FINAL

UNITED STATES POSTAL SERVICE
Supplemental Environmental Assessment
Hovercraft Transport of Alaska Bypass Mail

Prepared for:

UNITED STATES POSTAL SERVICE

Prepared by:

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June 2000

Finding of No Significant Impact

1.0 Proposed Federal Action

The U.S. Postal Service (USPS) proposes to transport bypass and non-priority mail by hovercraft on a permanent, year-round basis from the city of Bethel to nine Alaskan villages along the Kuskokwim, Johnson, and Pikmiktalik rivers. The nine villages are Atmautluak, Kasigluk, Napakiak, Napaskiak, Nunapitchuk, Akiachak, Akiak, Kwethluk, and Tuluksak. The hovercraft vehicle will be similar in design, size, operational characteristics, and noise and emissions generation as the British Hovercraft model AP.1-88. To optimize the hovercraft mail transport activity and satisfy bypass and non-priority mail service standards, transport of bypass and non-priority mail by hovercraft would be supplemented, as needed, with alternate modes of transportation such as trucks, snow machines, all terrain vehicles, boats, and planes. The USPS would continue to transport First-class, Express, and Priority mail primarily by aircraft. A village agent, hired by the air carrier, would meet the airplane and transfer mail to the post office.

Based on an unsolicited proposal from Alaska Hovercraft Joint Venture, the USPS conducted a three-year demonstration project from July 1997 through June 2000 to transport bypass and non-priority mail on a year-round basis by hovercraft from the city of Bethel to eight remote Alaskan villages along the Kuskokwim, Johnson, and Pikmiktalik Rivers. The demonstration project was environmentally reviewed in the July 1997 Final Alaska Hovercraft Demonstration Project Environmental Assessment (DPEA). The DPEA concluded that there would be no significant impact on the environment from use of the hovercraft to transport bypass and non-priority mail and the USPS subsequently issued a Finding of No Significant Impact (FONSI). Although the USPS did not anticipate any significant impacts, in the FONSI, it agreed to conduct ecological and safety monitoring during the demonstration project, to obtain additional empirical data on potential impacts of the hovercraft mail transport activity.

The USPS will need to contract for the transport of mail by hovercraft in order to move from the demonstration to the proposed operational phase. The hovercraft would be maintained and operated at a facility located in Bethel. Trucks would transport mail between the airport in Bethel and the selected contractor's hovercraft facility. Hovercraft facilities would include a hangar, small office, waiting area, and a ramp that would lead to the Kuskokwim River.

While transporting mail, the hovercraft would stay within the banks of the Kuskokwim, Johnson, and Pikmiktalik rivers, and adjacent tributaries and sloughs. The hovercraft operator would designate a landing site at each village for the hovercraft to off-load mail. An agent would meet the hovercraft at the river's edge to accept the mail for transport to the villagers and to transfer outgoing mail to the hovercraft. Non-priority mail would be delivered to the post office, while bypass and any other freight would be delivered directly to the consignee.

Under the no-action alternative, bypass and non-priority mail would be transported daily by plane. All bypass and non-priority mail would be flown from Anchorage to Bethel Airport, transferred, and flown by small engine aircraft to each village. This procedure would require repeated trips to the villages by the air carrier, as compared to the containerized bulk transport performed by the hovercraft. At the village landing strip runway, a bush carrier-hired agent would receive the mail for distribution. As the agent meets the aircraft, he or she would transfer mail to the bush carrier for transport elsewhere.

2.0 Purpose and Need for Action

The project is needed to assist the USPS in meeting its mission in the Bethel area, which is to provide prompt, reliable, and efficient postal service within mail service standards. This commitment extends to providing service at the highest level of quality and at the lowest possible cost. Specifically, the USPS needs a proven method to transport bypass and non-priority mail to rural areas surrounding Bethel that will economically satisfy bypass mail service standards.

3.0 Environmental Impact Analysis

This section summarizes the salient environmental issues for this proposed action. A more detailed discussion of environmental impacts can be found in the Supplemental Environmental Assessment (SEA) and the Demonstration Project Environmental Assessment (DPEA). Information collected during the monitoring effort is presented in the Ecological Monitoring Summary Report. The no-action alternative would not result in any changes in existing levels of environmental impact resulting from mail delivery by fixed-wing aircraft.

3.1 Fish and Wildlife

There are abundant and diverse fish and wildlife resources in the Kuskokwim River drainage. The biological monitoring program and environmental assessment focused on the potential impacts of hovercraft operation on fish, waterfowl, and subsistence resources.

3.1.1 Fish

The Kuskokwim is one of the largest rivers in Alaska and provides important fish habitat throughout its drainage. Within the project area, the Kuskokwim River serves as an important migration corridor for anadromous species (fish that mature in salt water but spawn in fresh water) and the Kuskokwim, Johnson and Pikmiktalik rivers provide year-round habitat for resident species. Anadromous and resident species important in subsistence, commercial, or sport fisheries in the project area include chum, coho, sockeye, pink, and chinook salmon, sheefish, humpback whitefish, round whitefish, Arctic grayling, blackfish, and northern pike.

Although the DPEA concluded that there would be no significant impacts on the environment from use of the hovercraft, the USPS agreed to conduct ecological monitoring of fish during the hovercraft demonstration project. The questions proposed to be answered by the monitoring effort included:

- Are adult fish being injured or killed by the hovercraft?
- Are juvenile fish being injured or killed by the hovercraft as it passes over shallow water?
- Do juvenile fish become stranded by the wake of the hovercraft in shallow areas of the rivers and if so, are they at greater risk than from conventional watercraft?

The monitoring team assessed potential for mortality to adult fishes by watching for floating (i.e., injured or dead) fishes behind the hovercraft and in its wake, and by recording the number of injured and dead fish on the Johnson and Kuskokwim rivers, independent of whether the hovercraft had recently passed through the area. Over the course of ecological monitoring, the team surveyed 264 miles of river behind the hovercraft (within 30 minutes of its passing) for dead or injured fish. In addition, the team recorded occurrences of injured or dead fish along 4,297 miles of the hovercraft route. Given that the monitoring team observed no dead or injured fish attributable to the hovercraft either behind it or along its route, there is no evidence that the hovercraft is harming adult fish.

The hovercraft lands at villages and occasionally travels near the shore over shallow water. There was a concern that the turbulence caused by the rapid water displacement under the craft could injure or kill small fish in those shallow areas. To assess this potential impact, the monitoring team established a number of study areas on the Johnson and Kuskokwim rivers, where the hovercraft was intentionally routed onto shallow beaches where abundant small fish were known to be present and where sampling would be effective. Fish were collected using a beach seine. Most of the fishes caught in both test events (where the hovercraft had passed by) and control events (where the hovercraft had not passed by) were unharmed. These data indicate that the passage of the hovercraft did not significantly harm fish.

In response to local concerns, the monitoring team also conducted several investigations for evidence of stranded fish. Using observations of stranding at landing sites, during near shore operations, and during unplanned stops, it was estimated that the hovercraft might strand 250 to 880 chum salmon fry and 920 to 4,640 whitefish fry per year. These fry numbers equate to 3 to 44 adult salmon and 1 to 6 adult whitefish, respectively. The annual chum salmon runs in the Kuskokwim River range from several hundred thousand to over a million. Thus, based on the comparison of the estimates of mortality with the total numbers of available fish, the hovercraft operation does not have a significant effect on the chum salmon population in the Kuskokwim drainage. Similarly, the loss of 6 adult white fish is also not significant. About 28,000 pounds of whitefish were harvested in 1986 by residents of the village of Kwethluk alone.

The studies conducted indicate the proposed action of transporting bypass and non-priority mail by hovercraft will not result in significant adult fish mortality, juvenile fish mortality in shallow water areas, or stranding of juvenile fish along beaches.

3.1.2 Birds

The USFWS considers the Kuskokwim River to be a major water resource associated with, but not part of, the Yukon National Wildlife Refuge. Waterbirds use the Kuskokwim River system during the entire ice-free period of May to September. Waterfowl typically arrive in

the area in the spring shortly after ice-out in May. Breeding and nesting occur in May and June, followed by brood rearing. Depending on the species, fledging occurs during July and August, followed by the fall staging period and migration before ice-up in October. The rivers provide staging habitat for all waterfowl during the migratory season.

Although the DPEA concluded that the hovercraft project would cause no significant adverse impacts on the environment, the USPS agreed to conduct ecological monitoring of bird resources, particularly waterfowl, during the demonstration project. The questions proposed to be answered by the monitoring effort included:

- Is there a difference in behavioral responses of waterfowl to hovercraft versus other watercraft, and if so, what is the difference?
- Is the nesting success of waterfowl along the river routes of the hovercraft affected by the hovercraft's passage?

The results of flushing observations conducted during the demonstration project indicated that waterfowl species nearly always flushed in response to the hovercraft, as well as to other watercraft. The results of these studies indicate that, under the proposed action, waterfowl would react to the hovercraft in a manner similar to the disturbance produced by a motorboat. Other birds exhibited similar reactions; they were flushed by the hovercraft as well as by motorboats. Typically, after flying only a short distance, the birds would land in nearby habitats.

Due to the importance of subsistence gathering along the rivers and in response to village residents' concerns, the monitoring team studied waterfowl abundance along sections of the rivers traveled by the hovercraft, as well as along sections where the hovercraft does not operate. The results of this study indicate that the proposed action of transporting bypass and non-priority mail using a hovercraft would not have significant adverse impacts on waterfowl subsistence use of the habitat along the rivers.

The monitoring team conducted additional studies to evaluate whether the hovercraft adversely affects the use of nearby habitats by waterfowl, and thus potentially the breeding capacity of the birds. The team surveyed aerial transects both in hovercraft operational areas and in control areas, using fixed-wing aircraft to document breeding pairs and general waterfowl use of habitats in areas near the rivers. The team segregated waterfowl counts into three habitat zones: on the river, adjacent to the river (<200 yards from river), and off the river (>200 yards from the river). The results of the aerial surveys of waterfowl use indicated no statistical difference in the distribution of waterfowl between control and operational areas. Based upon these results, there is no evidence that the proposed action would have a significant adverse effect on the distribution of breeding waterfowl or general waterfowl use in the hovercraft operational area. It follows that the proposed action would also not have a significant adverse effect on the number of waterfowl available for subsistence hunting.

3.2 Noise

The USPS was unable to discover any existing ambient noise level studies of Bethel and the villages considered in the SEA. Thus, the DPEA and SEA made conservative assumptions about the existing noise environment. Specifically, it was assumed that the current ambient

noise level is 40 dB, a noise level that is commonly associated with rural areas. This is believed to be a conservative estimate, given the commonly found noise sources in the villages such as electrical generators, snowmobiles, all-terrain vehicles, boats, and automobiles. At 40 dB, an environment would be less noisy than an urban setting, but more noisy than a remote part of a national park.

The hovercraft generates the most noise impact when it is within 150 feet of the landing sites. This is a result of the noise characteristics of the hovercraft as it maneuvers for approach and departure at the landing sites. Where the hovercraft passes by without stopping, it generates less noise, because the craft is operating at a nearly constant speed with minimal maneuvering. The noise associated with the proposed hovercraft operations at the closest dwelling unit for each village has been calculated to be within the appropriate Federal Transit Administration (FTA) and Federal Aviation Administration (FAA) guidelines. Consequently, the use of the AP.1-88 or similar hovercraft will not cause significant noise impacts in the villages. Noise levels at fishing camps are anticipated to be considerably less than in the villages, as only pass-by activities would affect the camps. Thus, no significant adverse noise impacts on fishing camps or villages would be anticipated as a result of the proposed action.

3.3 Socioeconomics

3.3.1 Safety

The Kuskokwim, Johnson, and Pikmiktalik rivers are important transportation corridors between villages for summer and winter travel. Boat and snow machine travel on these rivers is common. Because there are no speed limits, age restrictions, or operator licensing for the use of these machines, safety is a consideration. Bypass mail currently is delivered to Tuluksak by air carrier. Prior to the hovercraft demonstration project, planes transported bypass mail to the other eight villages. Although there is some inherent risk in flying in the Yukon Delta region of Alaska, a high level of safety is observed by pilots to minimize potential harm.

The results of the demonstration project have shown that transporting bypass mail by hovercraft is safe. Except for the days when the ice was forming in the fall or breaking up in the spring, the hovercraft delivered mail six days a week. Communication on safety issues between Alaska Hovercraft Joint Venture and the village residents helped maintain a good safety record. Experience gained from the demonstration project indicates that the use of the hovercraft will not have a significant adverse impact on safety.

3.3.2 Local Employment and Economics

Subsistence, commercial, and recreational activities such as hunting, fishing, and trapping, are important to the regional economy. A transition to a partial cash economy is slowly occurring. The emerging cash economy is based on some wage employment and seasonal commercial fishing, as well as cash infusion from social service subsidies. Experience during the demonstration project has shown that while the proposed action may result in minor shifts in employment, overall local employment opportunities will not decline.

It will be necessary for the selected hovercraft contractor to employ some number of local residents in Bethel to accomplish their day-to-day operations. With the loss of revenue

associated with transport of bypass mail by air carrier to Tuluksak and Atmautluak, some bush air carriers will be faced with the decision of either curtailing or eliminating some air cargo service out of Bethel. Since there are other destinations out of the Bethel hub and other hubs to which the air carriers could shift operations, it is anticipated that the overall impact on air carrier employment would be minimal.

The selected hovercraft contractor would employ, at a minimum, one agent in each village to help transfer bypass mail from the hovercraft to the village. In addition, the air carrier transporting first class and priority mail would also employ, at a minimum, one agent in each village to transfer the mail from aircraft to the post office. It is not known if the total dollars paid to all these agents will be less or more than when all the mail was transported by airplane. Those contracts and the amounts paid are negotiated with the individual agents. However, the agents are paid according to the weight of the mail they transport and the total amount of mail should not change. Thus, there is the likelihood that the village agents' pay may not change significantly.

Reliable transportation of passengers and freight could result in some economic stimulation. Mail delivery and travel between villages will be more predictable using transportation that is not inconvenienced by extreme weather and bad runway conditions. Over the past three years, ridership on the hovercraft has increased, especially during times when conditions do not allow aircraft to fly (spring thaw, low visibility, soft runways, standing water).

3.3.3 Bush Air Carriers

Prior to the implementation of the demonstration project, there were ten bush air carriers operating out of the Bethel hub and serving the eight villages considered in the DPEA. There are currently six carriers providing service to the seven villages on the hovercraft route. An additional three carriers provide service to Atmautluak and Tuluksak.

Priority mail is transported by air carrier to all nine villages. Bypass mail is transported by air carrier to only two of the nine villages, Atmautluak and Tuluksak (the hovercraft transports bypass mail to the other seven villages). Weekly volume and revenue to the air carriers from transport of bypass mail to these two villages is about 21,380 pounds and $10,300, respectively.

Air carrier cargo service has decreased to the seven villages on the hovercraft route since the initiation of the demonstration project. However, the level of passenger service has remained relatively constant. While passenger service has decreased in some villages and increased in others, the overall level in the local area remains similar and each village still has one or more full service carriers.

Currently, air carriers transport priority mail to the nine villages in the proposed action. Air carriers also transport bypass mail to Atmautluak and Tuluksak. Under the proposed action, the transport of bypass mail to Atmautluak and Tuluksak will be shifted from air carriers to the hovercraft. As a result, the bush air carriers that transport bypass mail to these two villages will lose approximately $540,000 in revenue per year, but will retain the revenue associated with transport of priority mail. The revenue forgone by the bush air carriers will not be lost to the economy because hovercraft operations will result in local village operations to receive and deliver the mail.

At Bethel, bush air carriers that lose the bypass mail volume may respond by pulling out of the market or reducing their hub work force. These are more likely to be the carriers that fly cargo only, rather than those that provide full service (i.e., cargo and passengers), or passengers only. The selected hovercraft contractor may employ some of the individuals that may lose their jobs as a result in the shift in mail service.

The current level of passenger service will likely be maintained. Experience with the diversion of mail from air to surface transportation in other areas of Alaska and in Bethel during the demonstration project has shown that when companies withdraw passenger service, these services are often picked up by another air carrier. As evidence, the level of passenger service to the villages via air carrier is currently similar to the level that existed prior to the implementation of the demonstration project. Any reduction in air carrier passenger service that is not picked up by another air carrier will be at least partially offset by the passenger carrying capability of the hovercraft.

Because the air carriers can expand service to the other 18 villages out of the Bethel hub or fly out of other hubs, the impact of the proposed action on the bush air carrier industry in the Bethel area should not be significant.

3.3.4 Coastal Zone Management

The villages to receive mail service by hovercraft are within the Ceñaliulriit Coastal Zone Management (CZM) District. The State of Alaska's CZM program sets standards and develops procedures to guide coastal development throughout the state. It is a land use planning tool to ensure that coastal resources are preserved, protected, enhanced, and, where necessary, restored. The program details standards for different land uses, including transportation facilities and navigational facilities and systems.

The USPS has concluded that the proposed action:

1) Will not cause significant adverse impacts to subsistence use to coastal zone resources;

2) Supports a public need;

3) Maintains access to subsistence resources;

4) Is designed to minimize adverse impacts to biological resources, subsistence use areas, cultural characteristics;

5) Avoids sensitive habitats and areas of importance to commercial fishing;

6) Is designed, sited, constructed, operated, and maintained to avoid significant adverse impacts to the subsistence uses, air and water quality, fish and wildlife and their habitats, commercial fishing uses, and historic, prehistoric, and archaeological resources; and

7) Will not adversely impact bank erosion.

These conclusions address the enforceable policies contained within coastal zone management plan which are important to consider under the proposed action. After careful analysis and consideration of issues submitted by the public and federal and state agencies, the USPS has determined that the proposed action is consistent with enforceable

coastal zone policies in Alaska. The USPS is currently engaged in the CZMP process with the State and if necessary, will amend this SEA upon completion of the process.

3.4 Subsistence Activities and Commercial Fishing

Although the Yukon Delta offers a variety of subsistence resources ranging from caribou to marine life, the most prevalent subsistence resource used in the area is salmon. Fish account for 60 to 85 percent of the yearly food supply in the nine villages in the proposed action. Although most of the subsistence harvest consists of salmon, other fish species including blackfish, sheefish, humpback whitefish, northern pike, and Arctic grayling, are important to the food supply of many villages. Most subsistence fishing is done using gillnets hauled in by hand.

Salmon are also harvested in the area's commercial fishery. Sections of rivers are opened a short time for commercial fishing, an activity referred to as a Commercial Opening. Typically, 20 to 30 days of commercial fishing are allowed per year. The season extends from mid-June to early September. Approximately 800 commercial fishing permits are issued for the Kuskokwim Area, which consists of four fishing districts. Fishing is done using 300-foot-long drift gillnets, which are set and hauled in by hand from 20- to 25-foot motorized boats.

Although the DPEA concluded that there would be no impact on commercial or subsistence fishing, the USPS agreed to conduct monitoring studies during the demonstration project. The questions proposed to be answered by monitoring included:

- Is gillnet subsistence and commercial fishing affected by the passage of the hovercraft?
- Is blackfish subsistence fishing affected by the passage of the hovercraft?

To assess if the hovercraft might be having an effect on subsistence and commercial gillnet fishing, fishing studies were conducted to discern possible differences in catch rates when the hovercraft travels past a gillnet. For the fishing experiment, the monitoring team used pairs of net sets: test-sets (short net sets during which the hovercraft passed by) and control-sets (sets of the same duration without the hovercraft passing by). The test and control sets of each paired set were fished in the same location, one immediately after the other. Two types of nets were employed in the monitoring efforts: set nets, which are anchored in place often with one end attached to shore, and drift nets, which are allowed to drift with the current. The difference between test and control catch rates was not statistically significant, indicating that the hovercraft would have no effect on subsistence or commercial gillnet catches.

