to provide new or additional information on the proposed project. On 14 April 2005, the Corps issued a public notice for the public hearing, and a public notice erratum which extended the Corps' evaluation to include a review under authority of Section 404 of the Clean Water Act of the proposed placement of clean pea gravel or sand in holes caused by the removal of timber piles. The expiration date for public comments on the erratum was 31 May 2005.

The public hearing was held on 17 May 2005 on Vashon Island in King County. The purpose of the hearing was to obtain public views and opinions on the proposed project that were relevant for consideration in making the Corps' permit decision for the proposed project. To date, the Corps has received over 1035 comments, including verbal and written comment letters, e-mails and cards, during the public hearing and the public comment period, and additional written comments received since the end of the public comment period. While the expiration date for the public comments has since passed, the Corps has and will continue to consider all comments received up to the date of the DA permit decision.

7.3 Identification of Areas of Concern

The major controversial issues identified during the public hearing and comment period included groundwater supplies, visual and noise disturbances, the effect of existing arsenic-contaminated topsoils, removal of upland forest habitat, potential impacts on recreational use in the area, navigation impacts, and potential effects on nearshore habitat including eelgrass, forage fish, and endangered and threatened species. Comments received since the end of the public comment period have identified specific concerns about impacts to Southern resident killer whales, salmon, and forage fish.

8 SCOPE OF ANALYSIS

In accordance with the Corps' NEPA implementing regulations[1] this environmental assessment (EA) examines the potential impacts of issuing a Department of the Army (DA) permit for an existing barge loading facility (dock) to remove the existing dock and construct a new dock

[1] 33 CFR Part 325 Appendix B, 7(b)

associated with a proposed expansion of the existing upland gravel mine. The proposed dock consist of conveyor tube that extends about 305 feet waterward of MHW line supported by three support bents and seven berthing dolphins with fenders and catwalks that run 510 feet parallel to the shoreline. The upland mine is comprised of 235 acres, approximately 193 acres would be mined. The elevated conveyor sits in an upland area landward of the MHW line that is about 60 feet wide and 1000 feet long (1.3 acres). The proposed dock's footprint would cover 7,796 square feet or 0.18 acres waterward of the MHW line.

The scope of analysis for this DA permit decision is, at a minimum, the 0.18 acres waterward of the MHW line. In addition, the scope of analyses for DA permits may extend beyond the specific activity requiring a DA permit if the Federal control and responsibility of portions of the entire, larger project outside the limits of Corps' jurisdiction are such that "the Federal involvement is sufficient to turn an essentially private action into a Federal action. These are cases where the Federal environmental consequences of the larger action are essentially products of the Corps' permit action." In such instances, Federal control and responsibility includes "the portions of the project beyond the limits of Corps jurisdiction where the cumulative federal involvement of the Corps and other Federal agencies is sufficient to grant legal control over such additional portions of the project."

In this case, the proposed dock is intended to serve an existing upland gravel mine and will be constructed and operated in the marine waters of Puget Sound. Because of the very nature of the broad functional values associated with marine waters, the Corps typically has broad scopes of analysis for activities within these waters. This includes consideration of impacts to fish and wildlife species, water quality, recreation, and navigation, among others. All of these factors are specifically within the Federal interest due to our responsibilities under the Clean Water Act, the Rivers and Harbors Act, and the Endangered Species Act.

In an effort to consider all potential impact that the proposed dock could have on marine waters, including impacts to threatened and endangered species, the Corps expanded the scope of analysis to encompass the action area as defined in the Biological Evaluations. The action area is defined as the east shoreline of Maury Island from Piner Point to Point Robinson, extending three miles across the East Passage to the opposite shoreline. The Corps established this board action area to evaluate effects of the project on all aspects of the aquatic resources from tug and barge traffic approaching and departing the dock as well as impacts from the construction of the dock. The Corps considers this action area as within the Corps' Federal control and responsibility.

We also evaluated whether there were aspects of the upland gravel mine that would be within the Corps' Federal control and responsibility. We concluded that we did not have sufficient rationale to expand the scope of analysis to include the upland gravel mining activities, except for the upland area under the elevated conveyor (60 feet wide and 1000 feet long, landward of the MHW line) after looking at the four factors listed in our Regulations found at 33 CFR 325, Appendix B, and the following reasons.

The Corps' NEPA implementing regulations list four factors typically used to determine whether sufficient Federal control and responsibility exists to warrant expanding the scope of analysis to

additional portions of the larger project beyond the specific activity requiring a DA permit. The following discussion reviews these four factors in context of the proposed project and presents the rationale the Corps used in determining the scope of analysis for this EA and ultimate the DA permit decision.

Factor 1. Whether or not the regulated activity comprises merely a link in a corridor-type project.

Regulated activities that comprise merely a link in corridor type projects (e.g., roads or utility lines) typically result in a narrow scope of analysis limited to the specific activity requiring a DA permit, unless such a significant portion of the entire, larger project of the Applicant is located in waters of the United States such that the Corps permit decision greatly influences the origin and destination of the Applicant's larger project, as well as its route[2]. This factor is most relevant to a long-distance pipeline project, electric-transmission project, or highway that crosses a water of the United States. In this case the Applicant's proposed dock is not affected by this factor as the entire, larger project of the Applicant is not analogous to a corridor-type project similar to building a road or laying a utility cable (where the project's impact is generally limited to the corridor's direct pathway, the route of which is not altered once it has been constructed). Here, the Applicant has indicated it plans to use the proposed dock to move sand/gravel from active mining phases (each phase is approximately 32 acres in size) in the upland mine site to various destinations around central Puget Sound region (the end location of which will vary upon market demand). There is no "set" pathway or corridor which will be routinely traversed every single time sand/gravel will be moved from the proposed dock to a number of destinations in central Puget Sound region. Currently the Applicant loads trucks with sand/gravel mined from the upland site and use public roads to various destinations on Maury and Vashon Islands only.

However, even assuming that an argument could be made that the Applicant's larger project is analogous to a corridor-type project, the replacement dock would clearly constitute the essence of merely being a "link" since the dock would be used to "link" a boat to the upland mine site. Neither the origination of the sand/gravel mined from the upland site or its eventual destination, nor its route to and from the navigable water, except as the route applies to the location and configuration of the dock itself, are within the control and responsibility of the Corps of Engineers. As such, whether or not the Corps decides to issue this DA permit or not sand and gravel will be transported from the upland mine site.

Therefore, this factor does not warrant extending the Corps' scope of analysis to the upland mining areas.

Factor 2. Whether there are aspects of the upland facilities in the immediate vicinity of the regulated activity which affect the location and configuration of the regulated activity.

It does not appear that there are aspects of the upland facility in the immediate vicinity of the proposed dock that substantially affect the location and configuration of the regulated activity. While there are some aspects of the applicant's upland mining activities, such as the number of mining phases that are in production at a particular time and how quickly a phase is depleted,

[2] 33 CFR Part 325 Appendix B, 7(b)(3)

that affect the *size* and the *purpose/need* of the dock, these do not affect the *location* and *configuration* of the dock itself. (In contrast, the dock's location and configuration *are* affected by the current location of the pilings of the old dock and interests related to of the water resource, e.g., location of eel grass beds, etc.).

The proposed dock is intended to increase the Applicant's ability to transport mined sand/gravel to various destinations around the Puget Sound. However, the applicant has indicated that it plans to continue mining this site regardless of the ability to acquire a DA permit. The DA permit would enable the applicant to accelerate the mining process substantially, but the applicant does not need a DA permit or other Federal approval to conduct the mining. To the contrary, the Applicant has been actively mining the upland site for approximately 60 years and has indicated that it plans to continue mining the site into the future.

Therefore, this factor does not warrant extending the Corps' scope of analysis to the upland mining areas.

Factor 3. The extent to which the entire project would be within Corps jurisdiction.

The proposed dock would cover 7,796 square feet or 0.18 acres waterward of the MHW line, which is clearly within waters of the United States and Corps jurisdiction under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. However, there is no Corps jurisdiction in the 235 acres upland mining area as there no Section 10 or Section 404 waters in the upland mining areas. Excluding temporary impacts from the construction and operation of the proposed dock and conveyor system, the proposed dock structure covers 0.18 acres, and this is the minimum area within the Corps jurisdiction. However, in addition to this minimum, a portion of the upland site is under the elevated conveyor, about 60 feet wide and 1000 feet long landward of the MHW line. Within this upland area under the elevated conveyor, there will be both temporary impacts from construction and permanent impacts from access and maintenance. The upland area affected by the proposed conveyor would be 1.3 acres. We have also included this in our scope of jurisdiction.

Therefore, this factor does not provide a basis for extending the Corps' scope of analysis to the upland mining areas, beyond the upland area under the elevated conveyor (60 feet wide and 1000 feet long, landward of the MHW line).

Factor 4. The extent of cumulative Federal control and responsibility.

The Corps regulations state that "Federal control and responsibility would include the portions of the project beyond the limits of Corps jurisdiction where the cumulative Federal involvement of the Corps and other Federal agencies is sufficient to grant legal control over such additional portions of the project. These are cases where the environmental consequences of the additional portions of the project are essentially products of Federal financing, assistance, direction, regulations, or approval..."[3] In determining whether sufficient cumulative Federal involvement exists that would warrant increasing the scope of analysis for the Corps' permit, the Corps

[3] 33 CFR Part 325 Appendix B, 7(b)(2)(iv)(A)

considers whether other Federal agencies are required to take Federal action under other Federal environmental review laws and executive orders.[4]

The Applicant's on-going mine facility is entirely composed of private property, except for Washington State Department of Natural Resources aquatic lands at the dock site, There is no Federal funding, guarantee, or other Federal financial assistance associated with any aspect of the Applicant's project. Federal funds were not used to acquire the property originally. No Federal land must be crossed to reach the site. While the applicant is required to maintain a valid mining permit in order to mine the site, it has obtained a State reclamation permit from Washington State Department of Natural Resources. This is not a Federal agency, nor Federal authority. There are no areas of property that are eligible or meet the criteria for listing in the National Register of Historic Places (NRHP). No significant cultural resource sites have been identified that fall within the permit area or within the footprint of the proposed mining areas. Impacts to Federally listed threatened and endangered species, and their designated critical habitat were analyzed, but the areas of primary interest do not include the uplands, and are primarily focused on the marine waters associated with the proposed dock. No wildlife refuges, wetlands, or other dedicated natural resource areas occur on the upland site. As such, no other Federal agencies are required to take action in the upland areas under the Fish and Wildlife Coordination Act, the Endangered Species Act, Executive Order 11990 for Protection of Wetlands, or other environmental review laws or executive orders, with the exception of the marine waters, which have been the subject of intense local, state, and Federal scrutiny.

In summary, no other Federal agencies exert anything other than negligible control over the environmental effects of the mining on the upland portions of the site. The Corps' ability to do anything but disclose potential upland impacts in the upland area is seriously limited. For example, the Corps would have no authority or ability to limit mining operating hours to mitigate noise impacts – this is something solely under the control of the local land use decision maker (King County). Table I below shows the local government and state agencies with regulatory or permitting authority over the project.

Thus, it is the Corps' opinion that the DA permit action confers Federal control and responsibility over the environmental effects occurring in Corps jurisdictional areas (0.18 acres of the dock's footprint and 1.3 acres upland area under the elevated conveyor) and the Federal interest in the marine waters stretching from the east shoreline of Maury Island from Piner Point to Point Robinson, extending three miles across the East Passage to the opposite shoreline) only.

In arriving at the Corps' scope of analysis for this DA permit, we also considered the public response to the Corps public notice. We received a substantial number of comments, mostly from local residents of Vashon/Maury Island as well as other parties interested in limiting environmental impacts at the site. We also received comments from other state agencies. The vast majority of the comments were focused on potential impacts to the marine ecosystem.

[4] 33 CFR Part 325 Appendix B, 7(b)(2)(iv)(B).

Table I: Permits and Authorizations Required for the Proposed Project.

State Permits and Authorizations
Section 401 Water Quality Certification (Ecology) Consistency with Coastal Zone Management (Ecology) NPDES permit (Ecology) State Process Water, Stormwater and Mine Dewatering Discharges permit (Ecology) Mining Reclamation (WDNR) Hydraulic Project Approval (WDFW) Revised Aquatic Land Lease (WNDR)
King County Permits and Authorizations
Shoreline Conditional Use (King County) Shoreline Substantial Development (King County) Grading Permit (King County) Building Permit (King County)
Federal Permits and Authorizations
Section 10 (Corps) Section 404 (Corps)

Accordingly, the appropriate scope of analysis for this EA in support of the Corps permit decision is the area influenced by the proposed replacement of the existing dock, including the marine environment influenced by construction and use of the dock and inclusive of areas considered for the determination of potential effects on threatened or endangered species. However, in response to the intense public interest over the entire project and the potential indirect effects on the rate of mining that would arise from a Corps decision to issue a permit; we have included information on the upland resources within our public interest review to assure that we have considered all factors adequately for our permit decision. This review will include an evaluation of the public interest, including, but not limited to, impacts to aquatic resources, threatened and endangered species, navigation, and cultural resources.

We acknowledge that the main source of information regarding the upland resources is the SEPA documentation developed by King County. It is our assessment that this very encompassing documentation is sufficient to meet our needs for our analysis of impacts for the upland areas. In a few instances, we have also requested clarifying information from the applicant. The Corps independently evaluated all information prior to its incorporation into this document. All references used in this document are listed in Section 17 "References".

9 PROJECT PURPOSE

The Corps has determined that project purpose for this permit action is "*to provide sand and gravel by waterborne transport to meet the market demands of the Central Puget Sound region.*" The rational for this determination is as follows:

The applicant states the purpose of the proposed work is ***"to expand operations at the project site to serve markets outside of those able to be served efficiently using trucks to transport the mined sand and gravel"***. The applicant further clarified this purpose statement by adding ***"The proposed work would allow loading of barges with sand and gravel from the existing mine, thereby allowing waterborne transport of mined material throughout the Central Puget Sound region."***

The applicant has a desire to continue in the aggregate industry, to continue to supply their customers, their concrete plants, and to make a profit as they have done in the past. The applicant's DuPont facility no longer contains enough sand to meet their own needs or their customer's needs. Maury Island mine contains large amounts of sand which meets specification for public projects which makes the mine a valuable resource in the Central Puget Sound region.

The Corps makes independent determination of the applicant's project purpose. While the Corps believes it is very important to consider the applicant's views regarding the project's purpose and the existence of (or lack of) reasonable alternatives, the Corps must determine and evaluate these matters independently. The project purpose must not be so narrowly defined so to unduly restrict a reasonable search for potential alternatives. The applicant's purpose statement above limited the alternatives analysis to the proposed site. The Corps believed that off-site alternatives also needed to be explored to determine if there were less impacting alternatives available.