In response to concerns raised by residents of villages on the Johnson River, monitoring was also undertaken to evaluate the hovercraft's potential effects on wintertime blackfish subsistence fishing. There was concern that the noise, currents, and underwater pressure produced by the hovercraft near fishing areas might scare blackfish away, thereby reducing the overall number of blackfish available for harvest. Similarly, there was concern that the disturbance might affect fishing success by causing the blackfish to stay away from, rather than to congregate in the fishing holes. The purpose of the monitoring was to determine if hovercraft operations drive fish away from traps, or alter behavior such that they are less likely to enter the traps. The results of the monitoring indicated that the hovercraft and

snowmobile traffic (studied for comparison purposes) on the Johnson River did not have any significant adverse effect on blackfish behavior or fishing success.

Based upon the results of the analyses, no significant adverse impacts to fish and wildlife subsistence resources are anticipated, including waterfowl, furbearers, fish, and large mammals. This conclusion, coupled with the fact that the proposed action will not affect the accessibility to subsistence resources, leads to the overall conclusion that the proposed action would not have significant adverse impacts on subsistence use of wildlife. Likewise, the proposed action would have no significant adverse effect on the availability or abundance of fish for commercial fishing.

4.0 Mitigation Measures

No measures are required to mitigate from significance to insignificance because the proposed action would result in no significant impacts. Operations were, however, designed to reduce the level of impact and to provide benefits to the public when possible. During the demonstration project, the hovercraft project implemented a number of mitigation measures to ensure that impacts are avoided to the maximum extent possible. These mitigation measures have been effective, as evidenced by the fact that the insignificant impacts of the project were further reduced and/or compensated for by the implementation of the mitigation. These mitigation measures, which will be continued, demonstrate the hovercraft program's desire to be a good village neighbor and to support the local subsistence way of life. The more important mitigation actions implemented are listed below:

1. Only disturbed sites would be used for landings areas;
2. Only existing disturbed paths would be used to bring the bypass mail to the village from the landing site;
3. No piers or other structures would be constructed at the villages or in the water;
4. Winter fish net poles would be provided to those who want them;
5. The hovercraft would not operate from one hour before to one hour after a commercial fishing opening;
6. The hovercraft would take all practical measures to avoid driving over subsistence fish nets;
7. The hovercraft would suspend operations during fall freeze up to allow ice to thickly freeze;
8. The hovercraft would avoid cracking ice during winter ice up by observing ice conditions behind the hovercraft from a snow machine;
9. Operation would be coordinated with the US Fish and Wildlife Service to minimize potential impact to caribou migrations;
10. The hovercraft would use all practical measures to avoid fish camps;
11. At the request of villages, landing sites would be changed during winter;

12. The hovercraft would offer medical evacuation services;

13. Upon request the hovercraft would brake ice in front of villages to improve river access in the spring;

14. The hovercraft would be restricted to travel within the banks of the river;

15. The daily hovercraft operations would be planned to minimize passbys of sensitive locations such as villages and fish camps; and

16. The hovercraft would not operate during spring ice out to prevent unsafe conditions on the rivers.

5.0 Conclusion and Approval

During the Hovercraft Demonstration Project, the Hovercraft Committee, consisting of federal regulatory agencies, state regulatory agencies, community representatives, and the USPS, met monthly to discuss the operation of the hovercraft. During the three years these meetings were held, the government agencies have never alleged the hovercraft operation to be in non-compliance with their respective regulations. Not once was the hovercraft operation found to implicate safety, subsistence, commercial fishing, oil spills, or any other operational concerns.

After careful and thorough consideration of the facts contained herein and in the Supplemental Environmental Assessment, the undersigned finds that the proposed federal action is consistent with existing national environmental policies and objectives set forth in Section 101(a) of the National Environmental Policy Act of 1969 (NEPA) and that it will not significantly affect the quality of the human environment or otherwise include any condition requiring consultation pursuant to Section 102(2)(c) of NEPA. Therefore, the USPS is issuing this Finding of No Significant Impacts (FONSI) with respect to the proposed action. Because no significant adverse impacts are expected from this proposed action, an environmental impact statement will not be prepared.

Paul E. Vogel
Acting Vice President
Network Operations Management

Responsible Official

6/29/00
Date

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June 2000

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Executive Summary

The U.S. Postal Service (USPS) proposes to transport bypass and non-priority mail by hovercraft (also known as air-cushioned vehicle) on a year-round basis from the city of Bethel to nine Alaskan villages along the Kuskokwim, Johnson, and Pikmiktalik rivers. To optimize the hovercraft mail transport activity and satisfy bypass and non-priority mail service standards, transport of bypass and non-priority mail by hovercraft would be supplemented, as needed, with alternate modes of transportation such as trucks, snow machines, all terrain vehicles, boats, and planes. The project is needed to assist the USPS in meeting its mission in the Bethel area, which is to provide prompt, reliable, and efficient postal service within mail service standards. Specifically, a proven method to transport bypass and non-priority mail to rural areas surrounding Bethel is needed that will economically satisfy bypass mail service standards.

Based on an unsolicited proposal from Alaska Hovercraft Joint Venture, the USPS conducted a three-year demonstration project from July 1997 through June 2000 to transport bypass and non-priority mail on a year-round basis by hovercraft from the city of Bethel to eight remote Alaskan villages along the Kuskokwim, Johnson, and Pikmiktalik Rivers. During the demonstration project hovercraft service to one of the villages, Atmaukluak, was suspended. The demonstration project proved that hovercraft technology is a safe and reliable method of transporting bypass and non-priority mail in the region.

The demonstration project was environmentally reviewed in the July 1997 Final Alaska Hovercraft Demonstration Project Environmental Assessment (DPEA). The DPEA concluded that there would be no significant impact on the environment from use of the hovercraft to transport bypass and non-priority mail and the USPS subsequently issued a Finding of No Significant Impact (FONSI). In the FONSI, the USPS agreed to conduct ecological and safety monitoring during the demonstration project, to obtain additional data on actual impacts of the hovercraft mail transport activity.

Pursuant to the National Environmental Policy Act (NEPA) and USPS regulations, the USPS must evaluate the impacts associated with the changes in the proposed action. The substantial changes in the proposed action being considered by the USPS are the change in status of the program from a demonstration project to permanent service and the addition of one village (Tuluksak) to the transport route. This EA is referred to as a "Supplemental EA" (SEA) because the USPS has already evaluated the impacts associated with the transport of mail by hovercraft to villages in the vicinity of Bethel. The USPS re-considered all the issues addressed in the DPEA and determined that certain issues do not require additional analysis. Thus, the SEA focuses on evaluating the impacts associated with the changes in the proposed action as well as considering new, available information.

Under the no-action alternative, bypass and non-priority mail would be transported daily by plane, the system practiced before the demonstration project. All bypass and non-priority mail would be flown from Anchorage to Bethel Airport, transferred, and flown by small engine aircraft to each village. The environmental impacts associated with the no-action alternative were evaluated in the DPEA and are incorporated by reference in this SEA since they have not changed.

Considerable public input was used in scoping the issues for this document. This included input received during: 1) the development of the DPEA; 2) monthly meetings of the Hovercraft Committee; 3) the demonstration project monitoring activities; and 4) the scoping of the SEA. The SEA supplements the findings of the DPEA by addressing the impacts of the proposed action on issues that were monitored during the demonstration project and issues that were raised as part of the scoping process. These include fish and wildlife, threatened and endangered species, aquatic resources (water quality and Coastal Zone Management), air quality, noise, hazardous materials, socioeconomics (safety, local employment and economics, bush air carriers), subsistence activities, and commercial fishing. The evaluation indicates that selection of the proposed action would result in no significant adverse impacts.

Selection of the no-action alternative would result in no new impacts on human health and the environment. The no-action alternative would, however, result in air carriers resuming transport of bypass and non-priority mail to the seven villages served by the hovercraft during the demonstration project. Environmental impacts normally associated with the use of aircraft for transporting mail would continue to occur.

In conclusion, selection of the proposed action would result in no significant adverse impacts on human health and the environment.

1.0 Purpose and Need, Proposed Action and Scope

1.1 Introduction

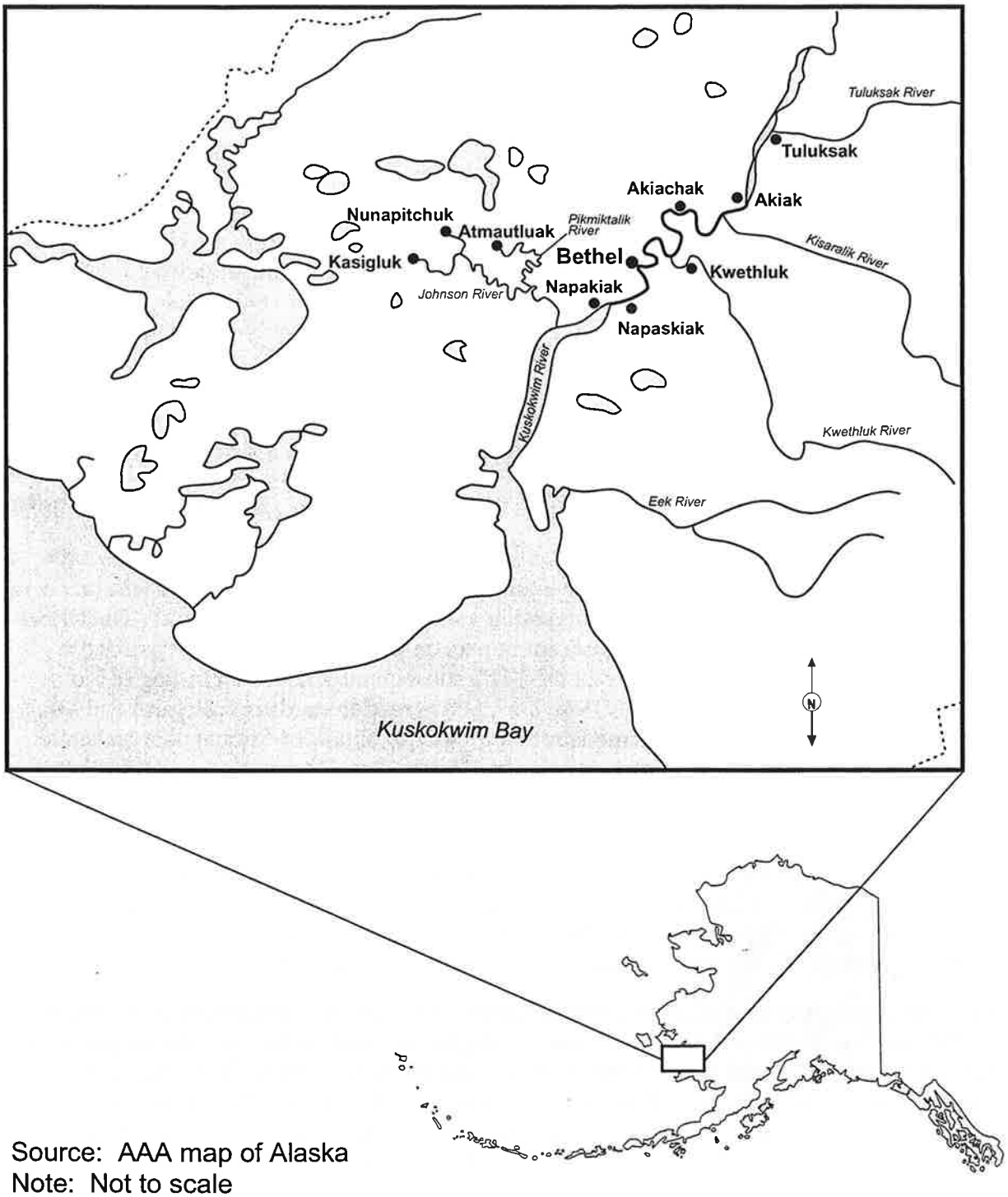
Based on an unsolicited proposal from Alaska Hovercraft Joint Venture, the U.S. Postal Service (USPS) conducted a two-year demonstration project from July 1997 through June 1999 to transport bypass and non-priority mail on a year-round basis by hovercraft (also known as air-cushioned vehicle), from the city of Bethel to eight remote Alaskan villages along the Kuskokwim, Johnson, and Pikmiktalik rivers. (For the purpose of this document, the term "bypass" mail refers to both bypass and non-priority mail.) The purpose of the project was to determine if hovercraft technology is a reliable method of transporting bypass mail in this region of Alaska. The two-year demonstration project partially replaced the daily transportation method of using fixed-wing airplanes. The contract carrier, Alaska Hovercraft Joint Venture, used the AP.1-88 hovercraft because of its size, noise levels, maneuverability, and other factors.

The demonstration project was environmentally reviewed in the July 1997 *Final Alaska Hovercraft Demonstration Project Environmental Assessment* (DPEA) (USPS, 1997a). The DPEA concluded that there would be no significant impact on the environment from use of the hovercraft to transport bypass mail, and the USPS subsequently issued a Finding of No Significant Impact (FONSI). In the FONSI, the USPS agreed to conduct ecological and safety monitoring during the two-year demonstration project, to obtain additional data on actual impacts of the hovercraft mail transport activity. The results of the monitoring effort are presented in the *Ecological Monitoring Summary Report* (USPS, 2000a) and the *Technology and Safety Assessment* (USPS, 2000b).

Near the completion of the first two years of the demonstration project, it was evident that more time was needed to evaluate hovercraft mail transport. A Categorical Exclusion for the continuation of the Alaska Hovercraft Demonstration Project was executed (USPS, 1999a), thereby extending the two-year demonstration project until June 30, 2000.

Based on the positive results of the demonstration project and the monitoring program, the USPS is now considering the action of transporting bypass mail by hovercraft on a permanent, year-round basis from the city of Bethel to nine Alaskan villages along the Kuskokwim, Johnson, and Pikmiktalik rivers (Figure 1.1). Pursuant to NEPA and USPS regulations, the USPS must consider the impact of major actions to human health and the environment. This obligation is commonly fulfilled by preparing an Environmental Assessment (EA).

This EA is referred to as a "Supplemental EA" (SEA), because the USPS has already evaluated the impacts associated with the transport of bypass mail by hovercraft to villages in the vicinity of Bethel (USPS, 1997a). The proposed action in the DPEA was to conduct a two-year demonstration project to transport bypass mail on a year-round basis from the city of Bethel to eight Alaskan villages.



Source: AAA map of Alaska
Note: Not to scale

UNITED STATES POSTAL SERVICE

PROJECT LOCUS MAP

USPS Transport of Alaska Bypass Mail by Hovercraft
Supplemental Environmental Assessment

Figure 1.1

Although regulations do not require the preparation of SEAs, the USPS determined that an SEA would be useful due to the substantial changes in the proposed action being considered. The proposed changes include the change in status of the program from a demonstration project to a permanent service and the addition of one village (Tuluksak) to the transport route. As a supplement, this SEA focuses on evaluating the impacts associated with these changes.

The SEA is organized as follows:

Section 1, Purpose and Need, Proposed Action and Scope, defines the purpose and need for the proposed action, the proposed action, and the scope of the SEA. It also provides information on the level of public involvement during the scoping process and demonstration project.

Section 2, Description of Alternatives, describes the proposed action and the no-action alternative, as well as other alternatives considered and dismissed as infeasible or impracticable.

Section 3, Affected Environment, describes existing conditions for relevant issues, prior to the implementation of the hovercraft demonstration project.

Section 4, Environmental Consequences, describes impacts of the proposed action and no-action alternatives for each of the topics included in Section 3.

Section 5, Comparison of Alternatives/Conclusions, presents conclusions and compares the environmental impacts of the proposed action and the no-action alternative.

Section 6, References, contains a list of references cited in the SEA.

The SEA was prepared in accordance with NEPA (42 USC 4321 *et seq.*), the Council on Environmental Quality regulations (40 CFR 1500), USPS regulations (39 CFR 775), and USPS guidelines provided in Handbook RE-6, "Facilities Environmental Guide."

1.2 Purpose and Need for Action

The project is needed to assist the USPS in meeting its mission in the Bethel area, which is to provide prompt, reliable, and efficient postal service within mail service standards. This commitment extends to providing service at the highest level of quality and at the lowest possible cost. Specifically, a proven method to transport bypass mail to rural areas surrounding Bethel is needed that will economically satisfy bypass mail service standards (USPS, 2000c).

1.3 Proposed Action

The USPS proposes to transport bypass mail by hovercraft on a year-round basis from the city of Bethel to nine Alaskan villages along the Kuskokwim, Johnson, and Pikmiktalik rivers. To optimize hovercraft mail transport operations and satisfy bypass mail service standards (USPS, 2000c) transport of bypass mail by hovercraft would be supplemented, as needed, with alternate modes of transportation such as trucks, snow machines, all-terrain vehicles, boats, and planes. These forms of transportation are common in the region, and are used to transport people, goods, and, for aircraft, priority mail. Alternate modes would be used on a limited basis to transport bypass mail, and would involve travel along and use of existing trails, rivers, ice roads, and airfields.

1.4 Public Involvement

Information and views from federal, state, and local agencies and the public are important in providing insight on the issues pertinent to the proposed action. The USPS believes that public involvement is fundamental to understanding the culture and tradition of the local people as well as understanding the environmental process and proposed actions. As a consequence, the USPS has made an extraordinary effort over the last three years to engage the native Alaskans, the local residents, the general public, and resource agencies. Toward this end, the USPS conducted numerous public meetings and information exchange opportunities in support of the DPEA, established a Hovercraft Committee and requested public and resource agency input into the ecological monitoring and SEA. The following sections outline the extensive public involvement efforts associated with the DPEA, Hovercraft Committee, ecological monitoring, and SEA.

1.4.1 DPEA

For the DPEA, notification to the public that the document was being compiled was advertised in *The Tundra Drums* on May 11, 1995 and posted on the bulletin boards at the Post Offices at all eight villages and Bethel. A notice that a public meeting would be held to discuss the demonstration project was published in *The Tundra Drums* in June 1995 and posted on the bulletin board at all nine Post Offices. In addition to the advertisement in *The Tundra Drums*, announcements of the public meeting were sent to radio stations KYUK, KNOM, and KICY, and invitations were sent out to federal, state, and local agencies and interested parties requesting information. Information was solicited from agencies in the form of scoping letters and meetings were held with representatives from the US Fish and Wildlife Service (USFWS), Yukon Delta National Wildlife Refuge, and Alaska Department of Fish and Game (ADFG). Comments from the public were solicited through a preliminary scoping letter (June 6, 1995). A public meeting was held on July 6, 1995 in Bethel. A translator was present, and headphones were made available to have simultaneous translation of the speakers into the native language of Yupik. In addition to verbal comments received during the public meeting, letters indicating concern were received.

Based on the concerns expressed by the public, the USPS, during 1996, conducted further evaluations of the project. As a result of that re-evaluation, the USPS refined its proposed action. A final scoping letter was distributed for the refined project (January 23, 1997). On April 3, 1997, the USPS and Alaska Hovercraft Joint Venture met with the Bethel Chamber of Commerce to answer questions about the demonstration project. Meetings were held with federal and state resource agencies and with the Association of Village Council Presidents (AVCP) on May 16, 1997. A public meeting was also held in Bethel on May 16, 1997, and a radio interview was broadcast on KYUK. In addition, public meetings were held in Atmautluak, Kasigluk, Napakiak, Napaskiak, and Nunapitchuk on May 19 and 20, 1997. Inclement weather resulted in postponing meetings in Akiachak, Akiak, and Kwethluk until June 11, 1997. These meetings were held to address questions on the draft DPEA (USPS, 1997b). Written and verbal comments on the Draft DPEA were taken into account in the final DPEA (USPS, 1997a).

1.4.2 Hovercraft Committee

An additional avenue of continued public involvement over the past three years was the use of a voluntary Hovercraft Committee, formed prior to the beginning of the demonstration project.