The Corps considers the applicant's desire to provide waterborne service as a reasonable restriction when considering alternative sites, especially since waterborne transportation would be required to move anything from Maury/Vashon Island to other areas of the Puget Sound. The Corps has determined that expanding the project purpose for Corps permit decision to include off-site alternatives can be done by removing the restriction of "*to expand operations at the project site*". The Corps also included "waterborne' as opposed to efficiently using trucks. Therefore the project purpose for this permit action is ***"to provide sand and gravel by waterborne transport to meet the market demands of the Central Puget Sound region."*** As the Corps evaluates alternatives, we will continuously reevaluate the project purpose.

The underlying need for the proposed project is supported by regional need for sand, the limitations on opening up new mines in the Puget Sound region, and the location of existing aggregate and concrete industries that depend on the sand and gravel.

Washington State Department of Natural Resource has identified a regional need for high quality sand that meets specification for public projects. According to Washington Department of Natural Resource (WDNR) the consumption of sand, gravel and rock (aggregate) is tied directly to population. Washington State's population has increased by more than two million people over the last 20 years (WDNR 1998). Continued population growth is rapidly depleting the mineral resources in Central Puget Sound region (Pierce, King and Snohomish Counties) and suitable aggregate is important to economic development in the region. Most aggregate producers can only serve customers within close proximity to their mines or processing plant. This is a result of transportation costs and presence of infrastructure. Transportation cost of aggregate is a function of weight and distance. A dump truck can haul 32 tons (64,000 pounds)

of material using a truck and trailer combination. The cost of transportation increases with every mile added to a one-way trip.

The Washington Growth Management Act requires that each county government designate mineral resource areas within their boundaries. King County has designated less than six square miles of the county for mineral resources areas. King County is expected to need more than 20 million tons of aggregate in 2010 and demand will continue to increase over the next ten years to 22 million tons. The average mine produces approximately 110,000 tons per year (PLU 2003). In this case there is an overwhelming amount of supporting information that the Central Puget Sound region has a growing need for sand and gravel near the major urban growth areas and that transportation costs is an important factor in meeting the market demands of this region.

The aggregate and concrete industries in the Seattle-Tacoma-Everett areas are located on local waterways including Duwamish River, Lake Washington, Snohomish River, Hylebos Waterway, and Puget Sound. This industry is depended on the delivery of sand and gravel by waterborne transportation. The applicant also owns and operates four concrete batch plants on these waterways in Seattle, Tacoma, and Everett. The applicant has built a large part of their business, about 80 percent, on providing sand and gravel by barge transport to their customers which are also located on these waterways in Seattle, Tacoma, and Everett. Hauling aggregate to the applicant's batch plants and their customers by truck would not only increase transportation cost but would have additional affects on the existing infrastructure in these locations, including congestion on existing highways, maintenance of road surfaces, safety concerns, noise, consumption of oil products and air pollution.

10 DISCUSSION OF ALTERNATIVES

Under all the decision options presented in Section 2, the Corps must analyze a reasonable range of project alternatives. Reasonable alternatives are those that are feasible and such feasibility must focus on the accomplishment of the project purpose that would be satisfied by the permit issuance. Provided below is an evaluation of alternatives to the proposed project:

10.1 No Federal action

In this document any action that results in "no activity requiring a DA permit" would be consider the "No action" alternative. Under the no action alterative the applicant would elect to modify the proposal to eliminate work under the Corps jurisdiction or withdrawal the permit application. The applicant has requested that the Corps make a permit decision. Therefore, Corps will not carry the "no federal action" forward through the environmental resource analysis. The Corps, however, will consider permit denial as a possible "no action". This would have the same effect as the "no federal action" alternative. That is the activities regulated under DA authority would not occur. However, the Applicant has indicated that mining will continue at the upland mine site whether or not the Corps decides to issue a DA permit.

10.2 Off-Site Alternatives

According to Washington State Surface Mining Reclamation Sites directory, there are 111 permitted sand and gravel mines in Pierce, King and Snohomish Counties (WDNR 2006). Many of these mines are less than 100 acres in size, some are depleted or nearing depletion and most are located in areas were the only means of aggregate transport is by truck. There are three

permitted mine sites with water access in King and Pierce Counties, the applicant's DuPont and Maury Island sites and Manke Lumber's mine near the Hylebos Waterway. The applicant stated that their DuPont mine does not have the sand to meet the applicant's needs or that of their customers. The Manke mine site is about 10 acres and the Corps does not consider this a viable alternative due to its size based on discussions with WDNR geologist (WDNR 2007). WDNR identify Maury Island mine as the only remaining sand and gravel resource with water access in King County (Teissere 2004). There are no existing permitted mines with water access in the Central Puget Sound region (WDNR 2007).

The applicant is currently purchasing and transporting sand by barge from Canada to meet their needs and those of their customers. The applicant stated that it is more cost effective to transport aggregate by barge because a large portion of the applicant's business and their customers are depended on delivery of aggregate by barge.

As presented in Section 9 "Project Propose", the hauling of aggregate by truck to the applicant's plants and their customers by truck would not only increase transportation cost but would have additional impacts on the existing infrastructure in these locations, including increase congestion on existing highways, increase maintenance of road surfaces, increase safety concerns, increase noise, increase consumption of oil products and increase air pollution.

Jefferson County contacted us concerning a proposed expansion of an existing mine within their jurisdiction. However, this potential project is still in the preliminary planning stage. Pursuant to communications with Jefferson County, we understand this proposal would include the construction of a new dock for the purpose of marine transport of aggregate material. There currently is no existing dock associated with the existing mine. The proposed dock would be located in Hood Canal, southwest of Hood Canal Bridge and about 55 nautical miles from Maury Island. Through our discussions with Jefferson County, we understand that the environmental review will take at a minimum a year to complete. Jefferson County provided us with preliminary information on the proposed market area which was provided to them by the applicant. The preliminary market area is proposed as local (Port Angeles), regional (Puget Sound urban centers), intrastate (Vancouver, WA.) and interstate (Oregon, California and Hawaii). As such, the Corps has determined that this potential site is not suitable for including within this alternatives analysis since there is not sufficient information available to determine if this preliminary proposal is feasible at this phase of its planning. According to Jefferson County the proposed dock is not critical to the expansion of the mine in Jefferson County and would progress regardless of dock construction.

Given the above, there are no currently permitted mine sites in any of the counties with shorelines along Puget Sound that have or could have water access within the next decade or more (Washington DNR 2007). It is unlikely that any area with sand and gravel deposits sufficient to meet the market demand that could have water access and is currently in operation could obtain the local and state permits to build and operate a dock within the next decade. The development of a new mine within a designated mineral resource area and with an associated marine transport facility would likely take years to obtain the necessary local and state permits and to conclude an environmental review process. Therefore, the Corps believes that these alternatives would not meet the near future need and would result in greater environmental

impacts, particularly if the proposed dock was located in an area that does not currently include a dock structure..

It is the Corps assessment that offsite and new mine alternatives are either unavailable to the applicant, cost prohibitive to the applicant, not currently feasible, or would result in greater environmental impacts, and/or would not accomplish the project purpose. The Corps worked closely with WDNR and reviewed other sources of information on the sand and gravel industry and information from the applicant in this assessment. Based on our findings, we have determined it is reasonable to limit further evaluation to on –site alternatives.

10.3 On-Site Alternatives

10.3.1 Original Proposal

The original proposal presented in the Corps permit application, dated August 2000, included the repair of the existing conveyor system and barge loading facility in its current location. The existing conveyor system repairs would have included the replacement of five power poles, re-installation of troughing idlers, return idlers, new motor drive, new rubber conveyor belts and addition of a spill or splash pan. Dock repairs would have included the replacement of about 45 timber pilings as part of the structure supports, fender, and dolphins and repairs to the dock's walkway, decking, and stringers. Timber piling would have been driven using an air hammer. The dock operation would have occurred 24 hours a day, 7 days per week. This proposal was identified in the King County SEPA FEIS as the proposed action (King County DDES 2000).

The Corps reviewed the applicant's original proposal and informed the applicant that the existing dock was not serviceable and that repairing the existing structure would not address environmental impact of the existing structure. The Corps suggested during meetings and telephone conversations with the applicant that the dock be replaced with material more suitable to the marine environment and extended into deeper water to avoid the nearshore area. These recommendations would reduce the environmental impacts that would occur with construction and operation of the proposed project.

Since this is no longer a viable proposal, the Corps will not carry this further in our evaluation of alternatives.

10.3.2 Current Proposal

The proposed project as described in Section 5 of this document was developed by the applicant during the King County shoreline permitting process and the Corps permit process (including ESA consultation). This alternative presented and discussed in the King County SEPA EIS addendum as the applicant's current proposal (King County DDES 2004).

The applicant proposed this alternative to the Corps in November 2004 as the proposed project. The proposed project avoids and minimizes a number of potential impacts to the marine environment that were expressed by the Corps, King County, and many commenters. The Corps has reviewed and completed an independent evaluation of the alternative information provided by the applicant and in the SEPA documents (King County DDES, 2000 & 2004). The alternatives represent a reasonable range of alternative for consideration by the Corps. Nothing

in the public record suggests the existence of an alternative that meets the project purpose with less environmental damage than the currently proposed project with mitigation.

Therefore, this proposal will be carried forward through the environmental impact analysis.

10.3.3 Permit Denial (No Action)

If the proposed project with mitigation is found to be inconsistent with Corps regulations pursuant to the public interest review, the permit application will be denied. The applicant would not have Department of the Army (DA) authorization to build the project as proposed. Therefore, no work would occur within the Corps jurisdiction and no impacts are expected to occur in or to the aquatic environment. The Corps will consider this decision option but will not provide an in depth evaluation because issuance of a permit would not occur and therefore the expected impacts would not occur.

11 404(b)(1) Guidelines

Section 404 of the Clean Water Act prohibits the discharge of dredged or fill material into waters of the United States unless the proposed discharge is the least environmentally damaging practicable alternative capable of achieving the proposal's purpose. The Guidelines prohibit a discharge when a practicable alternative exist which would have less adverse impact on the aquatic ecosystem.

In this case, the discharge being evaluated under the Section 404 is the discharge of clean pea gravel or sand in any depressions or holes caused by the removal of 228 timber piles below the mean higher high water (MHHW) line of Puget Sound related to the construction of the proposed dock. This discharge is a conservation measure identified during the ESA consultation process to protect listed species as well as critical habitat.

Appendix A contains the 404(b)(1) evaluation which includes an alternative analysis for this discharge. This analysis demonstrates that the discharge of the pea gravel or sand represents the least environmental damaging practicable alternative available to meet the conservation measure. The discharge will not result in the loss of aquatic resources. Therefore, the applicant's alternative, the discharge of clean pea gravel or sand into any depressions or holes caused by the removal of timber piles, satisfies the requirements of the Guidelines.

12 AFFECTED ENVIRONMENT (Baseline Conditions)

Existing conditions in the vicinity of the project site have been described by others in the State Environmental Policy Act (SEPA) Final Environmental Impact Statement (FEIS) for the proposed work (King County DDES 2000), Addendum to the SEPA FEIS (King County DDES 2004), the SEPA supplemental EIS for the Maury Island Aquatic Reserve Management Plan (WDNR 2004a), Nearshore Impact Assessment (EVS 2000) and documents provided by the applicant including biological evaluations (PIE 2002; Hall 2005 & 2006, and Grette Associates LLC 2002, 2003, 2005, 2006, & 2006b), and Annual Eelgrass Survey Reports, the latest of which was prepared in 2006 (Grette Associates LLC 2006c). Physical and biological characteristics of the marine environment adjacent to the project site appear fairly typical of Puget Sound based on marine reconnaissance for the applicant and King County between 1998 and 2000 as well as various surveys and unpublished information collected by the Washington

Department of Fish and Wildlife (WDFW) and Washington Department of Natural Resources (WDNR). Marine environment information sources are summarized in the King County FEIS. The Corps has independently evaluated factual information contained in these documents, particularly as it relates to marine features of the proposed project, and are incorporating them by reference into this decision document. The Corps has incorporated updated information in the following summary where noted.

12.1 Site Characteristics

The project site is located in southeastern Maury Island along East Passage in central Puget Sound. The City of Federal Way is located across from the project site on the opposite shore of East Passage. Maury Island is connected to Vashon Island by a road causeway at the north end of Quartermaster Harbor. Access to Vashon/Maury Island is provided via ferry or boat; there is no bridge connecting Vashon/Maury Island to the mainland.

Puget Sound has a glacial history that defines the primary geological characteristics of the project area. On Maury Island, the deepest and oldest subsurface layers are fine sands with some silt beds. Analysis indicates that these materials are older than 45,000 years and likely are interglacial deposits. These materials underlie the sands and gravels that would be mined. These interglacial deposits form a rolling surface under thick layers of sand and gravel that were deposited by meltwater streams and rivers that flowed from glacial ice as it advanced into Puget Sound from Canada about 16,000 years ago. Vashon Advance outwash deposits are materials graded from coarser sand and gravel near the top of the deposits to finer sands near the base. These are the materials that would be mined.

The shallowest subsurface layers, extending typically about 5 feet below grade in undisturbed areas, is classified as till deposited at the base of the Vashon age glacier that occupied the Puget Sound basin until about 13,000 years ago. This layer was deposited beneath moving ice. The till layer is relatively thin and discontinuous, particularly in the western and northern portions of the site, and do not appear to form a major barrier for subsurface water flow. Surface soils on the site are comprised of Everett and Alderwood soil series. Both of these soils series are well-drained, gravelly sandy loams over consolidated glacial till or gravelly sand that occur on relatively level terraces throughout King County.

As with adjacent portions of the shoreline, the site topography slopes gradually down toward the water from the crest of the island, with steep bluffs along the island shore. Along this section of Maury Island's shoreline, the sandy bluffs reach heights of 200 to 300 feet above the water's edge (King County DDES 2000). Most of the site is covered by vegetation.

Mining has occurred on the upland portion of the proposed project site since the 1940's. Prior to the 1980's, offsite barge deliveries to sites such as Indian Island and various piers within the Port of Seattle waterfront had resulted in annual mineral extraction levels as high as about 1.3 million cubic yards (cy). Since the 1980's, mining activities have continued on uplands at a lower rate (between 7,000 and 15,000 cy per year) to serve local markets on Vashon and Maury Islands. The barge loading facility has fallen into disrepair over the past several decades and is no longer serviceable.

Mining at the project site has reduced the heights of the on-site bluffs compared to adjacent shoreline. On the eastern portion of the site, past mining has removed up to 250 vertical feet of material, resulting in a horseshoe-shaped excavation covering about 40 acres. Two existing roads provide access the site. There is no shoreline stabilization structure along the shoreline at the site. Shallow sloughing has and continues to occur along the site's shoreline bluffs. The toe of the bluffs is being eroded by wave action. No reclamation has occurred within the existing mined area under Northwest Aggregates' existing WDNR Reclamation permit which was reapproved in 1991.

The shore consists of cobbles, gravel and medium sand stratified along different tidal levels along the beach. The beach slope is generally less than 10 percent and is dominated by gravel and medium sand above the -3 feet MLLW. The slope below -3 feet MLLW varies from about 10 percent to about 70 percent. Fine sands and silt dominate the substrate waterward of -3 feet MLLW. Shell debris has accumulated around the dock piles and dolphins. The existing dock and conveyor extends to depth between -18 and -24 feet MLLW. There's no evidence of sediment contamination in the project area (EVS. 2000).