The Committee's purpose has been to monitor actions of the demonstration project, suggest operational changes to mitigate potential problems, and advise the USPS of any other concerns regarding the project. The Committee has served as an informal conduit of information from federal, state, and local representatives on the operational and environmental performance of the hovercraft. The USPS selected a representative cross section of the stakeholders, giving priority consideration for membership on the Committee to those entities that indicated concern during the scoping and preparation of the DPEA. Invitations were extended to regulatory agencies, the AVCP, and representatives of Bethel and each of the eight original villages (see Appendix A for a complete list of the Hovercraft Committee Members). The Committee has been chaired by the USPS and has met each month in Bethel throughout the duration of the demonstration project. Teleconferencing was made available for those members who could not attend in person. Public attendance and comment was encouraged at these meetings.

1.4.3 Ecological Monitoring

The successful scoping of the monitoring effort was aided by considerable input from the local people and regulatory agencies. To guide the ecological monitoring efforts and to ensure that the monitoring reflected the concerns expressed by the people and agencies, the USPS prepared a programmatic monitoring plan to investigate impacts to wildlife, fish and subsistence [*Alaska Hovercraft Demonstration Project Ecological Monitoring Plan,* (USPS, 1997)]. Upon completion of the monitoring described in the 1997 Monitoring Plan, the USPS summarized the results in a report entitled, *United States Postal Service Alaska Hovercraft Demonstration Project Ecological Monitoring 1997-98 Summary Report* (USPS, 1998). A second monitoring plan (1999 Monitoring Plan) was developed prior to the 1999 ecological monitoring [*Alaska Hovercraft Demonstration Project Ecological Monitoring Plan* (USPS, 1999b)] to refine and focus the second year (1999) of monitoring based upon local input and the results of the monitoring conducted during 1997-98.

1997 Monitoring Plan

Prior to preparing the 1997 Monitoring Plan, a meeting was held in 1997 with representatives of the Alaska Department of Fish and Game (ADFG) to discuss possible methods to be used in the monitoring. Following this meeting, a number of telephone conferences were held during July and August 1997 with ADFG and the U.S. Fish and Wildlife Service (USFWS) to further refine the studies that were to be detailed in the 1997 Monitoring Plan. The draft and final 1997 Monitoring Plans were reviewed and coordinated with interested parties, including the entire Hovercraft Committee. Team members met with ADFG and USFWS representatives in August 1997 with the purpose of obtaining input into the design of the monitoring studies to be conducted in 1998. The entire monitoring team attended a public meeting in 1998 for the purpose of explaining the studies and obtaining feedback. The monitoring team leader attended a Hovercraft Meeting in May 1998 for similar purposes as well as to give a briefing on the results obtained to that date. During 1998, the team members conducted interviews with a number of village representatives over the telephone as well as in person in the villages to obtain feedback on the studies, hear concerns, and to gain assistance with choosing appropriate locations for conducting the studies that year.

1997-1998 Monitoring Plan

The draft version of the 1997-98 Summary Report (USPS, 1998) was also coordinated with the villages and Hovercraft Committee. The final version of the report was reviewed by village residents, Hovercraft Committee, and more than 40 people who sent in an issue report regarding an ecological matter. Additionally, the results of the 1997-98 monitoring efforts were

presented to the villages in February 1999 using an interpreter. Comments received on this report were considered in the development of the 1999 Monitoring Plan (USPS, 1999b).

1999 Monitoring Plan

The 1999 Monitoring Plan was coordinated with the same individuals and organizations as was the 1997 Monitoring Plan, as well as the more than 40 people who each sent in an issue report or who requested a copy during village presentations held in February 1999. Additional telephone conferences were held with ADFG and USFWS regarding technical methodologies for the 1999 monitoring. Team members met with ADFG and USFWS representatives in 1998 and 1999 with the purpose of obtaining input into the design of the monitoring studies to be conducted in 1999. Comments received on the plans and in meetings or issue reports were incorporated into the final studies that were conducted. Feedback on the proposed studies and plans was also obtained during numerous special meetings and interviews held for that purpose. As was done in 1998, the entire monitoring team attended a public meeting in 1999 for the purpose of explaining the studies and obtaining feedback. Team members also conducted interviews with village representatives over the telephone as well as in person in the villages, as was done in 1998, to obtain feedback on the studies, hear concerns, and to gain assistance with choosing appropriate locations for conducting the studies that year.

1.4.4 SEA

Notification to the public that this SEA was being prepared was advertised in *The Tundra Drums* on Feb 16, 2000 and posted on the bulletin boards at the Post Offices at Bethel and all nine villages on January 26, 2000 (see Appendix B for a copy of the Notice of Intent). Information was also solicited from agencies in the form of scoping letters, released on January 19, 2000 (see Appendix C for example scoping letters and a list of agencies and individuals contacted). Responses to scoping letters are presented in Appendix D. Information received from the public and the agencies was used in developing the scope for the SEA. This input supplemented previous input received as a result of the considerable public involvement efforts undertaken during the scoping of the DPEA and during the demonstration project. Comments on the draft SEA and USPS responses are presented in Appendix E.

1.5 Scope of the SEA

Considerable public input was used in scoping the issues for this document. This included input received during: 1) the development of the DPEA; 2) monthly meetings of the Hovercraft Committee; 3) the demonstration project monitoring activities; and 4) the scoping of the SEA. The DPEA concluded that there would be no significant impacts associated with the two-year demonstration project (USPS, 1997a). The USPS re-considered all of the issue addressed in the DPEA and determined that certain issues do not require additional analysis. This determination was based on review of new information received during the demonstration project and the features of the proposed action. Issues that will not be discussed further include topography, soils, and geology, vegetation and wetlands, aquatic resources (hydrology and floodplains), prime farmland, utilities, mail transport service, socioeconomics (population, non-mail-related transportation, land use, aesthetics, community services, and environmental justice), and historical, archaeological, and cultural resources. For these issues, the Finding of No Significant Impact (FONSI) still applies and decision makers and the public can refer to and use the information presented in the DPEA (USPS, 1997a).

The SEA supplements the findings of the DPEA by addressing the impact of the proposed action on issues that were monitored during the demonstration project and issues that were raised as part of the scoping process for the SEA. These include fish and wildlife, threatened and endangered species, aquatic resources (water quality and Coastal Zone Management), air quality, noise, hazardous materials, socioeconomics (safety, local employment and economics, bush air carriers), subsistence activities, and commercial fishing.

For the purposes of the SEA, it is assumed that the hovercraft would be used exclusively, a conservative scenario with respect to evaluating impacts and consistent with the DPEA. The USPS determined that it is not necessary to address environmental impacts associated with the alternate modes of transport (e.g., trucks, snow machines, all-terrain vehicles, boats and planes). These modes are common forms of transport that would be used on existing routes and on an incidental basis only. Any environmental impacts associated with them are already understood and accepted by the public.

2.0 Description of Alternatives

2.1 Proposed Action

The proposed action is to transport bypass mail by hovercraft on a permanent, year-round basis from the city of Bethel to nine Alaskan villages along the Kuskokwim, Johnson, and Pikmiktalik rivers. The nine villages are Atmautluak, Kasigluk, Napakiak, Napaskiak, Nunapitchuk, Akiachak, Akiak, Kwethluk, and Tuluksak (Figure 1.1). Alternate modes, such as trucks, snowmobiles, boats, all terrain vehicles, and planes, would be used on an incidental basis to supplement hovercraft transport. First-class, express, and priority mail would continue to be primarily transported by aircraft.

The USPS will need to contract for the transport of mail by hovercraft in order to move from the demonstration to the proposed operational phase. The Request for Proposals (RFP) for hovercraft mail service issued by the USPS (USPS, 2000d) does not stipulate the type of hovercraft to be used, the location in Bethel at which it would be housed, specific landing sites at the nine villages, transport schedules, or transport routes. For the purpose of the SEA and for the RFP, it is assumed that the selected contractor will use a hovercraft that is similar (i.e., in size, design, noise and emissions generation, and operational characteristics) to the AP.1-88 used during the demonstration project. It is also assumed that the approach from the river and land on which the hovercraft and supporting facilities will be housed will have been previously disturbed. Furthermore, it is assumed that the selected contractor will choose landing sites that have been previously disturbed by local villagers and that are located at similar distances from the villages as the ones used during the demonstration project. The use of previously disturbed sites is important because it alleviates the potential for several problems. For example, with the use of a disturbed site to house the hovercraft and landing areas that are already established, there will likely be no adverse effects to historic properties (Alaska Office of History and Archeology, 1997).

If the selected contractor's proposal violates any of the assumptions listed above, the USPS will evaluate the need to conduct additional environmental review. The selected contractor will be responsible for complying with all applicable laws and regulations, including those related to health, safety, and the environment. Mail transport operations, possible schedule and routes, and characteristics of the AP.1-88 are discussed in detail below.

2.1.1 Mail Transport Operations

The hovercraft would be maintained and operated at a facility located in Bethel. Mail would be transported between the airport in Bethel and the selected contractor's hovercraft facility by truck. Marine diesel fuel for the hovercraft would be delivered daily by truck from the local fuel storage tanks. No fuel would be stored on-site. Hovercraft facilities would include a hangar, small office, waiting area, and a ramp that would lead to the Kuskokwim River.

While transporting mail, the hovercraft would stay within the banks of the Kuskokwim, Johnson, and Pikmiktalik rivers, and adjacent tributaries and sloughs. The hovercraft would be operated at speeds commensurate with weather and field conditions. Speed would be reduced during periods of heavy river traffic and inclement weather, and at bends in the rivers.

Sections of river are opened a short time for commercial fishing, an activity referred to as a Commercial Opening. Hovercraft operations would be suspended in sections of river where Commerical Openings are taking place from one hour before to one hour after the Opening.

At each village, a landing site would be designated for the hovercraft to off-load mail. Hovercraft approach, landing, and exit procedures would depend on site-specific features. Based on the experience gained during the demonstration project, the landing sites selected at each village would already have been disturbed by local villagers landing their boats. No docks or ramps would need to be constructed. Landing sites selected by the contractor would be adequately spaced from residences in order to allow the hovercraft to comply with the Federal Aviation Administration (FAA) and Federal Transit Administration (FTA) recommended maximum noise level criteria. If a landing site or route back to the village were flooded in the spring, an alternate landing site that was previously disturbed would be substituted.

An agent would meet the hovercraft at the river's edge to accept the mail for transport to the villagers and to transfer outgoing mail to the hovercraft. As there are typically only a few vehicles in each village, it is anticipated that the agent either would have access to a vehicle or would use an all-terrain vehicle, tractor, or snowmobile and trailer to haul the mail and any other freight, as is done with shipments arriving by airplane or barge. Access from the landing sites to each village would be over established trails, roads, or waterways. Non-priority mail would be delivered to the post office, while bypass and any other freight would be delivered directly to the consignee.

To optimize hovercraft mail transport and economically satisfy mail service standards (USPS, 2000c), transport of bypass mail by hovercraft would be supplemented as needed with alternate modes of transportation such as trucks, snow machines, boats, all terrain vehicles, and planes. These alternate modes of transport would use trails, rivers, ice roads, and airfields currently used to transport people, goods, and, for aircraft, priority mail. For the purposes of the SEA, it is assumed that the hovercraft would be used exclusively, a conservative scenario with respect to evaluating impacts and consistent with the DPEA.

2.1.2 Hovercraft Schedule

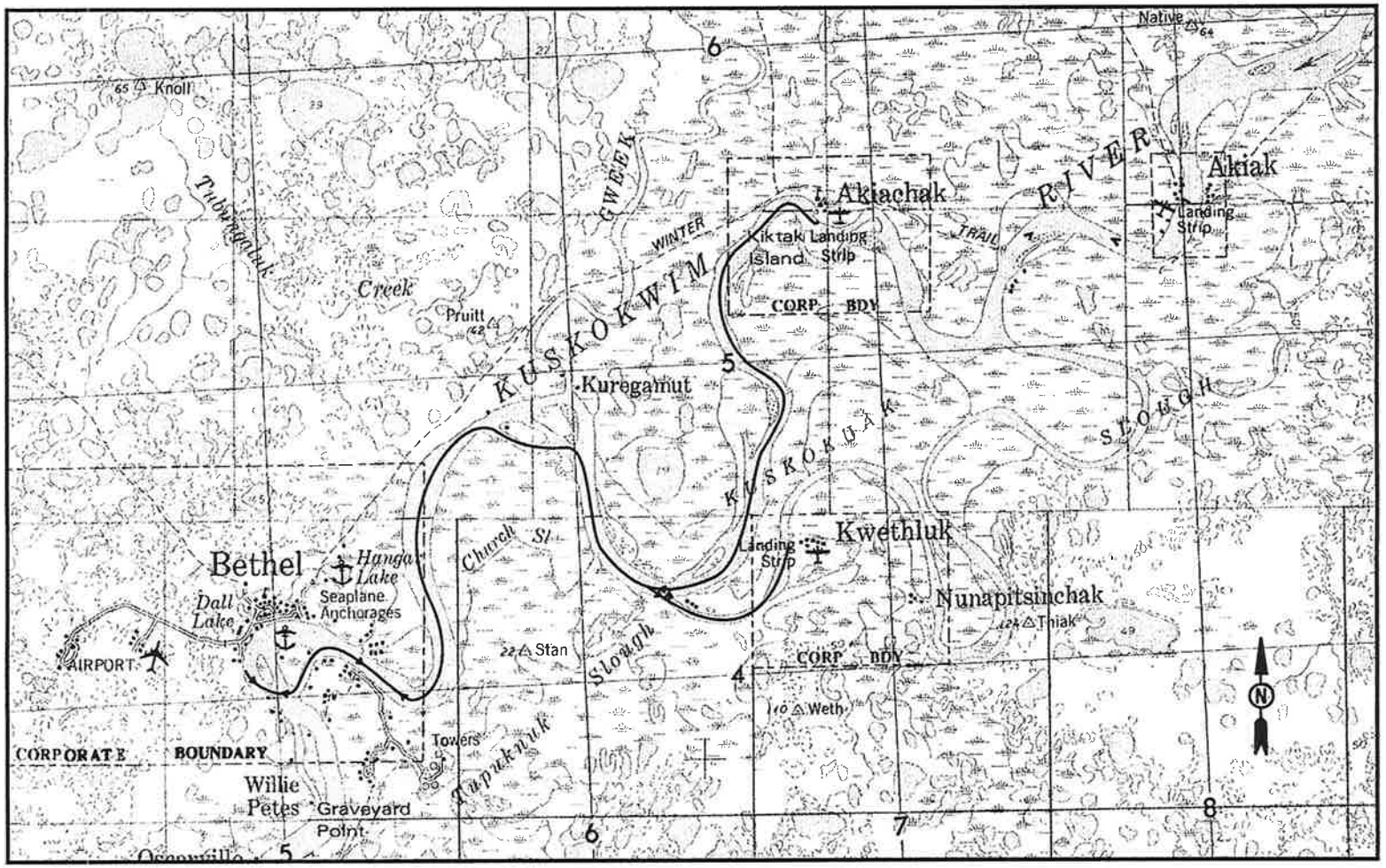
A possible schedule for the hovercraft is provided in Table 2.1. Possible routes are provided in Figures 2.1 to 2.4. Ultimately, the USPS would determine the actual schedule and routes. Regardless of the transport schedule, the hovercraft would return to Bethel at the end of each day.

Under the operating schedule in Table 2.1, the hovercraft would travel from Bethel up the Kuskokwim River on Monday to transport mail to Akiachak and Kwethluk (Figure 2.1). On Tuesday and Thursday the hovercraft would depart Bethel and proceed down the Kuskokwim River and up the Johnson and Pikmiktalik rivers to transport mail to Atmautluak, Kasigluk, Napakiak, Napaskiak, and Nunapitchuk (Figure 2.2). On Wednesday and Friday the hovercraft would travel from Bethel up the Kuskokwim River to transport mail to Akiachak, Akiak, Kwethluk, and Tuluksak (Figures 2.3 and 2.4).

Table 2.1 Possible Hovercraft Bypass Mail Transportation Schedule

Depart	Time	Arrive	Time
Monday			
Bethel	9:30 AM	Kwethluk	10:10 AM
Kwethluk	10:30 AM	Akiachak	10:45 AM
Akiachak	11:05 PM	Bethel	11:55 AM
Tuesday/Thursday			
Bethel	9:30 AM	Napaskiak	9:40 AM
Napaskiak	10:00 AM	Napakiak	10:15 AM
Napakiak	10:35 AM	Atmautluak	12:00 PM
Atmautluak	12:20 PM	Nunapitchuk	2:10 PM
Nunapitchuk	2:30 PM	Kasigluk	2:50 PM
Kasigluk	3:20 PM	Bethel	5:30 PM
Wednesday/Friday			
Bethel	9:30 AM	Kwethluk	10:10 AM
Kwethluk	10:30 AM	Akiak	11:00 AM
Akiak	11:20 AM	Tuluksak	12:05 PM
Tuluksak	12:25 PM	Akiachak	1:40 PM
Akiachak	2:00 PM	Bethel	2:50 PM

Note: all times are approximate



Source: U.S. Geological Survey 1980, Bethel
Route: Alaska Hovercraft Ventures

0 5 10 miles

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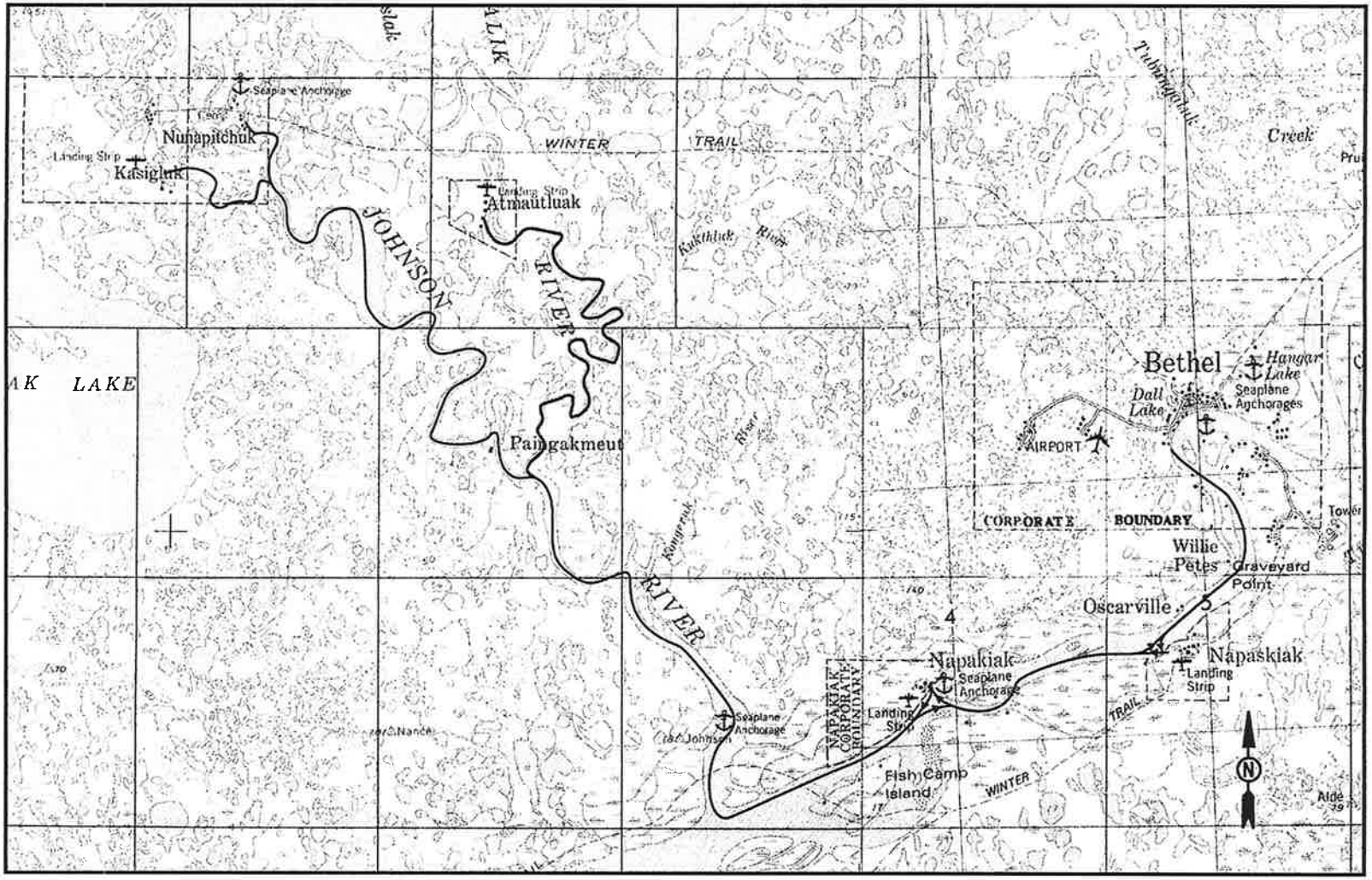
POSSIBLE MONDAY ROUTE

USPS Transport of Alaska Bypass Mail by Hovercraft
Supplemental Environmental Assessment

Figure 2.1



Source: U.S. Geological Survey 1980, Bethel and Baird Inlet
Route: Alaska Hovercraft Ventures

0 5 10 miles

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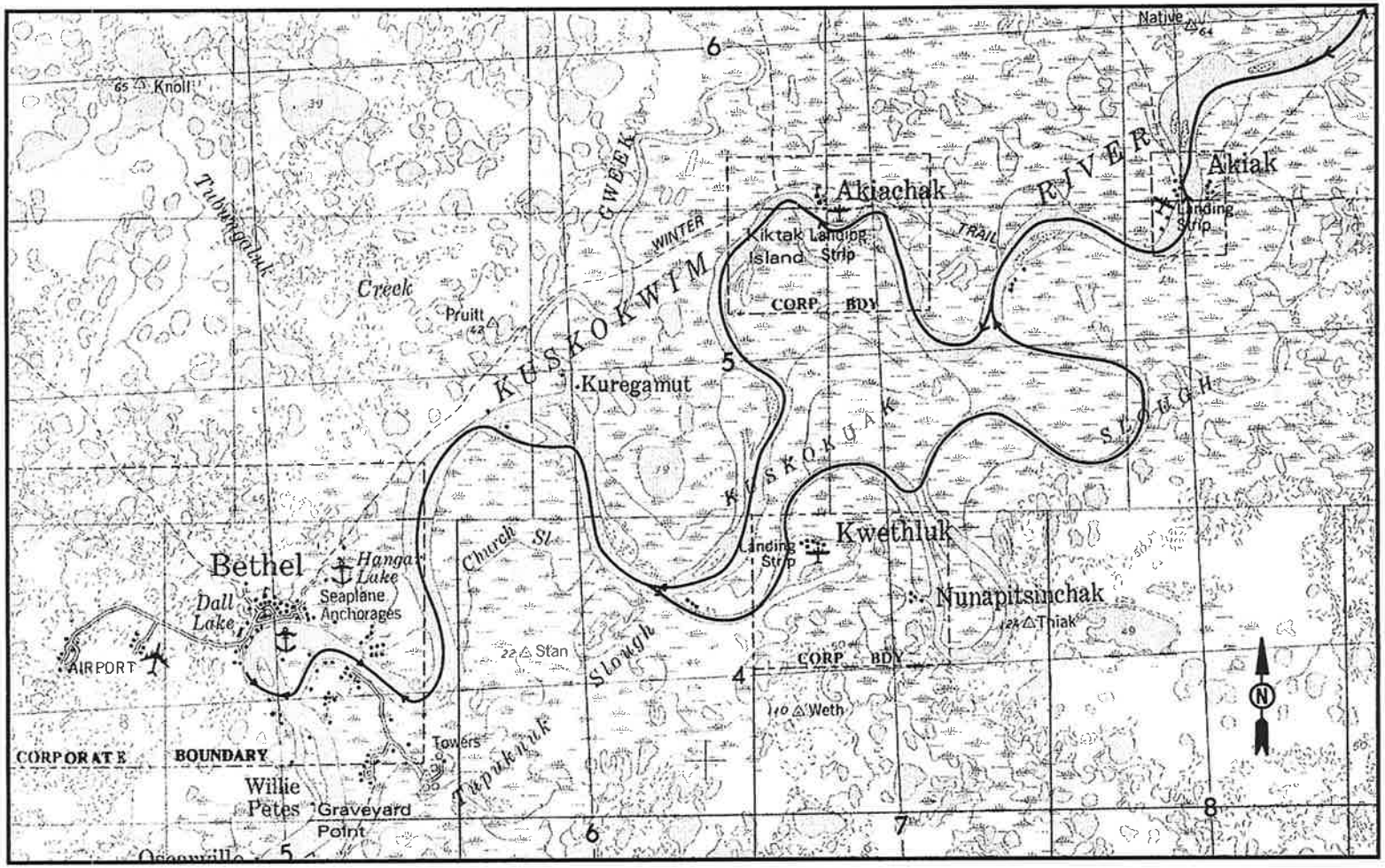
POSSIBLE TUESDAY / THURSDAY ROUTE

USPS Transport of Alaska Bypass Mail by Hovercraft
Supplemental Environmental Assessment

Figure 2.2



Source: U.S. Geological Survey 1980, Bethel
Route: Alaska Hovercraft Ventures

0 5 10 miles

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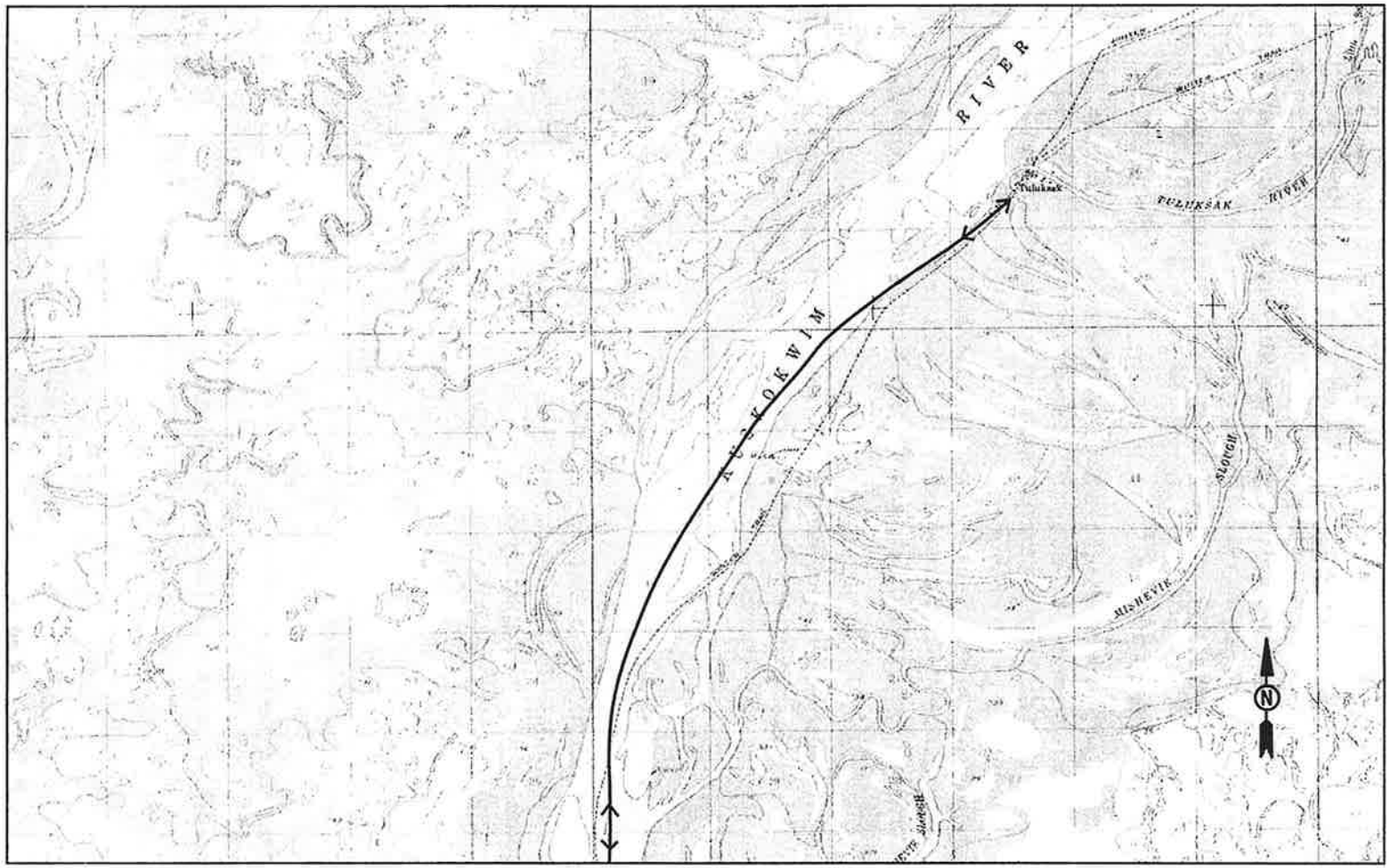
POSSIBLE WEDNESDAY / FRIDAY ROUTE - PART 1

USPS Transport of Alaska Bypass Mail by Hovercraft
Supplemental Environmental Assessment

Figure 2.3



Source: U.S. Geological Survey 1980, Bethel
Route: Alaska Hovercraft Ventures

0 2.5 5 miles

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POSSIBLE WEDNESDAY / FRIDAY ROUTE - PART 2

USPS Transport of Alaska Bypass Mail by Hovercraft
Supplemental Environmental Assessment

Figure 2.4

Experience gained during the demonstration project helped in the development of transit routes for the hovercraft. When leaving for deliveries to the villages of Atmautluak, Kasigluk, Napakiak, Napaskiak, and Nunapitchuk, the hovercraft would head south down the Kuskokwim River, eliminating the need to travel past Bethel (Figure 2.2). On delivery trips to Akiachak, Akiak, Kwethluk and Tuluksak the hovercraft would again head south and turn northeast up the Kuskokwim River, staying east of the largest island and approximately 0.5 mile from Bethel (Figure 2.1). These same routes would be followed on return trips.

2.1.3 Hovercraft Design Characteristics

As indicated above, the proposed action assumes a hovercraft vehicle that is similar (i.e., in design, size, operational characteristics, and noise and emissions generation) to the British Hovercraft model AP.1-88 used during the demonstration project (Figures 2.5 and 2.6). The AP.1-88 has an overall width and length of approximately 36 feet by 70 feet and is powered by two Deutz 390 horsepower (hp) marine diesel engines (model BF10L413FC), which provide lift, and two Deutz 500 hp diesel marine engines (model BF12L413FC), which propel the craft. The AP.1-88 can obtain a cruising speed of 50 miles per hour (mph) and has a load capacity (passengers plus freight) of 8 tons.

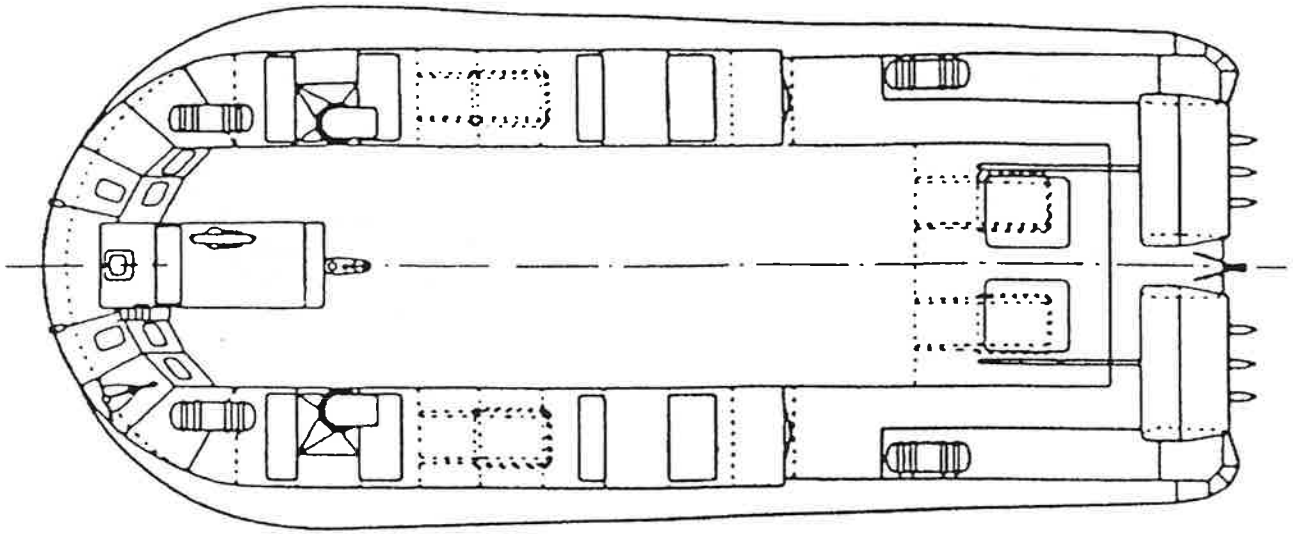
The AP.1-88 hovercraft has successfully demonstrated its operational capabilities on the river in the two seasonal modes of operation, water in summer and ice in the winter. Initially, the Arctic environment presented problems but the contractor has effectively addressed them over time (USPS, 2000b).

2.2 Other Action Alternatives

The USPS has considered alternatives to the proposed action of using a hovercraft, supplemented by alternate modes, to improve the reliability of mail transport to regional villages, while economically satisfying mail service standards. These alternatives were considered in light of their ability to meet the purpose and need of the project.

The USPS considered the possibility of exclusively using trucks in the winter, boats in the summer, and planes when the river cannot be navigated (e.g., during ice-out or ice-up). The use of such forms as primary transport for each season would be administratively problematic and would not improve transportation consistency. For example, river ice conditions can vary substantially between villages to the extent that scheduled transport primarily by truck is unreliable, and planes are sensitive to weather conditions and cannot be used during spring thaw when the airfields are too muddy for landings. In addition, boats that would be capable of carrying loads equivalent to that of the hovercraft may not be able to reach landing sites due to the shallow water. Alternatively, the use of smaller boats would require the maintenance of a fleet of transport craft.

Different types of hovercraft, including the C-7 and LACV-30, were considered in the DPEA. For various reasons, including noise level, size, reliability, and operational characteristics, the USPS determined that these crafts, as configured, were not suited for the transport of mail in this environment. Therefore, alternative hovercraft types were not evaluated further because they were adequately considered in the DPEA (USPS, 1997a). If the selected contractor's proposal violates this conclusion, the USPS will evaluate the need to conduct additional environmental review.



Scale

0 1 2 3 4 5 6 7 8 9 10

Note: Overall length 80' overall width 36'

Source: D.F. Dickens Assoc. Ltd, et al. Stikine/Iskut River Hovercraft Operations: Environmental Summary prepared for Cominco Metals, Vancouver, June 14, 1990

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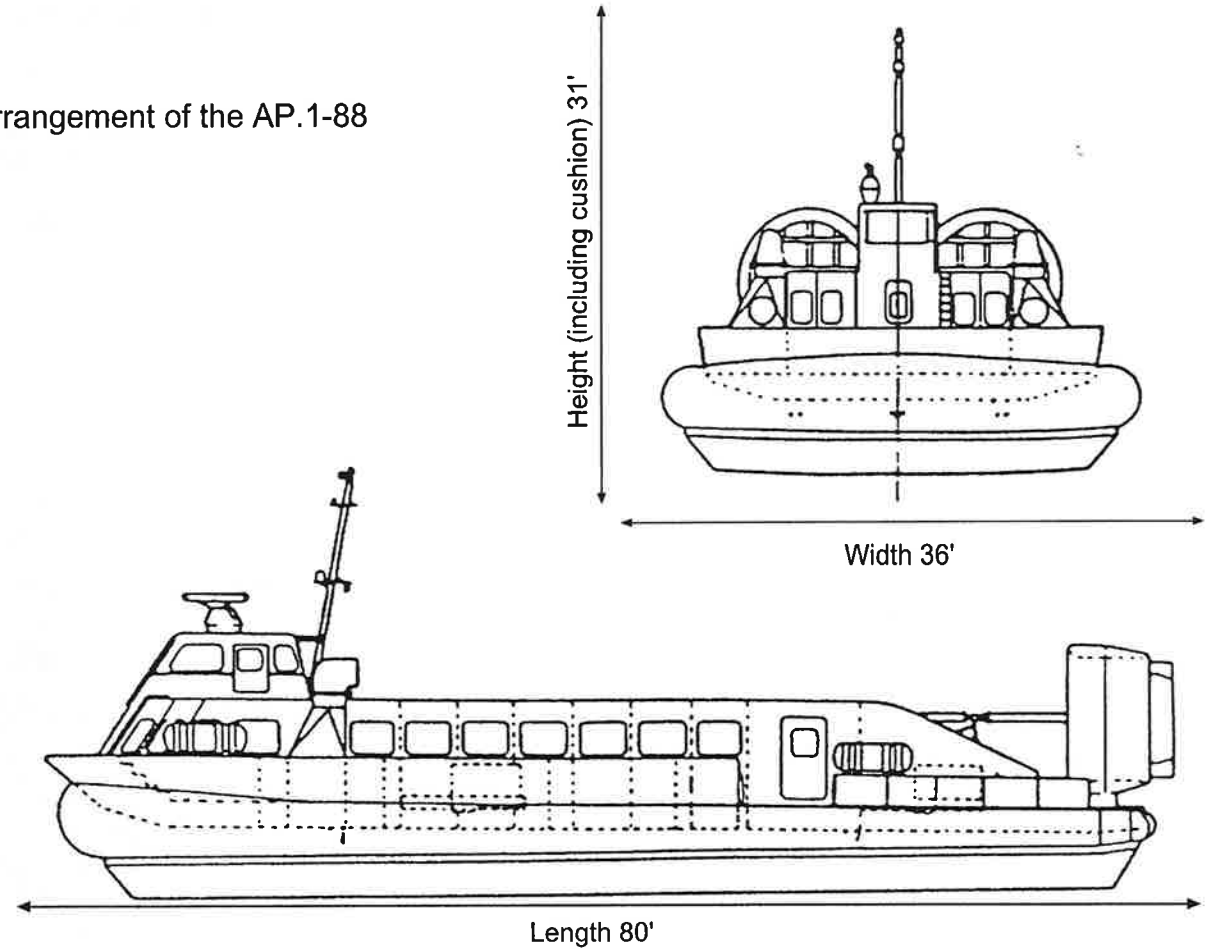
AP.1-88 HOVERCRAFT - TOP VIEW

USPS Transport of Alaska Bypass Mail by Hovercraft
Supplemental Environmental Assessment

Figure 2.5

General arrangement of the AP.1-88



Scale

0 1 2 3 4 5 6 7 8 9 10

Source: D.F. Dickens Assoc. Ltd, et al. Stikine/Iskut River Hovercraft Operations: Environmental Summary prepared for Cominco Metals, Vancouver, June 14, 1990

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AP.1-88 HOVERCRAFT - FRONT AND SIDE VIEWS

USPS Transport of Alaska Bypass Mail by Hovercraft
Supplemental Environmental Assessment

Figure 2.6

2.3 No-Action Alternative

Under the no-action alternative, bypass mail would be transported daily by plane, the system practiced before the demonstration project. All bypass mail would be flown from Anchorage to Bethel Airport, transferred, and flown by small engine aircraft to each village. This procedure would require repeated trips to the villages by the air carrier, as compared to the containerized bulk transport performed by the hovercraft. At the village landing strip runway, a bush carrier-hired agent would receive the mail for distribution. As the agent meets the aircraft, he or she would transfer mail to the bush carrier for transport elsewhere.