Offshore from the project site, water depth increases rapidly across moderate to steep slopes to a depth of approximately 540 feet in the East Passage channel of southern central Puget Sound (Wouldiams et al 2001). This reach of shoreline is considered semi-protected, with lower wave energy than other locations in the Puget Sound region.

12.2 Water Resources

Marine waters in East Passage are considered to be of "extraordinary" quality for aquatic life uses and are therefore subject to the most stringent State standards (WAC 173-201A-210; WAC 173-201A-612).

No perennial or intermittent surface waterbodies occur in the project vicinity along the southeast part of Maury Island. Precipitation in this area is directly evaporated, transpired by vegetation, or rapidly infiltrated through the highly permeable soils. The groundwater aquifer located under the site supports springs that flow out from the lower portion of the shoreline bluff and into Puget Sound (King County DDES 2000).

Groundwater resources in the vicinity of the proposed project site include shallow groundwater that is not part of an aquifer; deeper isolated pockets of water in more densely packed sands and gravels; and aquifers comprised of relatively large and stable areas of water-saturated substrate below the ground surface (King County DDES 2000). On Vashon and Maury islands, the aquifer is divided into a principal aquifer which resides in sands and gravels of the Vashon advance outwash, and a deep aquifer, which resides in the much deeper, pre-Vashon sediments. Based on well monitoring (King County DDES 2000), the static water levels in the aquifers below the site range from approximately 20 to 90 feet above mean sea level (compared to ground surface elevations as high as 325 feet above mean sea level).

The aquifer system under Vashon and Maury Island is designated as a sole source aquifer[5] by the U.S. Environmental Protection Agency (EPA). The sole source aquifer boundary is coincident with the shoreline of the islands, and at depth includes all geologic units that can supply significant quantities of drinking water to wells. The Vashon-Maury Island Aquifer System supplies approximately 71 percent of the drinking water to persons living on the islands.

There is a continuous north-flowing drift cell along the eastern shore of Maury Island from Piner Point to Pont Robinson, where it converges with the drift cell along the northern shoreline. The drift cell along the eastern shore is mostly uninterrupted. Sediment transportation is somewhat disturbed by existing bulkheads and fill associated with upland development (Washington DNR 2004a). Wake turbulence from commercial vessel traffic in East Passage resuspend sediments along the beach resulting in short-term periods of relatively high turbidity at the project site (Grette Associates, LLC 2006c).

Oil spills from commercial and recreational vessel traffic have occurred along the Vashon/Maury Island shoreline (Ecology 2007). Such spills are the result of number of factors including poor vessel maintenance, unintended release of oil due to equipment failure and/or operator error, and/or vessel collisions. Vessels operators are required to report any release of oils to state and federal response agencies at the time of occurrence. Failure to report oils spills and/or clean up the spill can result in civil penalties against vessel owners and operators.

12.3 Air Quality

There is no recent air quality monitoring data for the project site or Maury Island. Air quality at the closest monitoring stations in Tacoma and Kitsap County indicate that particulate and pollutant levels are typically low (Puget Sound Clean Air Agency 2006). Given the rural nature of the project site, particulate and pollutant inputs in the project vicinity are likely lower than those closer to monitoring locations; air quality on Maury Island would be expected to be as good as or better than at the monitoring locations.

12.4 Fish and Wildlife

12.4.1 Fish

Cutthroat trout (*Oncorhynchus clarki clarki*) and chinook (*O. tshawytscha*), chum (*O. keta*), coho (*O. kisutch*), and pink salmon (*O. gorbuscha*) feed and rear in nearshore areas in the vicinity of the project area. Juvenile salmonids feed on epibenthic invertebrates in the intertidal zone. In addition to salmonids, marine fish such as a variety of surfperch (*Embiotocidae*), flatfish (*Pleuronectiformes*), gunnel (*Pholididae*), stickleback (*Stichaeidae*), and rockfish (*Sebastes spp.*) species likely occur along Puget Sound shorelines. Common species that likely utilize the nearshore habitat include striped perch (*Embiotoca lateralis*), surf smelt (*Hypomesus pretiosus*), staghorn sculpin (*Leptocottus armatus*), English sole (*Parophrys vetulus*), copper rockfish (*Sebastes caurinus*), and cabezon (*Scorpaenichthys marmoratus*). The intertidal and shallow subtidal zones provide feeding and rearing habitat for young marine fish and offer feeding and

[5] The EPA defines a sole or principal source aquifer as one which supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. EPA guidelines also stipulate that these areas can have no alternative drinking water source(s) which could physically, legally, and economically supply all those who depend upon the aquifer for drinking water. For convenience, all designated sole or principal source aquifers are usually referred to simply as "sole source aquifers."

spawning habitat for mature adult fish. As with salmonids, the benthic invertebrate resources in nearshore areas provide abundant prey for marine fish.

Offshore areas along the Maury Island shoreline and in the project vicinity provide a mix of pelagic, benthic and reef habitat. Pelagic species such as adult salmonids, Pacific cod (*Gadus macrocephalus*), walleye pollock (*Theragra chalcogramma*), and Pacific hake (*Merluccius productus*) likely utilize the water column in offshore areas. Benthic areas provide habitat for flatfish, spiny dogfish (*Squalus acanthias*) and a variety of sculpin species (*Cottidae*) (Palsson and Tsou 2005). Reef habitats, provided by two sunken wooden barges, a sunken pleasure boat, and the existing piling at the site, provide habitat for lingcod (*Ophicon elongates*), greenling (*Hexagrammidae*), and several species of rockfish (King County DDES 2000).

WDFW has documented herring (*Clupea harengus pallasi*) spawning grounds along the shoreline of Quartermaster Harbor and southern Maury Island along East Passage (Bargman 1998). The Quartermaster Harbor herring stock spawns from late January through early April. These spawning grounds represent one of 18 distinct Pacific herring spawning areas in Puget Sound (WDNR 2004b). Herring deposit transparent, adhesive eggs on intertidal and shallow subtidal eelgrass and marine algae. Eggs may be deposited anywhere between the upper limits of high tide to a depth of minus 40 feet, but most spawning takes place between 0 and minus 10 feet in tidal elevation (Bargman 1998; WDFW 2006a). The documented herring spawning grounds extend from approximately the project site south to Piner Point and around the entire shoreline of Quartermaster Harbor (Washington DNR 2004b). Herring likely utilize eelgrass and macroalgae at the project site for spawning.

Documented spawning areas for surf smelt and sand lance occur south of the project area near Piner Point, the southern tip of Maury Island (Bargman 1998). A spawning survey was conducted in December 2005 by WDFW which documented a new spawning area for surf smelt and sand lance in the immediate area of the existing dock (WDFW 2005). Surf smelt and sand lance spawn in the high intertidal zone on mixed sand and gravel beaches. In southern Puget Sound, surf smelt tend to spawn from October through February; sand lance typically spawns from November through February (WDFW 2006a).

See Section 12.4.7 "Threatened and Endangered Species" for more detailed discussion on Chinook salmon, steelhead, and bull trout species listed or proposed for listing as threatened under the Endangered Species Act.

12.4.2 Terrestrial and Aquatic Vegetation

Upland vegetation on the mine site consists of Pacific madrone (*Arbutus menziesii*) and mixed madrone/Douglas fir forest. Douglas fir (*Pseudotsuga menziesii*) trees on the site range in size from 6 to 20 inches in diameter and average about 80 feet tall. The madrone trees range from 6 to 22 inches in diameter and average about 35 to 40 feet tall. About 69 percent or 161 acres of the mine site is forested. The remaining 31 percent or 74 acres of the mine site consists open ground and previously cleared areas that are now covered with mixed grasses, invasive shrubs (Scot's broom and Himalayan blackberry), and thickets of Pacific madrone and red alder (*Alnus rubra*) saplings (King County DDES 2000).

The nearshore subtidal areas, between 0 feet mean lower low water elevation (MLLW) and about -22 feet MLLW, support eelgrass (*Zostera marina*) which occurs to the north and south of the existing trestle and between the existing dock face and shoreline. The eelgrass patches have been surveyed and monitored yearly since 2001. Results of these surveys show that eelgrass has been established in two main eelgrass patches located at either end of the site where the controlling factors appear to be suitable for eelgrass. Isolated eelgrass plants continue to be observed in other portions of the site, but no new eelgrass patches have been established during the six year monitoring period. These isolated plants do not appear to survive year to year. There are two main patches, one patch located 219 feet south of the trestle and the other patch located 286 feet north of the trestle vary in densities for year to year (Grette Associates LLC 2006c).

The nearshore subtidal area also supports macroalgae which occurs between -20 feet MLLW and 0 feet MLLW in the area extending shoreward from the northernmost to the southernmost dolphin. Macroalgae observed in this area include *Ulva spp., Laminaria sp.* and *Costeria costata*. Species composition and distribution of macroalgae waterward of the trestle has been similar over the observations done from 2001 to 2006, although there has been some variability in location of the macroalgae within the observation area (Grette Associates LLC 2006c).

12.4.3 Shellfish and Invertebrates

Intertidal and shallow subtidal areas along the Maury Island shoreline provided habitat for a variety of shellfish including butter clams (*Saxidomus gigantea*), littleneck clams (*Protothaca staminea*), macoma clams (*Macoma spp.),* and common cockle (*Clinocardium nuttalli*); and crabs including Dungeness crabs (*Cancer magister*) and red rock crab (*Cancer productus*). Piddock clams (*Pholadidae*) occur under the pier and common mussels (*Mytilus edulis*) are attached to the existing piling (King County DDES 2000).

The piling communities at the project site, between 0 feet and -24 feet MLLW, consists of sea anemones, giant barnacles, green sea urchins, kelp crabs, decorator crabs, nudibrachs, limpets, chitons, mussels, jingle shells and various red and brown algae (King County DDES 2000).

Geoduck clam (*Panopea abrupta*) beds are found along the project site shoreline and extend all along the Maury Island coast along East Passage. Near the site, geoducks typically occur from at elevations between mean lower low water (MLLW) to about 200 yards from shore (King County DDES 2000). Tribal and public harvest of geoducks periodically occurs at and near the project site. The southwest shoreline is designated as geoduck tract 10150 in the 2004 Geoduck Atlas (WDFW 2004). The estimated geoduck density in tract 10150 averages 0.24 clams per square foot. Tribes harvested about 71 tons of geoducks from tract 10150 in 2002 (WDFW 2006b).

12.4.4 Marine Mammals

Puget Sound provides habitat for California sea lions (*Zalophus californianus*), Stellar sea lions (*Eumetopias jubatus*), harbor seals (*Phoca vitulina richardsi*), Dall's and harbor porpoise (*Phocoenides dalli* and *Phocoena phocoena*, respectively), killer whale (*Orcinus orca*), gray and minke whales (*Eschrichtius robustus* and *Balaenoptera acutorostr*ata, respectively), and sea otter (*Enhydra lutris*) (Osmek et al. 1998). Harbor seals and Dall's and harbor porpoises are the most

commonly observed marine mammals in Puget Sound. See Section 12.4.7 for more detailed discussion of killer whales.

12.4.5 Terrestrial Wildlife

The project site is used by a variety of mammals, including black-tailed deer (*Odocoileus hemionus*), raccoon (*Procyon lotor*), bats (Myotis sp.), Douglas' squirrel (*Tamiascurus douglasii)*, and possibly black bear (*Ursus americanus*). Mice, voles, moles and shrews are likely to be relatively abundant. Black-tailed deer are relatively common throughout Maury Island and the site provides habitat that is relatively isolated from human disturbance. Forested areas at the site provide hiding cover and cleared areas provide good feeding sites. The project site could support between 5 to 18 deer at any one time, based on historic studies of deer densities in western Washington.

The site supports at least three species of reptiles. The open, dry, and gravely habitat interspersed with shrub and grass cover and dense leaf litter from madrone trees provides good habitat for reptiles, including western fence lizard (*Sceloporus occidentalis*), northern alligator lizard (*Gerrhonotus coeruleus*), and terrestrial garter snake (*Thamnophis sirtalis*). Because the site is quite dry, amphibian use is expected to be limited. However, the leaf litter provided by the madrone and the dense understory of salal present in madrone woodlands provide fairly good habitat for salamanders, such as the ensatina (*Ensatina eschscholtzii*) and Northwestern salamander (*Ambystoma gracile*). Pacific chorus frogs (*Hyla regilla*) are the only amphibians that have been documented on the site (King County DDES 2000).

12.4.6 Birds

Maury Island and the project site contain suitable habitat to support numerous species of birds. Twenty-one species of birds have been documented at the project site. Within open and disturbed habitats, white-crowned sparrow (*Zonotrichia leucophrys*), rufous-sided towhee (*Pipilo erythrophthalmus*), and American robin (*Turdus migratorius*) are fairly common. The madrone and mixed Douglas fir/madrone forests support a variety of birds, including orange-crowned warbler (*Vermivora celata*), Swainson's thrush (*Hylocichla ustulata*), and yellow-rumped warbler (*Dendroica sp.*). Pileated woodpeckers (*Dryocopus pileatus*) have been observed in the mixed Douglas fir/madrone forest and other woodpeckers, such as sapsuckers (*Sphyrapius sp.*) and hairy woodpecker (*Dendrocopos villosus*), are expected to be present in this habitat type as well.

Raptors, including bald eagles (*Haliaeetus leucocephalus*) and red-tailed hawks (*Buteo jamaicensis)*, have been observed on the site and the open areas of the mine provide good hunting habitat. Bald eagles were delisted under the Endangered Species Act (ESA) on 8 August 2007. Bald eagles have been observed perching on the dock and on the hillside trees above the shoreline on and adjacent to the project site. There are no bald eagle nest sites in the immediate area. Four bald eagle nests are located between 3 and 6 miles from the project site. Great blue herons (*Ardea herodias*) forage along the shoreline, particularly during low tides. The shoreline within the project area is likely to be one of many heron foraging areas located along the Maury/Vashon Island shoreline since the nearest nesting colony is more that 2 miles away. Black-crowned night herons (*Nycticorax nycticorax*) and osprey (*Pandion haliaetus*) may

occasionally forage or rest on the site, but the site does not contain habitat for these species (King County DDES 2000).

12.4.7 Threatened and Endangered Species

In accordance with Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended federally funded, constructed, permitted or licensed projects must take into consideration impacts to federally listed and proposed threatened or endangered species. Several species protected under the Act are potentially found in the project vicinity. These species are listed in Table II.

Marbled murrelet is a small coastal seabird found in Puget Sound. These birds feed on small fish and invertebrates in nearshore marine waters. According to the WDFW habitat database, marbled murrelet feed in Quartermaster Harbor on the opposite side of the island from the project site. Marbled murrelet may occasionally feed offshore of the project site. They nest in mature and old growth coastal forest. There is no suitable marbled murrelet nesting habitat present within the project vicinity and suitable habitat does not occur within several thousand feet of the project boundary.