3.0 Affected Environment

The purpose of this section is to describe existing conditions prior to the initiation of the demonstration project (i.e., when bypass mail was transported by aircraft). This information was presented in detail in the DPEA (USPS, 1997a) and summarized here. The USPS re-considered all of the issues addressed in the DPEA and determined that certain issues do not require additional analysis. This determination was based on review of new information received during the demonstration project and the features of the proposed action. Issues that will not be discussed further include topography, soils, and geology, vegetation and wetlands, aquatic resources (hydrology and floodplains), prime farmland, utilities, mail transport service, socioeconomics (population, non-mail-related transportation, land use, aesthetics, community services, and environmental justice), and historical, archaeological, and cultural resources. For these issues, the Finding of No Significant Impact (FONSI) still applies and decision makers and the public can refer to and use the information presented in the DPEA (USPS, 1997a). The SEA supplements the findings of the DPEA by addressing the impact of the proposed action on issues monitored during the demonstration project and issues raised as part of the SEA scoping process.

Transport of bypass mail to Tuluksak was not part of the demonstration project, but is being evaluated in this SEA as part of the proposed action. Tuluksak is located about 20 miles north of Akiak, on the Kuskokwim River (Figure 1.1). The habitats at Tuluksak are similar to those found at Akiak (ADFG, 2000a), a village which was evaluated in the DPEA. The topography and other physical features are similar as well. Most of the information provided in the DPEA and summarized here is applicable to Tuluksak and the stretch of the Kuskokwim River between Akiak and Tuluksak. Important differences between the project area addressed in the DPEA and the addition to the project area included in the proposed action are noted.

3.1 Fish and Wildlife

Information on the fish, mammal, and bird species that are important to the local people is summarized below. Appendix F provides scientific names for species mentioned in the text.

3.1.1 Fish

The Kuskokwim is one of the largest rivers in Alaska and provides important fish habitat throughout its drainage. Within the project area, the Kuskokwim River serves as an important migration corridor for anadromous species (fish that mature in salt water but spawn in fresh water) and the Kuskokwim, Johnson and Pikmiktalik rivers provide year-round habitat for resident species. Anadromous and resident species important in subsistence, commercial, or sport fisheries in the project area include chum, coho, sockeye, pink, and chinook salmon, sheefish, humpback whitefish, round whitefish, Arctic grayling, blackfish, and northern pike.

Chum and coho are the most common salmon in the Kuskokwim River drainage, and their numbers are considered to be roughly equal (C. Burkey – ADFG, pers. comm.). The 10-year commercial catch averages are 500,000 for chum and 330,000 for coho.

The timing and duration of life history stages vary by salmon species but all follow the same general pattern. Salmon do not spawn in the mainstream Kuskokwim, Johnson, or Pikmiktalik rivers, but use the Kuskokwim River, including the stretch from Akiak to Tuluksak, primarily as a migration corridor. Adults migrate upstream, principally during summer, to clear, gravel-bottomed tributaries where they spawn in summer or fall. In the spring, salmon smolts migrate down the Kuskokwim River to the ocean. Smolts are juvenile salmon that are undergoing rapid physiological change to adapt to life in seawater.

Whitefish, pike, sheefish, and blackfish are resident fish species of the Kuskokwim, Johnson, and Pikmiktalik rivers. More specific behavioral information on important fish in the Kuskokwim drainage is provided in the DPEA (USPS, 1997a).

3.1.2 Mammals

The Kuskokwim, Johnson, and Pikmiktalik river corridors in the project area are not heavily populated by large mammals. This is largely due to human activity (USFWS, 1988). A study of fish and wildlife use of the Kuskokwim and Johnson rivers by AGRA Earth and Environmental confirmed that large mammals are relatively rare along the shores of both rivers (AGRA, 1998). The study, entitled *Hovercraft Impact Assessment*, was prepared for the Calista Elders Council.

Use of boats and snowmobiles disturbs mammals in the vicinity of the rivers during both ice and ice-free periods. Probably the most important reason the areas do not support greater numbers of large mammals is due to hunters' easy access by river. Since these conditions are not likely to change in the future, animal populations will continue to be depleted. Nevertheless, large animals, including grizzly bear, black bear, caribou, and moose, occasionally occur along the rivers.

Furbearer populations are also depleted along the river corridors. One exception is beaver. The population of beaver in the project area is very large (ADFG, 2000a). Beaver occupy all available habitats, including those considered to be of marginal quality. Low fur prices and the lack of incentive to trap have likely contributed to the growth in the beaver population. Other furbearers that may be found in the river corridors within the project area include lynx, red fox, weasel, pine marten, river otter, beaver, and mink. Beluga whales occasionally travel up the Kuskokwim River, but they are not known to go upriver as far as the project area (USFWS, 1988).

One of the differences between the two communities is the increased presence of caribou around Tuluksak. The Mulchatna herd is expanding its winter range (ADFG, 2000a). Of the three herds that use the Yukon National Wildlife Refuge (Kilbuck, Mulchatna and North Arctic), the Mulchatna is the only one that resides in or migrates through the project area (Anderson, et al., 1992; USFWS, 1997). Near Tuluksak, caribou have been seen close to and crossing the river (ADFG, 2000a).

3.1.3 Birds

The USFWS considers the Kuskokwim River to be a major water resource associated with, but not part of, the Yukon National Wildlife Refuge (USFWS, 1988). During the hovercraft demonstration project monitoring efforts, numerous flocks of terns, eagles, ducks, geese, gulls, and shorebirds were observed (USPS, 2000a). Waterbirds use the Kuskokwim River system during the entire ice-free period of May to September. Waterfowl typically arrive in the area in the spring shortly after ice-out in May. Breeding and nesting occur in May and June, followed

by brood rearing. Depending on the species, fledging occurs during July and August, followed by the fall staging period and migration before ice-up in October. The rivers provide staging habitat for all waterfowl during the migratory season. A more detailed description of waterfowl and other bird species found within the project area are presented in the DPEA (USPS, 1997a).

3.2 Threatened and Endangered Species

There are no listed threatened and endangered species within the project area (USFWS, 2000).

3.3 Aquatic Resources

3.3.1 Water Quality

The Kuskokwim River originates in the Alaska Range and flows southwestward to the Bering Sea. The river flows through forest, woodland, moist tundra, and muskeg of the Intermontane Plateaus, which are underlain by diverse sedimentary intrusive rocks and alluvial deposits. From Tuluksak, the river passes through a region of mature topography and low relief characterized by oxbow lakes, meanders, and sloughs. Major tributaries include the Pikmiktalik and Johnson rivers and the Kuskokwim Slough. The Kuskokwim River at Bethel has a drainage area of 42,000 square miles (USACE, 1988).

The Kuskokwim River exhibits extensive natural bank erosion and high sediment loading from continuous lateral movement of the river channel (AGRA, 1998). Suspended sediment levels greater than 100 mg/L are not unusual (ADEC, 1996). The suspended sediment concentration will fluctuate with changes in flow and erosion rates. During low flow periods, the river is least likely to transport coarse sediment, but total suspended solids may increase due to increased populations of algae.

3.3.2 Coastal Zone Management

The villages to receive mail service by hovercraft are within the Cenaliulriit Coastal Zone Management (CZM) District. The State of Alaska's CZM program sets standards and develops procedures to guide coastal development throughout the state (Coastal Management Program, 1999). It is a land use planning tool to ensure that coastal resources are preserved, protected, enhanced, and, where necessary, restored. The program details standards for different land uses, including transportation facilities and navigational facilities and systems.

3.4 Air Quality

The U.S. Environmental Protection Agency (USEPA) under provisions of the Clean Air Act and later amendments has issued National Ambient Air Quality Standards (NAAQS) for six criteria pollutants. The pollutants and associated standards are listed in Table 3.1. A review of the entire state of Alaska shows that only particulate matter and carbon monoxide exceed the standard anywhere in the state. These areas are far removed from the hovercraft route. The area surrounding Bethel is in attainment for all criteria pollutants as determined by the review of electronic databases supplied by the USEPA which were last updated in August of 1999.

Table 3.1 National Ambient Air Quality Standards

Pollutant	Standard Value		Standard Type
Carbon Monoxide (CO)			
8-hour Average	9 ppm	(10 mg/m^3)	Primary
1-hour Average	35 ppm	(40 mg/m^3)	Primary
Nitrogen Dioxide (NO_2)			
Annual Arithmetic Mean	0.053 ppm	(100 $\mu g/m^3$)	Primary & Secondary
Ozone (O_3)			
1-hour Average*	0.12 ppm	(235 $\mu g/m^3$)	Primary & Secondary
8-hour Average**	0.08 ppm	(157 $\mu g/m^3$)	Primary & Secondary
Lead (Pb)			
Quarterly Average		1.5 $\mu g/m^3$	Primary & Secondary
Particulate < 10 micrometers (PM-10)			
Annual Arithmetic Mean		50 $\mu g/m^3$	Primary & Secondary
24-hour Average		150 $\mu g/m^3$	Primary & Secondary
Particulate < 2.5 micrometers (PM-2.5)**			
Annual Arithmetic Mean		15 $\mu g/m^3$	Primary & Secondary
24-hour Average		65 $\mu g/m^3$	Primary & Secondary
Sulfur Dioxide (SO_2)			
Annual Arithmetic Mean	0.03 ppm	(80 $\mu g/m^3$)	Primary
24-hour Average	0.14 ppm	(365 $\mu g/m^3$)	Primary
3-hour Average	0.50 ppm	(1300 $\mu g/m^3$)	Secondary

* The ozone 1-hour standard applies only to areas that were designated non-attainment when the ozone 8-hour standard was adopted in July 1997. This provision allows a smooth, legal, and practical transition to the 8-hour standard.

** Due to legal challenges, the PM-2.5 and 8-hour ozone standards are not enforceable at this time, but should be implemented in the near future.

Source: U.S. Environmental Protection Agency

There are no large industrial complexes nearby. As such, it can be concluded that air quality near the Bethel area and in the Kuskokwim River Basin is not significantly impacted at this time.

It is also probable that the hovercraft operations in the Bethel area are covered by Rule AAC 50.100, which regulates opacity issues for marine vehicles. The rule requires that visible emissions through any marine vehicle exhaust, within 3 miles of the Alaskan coast, may not result in the reduction of visibility of greater than 20 percent for defined periods of time. Water vapor is excluded. The defined periods of time include:

- 3 minutes in any 1 hour while underway, at berth, or at anchor
- 6 minutes in any 1 hour during initial startup of diesel-driven vessels; and,
- 12 minutes in any 1 hour while anchoring, berthing, getting underway, or maneuvering in port.

Of these six criteria pollutants, ozone is a secondary pollutant that forms in the atmosphere from other gases. Lead is not an additive for diesel fuel and would not be emitted from the hovercraft. As such, only particulate matter, sulfur oxides, carbon monoxide and nitrogen oxides would be directly emitted by the hovercraft and are of concern here. In addition, although not listed as a criteria pollutant, hydrocarbons, primarily in the form of unburned fuel would be emitted by the hovercraft engines as well and are also of concern.

3.5 Noise

The USPS was unable to discover any existing ambient noise level studies of Bethel and the villages considered in the SEA. Thus, conservative assumptions were made about the existing noise environment. Specifically, it was assumed that the current ambient noise level is 40 dB, as experienced in what may be called a "Farm in Valley" (Figure 3.1). As with other assumptions made regarding noise issues in this document, this is believed to be a conservative estimate, given the commonly found noise sources in the villages such as electrical generators, snowmobiles, all-terrain vehicles, boats, and automobiles. At 40 dB, an environment would be less noisy than an urban setting, but more noisy than a remote part of a national park.

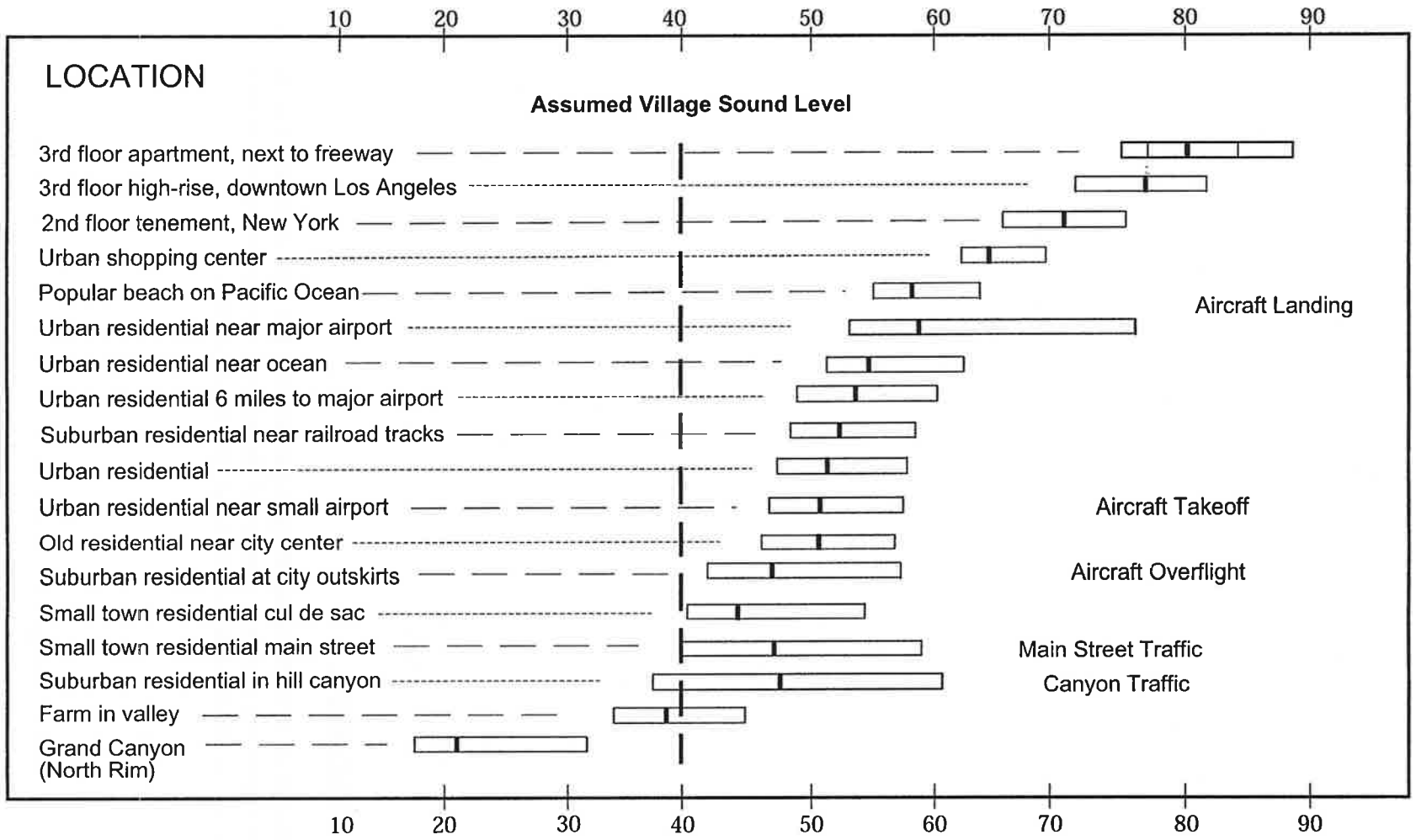
3.6 Hazardous Materials

Maintenance and operation of aircraft transporting bypass mail to the nine Alaskan villages involves the use of lubricants and cleaning agents and the use and storage of fuel at various locations. Most of the fuel is stored at Bethel, the local hub for air carriers.

3.7 Socioeconomics

3.7.1 Safety

The Kuskokwim, Johnson, and Pikmiktalik rivers are important transportation corridors between villages for summer and winter travel. Boat and snow machine travel on these rivers is common. Because there are no speed limits, age restrictions, or operator licensing for the use of these machines, safety is a consideration. Bypass mail is currently delivered to Tuluksak by air



Source: Cyril M. Harris, Ph.D., Handbook of Acoustical Measurements and Noise Control, (McGraw Hill, Inc.,Third Edition, 1991).

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A-Weighted Sound Levels Measured During The Daytime

USPS Transport of Alaska Bypass Mail by Hovercraft
Supplemental Environmental Assessment

Figure 3.1

carrier. Prior to the demonstration project, planes were also used to transport bypass mail to the other eight villages. Although there is some inherent risk in flying in the Yukon Delta region of Alaska, a high level of safety is observed by pilots to minimize potential harm.

3.7.2 Local Employment and Economics

Subsistence, commercial, and recreational activities such as hunting, fishing, and trapping, are important to the regional economy. A transition to a partial cash economy is slowly occurring. The emerging cash economy is based on some wage employment and seasonal commercial fishing, as well as cash infusion from social service subsidies. Information on local employment and economics by village is provided below.

Bethel: As the regional center for the Yukon-Kuskokwim Delta, Bethel provides food, fuel, transportation, medical care, and other services to approximately 56 villages. Approximately one-half of the jobs in Bethel are government positions. Commercial fishing is an important source of income; 216 residents hold commercial fishing permits, primarily for salmon and herring roe net fisheries. Residents' livelihoods are also centered on subsistence fishing and hunting (ADCED, 1999).

Akiachak: Subsistence activities provide most of the food source for residents in Akiachak. Year-round employment is focused on education, other public services, and small local retail businesses. The Yupiit School District Headquarters are located in the community. Commercial fishing is important to the community, with 78 residents holding commercial fishing permits. In addition, the community is developing a fish processing facility and freezer. A small number of residents also work at canneries in Bristol Bay. Other income sources include seasonal activities such as construction, commercial fishing, and Bureau of Land Management (BLM) firefighting (ADCED, 1999).

Akiak: Subsistence remains an important aspect of the village economy. Income sources include small local retail businesses, seasonal commercial fishing, BLM firefighting, and public employment with the city, school system, and other public services. The community is interested in developing a fish processing plant and tourism (ADCED, 1999).

Atmautluak: Subsistence activities remain an important part of the local economy, with cash income derived from the school, small retail businesses, and seasonal commercial fishing. Currently, 35 residents hold commercial fishing permits (ADCED, 1999).

Kasigluk: Subsistence activities contribute significantly to the local diet. Other employment is focused on the school, small local retail businesses, village government, and seasonal commercial fishing, with 46 residents holding commercial fishing permits primarily for salmon set net and herring roe fisheries (ADCED, 1999).

Kwethluk: Subsistence activities play a central role in the village economy, with salmon, moose and caribou being the staples of the community's diet. Seal meat and seal oil are obtained in trade with coastal relatives and neighbors. The largest employers are the school district, the federal and city governments, and small local retail businesses. Additional income sources include seasonal commercial fishing, with 61 residents holding commercial fishing permits (ADCED, 1999).

Napakiak: It is estimated that subsistence activities account for 50 percent of the diet in Napakiak, based primarily on salmon, waterfowl, moose, bear, and seals. Year-round employment is focused on the school system, as well as local, federal, and state government

agencies, and small retail businesses. Other income sources include construction, trapping activities, crafts, and seasonal commercial fishing, with 43 residents holding permits for herring roe and salmon net fisheries primarily (ADCED, 1999).

Napaskiak: The employment here is based on the school district, small local retail businesses, and some seasonal commercial fishing, with 42 residents holding permits for salmon drift netting. Subsistence activities continue to be a part of the culture and an important basis for the economy (ADCED, 1999).

Nunapitchuk: Subsistence activities and commercial fishing remain an essential component of the village economy. Currently, 52 residents hold permits for salmon and herring roe net fisheries and roe on kelp. Other employment is focused on the school, city government, small local retail businesses, and seasonal commercial fishing (ADCED, 1999).

Tuluksak: The primary sources of employment and income are the school, village government, and services. Subsistence activities provide most of the food source for the inhabitants. Some commercial fishing also occurs, with 31 residents holding permits for herring roe and salmon net fisheries (ADCED, 1999).