Table II. Federally listed threatened and endangered species that may potentially occur in the project vicinity.

Species	Listing Status	Critical Habitat
Marbled Murrelet *Brachyramphus marmoratus*	Threatened	Designated
Coastal/Puget Sound Bull Trout *Salvelinus confluentus*	Threatened	Designated
Puget Sound Chinook Salmon *Oncorhynchus tshawytscha*	Threatened	Designated
Southern Resident Killer Whale *Orcinus orca*	Endangered	Designated
Steller Sea Lion *Eumetopias jubatus*	Threatened	Designated (none in Washington state)
Humpback Whale *Megaptera novaeangliae*	Endangered	—
Leatherback Sea Turtle *Dermochelys coriacea*	Endangered	Designated (none in Washington State)
Puget Sound Steelhead *Oncorhynchus mykiss*	Threatened	—

Bull trout are native char to the Pacific Northwest and western Canada. Bull trout range includes Puget Sound and associated tributaries. Although bull trout are primarily found in colder streams, they are known to occur in large river systems and in Puget Sound. Anadromous bull trout move into salt or brackish water where they rear in the lower mainstem rivers and estuarine waters. There are no streams with suitable habitat for bull trout on Vashon or Maury Island. Bull trout could potentially occur in the project area.

Puget Sound is a migratory corridor for adult Chinook salmon and provides habitat for outmigrating juvenile chinook from rivers into the Sound before their eventual oceanic phase as adults. Juvenile Chinook salmon habitat includes nearshore areas and open water of Puget Sound. Juveniles could be present in marine water in the project vicinity from March through June, with smaller numbers occurring in July. Spring-run adult Chinook typically return to freshwater in April and May. Summer/fall-run adult Chinook begin freshwater migration in August. The greatest abundance of adults would occur between early summer and early fall as they return from the ocean to natal streams and rivers. There are no natal streams located on Vashon or Maury Island. The nearest natal stream and estuary is about 6 miles south of the project site. The eelgrass beds and substrate in the project area provide refuge for juvenile Chinook. However, the nearshore area within the project vicinity is primarily used as a migratory corridor for both juveniles and adults Chinook salmon.

Southern resident killer whales are generally found in the water off the San Juan Islands during the spring, summer and early fall, where they are believed to feed almost exclusively on Chinook salmon returning to the area's rivers to spawn. This area is considered to be the core habitat of the southern resident. During late fall and winter, southern resident typically leave this core area. The K and L pods generally are thought to travel to outside waters, while the J pod is believed to move to the inland waters of British Columbia and Puget Sound in late fall and remain there throughout the winter. However, J pods use is unpredictable within this relatively large area. All pods have been reported off the mouth of the Columbia River during fall and spring Chinook runs. K and L pods use of Puget Sound, including the Vashon-Maury Island area has increased in recent years and may continue to increase. Southern resident appear to travel more widely and erratically during years when salmon numbers are relatively low. Peak use of Puget Sound by southern residents generally occurs in the months of November, December, and January. Transient killer whales also travel sporadically throughout the Puget Sound. Southern residents use the waters off Vashon-Maury Islands as part of the broader fall/winter use area of Washington and British Columbia inland marine waters. Southern residents may occur within or near the project site at any time during the months of October through January; however, the frequency and duration of such occurrences are expected to be low. Critical habitat for the southern resident killer whale has been designated as the southern residents' entire range in Washington's inland marine waters, including Haro Strait, the Strait of Juan de Fuca, and all of Puget Sound, a total of just over 2,500 square miles. Excluded from this critical habitat area designation are 18 military sites and areas with water depths less than 20 feet deep (based on extreme high water elevation).

Steller sea lions occur year-round in Washington waters, but do not breed here. There are no rookeries or large haulouts located in Puget Sound. Although haulouts occur in a variety of areas, individual locations used are specific and change little from year to year. No haulouts have been identified in or near the project area. Steller sea lions feed in open-water habitat from nearshore areas to the edge of the continental shelf. Steller sea lions are not expected to occur in the project vicinity.

Humpback whale sightings are a common occurrence along the Washington coast, with less frequent sightings in the Strait of Juan de Fuca. Inside Puget Sound, sightings are less common, though they do occur. Two sightings (six individuals) were reported off the Seattle shoreline in the late 1970s with other sporadic sightings reported in 1980s. Because of its geographic

isolation from migration routes and feeding areas, humpback whales are rare in the project vicinity.

Leatherback sea turtles have been reported off the Oregon and Washington coast. The majority of the sightings occurred off the Washington coast in a range of 4.5 to 80 nautical miles offshore. There are no documented sightings within Puget Sound. Critical habitat is associated with breeding areas and does not occur in Washington. It is unlikely that this species would be found in the project vicinity.

Puget Sound steelhead generally refers to the anadromous form of the trout species *Oncorhynchus mykiss*, which includes freshwater rainbow or redband trout. In Puget Sound, the listing applies only to native, naturally spawning anadromous runs with the exception of two hatchery stocks in the Green and Hamma Hamma Rivers. Steelhead, unlike Pacific salmon, may spawn in multiple years. Typically juvenile steelheads out-migrate to salt water from April to mid-May. Based on WDFW database there are two populations of steelhead trout in the central sound. The East Kitsap populations, which is composed of a number of small runs including streams on the west side of Vashon Island and in Quartermaster and Gig Harbors.

The Puyallup River population consists of three native steelhead runs. There are no steelhead bearing streams on the East Passage between the Puyallup and Duwamish Waterway. It is unlikely that juvenile rearing occurs in shallow waters of the project area. Sub-adult and adult steelhead may use the deeper, offshore waters of the project area for migration and foraging, but are not expected to be present in significant numbers at any time.

12.5 Historic Properties

There is no known listed or eligible for National Register of Historic Places, Native American cultural resources sites identified by Washington State, Office of Archeology and Historic Preservation on the project site. A Chinese fishing colony existed on the west side of Maury Island, near Manzanita, this colony may have included a cemetery. However, information on this colony is limited. The location of any cemetery associated with this colony is unknown. Based on local information there is a potential that a cemetery connected with this colony may be located near or on the applicant's property. However, no evidence of any cemetery has been found on the applicant's property. The only recorded cemetery on Maury Island is the Maury Island Cemetery was established in 1887, which is located at the corner of SW 256th Street and 75th Street, near the Gold Beach community. This cemetery was also known as the Old Vashon Cemetery and the Penbrock Cemetery. The Point Robinson Lighthouse is located about 3.5 miles north of the project site. The Point Robinson Lighthouse is on the National Register of Historic Places.

12.6 Land Use

At the project site, the uplands and shoreline (the area between the extreme low tide and 200 feet landward of the ordinary high water mark) are owned by the applicant. The shoreline is designated Conservancy under the King County Shoreline Master Program which recognizes resources uses, including mining as an appropriate use (Washington DNR 2004b). The applicant has maintained the Aquatic Lands Lease from WDNR for the existing dock.

The upland portion of the project is designated as a Mineral Resource Area on the Mineral Resources Map of the King County's Comprehensive Plan and is zoned for Mineral uses. Aggregate mining is considered an interim use of the land (Langer 1993). The Washington Department of Natural Resources regulates reclamation on mineral lands. The applicant is required to implement a reclamation plan for extraction areas and to post a bond to ensure reclamation requirements are met.

The surrounding parcels are zoned as a mix of rural designations with one dwelling unit every 5 to 10 acres. The community of Dockton is located along Quartermaster Harbor about ½-mile northwest of the project site. The Sandy Shores residential community is located along the shoreline adjacent to southern boundary of the applicant's site. Gold Beach, another residential community, is located adjacent to the northern boundary of the site. Current land use densities in Gold Beach and Sandy Shores are 4 to 5 dwelling units per acre and represent development that occurred prior to the current zoning classification (King County DDES 2000).

12.7 Noise

According to the King County Noise Code, the project site would be considered an industrial noise source. The project site is bordered by Puget Sound to the southeast, forest in the northwest corner, individual residences to the west and the communities of Gold Beach and Sandy Shores to the northeast and southwest, respectively. For these land use, the applicable noise limits would be for an industrial source affecting rural residential receivers. The King County Noise Code allows sound level during day in range of 57 to 60 dBA and at night a range of 47 to 50 dBA for rural residential area in February 1998. Existing sound levels were measured at Sandy Shores and Gold Beach communities. Sound levels average 43 to 53 dBA during the day and 37 to 46 dBA during the evening at both locations (King County DDES 2000).

The marine traffic contributed to overall underwater background sound levels through the marine waters in the project vicinity.

12.8 Transportation

The mine has operated over the last few years at a maximum of 20,000 tons mined per year for local markets (Vashon and Maury Islands). Truck trips from this mine to local sites on Maury/Vashon Island numbered approximately 500 to 1,000 per year (King County DDES 2000).

12.9 Navigation

The marine traffic in the vicinity of the project includes personal sail and power craft; petroleum, mineral, bulk cargo or container barges; ships carrying bulk cargo, lumber, or containers; log raft tows; passenger ferries; auto ferries; and occasionally petroleum or crude oil tanker or barge. The amount of Seattle/Tacoma commercial traffic that sails east of Maury Island past the site is less then the total traffic to Tacoma and points south. SEPA FEIS marine traffic assessment addressed the areas most likely to receive tug/barges from the mine. These areas included south Puget Sound area, the Tacoma area and the Seattle area. Key commercial shipping passages within the study areas included the Tacoma Narrows, Dalco Passage at the south end of Vashon Island and the East Passage to Elliott Bay. Although some of the tug/barge traffic would travel

outside of this area, it was expected that most of the traffic would travel between the Seattle and Tacoma areas via the East Passage (King County DDES 2000).

The U.S. Coast Guard monitors the Vessel Traffic Service (VTS), a radar tracking system for all large vessels and tow vessels in the Puget Sound and the Strait of Juan de Fuca. The Coast Guard can visually observe active traffic on the VTS screen and relay this information to the skipper of marine traffic. The skipper uses this information to make navigation decisions. The Coast Guard does not direct the skipper, except under special or emergency conditions.

East Passage is generally used by larger ships and oil-carrying vessels, as these vessels take advantage of the safety coverage and reliability of the VTS to track their position and to inform them about other ships and potential hazards. Colvos Passage, on the west side of Vashon Island, is not covered by the VTS and is used by smaller ships and slow barge tows. About 13.4 deep draft and tow vessels traveled past the project site each day (King County DDES 2000). VTS Tracking data in 2001[6] showed deep draft vessels traffic in East Passage to be about 19 vessels per day (Grette Associates, LLC 2006c). VTS Tracking data in 2007[7] showed that deep draft vessels and tugs with tows average about 18 vessels per day (USCGS 2007).

12.10 Safety

The project site is located about 5 air miles from the now-closed ASARCO smelter. During the operation of the smelter (1890 to 1985) fallout containing arsenic, cadmium, lead, and other contaminants were distributed to surrounding areas, including Maury Island and the project site. The ASARCO smelter facility and the immediate vicinity have been designated an EPA Superfund site but this designation did not include Vashon/Maury Island area. Direct testing of the project site and pervious studies indicate that the top 18 inches of soils contain arsenic, lead, or cadmium in concentrations above natural levels. These three metals are above MTCA residential cleanup values. The subsurface sand and gravel deposits on the site contain natural levels of arsenic, lead, and cadmium, based on direct testing of these materials. "Natural" levels are those that occur naturally throughout the Puget Sound region. Levels of these contaminants in groundwater at the site and throughout Vashon/Maury Islands are also within natural levels. Surface water on the site is essentially absent. Rain tends to percolate rapidly into the porous sand and gravel deposits at the site. Runoff from the site during heavy rainfall events have been found to have arsenic at naturally occurring background levels (King County DDES 2000).

12.11 Aesthetics

The views from the project site for the last 20 years have consisted of primarily the existing gravel pit operation, containing sparse vegetation and open ground on 81 acres. The reminder of the site contains forest, exposed bluffs, and shoreline, including the existing barge loading dock. Visual components of the site vicinity include developed shoreline (Sandy Shores and Gold Beach communities), undeveloped beaches, forested bluffs, and the open water of Puget Sound. The dock has been an idle fixture in the environment. The two adjacent communities impart black-gray, brown, and white tones amidst the darker tones of surrounding forest areas, the whitish-gray tones of the beach and the variable gray and blue tones of the open water. The existing cleared area of the mine is visible from several locations and can be seen from across

[6] The 2001 vessels traffic information was based on five months of VTS data.
[7] The 2007 vessels traffic information was based on one month of VTS data.

Puget Sound on the mainland to the west. The shoreline curves slightly inward toward the site, so that half or more of the site is behind the bluffs and out of sight from many surrounding viewpoints, particularly views from Gold Beach community. Homes within both Gold Beach and Sandy Shores are oriented toward Puget Sound and do not directly face the existing mine and dock. Nevertheless, the mine and dock are major features on the landscape. The overall character of the Gold Beach and Sandy Shore communities is that of a quiet, shoreline community with typical features and activities of residential areas. Sail boats, pleasure craft, kayaks, and other recreational boating occur in the area and commercial ship traffic is visible in the shipping lanes located between the island and the mainland. At night, viewed from the east across East Passage, the lights of Gold Beach and Sandy Shores communities can be seen. These lights are interspersed among unlit areas, including the existing dock and mining area, and surrounding forested bluffs (King County DDES 2000).

12.12 Economics

Table III presents the general socioeconomic and demographic information for Vashon/Maury Island. Employment statistics show that highest numbers of the Island's population are professionals working in management, sales, education, health and social services. Many of these professionals commute to Seattle, Tacoma and other areas off the Island via the Washington State Ferry System. Home values on Vashon/Maury Island have gained an average of 20 % in 2005-2006. In 2006, 119 home were sold at a cost of $259 per square foot. The median price for a home in 2000 was $263,400, that price in 2006 was $435,000. This increase in median price places Vashon/Maury Island in the top 5 fastest appreciating neighborhoods in South Snohomish and King Counties (Rhodes et al 2007).

Population	Median Household Income	% below Poverty line	% Minority Population	Median Value of Housing	% Homeowners	% Unemployed
10,100	$58,261	10.6%	8.1%	$263,400	80%	1.4%

Table III. Selected demographic and socioeconomic information for Vashon/Maury Island.[8]

12.13 Recreation

Maury Island has a number of public recreation sites including Dockton Park, Maury Island Marine Park, Point Robinson Park and Lighthouse and Vashon Golf Course. Dockton Park is located on the north side of the island along Quartermaster Harbor. The park is about one-quarter of mile northwest of the mine site. The park provides picnic areas, hiking trails, swimming beach, a boat launch, and moorage. Maury Island Marine Park is located on the southeast side of Maury Island, along the shoreline northeast of Gold Beach. The park is accessed by walk downhill to the beach from the parking lot. The park is also accessed via the beach for some residents of Gold Beach and Sandy Shores. Point Robinson Park is located northeast of the project site and includes picnic tables, trails, and beach access.

[8] Population and Poverty level estimates are from 2006 King County Annual Growth Report. Demographics on race, employment, income and housing are from 2000 US Census Bureau, Vashon CDP, Washington.

The project site has been and currently is used as an informal recreational site by local residents. Access to the site occurs from undeveloped lands through existing dirt roads and informal trails and from the adjacent beaches. The sunken barges, located to the south of the existing dock, are popular for recreational scuba diving. The existing dock has also been used for vessel mooring by recreational boaters. Public access to the site has to occur without the applicant's permission and is discouraged by the applicant (King County DDES 2000)

13 ENVIRONMENTAL IMPACT ANALYSIS

The Corps has evaluated the proposed action in the following analysis. The focus of this analysis is on impacts associated with the marine dock portion of the proposed action. Impacts associated with the sand/gravel mining portion of the proposed action are discussed in Section 14 "Secondary and Cumulative Impacts".

13.1 Conservation

The applicant has proposed measures to avoid, minimize, and mitigate for potential direct and secondary impacts that the proposed action would have on the shoreline, beach and aquatic resources in the project area. The applicant has extended mining setbacks to 400 feet to ensure that the vegetated shoreline bluffs will remain undisturbed by the mining operations for the life of the mine. The applicant has agreed to extend the proposed dock into deeper water to provide additional protection to the eelgrass beds and nearshore habitat from construction and operation of the new dock.

The removal of 228 creosote treated timber piles in the nearshore area will reduce exposure of fish, including juvenile and adult salmonids, to organic and trace metal constituents of treated wood. The footprint of the pier has been reduced in the beach and nearshore area to the minimal number of support pilings needed for the conveyor and dock. The conveyer will be completely enclosed to eliminate spillage in the nearshore area. The applicant will implement two mitigation plans, "Maury Island Barge-Loading Operations (Extended Dock) and "Barge Approach and Departure Protocol" (Appendix C) to reduce the potential for impacts to nearshore habitat and eelgrass beds. These mitigation plans contain both biological monitoring and operational measures to avoid, minimize, and monitor for impacts. Operational measures will be employed to reduce and/or eliminate spillage during loading of barges, including the use of a limit switch on the conveyor to prevent operation when a barge is not in place, only barges with bin walls will be used, use of cable haul-back system to move barges, training of personnel, and video monitoring of loading operations.

13.2 Economics

Economic impacts of the proposed project are potentially linked to the economic health of the region through employee payrolls, its significance as an economical source of basic raw materials, and effects on the value of adjoining or otherwise affected real estate. The applicant estimates the mining, reclamation, and dock operations would employ up to about 20 workers at a time. A few more workers from other firms would be employed to operate and maintain the tugs and barges used to transport the aggregate. Presently, mining employs about two workers. This increase in employment is inconsequential compared to the hundreds of persons employed on the Vashon Island and the thousands employed in the Puget Sound region. The employment multiplier for the aggregates industry is approximately 1.8 total additional jobs in other job

sectors per aggregate job (PLU 2003). Therefore, the proposed project is expected to minimally affect regional employment income, economic activity and demand for residential real estate.

The proposed dock project and associated mining is expected to have minimal effect on real estate valuations in the neighboring communities of Sandy Shores (southeast) and Gold Beach (northwest) because the proposed project is situated too far from these communities to detract from their attractiveness. The nearest residences to the project site is along the shore to the southeast (Sandy Shores) about one-third mile from the dock, and the closest residences to the northwest (Gold Beach) is over half mile away. The fact that these residential communities developed during the most active period of the mine and dock including the 1970's when excavation rates were high and the applicant heavily used the existing dock indicates that the proposed project is not likely to substantially affect local real estate values. Furthermore, the proposed upland and shoreline buffers and limited hours of dock operation will minimize noise and visual impacts on the residential communities near the project site.

The proposed project will help to meet the regional market demand for sand and gravel. These types of aggregates are critical to the overall economy of the region particularly in the industrial, housing, and transportation sectors. A review by the Corps shows that these resources are limited relative to potential future demand in the region, particularly from sources in close proximity (i.e. economical) to consumers.

13.3 Aesthetics

Photographs, models of future appearances and a detailed description of visual impacts relative to existing conditions are contained in Chapter 11 of the SEPA FEIS (King County DDES 2000). Views of the mine and shoreline from the surrounding areas, including Gold Beach and Sandy Shores, would change in steps as the dock is replaced and mining proceeds. The changes can be classified as changes in topography, surface cover (vegetation, exposed materials), activity levels, and views from across Puget Sound.

While views of the sight would undoubtedly change, the overall impact is limited because views from a large number of residences in the area are oriented toward the water rather than the dock and mining area, partial retention of existing bluffs will tend to obscure views of the mine by shoreline residents, and vegetation will be re-established in disturbed/mined areas.

While the dock will extend between 82 feet to 104 feet further waterward than the existing dock, it will be similar in scale and appearance to the existing dock and be painted a gray-green color to reduce its bulky appearance and help it blend into background of vegetation, water, and shoreline communities. The limited operating hours, 7:00 am to 7:00 pm Monday through Friday, would also help minimize visual activity and light glare impacts. Lights would be visible to some residents in Sandy Shores and Gold Beach, but would not be considered bright or intrusive because most viewers' residences do not face the proposed dock, and would be more than 2,000 feet away.

13.4 General Environmental Concerns

13.4.1 Substrate

Inter- and sub-tidal substrate in the project area would be disturbed by removal of the existing piling, placement of new piling, and tugboat operations. Pile removal and driving from a barge would disturb a total of roughly 0.1 of an acre of primarily fine sand and silt substrate based on a few square-foot disturbance areas around each of 228 creosote-treated wood piles as they are removed and lifted out of the water onto a barge. Any depression left in the substrate would be backfilled with clean pea gravel or sand. Removal of the old piles would remove a source of potential creosote contamination of the substrate. A few square feet of additional predominately fine sand and silt substrate also would be disturbed around each of 56 new 24-inch diameter steel piles that would be installed. The anchors or spuds placed on the substrate to stabilize the barge during extraction and driving of piles would also disturb substrate.

Tugboats would operate in 40- to 80-foot deep (MLLW) water which would generate turbulence that would suspend finer sediments, should the tug propeller be directed toward the shoreline. Two studies of propeller wash effects were conducted for the proposed project (Jay, D.A 2002; PIE 2002b). These studies were independently reviewed through the King County SEPA processes. The Corps reviewed King County's findings and agreed that the true near bottom velocity and its effect on bed scour and turbidity have not been conclusively determined (Jones & Stokes 2003; King County DDES 2004).

The current proposed location of the dock would avoid serious disturbance of the substrate across the site and particularly in the vicinity of the eelgrass. The applicant's use of a fully enclosed conveyor system including telescoping spout, manual limit switch and haul back system is expected to prevent most incidental and accidental discharges of aggregate that could affect the substrate.

To ensure that any impacts to substrate from project operation are identified, the applicant has proposed bathymetry surveys be conducted prior to construction and at one year intervals for the first four years after project construction. After the first four years the surveys would be done every other year (Appendix B). The potential biological effects of increased turbidity and scour are discussed in other sections below.

13.4.2 Currents and Circulation

The density of pilings, dolphins, berth-facing structures, and berthed ships is so low and limited in extent that it would have a negligible effect on along-shore currents, drift cell sediment flow patterns, and wave erosion/deposition patterns.

13.4.3 Noise

The main sources of project-generated noise would be the operation of pile driver and other construction machinery during construction and tugboats and gravel loading/conveying equipment during project operations. Noise associated with construction and operations was analyzed in the SEPA FEIS. Noise impacts on ESA listed species and forage fish has been analyzed and documented in the biological evaluations and addenda and in USFWS and NMFS

concurrence letters as part of the ESA Section 7 consultation (Section 13.8 "Sensitive, Threatened and Endangered Species").

The applicant proposed a number of mitigation measures to avoid and/or minimize noise impacts during construction of the dock. A vibratory hammer would be used to install the new piles. Noise impacts on fish have not been observed in association with vibratory hammers. However, for piles to reach a load bearing depth, the applicant has indicted that pile proofing with impact hammer may be necessary. Since impact hammers are known to impact fish, the applicant has proposed the use of bubble curtain to attenuate underwater sound. The proposed bubble curtain has been designed to reduce the noise from the driving of the 24-inch steel piles. Other underwater noise from dock operation would include engine noise generated by tugboats and noise resulting from aggregate landing on barge deck. Barge loading noise would either dissipate into the air or be muffled as aggregate accumulates in the barge. The initial noise produced from aggregate landing in an empty barge would result in fish moving away from the source of the sound. This behavioral response would be short-term and temporary. The applicant proposed several measures to address underwater noise from dock operations which include extending the dock farther from shore this would allow for some noise attenuation in the nearshore areas, reducing engine noise generated by tugboats through use of barge haul-back system and restricting dock operations to 7am to 7pm, five days a week.

Construction and operations noise was evaluated for nearby locations, including the communities of Sandy Shores and Gold Beach in the SEPA EIS. The analysis took into account changing topography, topographic and berm barriers, noise attenuation over distance, effects of wind and other meteorological conditions on noise transmission. The noise analysis also included an evaluation of noise levels that would be produced by the proposed construction and mining activities including noise from barge loading, tug engines, conveyor operation, front loader and bulldozer (King County DDES 2000). The applicant proposes the use of a fully enclosed conveyor system instead of the open-air conveyor system used in the noise analysis. This change would reduce noise impacts (especially squeaking sounds) from those indicated in the noise analysis. Even with sporadically higher noise levels from revved up engines straining under a load, outside air-born noise levels would be only slightly above existing daytime noise levels and no more intrusive than noise from local traffic and neighborhood activities for the residents of Sandy Shores and Gold Beach. Pile proofing noise may be loud enough to be heard by neighboring communities along the shoreline to the south and north of the project site. However, this would occur sporadically during daylight hours for a few moments at a time only within an approximately 2-week construction period. Vibratory hammers generates much less intrusive noise levels than impact hammers and also would be used for only about a 2-week period. Nighttime noise levels are expected to be the same as the existing background conditions because the applicant would limit construction and operations activities to the daytime hours of 7 a.m. to 7 p.m. Construction noise is exempt from King County noise standards during the daytime (King County DDES 2000). Operation noise is expected to be within applicable noise limits for an industrial source during the day (King County DDES 2000 & King County DDES 2004).

13.4.4 Air Quality

The proposed project would generate little direct impact on air quality as the only emissions source would be a tug boats and construction equipment including pile driving equipment. Indirect impacts would also be minimal as the principal potential emission would be fugitive dust from where the aggregate drops into the barge. These emissions would be minimal because the conveyor would be entirely enclosed and the telescoping spout would minimize exposure of sand (aggregate) to the wind as it drops into the barge. Tugboats would generate somewhat higher quantities of carbon and nitrous oxides, and particulate matter, but would not by themselves cause exceedances of ambient standards or given that the proposed project would indirectly generate about 2080 possibly "new" vessel movements compared to the more than 100,000 vessel movements that occur in the Seattle-Tacoma area annually[9].

13.4.5 Special Aquatic Sites

Special aquatic sites are defined in 40 CFR 230.400-45 as wetlands, mudflat, coral reefs, pool and riffle area, vegetated shallows (eelgrass), sanctuaries and refuges. The proposed project would not directly impact any special aquatic site.

Construction impacts to eelgrass areas will be avoided by marking these areas with buoys and ensuring that construction barges will not anchor or spud in or near two eelgrass areas. Indirect impacts could result from the tugboat propeller wash scouring in two eelgrass areas that are located about 120 feet landward of the proposed berth face.

The applicant has moved the face of the proposed dock about 120 feet waterward of the eelgrass areas to reduce propeller wash and avoid shading impacts on the existing eelgrass beds and nearshore habitat. Shading impacts would be further reduced by the use of 75% open steel grating on the dolphin's platforms and grated catwalk connecting the seven dolphins.

The applicant has proposed procedures and monitoring of tug and barge movements as detailed in the "Barge Approach and Departure Protocol" (Appendix C) to avoid and minimize the potential for adverse impacts to the eelgrass areas and nearshore habitat.

The applicant has also agreed to construct and use a cable haul-back system to move the barge during loading, thus further minimizing the need to operate tugs in the vicinity of the eelgrass. These proposed procedures will allow the thick water column to dissipate much of the prop wash energy, will help ensure the prop wash turbulence is directed toward deeper water parallel to the shore most of the time, and expect under severe weather conditions will maintain more than 100 feet between prop and eelgrass reducing the velocities around the eelgrass to below the damage threshold. The applicant will install current meters to monitor propeller wash velocities from tugboats operation at or near the dock for an initial period of six months or until 50 barges have been loaded at the site.

The applicant has proposed pre- and post-project annual eelgrass monitoring and macroalgae surveys of the project site (Appendix C). Pre-project annual eelgrass monitoring was implemented by the applicant in 2001. Based on eelgrass monitoring from 2001 through 2007, eelgrass distribution in the project area is limited by physical conditions including 1) slope:

[9] New vessel movements are based on 8 tug/barge trips per day in a five-day work week for 52 weeks in one year.

colonization has not occurred in areas with a slope greater than 30%; 2) wave action: colonization has not occurred shoreward of -3 feet MLLW; and 3) light: colonization has not occurred between -12 feet and -16 feet MLLW (Grette Associates LLC 2006c and 2007).

Post-project annual eelgrass monitoring and macroalgae surveys and propeller wash monitoring are expected to identify any impacts from the operation of the project, including any propeller wash scouring. Changes to "Barge Approach and Departure Protocol" could occur based on information obtained from the propeller wash and eelgrass monitoring and additional mitigation for identified impacts would be required by local, state and federal agencies.

13.5 Historic Properties

No historic properties have been identified within the upland and marine portions of the site. The Corps has determined that no historic properties will be affected by the proposed project because the permit area has been extensively modified by modern development that little likelihood exist for the proposed project to impinge upon an undisturbed historic property.

13.6 Terrestrial Habitat and Wildlife

Chapter 5 "Terrestrial Plants and Animals" from the SEPA EIS (King County DDES. 2000) is incorporated by reference. The proposed action under review by the Corps would make the acceleration of direct impacts from terrestrial mining possible but would not substantially change the overall extent of the direct impacts that would otherwise occur over a longer time period.

13.7 Aquatic Habitat and Marine Organisms

The biological effects of construction noise and impacts on substrate are discussed in Section 13.4.3 "Noise" and 13.4.1 "Substrate". Biological effects of construction and operation activities on ESA listed species and forage fish have been analyzed and documented during ESA Section 7 consultation (Section 13.8). Permit conditions have been included in State and local permits, including Washington Department of Fish and Wildlife's Hydraulic Project Approval and King County shoreline permits, to protect juvenile salmon and forage fish spawning. Essential fish habitat impacts for groundfish, pacific salmon and pelagic fish were assessed and addressed through ESA Section 7 consultation.