3.7.3 Bush Air Carriers

Prior to the implementation of the demonstration project, there were ten bush air carriers operating out of the Bethel hub and serving the eight villages considered in the DPEA (USPS, 1997a). There are currently six carriers providing service to the seven villages on the hovercraft route. An additional three carriers provide service to Atmautluak and Tuluksak. Table 3.2 identifies the carriers and the service levels to each village.

Priority mail is transported by air carrier to all nine villages. Bypass mail is transported by air carrier to only two of the nine villages, Atmautluak and Tuluksak (the hovercraft transports bypass mail to the other seven villages). Weekly volume and revenue to the air carriers from transport of bypass mail to these two villages is about 21,380 pounds and $10,300, respectively.

As would be expected, air carrier cargo service has decreased to the seven villages on the hovercraft route since the initiation of the demonstration project. However, the level of passenger service (Table 3.2) has remained relatively constant. [The pre-demonstration project level of service is presented in Table 3.3 in (USPS 1997a).] While passenger service has decreased in some villages and increased in others, the overall level in the local area remains similar and each village still has one or more full service carriers.

3.8 Subsistence Activities and Commercial Fishing

Although the Yukon Delta offers a variety of subsistence resources ranging from caribou to marine life, the most prevalent subsistence resource used in the area is salmon (ADFG, 1995). Salmon migrate through the rivers and past proposed hovercraft landing sites to spawn upstream. It was estimated that 30 to 40 percent of the area residents leave their homes during the fishing season to live in fishing camps along the edges of rivers. This annual activity is considered a part of the Yupik way of life. Fish account for 60 to 85 percent of the yearly food supply in the nine villages in the proposed action (ADFG, 2000d). Although most of the subsistence harvest consists of salmon, other fish species including blackfish, sheefish, humpback whitefish, northern pike, and Arctic grayling are important to the food supply of

Table 3.2 Serving Air Carriers, Flight Frequency, and Flights per Day between Bethel and the Nine Villages in the Proposed Action

	Service Type	Akiachak		Akiak		Atmautluak		Kasigluk	
Air Carrier:		**Freq.**	**Daily Flights**	**Freq.**	**Daily Flights**	**Freq.**	**Daily Flights**	**Freq.**	**Daily Flights**
Grant Aviation	1	X7/DY	2	X7	2	X7	1	X7	1
Camai Air	2	X7	2	X7	2	135	1	X7	2
Larry's Flying Svs.	1	X7	2	X7	2	X7/X7	2	X7	2
Arctic Transportation Svs.	2	DY	1	DY	1	X7	1	DY	1
Yute Air	1	X7	1	X7	1	X7	1	X7	1
Frontier Aviation	2	X7	1	X7	1	X7	1	X7	1
Alaska Central Express	2	X7	1	X7	1	X17	1	X7	1
Arctic Circle Air	2	DY	1	DY	1	DY	1	DY	1
Hageland Aviation	1	X7/DY	2	X7/DY	2	X7/DY	2	X7/DY	2
WEEKLY TOTALS:									

Note 1: Service types 1 and 2 indicate full service (passenger and cargo) and cargo only, respectively.

Note 2: Data from January 2000

X7: Flight every day except Sunday

DY: Daily flight

X17: Flight every day except Monday and Sunday

135: Flights on Monday, Wednesday, and Friday

Table 3.2 (continued) **Serving Air Carriers, Flight Frequency, and Flights per Day between Bethel and the Nine Villages in the Proposed Action**

	Kwethluk		Napakiak		Napaskiak		Nunapitchuk		Tuluksak	
Air Carrier:	**Freq.**	**Daily Flights**	**Freq.**	**Daily Flights**	**Freq.**	**Daily Flights**	**Freq.**	**Daily Flights**	**Freq.**	**Daily Flights**
Grant Aviation	X7/DY	2	X7	1	X7	1	X7	1	X7/DY	2
Camai Air	X7	2	X7	1	X7	2	X7	2	135	1
Larry's Flying Svs.	X7	2	X7	2	X7	2	X7/X7	2	X7	1
Arctic Transportation Svs.	DY	1	DY	1	DY	1	DY	1	X7	1
Yute Air	X7	1	X7	1	X7	1	X7	1	X7	1
PenAir	X7	1	X7	2	X7	2	X7	2	X7	1
Alaska Central Express	DY	1	X7	1	X7	1	X7	1	X7	1
Arctic Circle Air	X7	1	DY	1	DY	1	DY	1	DY	1
Hageland Aviation	X7/DY	2	X7	1	X7	1	X7/DY	2	X7/DY	2
WEEKLY TOTALS:										

many villages (USFWS, 1988). Most subsistence fishing is done using gillnets hauled in by hand. Salmon are also harvested in the area's commercial fishery. Sections of rivers are opened a short time for commercial fishing, an activity referred to as a Commercial Opening. Typically, 20 to 30 days of commercial fishing are allowed per year. The season extends from mid-June to early September. Commercial Openings are not scheduled very far in advance, and must be coordinated with the processors and buyers to ensure that the fish can be sold. The Openings begin at either noon or 1:00 P.M., usually last 6 to 8 hours, and can occur one to three times per week during the fishing season.

Approximately 800 commercial fishing permits are issued for the Kuskokwim Area, which consists of four fishing districts. Each district can cover up to 100 miles of river. Fishing is done using 300-foot-long drift gillnets, which are set and hauled in by hand from 20- to 25-foot motorized boats. Existing boat traffic on the river does not seriously interfere with the fishery as boats are able to maneuver around the nets if necessary (ADFG, 1997).

Approximately 760,000 and 210,000 salmon were commercially harvested in the Kuskokwim Area in 1998 and 1999, respectively (ADFG, 2000b). In 1998 the total catch consisted of 40,000 chinook, 130,000 sockeye, 310,000 coho, and 270,000 chum. In 1999, there were 30,000 chinook, 80,000 sockeye, 30,000 coho, and 70,000 chum. The most recent subsistence data are preliminary results for 1999 (ADFG, 2000d). In 1999, subsistence catch in the Kuskokwim Area was 202,413 salmon (76,659 chinook, 47,612 chum, 49,388 sockeye, 27,754 coho).

4.0 Consequences and Mitigation

Much of the information on fish, wildlife, and safety presented in this section was collected as part of the monitoring effort conducted during the demonstration project. Monitoring efforts were designed to answer some of the questions about the impacts of hovercraft operation that were of concern to the public and resource agencies. Because the proposed action changes the status of the program from a demonstration project to permanent service, evaluation of the results of monitoring are applicable to this SEA. Thus the results of monitoring efforts are presented here as they relate to the proposed action. Additional details of the monitoring effort, including methods, analysis techniques, and raw data presentations, are provided in the *Ecological Monitoring Summary Report* (USPS, 2000a) and the *Technology and Safety Assessment Report* (USPS, 2000b). Other sources of information used to prepare this section included noise monitoring conducted by the USPS, and a report to the Calista Elders Council, entitled *Hovercraft Impact Assessment: Fish and Wildlife Habitat Use at the Kuskokwim and Johnson Rivers*, prepared by AGRA Earth and Environmental (AGRA, 1998). These investigations allowed the direct study of the potential for impacts during actual operation of the hovercraft in the rivers, and thus provide valuable, site-specific, information to evaluate the potential impacts of the permanent service contract.

CEQ regulations (40 CFR 1508.27) indicate that evaluation of whether an impact is significant or not involves consideration of "context" and "intensity." Impacts can be viewed in several different contexts. For example, loss of fish fry can be viewed in the context of the Pacific salmon fishery or in the context of the influence on the local village. Intensity refers to the severity of an impact (USPS, 1997d). The severity of an impact is often related to the context in which it is viewed. Each issue addressed below is discussed within a context relevant to the concerns expressed by regulatory agencies and the public.

The no-action alternative involves the transport of bypass mail by air carriers on a year-round basis to the nine villages, the condition that existed before implementation of the hovercraft demonstration project. This alternative was considered in the DPEA (USPS, 1997a). Readers that would like more information on the no-action alternative may refer to the DPEA. There would be no change in the level of impact associated with this form of mail transport from when it was last conducted.

4.1 Fish and Wildlife

4.1.1 Fish

The DPEA (USPS, 1997a) concluded that the operation of the hovercraft should not have significant beneficial or adverse impacts on important fish in the Kuskokwim, Johnson, and Pikmiktalik rivers. This is due to the proposed manner, routes, times of day, and frequency of operation of the hovercraft, and to life history aspects of the fish species present in these rivers. Salmon eggs and emerging fry would not be disturbed because all spawning occurs in tributaries. The Johnson and Pikmiktalik rivers and their tributaries are tundra streams and are unsuitable for salmon spawning (USFWS, 1997). Similarly, eggs of many other fish species should not be affected, since they too are spawned in tributaries.

The DPEA (USPS, 1997) conclusion is supported by the results of studies conducted by AGRA (1998) on the potential for the hovercraft to impact fish. Using a variety of observation techniques, including sonar to survey fish in areas used by the hovercraft and control areas not used by the hovercraft, AGRA (1998) found that adult fish were rarely documented near the surface of the water column in the Kuskokwim River and that more fish were observed in the areas used by the hovercraft than in the control areas. Based on its observations, AGRA (1998) concluded that there was "no evidence of direct impact on fish or to fish habitat."

Although the DPEA (USPS, 1997a) concluded that there would be no significant impacts on the environment from use of the hovercraft, the USPS agreed to conduct ecological monitoring of fish during the demonstration project. The questions proposed to be answered by monitoring included:

- Are adult fish being injured or killed by the hovercraft?
- Are juvenile fish being injured or killed by the hovercraft as it passes over shallow water?
- Do juvenile fish become stranded by the wake of the hovercraft in shallow areas of the rivers and if so, are they at greater risk than from conventional watercraft?

Potential Adult Fish Mortality

The potential for mortality to adult fishes in the rivers was assessed by watching for floating (i.e., injured or dead) fishes behind the hovercraft and in its wake. In 1999, monitoring personnel also recorded injured and dead fish they saw while working on the Johnson and Kuskokwim rivers, independent of whether the hovercraft had recently passed through the area.

Over the course of ecological monitoring, 264 miles of river were surveyed behind the hovercraft (within 30 minutes) for dead or injured fish. No dead or injured fish were observed during the surveys (USPS, 2000a). In addition, during 1999, occurrences of injured or dead fish were recorded along 4,297 miles of the hovercraft route. Given that no dead or injured fish attributable to the hovercraft were observed behind the hovercraft or along its route, there is no evidence that the hovercraft is harming adult fish. Furthermore, in its independent study completed for the Calista Elders Council, AGRA (1998) concluded that the impact on adult salmon from the hovercraft is not significant. This conclusion was based on observations that the fish were not present near the surface, and greater fish abundance was estimated in the hovercraft operational areas than in control areas.

The results from the USPS and Calista Elders Council studies indicate that the proposed action of delivering bypass mail using a hovercraft will not result in significant, adverse impacts to adult fish.

Potential Juvenile Fish Mortality in Shallow Water Areas

The hovercraft lands at villages and occasionally travels near the shore over shallow water. There was a concern that the turbulence caused by the rapid water displacement under the craft could injure or kill small fish in those shallow areas. To assess this potential impact, the monitoring team established a number of study areas on the Johnson and Kuskokwim rivers where the hovercraft was intentionally routed onto shallow beaches where abundant small fish were known to be present and where sampling would be effective (USPS, 2000a). Fish were collected using a beach seine. A description of the juvenile fish mortality monitoring methods and results are presented in the *Ecological Monitoring Summary Report* (USPS, 2000a).

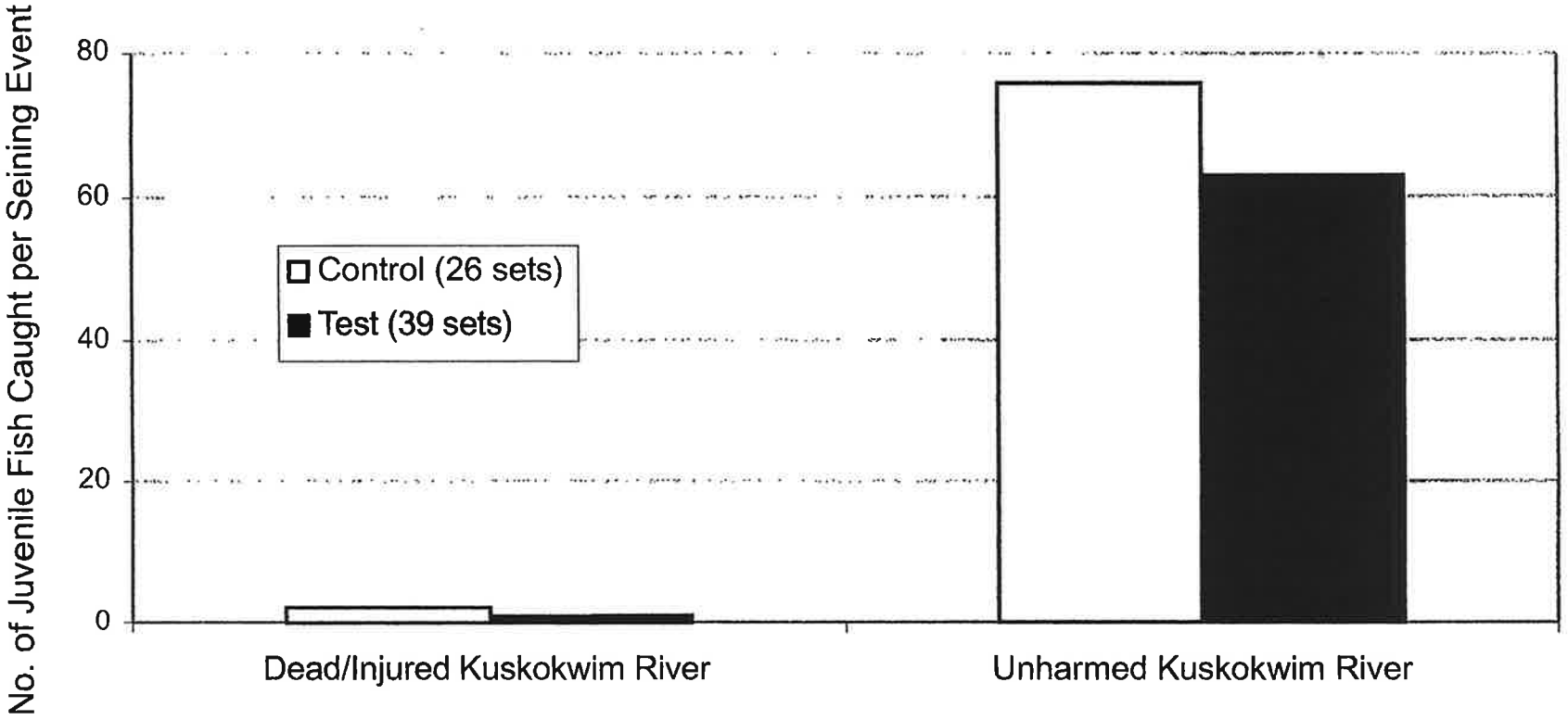
In total, 86 successful beach seinings were conducted during the 1999 monitoring campaigns, 65 on the Kuskokwim River and 22 on the Johnson River. These efforts resulted in the seining of 8,826 fish. Of these, 4,044 fishes were caught in test events (where the hovercraft had passed by), and 4,782 fishes were caught in control events (where the hovercraft had not passed by). Control events were necessary to understand the proportion of fish affected by the net and seining effort, independent of the hovercraft. The proportion of dead or injured fish was slightly greater for the control events (1.8%) than for the test events (0.7%) in the Kuskokwim River (Figure 4.1). In the Johnson River, the proportion of dead or injured fish was slightly greater in the control events (3.9%) than in the test events (2.9%) (Figure 4.2). Overall, the percentage of dead and injured fish was similar in the combined test events (2.0%) and combined control events (2.4%). Clearly, most of the fishes caught in both test and control events were unharmed. These data indicate that the passage of the hovercraft did not significantly harm fish and that the act of seining was responsible for most of the injury and mortality observed.

These results indicate that the proposed action of delivering bypass mail using a hovercraft will not have a significant, adverse effect on juvenile fish.

Stranded Fish at Landing Sites and on Beaches

In response to local concerns regarding stranding of fish, the USPS evaluated the potential for stranding during its monitoring program (USPS, 2000a). An investigation into the characteristics of the hovercraft's wake was undertaken to aid in evaluating the relative potential for hovercraft and other watercraft to strand fish. Three additional investigations for evidence of stranded fish were also conducted. The first stranding investigation involved checking for stranded fishes at landing sites immediately after the hovercraft came ashore. The second stranding investigation involved checking low-gradient beaches for stranded fish after the hovercraft passed by very close to or on the shore. The third involved checking for stranded fish after the hovercraft made unplanned stops on beaches.

Hovercraft Wake An investigation into the characteristics of the hovercraft's wake revealed that there were no significant differences in wave crest height, surge height, or surge distance from wakes produced by hovercraft and other craft (motorboats and tugs/barges) when they were more than 300 feet from shore (USPS, 2000a). AGRA (1998) reached a similar conclusion. In the AGRA study, observations of the hovercraft's wake were comparable to the wake produced by a medium-sized motorboat. However, the USPS found that the wakes produced by the hovercraft were slightly larger than those produced by motorboats when the craft passed close to shore. These data do not mean that the hovercraft strands more fish than a motorboat, but rather it simply has a greater potential to strand fish with its wake than do motor boats. Although slightly larger than those produced by a motor boat, the wakes produced by the hovercraft had minimal potential to carry fish onto shore because the wake heights averaged only 15.6 inches and went up the shore only a few feet. There is not enough water and energy involved to permanently strand (far enough from shore to preclude flipping back into the river) large numbers of fish. However, to verify these conclusions, additional observations were made.