Construction activities would kill or displace benthic and epibenthic organisms at all depths and locations where the pile removal and driving physically alter the substrate. Benthic and epibenthic organisms including macroalgae and any eggs that might be present from fish known to spawn in the general vicinity (such as lingcod and Pacific cod) could be smothered or otherwise affected by particulates and turbidity generated by the disturbance. Between 0.1 and 0.2 of acre of benthic/epibenthic could thus be adversely affected. However, effects would be only temporary. Recovery of benthic/epibenthic populations would occur within a few years.

Macroalgae surveys will be conducted pre- and post- construction to monitor for potential impacts. Removal of the existing pier and pilings would also result in a loss of reef habitat provided by 228 old pilings; organisms described in the Section 12 "Affected Environment" that utilize reef habitat would either die or be displaced. Some of the reef fish species are state-listed sensitive species, and some of the reef fish species prey on salmonids listed under the ESA. Eventually, the reef habitat would redevelop around the new (but fewer) steel support piles.

Placement of one set of piles (support bent) for the conveyor may require placement of anchor or spuds for the construction barge on the upper intertidal beach where sand lance and surf smelt eggs may be present. Impacts would be avoided by monitoring for the presence of eggs and temporarily halting of construction work on the beach when eggs are present. Geoduck harvesting impacts are not expected during construction as the geoduck tract 10150 located on the southwest shoreline was harvested in 2002. Harbor seals and porpoises may temporarily avoid the project vicinity during in-water construction activities. Once in-water construction is completed these mammals would be expected to return to the project area.

Tugboat propeller wash can scour the substrate, generate bubbles that reduce light penetration, and generate turbidity that can (positively and negatively) affect feeding and other activities. The potential for scouring on eelgrass is discussed in the Section 13.4.5 entitled "Special Aquatic Sites". Benthic and epibenthic organisms in the intertidal zone are not likely to be impacted by the tugboat operations due to the operational measures proposed by the applicant (Appendix B). The impact of prop wash on benthic organisms at or waterward of the dock face is unknown, but is likely to be minimal given the adaptability of most local bottom dwelling species to turbulence characteristic of intertidal zones. Silt, fine sand and organic materials would likely be suspended by the propeller turbulence during periods of tug and barge arrival and departure, but substrate elevations would not change appreciably. Much of the particulate matter and turbidity caused by tug and barge arrival and departure would settle out during intervening periods (King County DDES 2000). Juvenile salmon, and the eggs and larvae of herring and other forage species of fish are adapted to suspended sediment and turbidity exposure (King County DDES 2000). In 30 years of monitoring, the WDFW observed herring spawning in the site vicinity only once and within 1000 feet only twice. Surf smelt eggs from one fish were identified within 500 feet of the project area in 2005 (Grette Associates LLC 2006b). Therefore, any biological effects of tugboat operations are likely to be minimal.

Shading would have a minimal effect because shadow cast by the dock structures, barge and tugboat would be over 40- to 60-foot deep (MLLW) substrate where direct and diffuse light are too dim to support algae and eelgrass. Shading effects of the 12-foot diameter conveyor tube and support structures would be negligible because the structures would be elevated 25 feet above the MHW level and have a narrow light-blocking profile. The offshore portion of the dock structure would include an area about 9-foot by 9 foot over each dolphin with decking of open-grated steel with 75% open area. An aluminum catwalk with grating will connect the seven berthing dolphins. The open–grating decking will reduce shading effects of dock structure. The extended dock will move the barges into deeper water and substantially reduce the time when barges at the dock will cast shadow.

The risk of aggregate spillage during barge loading as a result of operator error and/or equipment failure has been reduced by the applicant's proposed mitigation plan which includes an enclosed conveyor system, manual limit switch, barge haul-back system, telescoping spout, personnel training, and video monitoring. If a discharge were to occur, these control devices would help ensure that discharge would be small. The probability of a large dock-side spill due to a loaded barge overturning or sinking is low based on the applicant's long history of mining and barge handling operations in Puget Sound (two barges have sunk in transit, one in Elliott Bay and one in Lake Union). Noise impacts are discussed in Section 13.4.3. Tug and barge movements are

not expected to adversely affect bottom and pelagic fish (including salmon, rockfish, walleye Pollock and forage fish) or marine mammals (such as harbor seals and porpoises) as these fish and marine mammals would move to avoid tugboats and barges. Project operations are not expected to impact or interfere with any future harvest of geoducks along the southwest shoreline. Artificial light impacts on marine organisms would be minimal due to limitation of operating hours of 7 am to 7 pm.

13.8 Threatened and Endangered Species

The ESA listed species that may potentially occur in the project vicinity are presented in Table II in Section 12.4.7 "Threatened and Endangered Species".

ESA consultation for the proposed project occurred over a period of six years from August 2000 through January 2007. The biological assessments and addenda and Corps' Memorandum for Service (MFS) provide supporting documentation to our determinations, including description of potential impacts on these species from both construction and operation of the project, and agencies concurrence letters which are part of the permit file. In response to public comment during the King County permit process and as part of the Corps' Section 7 consultations under authority of the ESA, the applicant has incorporated numerous conservation and mitigation measures into the proposed project design and operation. The measures are detailed in documents submitted by Northwest Aggregates, reviewed and approved by the Corps, and reviewed by NMFS and USFWS during consultation (PIE 2002;Grette Associates LLC 2002, 2003, 2003b, 2005, 2006, & 2006bc;Hall 2005 & 2006). A detailed consultation history is presented below and includes the Corps effects determinations.

The applicant submitted a Biological Evaluation (BE) for the dock repairs in August 2000. In response to the Corps comments on this BEs and further modifications to the proposal, the applicant provided several revised BEs. By letter dated 12 September 2002, the Corps requested U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) initiate formal consultation on the project and provided the Services with Corps Memorandum for Service (MFS) and the revised BE entitled "*Draft Biological Evaluation for Maury Island Dock Repair*", dated 2 June 2002 (PIE 2002). The Corps' MFS (Corps 2002) included the following effects determinations:

- Puget Sound chinook: "likely to adversely affect";
- Bull trout: "likely to adversely affect";
- Bald eagle: "not likely to adversely affect";
- Steller sea lion: "not likely to adversely affect";
- Marbled murrelet: "not likely to adversely affect";
- Humpback whale and Leatherback sea turtle: "no effect".

On 26 October 2002, the proposed project was again modified by the applicant and the Corps requested that the Services place the formal consultation process on hold until the BE addendum could be provided by the applicant. The applicant provided a BE addendum entitled "*Biological Evaluation & Essential Fish Habitat Assessment Addendum for Maury Island Dock Repair*" dated 17 December 2002 (Grette Associates LLC 2002). This addendum incorporated new conservation measures and a revised project description and drawings. The addendum was reviewed by the Corps and comments were provided to the applicant by letter, dated 19 March,

2003. The applicant responded to the Corps comments by providing a second addendum to the BE & Essential Fish Habitat (EFH) assessment, dated 1 April 2003 (Grette Associates LLC 2003). The Corps prepared a MFS, dated 22 April 2003 (Corps 2003) and requested the Services (USFWS & NMFS) re-initiate formal consultation by letter dated 9 May 2003 for the revised project. The Corps' MFS included the following effects determinations:

- Puget Sound chinook: "likely to adversely affect";
- Bull trout: "not likely to adversely affect";
- Bald eagles: "not likely to adversely affect";
- Steller sea lion, and Marbled murrelet: "not likely to adversely affect";
- Humpback whale and Leatherback sea turtle: "no effect".

During the consultation process the project was again modified, additional SEPA review was completed concerning potential prop wash affects and the applicant provided additional conservation measures. Information on bubble curtain design (Grette Associates LLC 2003b & 2003c) was provided by the applicant directly to NMS and USFWS. NMFS provided a concurrence letter dated 13 February 2004. NMFS letter stated that based on the modification to the proposed project since its original design, NMFS determined the project will "not likely to adversely affect" threatened Puget Sound chinook. A Memorandum to USFWS dated 16 March 2004 (Corps 2004), changing the Corps determination of "likely to adversely affect" to "not likely to adversely affect" for bull trout was provided to USFWS per their request. Based on the MFS (Corps 2003) and Memorandum to USFWS (Corps 2004), USFWS concurred with the Corps' determination of "not likely to adversely affect" for bull trout, bald eagle and marbled murrelet, by letter dated 12 April 2004 (USFWS 2004).

In June and November of 2004, critical habitat was proposed for bull trout and chinook salmon by USFWS and NMFS, respectfully. In December 2004 NMFS proposed listing of the southern resident killer whale. As a result of these proposed listings, the applicant began working on BE addenda in February 2005. On 14 April 2005 the applicant provided two BE addenda entitled "*Biological Evaluation Addendum for Bull Trout and Chinook Salmon Critical Habitat Evaluation*", dated March 2005 (Grette Associates LLC 2005) and "*Biological Evaluation Addendum for Southern Resident Killer Whales*" dated 11 April 2005 (Hall 2005).

The Corps reviewed these addenda and prepared letters to NMFS and USFWS, dated 29 April 2005, requesting conference on proposed critical habitat for bull trout and chinook and proposed southern resident killer whales and requested consultation if the species is listed or critical habitat is designated during consultation. The Corps agreed with effects determinations in the addenda:

- Southern resident killer whale (proposed): "no jeopardy to the continued existence";
- Southern resident killer whale (listed): "not likely to adversely affect";
- Puget Sound chinook critical habitat (proposed): "no destruction or adverse modification";
- Puget Sound chinook critical habitat (designated): "not likely to adversely affect";
- Bull trout critical habitat (proposed): "no destruction or adverse modification";
- Bull trout critical habitat (designated): "not likely to adversely affect".

NMFS, by letter dated 21 June 2005, concurred with our determinations on proposed critical habitat for chinook and proposed southern resident killer whale (NMFS 2005). Critical habitat

for chinook was designated on 2 September 2005 and critical habitat for bull trout was designated on 26 September 2005. USFWS concurred with our determination on critical habitat for bull trout, by letter dated 19 December 2005 (USFWS 2005).

On 9 May 2006, the Corps recommended the applicant address the public's comments on southern resident killer whale, updated forage fish information based on WDFW recent survey of the project area, evaluate impacts to the proposed listing of critical habitat for southern resident killer whale, and the proposed listing of Puget Sound steelhead. On 16 June 2006, NMFS proposed critical habitat for southern resident killer whale. The applicant provided BE addenda for steelhead, dated 13 June 2006, and Southern resident killer whale, dated 15 June 2006, and Forge Fish information dated 14 June 2006 (Grette Associates LLC 2006). These addenda were reviewed by the Corps and comments were provided to the applicant in July 2006. Revised addenda, entitled "*Biological Evaluation Addendum – Evaluation of Effects on Southern resident killer whales*", dated revised 17 July 2006 (Hall 2006), and "*Biological Evaluation Addendum: Steelhead*", dated 13 July 2006 (Grette Associates LLC 2006c), were provided by the applicant on 17 July 2006.

By letter, dated 18 August 2006, the Corps requested NMFS to complete an informal consultation on proposed listing of Puget Sound steelhead and re-initiate informal consultation on the killer whale and its proposed critical habitat. Included with this consultation request was the additional information on forage fish at the project site. The Corps' MFS, dated 17 August 2006, included the following effects determinations (Corps 2006):

- Puget Sound chinook: "not likely to adversely affect;
- Puget Sound steelhead (proposed): "not likely to jeopardized the continued existence of the species";
- Puget Sound steelhead (if listed): "not likely to adversely affect";
- Southern resident killer whale: " not likely to adversely affect";
- Southern resident killer whale critical habitat (proposed): " not likely to destroy or adversely modify";
- Southern resident killer whale critical habitat (if listed): "not likely to adversely affect".

By letter, dated 6 November 2006, NMFS confirmed their concurrence with our determination on chinook after review of the additional forage fish information (NMFS 2006). NMFS also concurred with our determination of "not likely to adversely affect" for southern resident killer whales and "not likely to adversely modify or destroy proposed southern resident killer whale critical habitat.

NMFS designated critical habitat for southern resident killer whale on 29 December 2006. In anticipation of this designation the Corps, by letter dated 21 December 2006, requested that the NMFS re-initiate consultation for critical habitat and concur with our determination of "not likely to adversely affect" designated critical habitat for southern resident killer whales. By letter dated 19 January 2007, NMFS concurred with our determination (NMFS 2007).

13.9 Land Use

Regulations at 33 CFR 320.4 (j) indicate that primary responsibility for determining zoning and land use matters rests with state and local governments. The Corps is directed to accept

decisions by such governments on land use matters unless there are significant issues of overriding national importance. The Corps has not identified any such issues that are in conflict with local land use decisions. The proposed project site is designated in the King County Comprehensive Plan as a mineral resource site. The site is also zoned as a mineral resources site in the 1995 King County zoning amendment through Ordinance #12065. The County has confirmed that the proposed project including the dock and associated mining would be consistent with County requirements for mineral resource sites by issuance of a King County Shoreline Substantial Development Permit dated 16 June 2005, and Grading Permit (renewed) dated 6 July 2007.

13.10 Navigation

The proposed project would typically add eight trips per weekday in the dock vicinity and East Passage with most departures destined for Seattle, Everett, and Tacoma. Very few if any trips would continue beyond central Puget Sound. The applicant has stated that the majority of barges would be 4,500 tons, with occasional use of 6,000-ton, 10,000-ton and 2,500-ton barges. With the limited barge loading hours and days of operation, a maximum of two 10,000-ton barges, or three 6,000-ton barges, or four 4,500-ton barges could be loaded per day. The size of barge used, limited hours of operation, and market demand will play a large part in the number of crossings that would actually occur each day. The dimensions of barges from the different size classes can vary from barge to barge. Typically, a 4,500-ton barge is about 200 to 260 feet long and about 54 to 60 feet wide. A 6,000-ton barge ranges from about 250 to 280 feet long and about 60 to 75 feet wide. A 10,000-ton barge is about 330 feet long and about 80 feet wide. Tugs average about 7 knots with an empty barge and about 5 knots with a loaded barge. The maximum speed of tug under either scenario is about 10 knots.

Preliminary existing marine traffic information for 2007 provided by the USCG shows an average of about 18 trips per day by deep-draft vessels and tugs with tows in East Passage (USCG 2007).[10] The proposed increase of eight trips per day by tugs with tows would not be significant in terms of ship traffic congestion and safety for the following reasons:

- Existing low traffic density means there would be substantial intervals in terms of time and distance for vessels to merge into or cross over transit lanes without significant delays or safety hazards to other vessels;
- The USCGS has indicated that the Vessel Traffic Service (VTS) (which is also used in much more congested Puget Sound areas) has the ability to safely handle the modest increase in barge traffic in the East Passage vicinity. All tugs used to haul sand from the applicant's dock would, by virtue of their size, be required to report their departures and use the Vessel Movement Reporting System (VMRS) which is part of the VTS (USCG 2007). This system will make it possible for tug/barge traffic to depart the dock knowing the approximate location of approaching southbound traffic obscured by Point Robinson before it enters the marine traffic lanes. The USCG also has authority to impose additional operating requirements during periods of poor weather or visibility.
- The risk of collisions with smaller vessels not participating in the VMRS would be low because smaller vessels are typically maneuverable over short distances and because the tug/barges are relatively slow moving.

[10] This represents an increase of about four trips per day over the average of 13.4 trips per day in 2000 when King County prepared the SEPA FEIS.

- Representatives of the Washington State Ferry Systems have indicated that an increase of eight barge crossings on the Fauntleroy/Vashon run would not cause significant impacts to ferry operations (King County DDES. 2000).

13.11 Shore Erosion and Accretion

The proposed project would not affect currents and along-shore sediment movement because existing sediment feeder bluffs would be left in place with their existing vegetation, and the small area of widely spaced piling and moored vessels would offer only nominal resistance to along-shore currents, wave action and associated littoral drift. Therefore, the proposed project should have little effect on shore erosion and accretion rates and patterns.

13.12 Recreation

Public access to the beach and adjacent waters would be limited during removal and construction of conveyor, trestle, dock and dolphins. Once construction is completed, local residents could access the beach beneath the new conveyor/trestle safely as the conveyor would be completely enclosed to reduce spillage and dust. Access to the new dock for recreation would be prohibited by the applicant due to safety concerns. Tug and barge movement at the dock would not substantially affect access to the sunken barges for recreational scuba diving or recreational boating in the dock area because these activities peak on weekends when the dock will not be in operation.

13.13 Water Supply, Conservation and Water Quality

As discussed in Section 13.4.1 "Substrate" and Section 13.7 "Aquatic Habitat and Marine Organisms", the principal marine water quality effects would be limited to turbidity and particulates suspended by pile removal, driving, and tugboat operations. No other activities or discharges affecting water quality are anticipated. The tug operation plans would minimize accidental and "routine" lubricant and fuel discharges which would minimize risks from these kinds of contaminant sources to water quality during the construction and operation phases of the proposed project. Oil spill risk is considered low based on the reasons presented in Section 13.10 "Navigation". Removal of the old creosote treated timber piles is considered a benefit to the marine environment.

13.14 Energy Needs

Under the proposed project there would be an increase in energy use during construction and operation of the dock. The exact amount is not readily quantifiable.

13.15 Mineral Needs

The proposed project will help meet the regional demand for sand and gravel. Sand and gravel are essential resources for use in construction and therefore affect the regional economy. Population growth in central Puget Sound region has increased the demand for sand and gravel. This increase in demand has outpaced the local supplies in Snohomish, King and Pierce counties and existing permitted sand and gravel mines in these counties are near depletion (WDNR, 1998). Because of its bulk and weight, transportation costs and proximity to consumers are major factors in the economic viability of sand/gravel sources. Over longer distances, waterborne transport is much cheaper than transport over land by truck. This particular source of

sand is particularly valuable for concrete because of its uniform grain characteristics and hardness, and low silt content (cleanliness).

13.16 Consideration of Property Ownership

The property is privately held by the applicant. No relocation of businesses or residences would be required for the proposed activities. Adverse impacts from dust, noise and other vectors to adjacent property owners from the proposed project are not anticipated. Although mineral extraction activities can affect adjoining property values, the potential for expansion and intensification of this activity has existed for over 40 years and has been well publicized through the media, Vashon/Maury Island community planning activities and plans, and recurring permitting processes at the local and state government levels.

13.17 Other considerations

No other changes are expected to the human use characteristics of the aquatic environment that would be affected by the project.

14 SECONDARY AND CUMULATIVE IMPACTS

The Corps conducted an independent analysis of potential cumulative and secondary impacts associated with the proposed project inclusive of past, present, and reasonably foreseeable future actions.

14.1 Secondary Impacts

Secondary impacts are those that are "...caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable" (40 CFR §1508.7). Generally, these impacts are induced by the proposed project. Secondary effects can occur within the full range of impact types, such as changes in land use, economic vitality, shoreline and neighborhood character, and their associated effects on air quality, noise, water resources, and wildlife habitat.

Secondary adverse effects from the proposed project are associated with the upland mining operation and the increase in the extraction rate. As part of sand and gravel extraction, upland vegetation would be removed and topsoil would be segregated. The top soil would be stored in a lined and covered containment cell located on the project property. Soils containing arsenic concentrations above the clean up levels would be managed in a separate portion of the cell with additional containment measures. Water that collects in the cell would be monitored for contamination, treated and infiltrated.

The applicant would implement a number of measures to ensure that the sole source aquifer would be protected from any mining activities including groundwater monitoring wells and maintenance of a minimum 15-foot separation between the bottom of the mine pit and the groundwater. Groundwater levels would be monitored quarterly over a 5-year period (King County DDES 2000). Temporary retention/infiltration ponds would be constructed at different levels on the mine site slopes. The sand/soil in this 15-foot separation zone would also be more than sufficiently thick to filter out any contaminants that might be adsorbed on soil particulates. Infiltration of runoff, maintaining the minimum 15-foot separation between the mine and groundwater and monitoring of groundwater of will prevent the intrusion of saltwater beneath the mine and continue to protect the aquifer under Maury Island. Potentially deleterious

quantities of water-soluble contaminants originating from precipitation, mining, human activities, or the air are not anticipated (King County DDES 2000). The walls of the mining pit would be sloped toward the mine floor and away from Puget Sound to reduce runoff and sedimentation into the Sound (King County DDES 2000). Fugitive dust and conveyor spillage, which could be a source of turbidity in nearshore area, has been addressed with the complete enclosure of the conveyor system and the applicant will implement the Mitigation plan "Maury Island Barge-Loading Operations (Extended Dock)" (Appendix C).

Reclamation of mined areas, including revegetation, would occur according to a reclamation plan approved by the Washington Department of Natural Resources. The shoreline bluffs would remain unchanged as the applicant has increased the shoreline buffer to 400 feet to ensure protection of the bluffs and their vegetation from disturbance. Erosion and deposition of sediment from the bluffs on to the beach are not expected to change.

The loss of wildlife habitat would occur at a higher level but would be limited to a maximum of 64 acres. Wildlife would move away from the areas of active disturbance into the undisturbed areas of the applicant's property and adjacent property. These undisturbed areas would continue to provide cover and feeding for wildlife habitat. Although the variety of mammals, birds, reptiles and amphibians that use the site would continue, populations of these animals may decline as other suitable habitat sites may be at or near carrying capacity and these animals would be required to compete for already limited resources. Less mobile animals such as small mammals, amphibians, reptiles, and young animals could perish during vegetation removal operations. As reclamation of each mining phase is completed and vegetation regrowth occurs, wildlife would begin to repopulate these areas. There would be temporal loss of forest habitat between mining phases and reclamation. The mining operation has and will continue to have long-term impacts on wildlife habitat within the boundaries of the mine.

The proposed stormwater treatment and reclamation will mitigate for the majority of these impacts and should not result in any significant reduction in overall water quality or/and habitat for wildlife in the area.

Boundaries of mine and fencing would remain unchanged. Infiltration path of precipitation would pass through less soil, but mining will be restricted to zones 15 feet above typical ground water levels. No public roads or other facilities, or streams would be affected by the mining or additional gravel transportation. Therefore, the level of risk to public health and safety would remain unchanged.

Secondary and/or indirect impacts should not occur to marine resources from the removal of the old dock and construction of new dock since the applicant proposes to implement all the mitigation measures presented in Section 6 "Proposed Mitigation Measures" and Appendix C. Secondary water quality impacts are not expected to occur as a result of this project. Sediment transport and turbidity plumes associated with the removal of timber piles, installation of steel piles, and placement of clean gravel/sand in depressions resulting from the pile removal are expected to be short-term and dissipate over a relatively short period of time.

14.2 Cumulative Impacts

Cumulative impacts result from the incremental consequences of an action (the project) when added to other past and reasonably foreseeable future actions (40 CFR 1508.7). The cumulative effects of an action may be undetectable when viewed in the individual context of direct and even secondary impacts, but when added to other actions can eventually lead to a measurable environmental change.

The geographic basis for this analysis is the Vashon/Maury Island and surrounding marine waters. Vashon/Maury Island lies in the Puget Lowlands within Puget Sound and within the boundaries of King County. Vashon/Maury Island encompasses about 37 square miles of which 29.7 square miles are on Vashon Island and 7.0 square miles on Maury Island. These two islands are linked by a narrow isthmus and are not truly independent islands. Vashon Island is about 13 miles long and 4 miles wide. Maury Island is about 5 miles long and about 1 mile across and is bordered on the west by Quartermaster Harbor and Vashon Island, on the south by Dalco Passage, on the east by East Passage and on north by Puget Sound.

Prior to European-American settlement (early 1800), the Vashon/Maury Island consisted of a low-elevation forest, interspersed with wetlands, and small creeks. These characteristics are very similar to many of the islands in Puget Sound that formed on glacial till and outwash. The topography of Maury Island varies from sea level to elevation of just over 500 feet at Maury Island Marine Park. The shoreline consists mostly of steep, slide prone slopes with few freshwater seeps. Maury Island is not divisible into watersheds, the majority of freshwater flows from intermittent creeks and freshwater seeps into Quartermaster Harbor. The temperate climate of the islands consists of winter rain and very little, if any, snow accumulation. Quartermaster Harbor is a shallow embayment that lies between Vashon and Maury Island and is connected to Puget Sound. The rolling topography of Vashon/Maury Island, coupled with abundant moisture (winter rainfall) resulted in fairly complex habitat patterns with forests, wetlands, open meadows, streams, and marine shorelines in close proximity. The abundant edges between habitat types likely resulted in high habitat diversity and therefore high biodiversity.

These features supported several important ecological processes on Vashon/Maury Island and in the adjacent marine waters. The forests supported migratory and resident birds and wildlife, helped infiltrate rainfall to support groundwater flow to wetlands and streams, and provided organic input to streams for fishery support. The nearshore habitat supported forage fish species that in turn supported migratory salmonids. The interconnectivity of the variety of habitat types likely increased the habitat value of each due to the benefits of edge effects (more interplay and use of habitat types by a variety of wildlife) as well as relatively high species diversity in both plants and animals.

The major activities that changed the landscape over time were logging, agriculture, mining, industrial development and residential development all of which included land clearing. Logging began on the islands in the early 1800's, when Seattle pioneers exported logs to San Francisco. Logging continued into the early 1900's. The settlement of Vashon/Maury Island started in 1864 when several families moved to islands to claim land under the federal Homestead Act of 1862. The dry dock began operations in Quartermaster Harbor at Dockton in

the 1890. In 1892 a large portion of Maury Island's forests were cleared for a dairy operation. Two roads were constructed, one in 1916 and other in 1925, which crossed the isthmus connecting Vashon Island to Maury Island. In 1929 the first sand and gravel mine was opened on Maury Island by Ideal Cement Company in Seattle. The second sand and gravel mine began operation in 1930's. By 1971 there were four sand and gravel mines in operation along the southeastern shoreline of Maury Island. Between the 1950's and late 1970's millions of yards of sand and gravel were mined and transported by barge and used in construction of the Naval Shipyard at Bremerton and Port of Seattle's Pier 46, Pier 86, Pier 25, Terminal 155, Terminal 102, and Terminal 18. At least three of these mines had marine docks for the loading of barges.

Regular ferry service came to the islands in 1951 when Washington State Ferries began operations between the Vashon and mainland. Two large residential developments on Maury Island, Sandy Shores and Gold Beach, were platted in the mid-1960's. Both of these developments are on the southeastern shoreline of Maury Island overlooking East Passage.

Today, Vashon/Maury Island is still considered a rural area with small farms and single family residences spread over the islands. The regular ferry service increased the development opportunities on Vashon/Maury Island and population increased from 4,320 in 1950 to over 10,000 in 2000. The majority of the islands' working population commutes to the mainland via the ferry. High density residential developments are concentrated in the Vashon Town Center, Vashon Heights, Burton, Dockton, and along parts of shoreline including Sandy Shores and Gold Beach on Maury Island. Commercial and industrial uses are found in areas where sewer and other urban services are available. There are several utility easements that provide electricity, natural gas and telecommunications to Maury Island. Recreational developments on Maury Island include golf course and several public parks: Maury Island Marine Park, Dockton Park, and Point Robinson Park. Three marines operate in Quartermaster Harbor, the Quartermaster Yacht Club, Quartermaster Harbor Marina and Dockton County Marina.

There are two active sand and gravel mines on Maury Island, Northwest Aggregate (the project site) and Vashon Sand and Gravel (located adjacent to Maury Island Marine Park). The abandoned mine sites have been developed and are now the Gold Beach residential development and Maury Island Marine Park. The Maury Island Aquatic Reserve was established in 2000 by Washington State Department of Natural Resources. The Reserve includes about 5,530 acres of state owned aquatic bedlands and tidelands in Quartermaster Harbor and along the south and east shores of Maury Island beyond Point Robinson Lighthouse and park. The reserve extends waterward of the mean lower low water to a depth of 70 feet. There are numerous recreational docks, floats and mooring buoys along the shorelines of both islands. The southeastern shoreline of Maury Island has four docks, the old sand and gravel loading dock at the Maury Island Marina Park that is now used for recreational activities, the Gold Beach community dock, Sandy Shores' community dock and the applicant's existing dock. About 60 percent of Vashon/Maury Island's shoreline has been armored or modified in some manner (WDNR 2004b). Most of the surface soils on Vashon/Maury Island are contaminated with arsenic, lead and other metals from now closed ASARCO smelter, located in Tacoma.

The impacts associated with the conversion of forest, wetlands, riparian and marine habitats from agriculture (crops and pasture land), roads, parks, residential, mining, commercial and industrial

developments has resulted in loss and/or degradation of fish and wildlife support habitat, loss of biodiversity, degradation of water quality, and degradation of shorelines and nearshore marine habitat.

Current projects in the area include shoreline protection projects that consist of repairs to existing bulkheads adjacent to existing residences along the shoreline. A number of bulkhead repair projects are in the King County permit process in the vicinity of the project site. These projects are not expected to result in additional impacts to shoreline or the nearshore marine habitats. Shoreline protection projects would require Department of the Army, Section 10/404 permits in additional to local permits. Residential and commercial development on Maury Island is expected to continue until such time that the County's Growth Management Act and/or the availability of drinking water limits such developments.

The King County Comprehensive Plan has defined the project site as a designated mineral resource site. The site is also zoned as a mineral resources site in the 1995 King County zoning amendment through Ordinance #12065. To maintain and enhance a commercial mineral resource King County has developed policies to assure adjacent land uses would not interfere with the continued use of the designated lands. The properties adjacent to the project site are zoned as Rural Areas 2.5 (one dwelling unit per 5 acres) and Rural Area 10 (one dwelling unit per 10 acres). Current land use densities in Gold Beach and Sandy Shore are four to five dwelling units per acre and represent development that occurred prior to the current zoning classification.