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Average Number of Harmed vs Unharmed Fish Collected with Beach Seines on the Kuskokwim River

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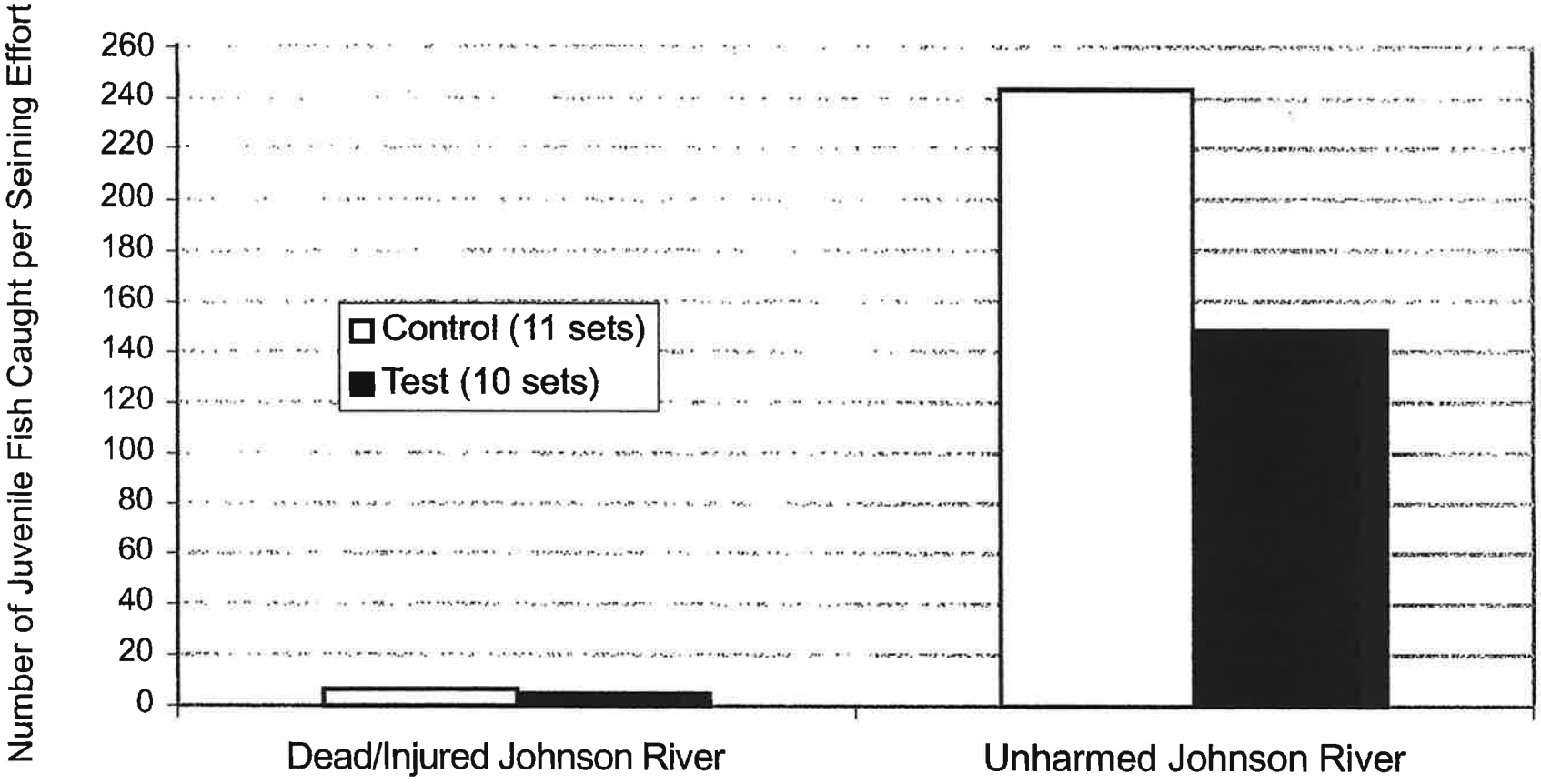
Supplemental Environmental Assessment

Figure 4.1



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Average Number of Harmed vs Unharmed Fish Collected with Beach Seines on the Johnson River

USPS Transport of Alaska Bypass Mail by Hovercraft
Supplemental Environmental Assessment

Figure 4.2

To further investigate the question of stranding from wakes, 13,000 yards of beach were checked for stranded fish during 1998 wake studies. No stranded fish were found that could be attributed to the hovercraft. Therefore, it was concluded that, during operations when the hovercraft is not on or within a few feet of shore, its wake does not strand fish.

Stranding at Landing Sites On the Johnson River, there were 10 landing site observations (6 at Kasigluk and 4 at Nunapitchuk) from July through August 1999. No stranded fish were found during any of the events. On the Kuskokwim River, 16 landing sites were checked during July and August in 1998 (3 in Akiak, 3 in Akiachak, 3 in Kwethluk, 4 in Napakiak, and 3 in Napaskiak). No stranded fish, attributable to the hovercraft, were observed during these 1998 checks. In 1999, there were 47 landing sites checked on the Kuskokwim River between June and August (8 in Napakiak, 11 in Kwethluk, 9 in Napaskiak, 8 in Akiak, and 11 in Akiachak). A total of 83 stranded fish were observed in these landing site checks. Most of the fish stranded were whitefish (52) and chum salmon (28). No salmon strandings were observed on the Johnson River. Although occasional fry might venture into the Johnson River, there are no salmon runs in the Johnson drainage.

The stranded chum salmon were observed only during the June events on the Kuskokwim River. In 1999, 11 landing site observations were made in June (when chum salmon fry are present in the river), with a total of 28 salmon observed stranded. Using these data, the average number of chum salmon stranded per landing was 2.5 (i.e., 28 salmon/11 landing site observations).

Chum salmon fry are present in this reach of the Kuskokwim River for approximately 5 weeks per year. Under the possible transport schedule presented in Section 2, there would be approximately 56 landings in a four-week period, calculated as:

$$[5 \text{ weeks} \times 2 \text{ days per week} \times 4 \text{ villages}] + [5 \text{ weeks} \times 3 \text{ days per week} \times 2 \text{ villages}].$$

Using this information, the total number of chum salmon fry stranded was estimated by multiplying the total number of landings during the 5 weeks when chum fry migrate (70) by the average number of salmon fry stranded per landing (2.5). This calculation yields 175 stranded salmon fry per year at landing sites on the Kuskokwim River. The number of stranded fry would be a negligible fraction of the chum salmon population, considering the numbers of chum salmon fry in the river at this time. Furthermore, considering all the sources of mortality in salmon populations from the time they are fry to when they return to the Kuskokwim River, the impact on salmon fry at landing sites would not be measurable in the numbers of returning salmon.

The estimate of 175 chum salmon fry is an insignificant proportion of the total chum salmon population in the river. Total run estimates for returning adult chum from 1993 to 1995 is 482,000 to 1,000,000 (ADFG, 2000c). The proportion of other salmon species stranded would also be insignificant, since there is no evidence that it would be higher for the others. Indeed, there is evidence available that suggests that the proportion for some of the other species would even be less due to behavioral differences between the species. It would be likely be lower for king and coho salmon because the young of these species stay in the freshwater for a year or more before migrating to the ocean (Groot and Margolis, 1992), resulting in considerably larger body size than the other species that migrate immediately after hatching. When migrating, king and coho salmon juveniles are known to stay in deeper water, further lessening their risk of being stranded in shallow water areas (Groot and Margolis, 1992).

Juvenile whitefish reside in the Kuskokwim and Johnson Rivers, at least through their first year. Including data from both rivers, 52 juvenile whitefish were observed stranded in 73 landing site observations (10 on the Johnson River and 63 on the Kuskokwim River). These figures provide an average of 0.71 stranded whitefish per landing. The period over which whitefish stranding is possible is from mid-April through mid-October when the rivers are not frozen. Over these 26 weeks, there would be 520 landings (based on the transport schedule presented in Section 2). With this number of landings, it is estimated that about 369 juvenile whitefish could be stranded on an annual basis. The 369 stranded whitefish fry would be a negligible fraction of the whitefish population, considering the large numbers of whitefish fry in the river. Furthermore, considering all the sources of mortality in whitefish populations from the time they are fry to when they mature, the impact on whitefish populations from stranding at landing sites is insignificant.

Stranding from Operating in Shallow Water and Near Shore The second investigation of fish stranding was associated with times and locations where the hovercraft came very close to shore during June through August 1999, as part of the investigation into the effects of the hovercraft on juvenile fishes in shallow areas of the rivers.

The shoreline was checked for stranded fish after 31 test events on the Kuskokwim River and 3 test events on the Johnson River. The length of shoreline checked varied from 100 to 400 yards. Most of the stranded fish in both rivers were whitefish, although during one event in June 1998, four chum salmon fry were also stranded.

As noted, only the June events were useful for evaluating the impact of stranding to chum salmon fry because that is when the most chum salmon fry are present in the river. There were five test events on the Kuskokwim River in June. Four chum salmon fry were found stranded after the five staged events. Based on this number and the length of beach searched, the number of chum salmon fry stranded per yard was calculated at 0.004 (1 fish per 250 yards when the hovercraft passes on or within several feet of the shoreline). Twenty-two whitefish were also observed stranded during the on-shore/near shore test events. Based on three Johnson River tests and 31 Kuskokwim River tests, the average number of juvenile whitefish stranded was calculated at 0.0029 (1 fish per 400 yards when the hovercraft passes on or within several feet of the shoreline).

The percentage of each trip that the hovercraft is near or on the shore along low-gradient beaches is not possible to estimate accurately because it varies by the amount of boat traffic, tide, wind speed, and wind direction. Based on the experience of the ecological monitoring team, the percent of the distance traveled by the hovercraft on low gradient beaches is likely between 0.5 to 5.0 percent.

The potential for chum salmon fry stranding is greatest during five or fewer weeks in May and June. Under the proposed transport schedule in Section 2, the hovercraft would travel about 400 miles per week (on the Kuskokwim River only). At 400 miles per week, the total distance traveled by the hovercraft during the chum salmon outmigration would be about 2,000 miles. Assuming a range of 0.5 to 5.0 percent of the total distance is traveled on or near low-gradient beaches and the stranding rate is 0.004 fish per yard (e.g., 1 fish every 250 yards of affected beach), the annual stranding is estimated to be between 70 to 704 chum salmon fry.

The potential for whitefish fry stranding occurs throughout the open water period of hovercraft operations. Assuming a 26-week transport period, a travel distance of 622 miles per week (on the Kuskokwim, Pikmiktalik and Johnson rivers), and affected shoreline values of 0.5 to 5.0

percent, the number of whitefish fry stranded on low-gradient beaches per year is estimated to be between 413 and 4,127. It is important to note that the shoreline areas used in the test experiments were selected as worst case situations for fish stranding. It is also important to consider that these worst case locations are uncommon relative to the route covered by the hovercraft. The hovercraft is most often offshore in deeper water and typically comes close to shore only at point bars or mid-channel mudflats.

Stranding From Unplanned Stops on Beaches The hovercraft made six unplanned stops on beaches and sandbars during the 1999 monitoring. After each unplanned stop, the beach was checked for stranded fish. A total of 21 whitefish were found stranded (USPS, 2000a). These data were not included in the low-gradient beach stranding evaluation because these stops did not represent the typical hovercraft operation and their frequency of occurrence is unpredictable. However, because unplanned stops are likely to occasionally occur in the future, the likely number of fish stranded during such events was estimated. The hovercraft operates about 130 days in the 26 weeks of open water. Using the 6 unplanned stops on beaches observed by the monitoring team in 20 days of monitoring (0.3 stops per day) as a basis, the number of unplanned stops would be about 40 (0.3 x 130). Using this value and the number of whitefish stranded per unplanned stop, (3.5, or 21 fish/6 stops), results in an estimate of about 140 whitefish stranded per year at unplanned stops on beaches.

Summary of Potential for Stranding Juvenile Fish Based on the estimates for landing sites, operation in shallow water near shore, and unplanned stops on beaches, the total number of chum salmon fry stranded on an annual basis would range from about 250 to 880. For whitefish, the estimated annual number of fry stranded would range from about 920 to 4,640. For chum salmon, the stranding estimate can be put into perspective by converting it to adult salmon equivalents. Chum salmon survival rates from the migrant fry to adult return are typically between 1 and 5 percent. Therefore, the stranding of between 250 and 880 salmon fry translates into an annual loss of 3 to 44 adult fish. To put this into perspective, the annual chum salmon runs in the Kuskokwim River range from several hundred thousand to over a million (USPS, 1997a; based on data from Burkey et al., 1995). Therefore, the magnitude of this impact is insignificant. Based on these estimates of mortality, the hovercraft operation does not have a significant effect on the chum salmon population in the Kuskokwim drainage. While no other species of salmon were observed stranded besides chum, this was likely a result of the timing of the monitoring. However, chum salmon stranding likely represents a worst case for the other species, because chum and coho salmon are the most abundant of the salmon species present in the Kuskokwim River (ADFG, 2000c). The number of coho fry stranded would be expected to be similar and the number of chinook, sockeye, and pink fry stranded would be expected to be far less.

Putting the whitefish fry stranding into perspective requires a different approach than used above for salmon because survival rates and stocks are not tracked as they are for salmon. To put the number of whitefish potentially stranded into perspective, one must use rates of fish fecundity, hatching success, and fry to adult survival obtained from the literature. An adult whitefish produces an average of about 6,500 eggs (Scott and Crossman, 1973). Assuming each adult fish spawns only once (which is conservative since whitefish spawn several times), two adult fish would need to survive out of the 6,500 eggs to replace the male and female that spawned to maintain a stable population. This is a 0.031% egg-to-adult survival rate. If an egg-to-fry survival rate of 25% is assumed, the fry-to-adult survival rate would be 0.123%. If each fish spawned twice, then the survival rates above would need to be cut in half to maintain the stable population. If a fry to adult survival rate of 0.123% is assumed, the 920 to 4,640 stranded

fry would represent about 1 to 6 adult whitefish. This is not significant given the number of whitefish taken each year for subsistence consumption. For example, 28,000 pounds of whitefish were harvested in 1986 by residents of the village of Kwethluk alone (ADFG, 1999).

Conclusion on the Potential for Impacts to Fish from the Proposed Action

The analyses presented above indicate that the proposed action of transporting bypass mail by hovercraft will not result in significant adult fish mortality, juvenile fish mortality in shallow water areas, or stranding of juvenile fish along beaches. Therefore, the proposed action will not have a significant adverse effect on the abundance of fishes. The very conservative analyses, which do not account for the incidental use of alternate transport modes when the hovercraft does not operate, add confidence to the conclusion that there will be no significant adverse impact on fish associated with the proposed action.

4.1.2 Mammals

As found in the DPEA (USPS, 1997a), no direct mortality of mammals would result from the proposed action of transporting bypass mail using a hovercraft. The hovercraft is able to easily maneuver around any large mammals observed in or on the river. Despite a slightly greater use of the area upstream of Akiak by caribou during winter (see Section 3), this conclusion can be extended to the reach of river between Akiak and Tuluksak. The hovercraft crew should readily be able to see any caribou that might be on the ice or in the water, allowing easy avoidance. During the demonstration program, the USFWS agreed at a Hovercraft Committee Meeting (August 26, 1997) to notify the hovercraft operations in the event that caribou were observed along the route upstream of Kwethluk. No reported instances of interactions with caribou occurred.

Occasional disturbance of mammals could occur due to its noise and presence. However, such instances are expected to be few and insignificant due to the low populations along the river corridor, the secretive nature of the furbearers, the intensive subsistence activity, the transient nature of the disturbance, and the acclimation of resident mammals to the considerable vehicle traffic already on the rivers.

In summary, there will be no significant adverse impacts to mammals from the proposed action of transporting bypass mail using a hovercraft.

4.1.3 Birds

The DPEA concluded that the hovercraft would not significantly affect bird populations, including waterfowl, for two reasons (USPS, 1997a). First, the disturbance caused by the hovercraft is transient in nature. Second, the number of birds affected would be a small subset of the total number of birds in the surrounding area. These two conclusions would be applicable to the proposed action because of the similarity in operations and habitats involved in the demonstration project and those involved with the proposed action.

Although the DPEA concluded that there would be no significant adverse impacts on the environment from use of the hovercraft, in response to public concerns the USPS agreed to conduct ecological monitoring of bird, particularly waterfowl, resources during the demonstration project. The results of the monitoring studies were used to define the potential for impacts from the proposed action. The questions proposed to be answered by monitoring, and still germane to the proposed action, included:

- Is there a difference in behavioral responses of waterfowl to hovercraft versus other watercraft, and if so, what is the difference?
- Is the nesting success of waterfowl along the river routes of the hovercraft affected by the hovercraft's passage?

Brief descriptions of the studies undertaken to address these issues are provided in this section, as well as the results of the studies. These studies are fully described in the *Final Ecological Monitoring Summary Report* (USPS, 2000a).

In the 1997-1998 monitoring effort, waterfowl resources were evaluated by recording flushing distances from the hovercraft and motorboats, and by evaluating waterfowl use of habitats along the riverbanks and outside of the riverbanks. Based on the results of that effort, 1999 monitoring efforts were refocused on larger scale indications of disturbance. The 1999 monitoring was designed to determine whether waterfowl used areas where hovercraft operated differently than where it did not operate. The effort consisted of evaluating the effect of the hovercraft on numbers of waterfowl along the rivers and noting its effect on waterfowl use of areas adjacent to the rivers.

Flushing of Waterfowl

Waterfowl flushes were recorded in response to both the hovercraft and motorboats by direct observation while riding these crafts on both the Kuskokwim and Johnson rivers. Observations of flushing and the behavior of birds in response to the hovercraft and other watercraft were also conducted from stationary locations on the Kuskokwim and Johnson rivers.

The results of the flushing observations conducted during the demonstration project indicated that waterfowl species nearly always flushed in response to the hovercraft and other watercraft. Gull species (not a waterfowl species) far outnumbered other species observed on both rivers and flushed more in response to the hovercraft than to motorboats. A notable observation was that, based upon a very limited amount of data, bald eagles were relatively tolerant of both types of craft. It is important to note that gulls, ducks, and shorebirds that flushed from the hovercraft and motorboats were sometimes observed landing in nearby habitats after only flying a short distance.

The results of these studies indicate that, under the proposed action, waterfowl would react to the hovercraft in a manner similar to the disturbance produced by a motorboat. Other birds flushed by the hovercraft would also react similarly as when flushed by a motorboat and would often land in nearby habitats after flying only a short distance.

Waterfowl Use of River Habitat

Due to the importance of subsistence gathering along the rivers and in response to village residents' concerns, a study of waterfowl use of river habitats was added to the monitoring program in 1999. This study involved conducting surveys of waterfowl abundance along sections of the rivers traveled by the hovercraft and along sections where the hovercraft does not operate. In the spring and summer, the waterfowl observed would be representative of use by resident breeding waterfowl and waterfowl broods, whereas in August the waterfowl observed would likely be birds that are preparing to migrate. Therefore, this study gave some insight into whether or not waterfowl were "leaving the area" as a result of the demonstration project hovercraft and thus not available to subsistence hunters. The specific areas surveyed were selected after coordination with village residents and the USFWS which provided input on

areas that it thought would represent good waterfowl habitat. Based upon this input, five transects were identified:

- Johnson River (hovercraft area)
- Pikmiktalik River (control area)
- Kuskokwim River (hovercraft area)
- Slough off the Kuskokwim River (control area)
- Lower reaches of Gweek River (control area)

The Gweek River and Kuskokwim Slough transects were used as a control for comparisons of waterfowl abundance on the transect within the hovercraft route on the Kuskokwim River, and the Pikmiktalik River transect was used as a control for comparison with waterfowl abundance on the Johnson River.

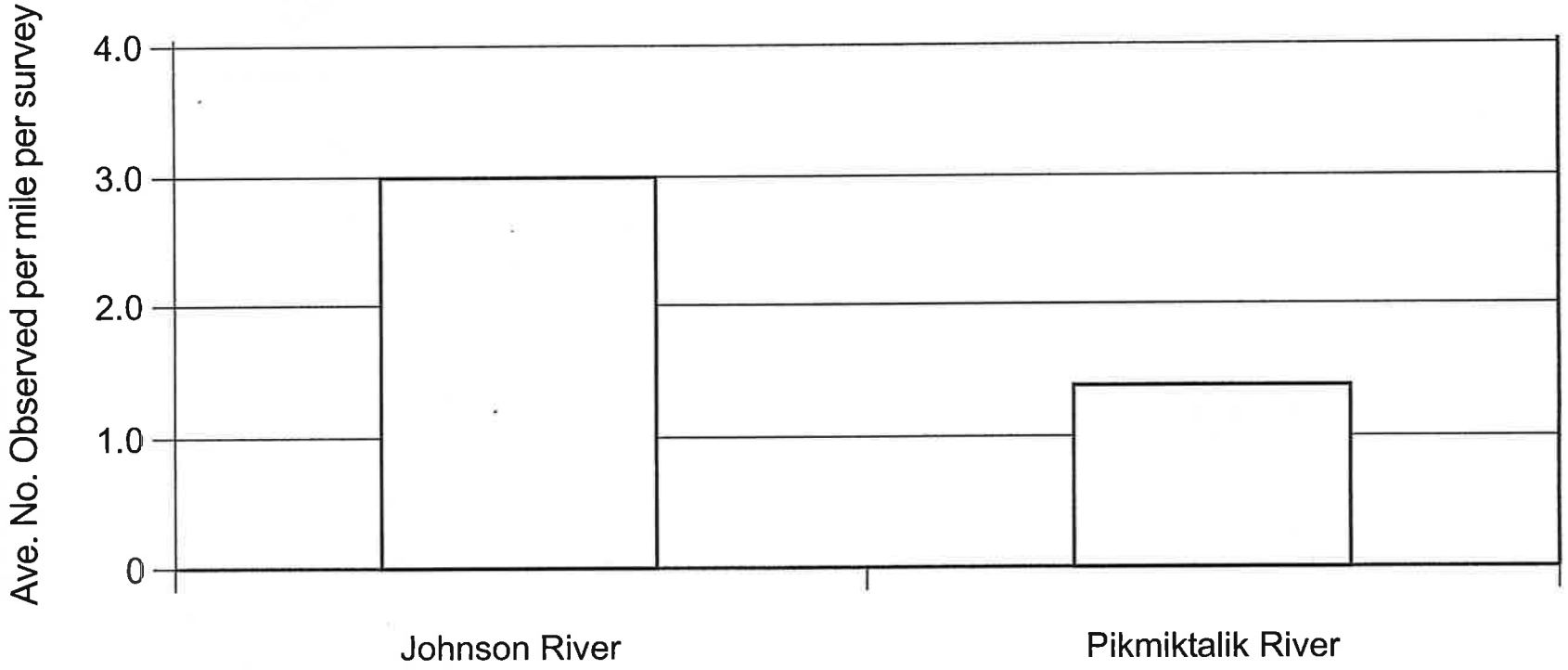
Waterfowl abundance was higher on the Johnson River than the Pikmiktalik River (Figure 4.3). This suggested the presence of the hovercraft does not significantly affect waterfowl presence.