The upland portion of this project would occur within the existing mine boundaries and would impact existing forest stands on the site. The extent of future forest impacts from mining activities depends on the rate of extraction. As each phase or segment of mining is completed the reclamation process would begin. Prior to reclamation, the loss of forest would be the largest impact to animals that require space and protective cover, such as deer, coyotes, pileated woodpecker, and screech owl. The proposed project would continue the overall trend of deforestation on Maury Island. Reclamation would offset some of the trend of deforestation over the long-term (depending on the mining and reclamation rate up to 50 to 100 years). The upland mine site is located within a groundwater discharge area, as such the groundwater beneath the site flows to Puget Sound. Monitoring of wells on the site would ensure that the mining activities would not affect groundwater or local drinking water supply by ensuring that the floor of the mine remains 15 feet above the groundwater table. Soils contaminated with arsenic would be contained and managed within the mine site. Dust within the mine site would be controlled by maintaining moisture content of mined materials, maintaining vegetated buffer around the site and permanently stabilize the reclaimed area once mining is completed. Removal of shoreline vegetation would be limited to the area necessary for access to conveyor system site during construction and access for operation and maintenance of conveyor system and barge loading facility. The mine boundary has been moved back 400 feet from the existing shoreline bluffs, to protect the bluffs from disturbance. The mine boundary remains at 200 feet along the shoreline at the conveyor system and barge loading facility as show in Figure 2.

The marine portion of this project would occur on the existing shoreline and within the marine waters adjacent to the existing mine. This portion of the project includes the removal of the

existing dock facility and construction of the new dock which would impact shoreline vegetation, upper beach habitat, nearshore habitat, and deep water habitat. The proposed work would occur within short time period. Removal of shoreline vegetation would be limited to the area necessary for access to the onshore portion of the conveyor system during construction. Shoreline vegetation in the area of the conveyor system would be maintained for access. The project's impacts to upland wildlife habitat, vegetation, and water quality would be addressed through County grading permit, stormwater permit and WDNR's required reclamation activities. The applicant would implement construction methods and mitigation measures including timing limits and duration of construction to minimize impacts to aquatic resources from replacement of the barge loading facility. The applicant would also implement operational monitoring plans to ensure any impacts to nearshore habitat including submerged aquatic vegetation can be quickly identified and addressed. The proposed project will not significantly contribute to the areas' adverse cumulative impacts as the proposed work is within a disturbed area and adjacent to an existing upland mine and the impacts will be offset by the proposed construction methods and mitigation measures presented in Section 6 "Proposed Mitigation Measures" and Appendix C.

15 COMPLIANCE WITH FEDERAL LAWS

15.1 Clean Air Act

The proposed project has been analyzed for conformity applicability pursuant to regulations implementing Section 176(c) of the Clean Air Act. The proposed activities would not exceed *de minimis* levels of direct emissions of a criteria pollutant or its precursors and are exempted by 40 CFR Part 93.153. Any later indirect emissions are generally not within the Corps continuing program responsibility and generally cannot be practicably controlled by the Corps. For these reasons, a conformity determination is not required for this project.

15.2 Clean Water Act Compliance

A DA permit pursuant to Section 404 of the CWA is required for the discharge of fill material into waters of the United States, including wetlands. The proposed project includes the discharge of clean pea gravel or sand into depression resulting from the removal of the timber piles. Washington State Department of Ecology issued Water Quality Certification for the proposed fill on 14 March 2006.

15.3 Coastal Zone Management Act.

Pursuant to the requirements of Section 307(c)(3) of the Coastal Zone Management Act of 1972 as amended, the project must comply with the approved Washington Coastal Zone Management (CZM) Program. This concurrence is based upon compliance with all applicable enforceable policies of the CZM Program, including Section 401 of the CWA. Washington State Department of Ecology issued the CZM Consistency Certification as part of the Water Quality Certification on 14 March 2006.

15.4 Endangered Species Act

The Corps was the lead federal agency for this coordination. A biological evaluations and addendums was prepared by the applicant's consultant, reviewed by Corps and sent to the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS).

USFWS concurred with Corps' determinations of effect as noted in Section 13.8, by letters dated 12 April 2004 and 19 December 2005. NMFS concurred with Corps' determination of effect as noted in Section 13.8, by letters dated 10 February 2004, 21 June 2005, 6 November 2006, and 19 January 2007. ESA Section 7 consultation is complete. ESA consultation would be re-initiated should any new species become listed as threatened or endangered prior to the permit issuance.

15.5 Environmental Justice

Executive Order 12898 directs federal agencies to identify and address disproportionately high and adverse human health or environmental effects of agency programs and activities on minority and low-income populations. No tribal resources would be harmed. No adverse effects to minority or low-income populations would result from the implementation of the proposed project.

15.6 Essential Fish Habitat

In accordance with the Essential Fish Habitat (EFH) consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act, the Corps has determined that the proposed project would not adversely affect designated EFH for federally-managed fisheries in Washington waters. No further EFH consultation is necessary. NMFS concurred with this determination on date 10 February 2004.

15.7 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (16 USC 470) requires that wildlife conservation receive equal consideration and be coordinated with other features of water resources development projects. This goal is accomplished through publication of Corps public notice which is provided to U.S. Fish and Wildlife Service for their review and recommendations for the avoiding or minimizing impacts to fish and wildlife.

15.8 National Environmental Policy Act

Section 1500.1(c) and 1508.9(1) of the implementing regulations for the National Environmental Policy Act of 1969 (42 USC §§ 4321 through 4375, as amended) requires federal agencies to "provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact" on actions authorized, funded, or carried out by the federal government to insure such actions adequately address "environmental consequences, and take actions that protect, restore, and enhance the environment". This assessment evaluates known environmental consequences from the proposed replacement of the existing dock and the increased extraction of sand and gravel from the upland mine at Maury Island, King County, Washington.

15.9 National Historic Preservation Act

The National Historic Preservation Act (NHPA) requires federal agencies to consider the effects of its actions on sites, buildings, structures, or objects included or eligible for the National Register of Historic Places must be identified and evaluated. Requirements under Section 106 of the Act apply to any federal undertaking, funding, licensing, or permitting. The project area does not include any sites listed or eligible for National Register of Historic Places. However, there is low potential for historic graves to occur on the applicant's property. The revised Code

of Washington (RCW 68.60.050) addresses the inadvertence of discovery of historic graves through construction. If such a discovery would happen the applicant is required to report to the Washington State Office of Archaeology and Historic Preservation. The Corps has determined that the proposed project is in compliance with Section 106 of the National Historic Preservation Act.

15.10 Treaty Rights

In the mid-1850's, the United States entered into treaties with a number of Indian tribes in Washington. These treaties guaranteed the signatory tribes the right to "take fish at usual and accustomed grounds and stations . . . in common with all citizens of the territory" [*U.S. v. Washington*, 384 F.Supp. 312 at 332 (WDWA 1974)]. In *U.S. v. Washington*, 384 F.Supp. 312 at 343 - 344, the court also found that the Treaty Tribes had the right to take up to 50 percent of the harvestable anadromous fish runs passing through those grounds, as needed to provide them with a moderate standard of living (Fair Share). Over the years, the courts have held that this right comprehends certain subsidiary rights, such as access to their "usual and accustomed" fishing grounds. More than *de minimis* impacts to access to usual and accustomed fishing area may violate this treaty right. *Northwest Sea Farms v. Wynn*, F.Supp. 931 F.Supp. 1515 at 1522 (WDWA 1996). In *U.S. v. Washington*, 759 F.2d 1353 (9th Cir 1985) the court indicated that the obligation to prevent degradation of the fish habitat would be determined on a case-by-case basis. The Ninth Circuit has held that this right also encompasses the right to take shellfish. *U.S. v. Washington*, 135 F.3d 618 (9th Cir 1998).

The public notices for this permit action was provided to Chinook, Duwamish, Jamestown S'Klallam, Kikiallus, Lummi, Muckleshoot, Nisqually, Port Gamble S'Klallan, Quinault, Shoalwater Bay, Skokomish, Snoqualmie, Squaxin, Steilacoom, Suquamish, Swinomish, Tulalip, and Umatilla Confederate Tribes. No tribes submitted comments to indicating that the proposed project would interfere with their treaty fishing rights.

Though the area in question is within the Usual and Accustomed area of several tribes, there is no information to indicate that the project will impact these Tribes Treaty rights. The proposed project has been analyzed with respect to its effects on the treaty rights described above. We anticipate that:

(1) The work would not interfere with access to usual and accustomed fishing grounds or with fishing activities or shellfish harvesting;
(2) The work would not cause the degradation of fish runs and habitat; and
(3) The work would not impair the tribes' ability to meet moderate living need.

16 SUMMARY

The U.S. Army Corps of Engineers has prepared this EA is support of the Corps' permit decision for the proposed construction and operation of a barge loading facility (dock) located on the shoreline of Maury Island in King County, Washington. The purpose of this project is provide sand and gravel by waterborne transport to meet the market demands of the Central Puget Sound Region.

The applicant's proposal is to replace and extend the existing barge loading dock. This action would include removal of 228 timber piling and backfilling any depressions left by their removal

with clean pea gravel or sand. The existing sunken barges located near the southwest end of the existing dolphin alignment would remain in place. The proposed work includes construction of a barge-loading conveyor tube with three 4- to 6-pile support bents; seven 6-pile berthing dolphins with fenders and aluminum catwalks. A maximum of 56 24-inch steel piles will be installed to support the new trestle and seven berthing dolphins. The replacement dock would extend up to 305 feet waterward of the Mean High Water (MHW) line and would run 510 feet parallel to the shoreline. The replacement dock would cover 7,796 square feet (compared to 8,940 square feet of existing dock). Steel grating with 75% open area would cover the dock. To prevent gravel spillage from the mine to the barge, the conveyor tube would be completely enclosed with telescoping spout attached to the discharge end of the conveyor to lower the material into the barge. The spout would have a retractable chute and spoon to prevent dust and help distribute the material into the barge. A haul-back system (i.e. a system of winches, cables and pulley wheels used to position the barge during loading operations) would be attached to the top of the dolphin frames.

NO ACTION ALTERNATIVE: The no-action alternative was carried throughout the analysis and is reflected in the baseline environmental conditions of the area. Under the no-action alternative, no permit would be issued for this activity either from permit denial or the applicant's withdrawal of their application.

OTHER ALTERNATIVES CONSIDERED: In addition to the applicant's proposal and the no-action alternative (no permit), both off-site and on-site alternative sources for sand and gravel were evaluated as part of this environmental analysis.

ENVIRONMENTAL CONSEQUENCES: This environmental assessment describes the environmental consequence of the proposed project. Construction will result in short-term impacts to aquatic environment, including impacts to substrate, water quality, fish and wildlife species, including threatened and endangered species, shellfish, and invertebrates. Noise may also cause some impact to the aquatic environment as well as recreational uses. Impacts to views from residences and beaches along the adjacent shorelines near the project site will occur with the initiation of construction activities at the dock site. The movement of barges to and from the area will increase during the construction period. Changes in shoreline vegetation will also occur in association with the dock's construction.

Operation of the proposed dock will result in long-term direct changes in baseline conditions for noise, aesthetics, and navigation. Operational noise levels will increase from the current baseline levels. Noise levels are not expected to exceed the King County Noise Code for an industrial noise source due to the limited hours of dock operation (7 AM to 7PM five days a week), enclosed conveyor system with telescoping spout and retractable chute/spoon, and Barge Approach and Departure Protocol.

Views from the nearby residences, including Gold Beach and Sandy Shores, and view from across Puget Sound will be affected by the proposed dock. The proposed dock will extend further waterward but will be similar in scale and appearance to the existing dock. Visual activity (movement of barges to and from the dock) and light glare will increase with the

operation of the proposed dock. The limited hours of operations and shielding of work lights will reduce the overall visual impacts.

The project operation will increase the volume of marina traffic in the project area above the current baseline conditions by an average of eight tug/barges per weekday; see Section 13.10 "Navigation". The U.S. Coast Guard's Vessel Traffic System and Vessel Movement Reporting systems will compensate for the increase of tug/barge movements in East Passage.

MITIGATION MEASURES: The construction methods, ESA conservation measures, and mitigation implemented during construction will substantially reduce the short-term, direct increases in turbidity and sedimentation levels, general water quality, and the disturbance to fish and marine mammals including threatened and endangered species that may be present in the project area during construction.

Forage fish surveys will be done prior to construction. The in-water work will be done during set construction work windows. Visual monitoring for killer whales will take place during construction. These measures will reduce direct impacts to threatened and endangered species and their prey during construction.

Disturbance of the eelgrass beds (an element of the aquatic habitat) will be limited to wave action from movement of construction equipment in the project area. Wave action is not expected to exceed the existing baseline conditions during construction period.

Noise level during construction will increase from the movement of equipment at the site and construction activities (removal of existing structure and proofing of new piles). Construction noise will increase from the current baseline. However, these levels are not expected to exceed the King County Noise Code for construction.

Recreational access to the beach at the project site will be prohibited during the project construction period. Dive access to sunken barges will not be impacted by the construction or operation of the proposed dock. Beach access at the dock site will be allowed by the applicant after construction. Overall changes in recreational access during construction will be short-term and temporary.

The proposed project would result in economic benefits to the applicant and region by meeting regional demand for products that are important in the construction of infrastructure, utilities, and commercial and residential developments.

CONCLUSIONS: The current proposed project is not a major Federal Action significantly affecting the quality of the human or natural environment, and therefore, does not require preparation of an environmental impact statement. This EA will be used in the Corps permit decision process and in determining compliance with the Corps' implementing regulations at 33 CFR 320-330 and 40 CFR 230.

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18 ACRONYMS

BE: Biological Evaluation
CFR: Code of Federal Regulations
CWA: Clean Water Act
Corps: U.S. Army Corps of Engineers
CZM: Coastal Zone Management
DA: Department of the Army
dBA: decibels (A-weighted)
DDES: King County Department of Development and Environmental Services
Ecology: Washington Department of Ecology
EFH: Essential Fish Habitat
EA: Environmental Assessment
EIS: Environmental Impact Statement
EPA: Environmental Protection Agency
ESA: Endangered Species Act
FEIS: Final environmental impact statement
FWCA: Fish and Wildlife Coordination Act
GMA: Growth Management Act
Guidelines: Section 404 (b)(1) guidelines
HPA: Hydraulic Project Approval
KCC: King County Code
MFS: Memorandum for the Services
MHW: mean high water
MHHW: mean higher high water
MLW: mean low water
MLLW: mean lower low water
MTCA: Model Toxics Control Act
NEPA: National Environmental Policy Act
NHPA: National Historic Preservation Act
RCW: Revised Code of Washington
NMFS: National Marine Fisheries Service
SEPA: State Environmental Policy Act
SHPO: State Historic Preservation Office
SMA: Shoreline Management Act
SSDP: Shoreline Substantial Development Permit
USC: United States Code
USCG: United States Coast Guard
USFWS: United States Fish and Wildlife Service
VTS: Vessel Traffic Service
WAC: Washington Administrative Code
WDFW: Washington Department of Fish and Wildlife
WDNR: Washington Department of Natural Resources
WQC: Water Quality Certification