Waterfowl use of the Kuskokwim and Gweek rivers was significantly less than waterfowl use on the slough, but use of the Kuskokwim River and the Gweek River was not significantly different (Figure 4.4). Since the Kuskokwim River has more boat traffic than the Gweek River, fewer waterfowl might have been expected to use the Kuskokwim River. These observations suggest that multiple factors, such as habitat quality, affect waterfowl use of these areas.

The results of this study indicate that the proposed action of transporting bypass mail using a hovercraft would not have significant adverse impacts on waterfowl use of the habitat along the rivers. These findings are corroborated by the results of an earlier study conducted for the Calista Elders Council on bird abundance along the Kuskokwim or Johnson Rivers (AGRA, 1998). AGRA observed similar numbers of ducks along parts of the rivers used by the hovercraft (0.14 ducks per mile) and parts of the rivers not used by the hovercraft (0.10 ducks per mile).

Breeding Waterfowl

Aerial transects across the Kuskokwim, Johnson, and Pikmiktalik rivers were surveyed during the demonstration project monitoring program for waterfowl use in order to evaluate whether the hovercraft adversely affected the use of nearby habitats by waterfowl, and thus potentially the breeding capacity of the birds. Aerial transects in hovercraft operational areas and in control areas were surveyed using fixed-wing aircraft to document breeding pairs and general waterfowl use of habitats in areas near the rivers. Waterfowl counts were segregated into three



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Comparison Of Waterfowl Abundance Along Hovercraft Route On Johnson River With Control Areas

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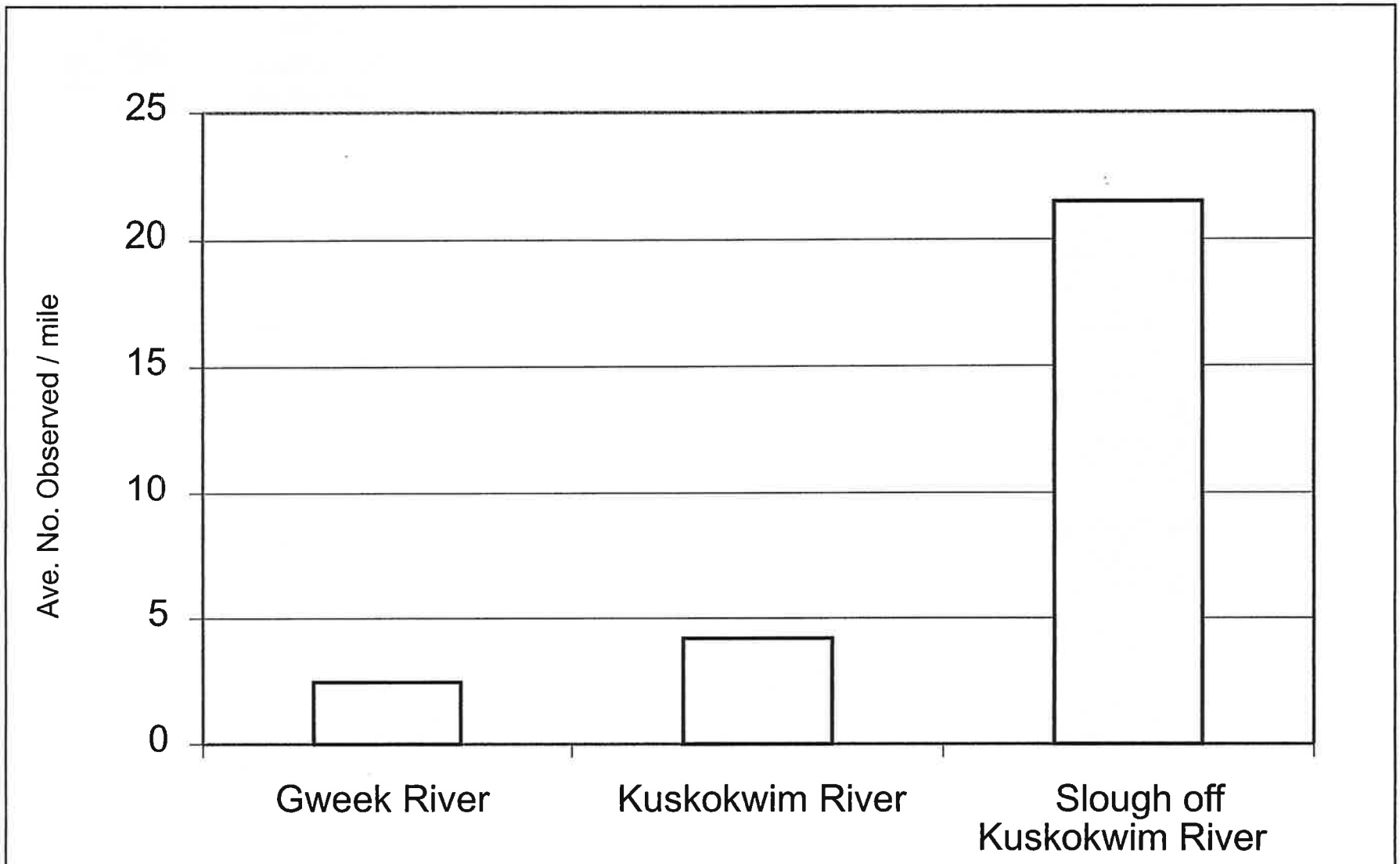
Figure 4.3



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Comparison Of Waterfowl Abundance Along Hovercraft Route On Kuskokwim River With Control Areas

USPS Transport of Alaska Bypass Mail by Hovercraft
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Figure 4.4

habitat zones: on the river, adjacent to the river (<200 yards from river), and off the river (>200 yards from the river). The total lengths of these zones on each transect were measured and used to standardize the waterfowl counts per unit length of habitat zone. The general presence of waterfowl, as indicative of breeding waterfowl, was used as an index for nesting activity. Waterfowl use in the hovercraft operational areas was compared with waterfowl use in the control areas, to determine if the hovercraft had an effect on waterfowl behavior during the demonstration project. The hovercraft operational areas and control areas used in the evaluation were:

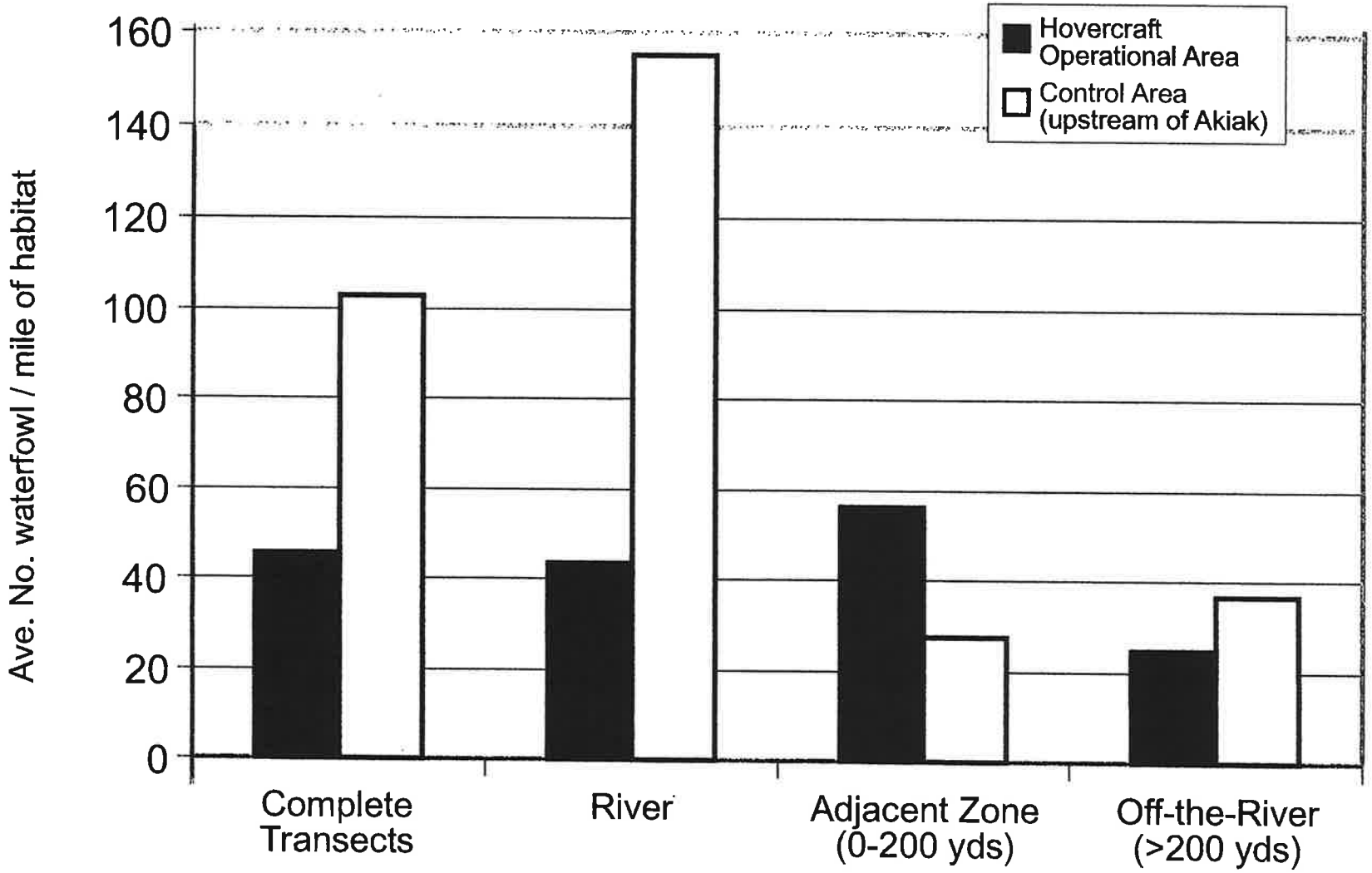
- Kuskokwim River Operational Area: across the Kuskokwim River between Akiak and Napakiak
- Kuskokwim River Control Area: across the Kuskokwim River between Akiak and Tuluksak
- Johnson River Operational Area: across Johnson River from mouth to just above Kasigluk
- Johnson River Control Area: across the Pikmiktalik River from approximately 2 miles upstream of the mouth to approximately 3 miles above Atmautluak

During the demonstration project there was concern that the hovercraft could adversely affect hunting success in two ways. One was by simply chasing the birds from the area, and the other was by adversely affecting breeding waterfowl, which in turn would affect the numbers of waterfowl available to hunters. These two potential phenomena are interrelated and thus were assessed together by evaluating the effect or lack of effect the hovercraft has on the distribution of waterfowl along its operational routes.

The results of aerial surveys of waterfowl use on the Kuskokwim River during the demonstration project indicated no statistical difference in the distribution of waterfowl between the control and operational areas (Figure 4.5). Based upon these results there is no evidence that the proposed action would have a significant adverse effect on the distribution of breeding waterfowl or general waterfowl use in the hovercraft operational area on the Kuskokwim River. It then follows that the proposed action would also not have a significant adverse effect on the number of waterfowl available to subsistence hunting during the demonstration program.

The results of the aerial surveys comparing waterfowl use on the Johnson River with waterfowl use on the Pikmiktalik River during the demonstration project also indicated no statistical differences in the distribution of waterfowl between the hovercraft operational area and the control area (Figure 4.6). Thus it can be concluded that the proposed action would not have a significant adverse effect on the distribution of breeding waterfowl and general waterfowl use of the Johnson River.

Furthermore, since there was no evidence of a shift in distribution from waterfowl using the river to using either adjacent or off-river zones during the demonstration project, it can be concluded that the proposed action would not result in a shift from the adjacent zone to the off-river zone, where they might be less accessible to subsistence hunters. Based upon these results, there is no evidence that the proposed action would have a significant adverse effect on the distribution of breeding waterfowl or general waterfowl use in the hovercraft operational areas on the Johnson River. It then follows that the proposed action would also not have a significant adverse effect on the number of waterfowl available to subsistence hunting.



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Comparison of Waterfowl Abundance Along Aerial Transects Across the Kuskokwim River and Control Area

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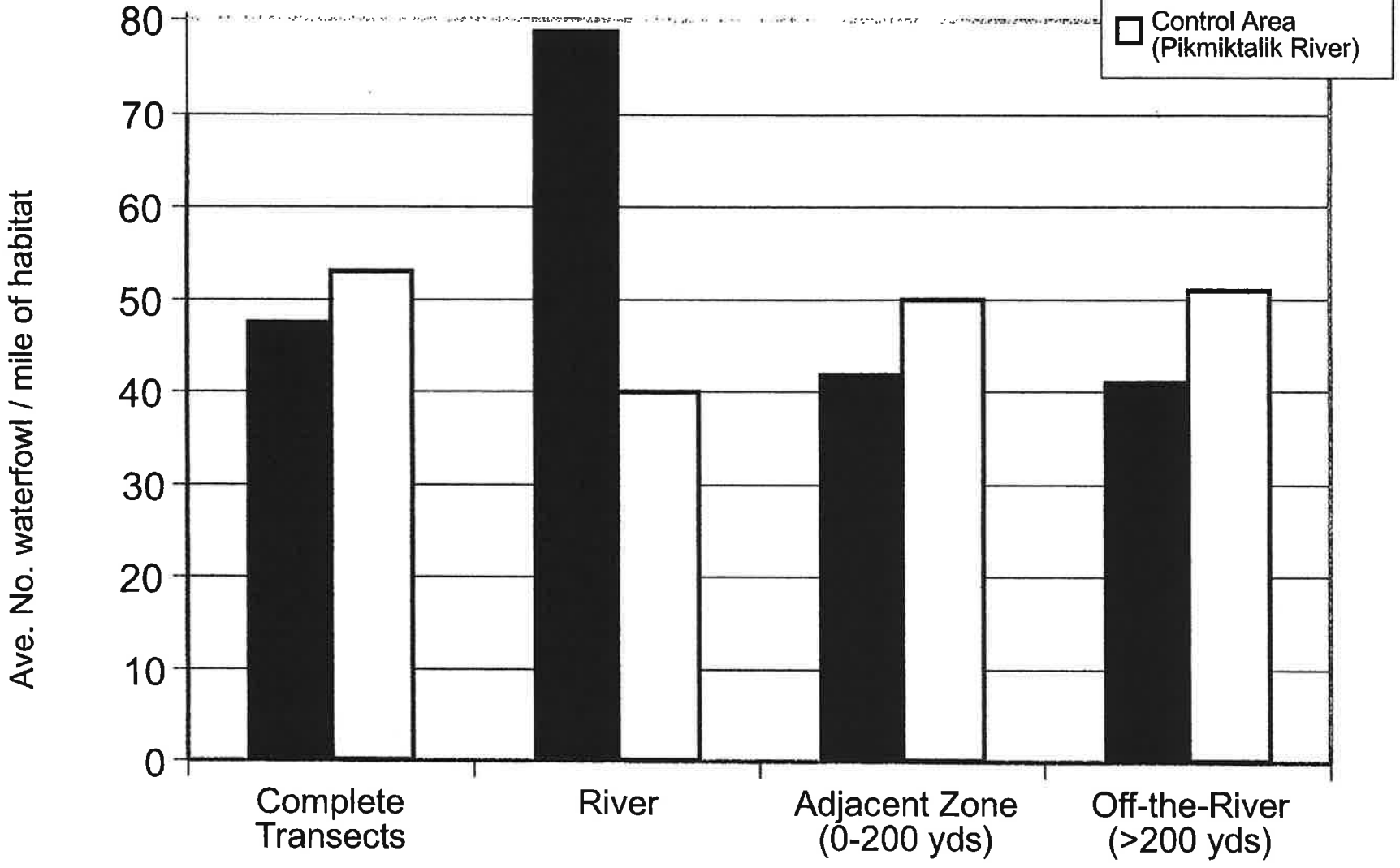
Figure 4.5



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Comparison of Waterfowl Abundance Along Aerial Transects Across the Johnson River and Control Area

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Figure 4.6

Conclusion on the Potential for Impacts from the Proposed Action

Based upon the results of the two years of monitoring during the demonstration project, no significant adverse impacts to waterfowl or birds in general would result from the proposed action. The proposed action differs from the demonstration project only in the addition of service to Tuluksak and the use of various modes of transport at times when conditions warrant. Based upon the similarity of habitats (see Section 3), waterfowl use in the reach of river between Akiak and Tuluksak should be similar to that below Akiak where the monitoring study was conducted. Therefore, the available evidence indicates that there would be no significant impacts to waterfowl and thus subsistence hunting associated with the proposed action of delivering bypass mail using a hovercraft.

4.2 Threatened and Endangered Species

Correspondence with the USFWS indicated that there are no known threatened or endangered species near the nine villages and along the hovercraft routes (USFWS, 2000). Although the American peregrine falcon was evaluated as an endangered species in the DPEA, it has since been deemed recovered and was removed from the federal (*Federal Register*: August 25, 1999, pp. 46541-46558) and state threatened and endangered species lists, remaining listed only as a state species of special concern. The DPEA documented that there was no nesting habitat along the river below Akiak. There is also no nesting habitat between Akiak and Tuluksak because the habitat along that reach of river is similar to that below Akiak and also does not provide the cliffs or bluffs needed for nesting habitat. Therefore, the proposed action would have no significant adverse impact on threatened or endangered species.

4.3 Aquatic Resources

4.3.1 Water Quality

The Kuskokwim River exhibits extensive natural bank erosion and high sediment loading from continuous lateral movement of the river channel (AGRA, 1998). Erosion caused by the wakes generated by watercraft likely contributes to sediment loading in the river. The results of wake investigation conducted during the monitoring effort indicated that the characteristics of the hovercraft wake (crest height, surge height, and surge distance) were, based on statistical tests, significantly greater than for motorboats when both craft passed less than 100 feet from shore (USPS, 2000a). Even if the erosion caused by the hovercraft is greater than the erosion caused by a motorboat, the absolute amount of erosion caused by the hovercraft is extremely small compared to all the motorboats that use the river and the considerable natural erosion, particularly during high spring flows. These facts lead to the conclusion that there would be no significant adverse impacts on water quality associated with the proposed action.

4.3.2 Coastal Zone Management

The villages to receive mail service by hovercraft are within the Ceñaliulriit Coastal Zone Management (CZM) District. The State of Alaska's CZM program sets standards and develops procedures to guide coastal development throughout the state. It is a land use planning tool to ensure that coastal resources are preserved, protected, enhanced, and, where necessary, restored. The program details standards for different land uses, including transportation facilities and navigational facilities and systems.

The USPS has concluded that the proposed action:

1) Will not cause significant adverse impacts to subsistence use to coastal zone resources;

2) Supports a public need;

3) Maintains access to subsistence resources;

4) Is designed to minimize adverse impacts to biological resources, subsistence use areas, cultural characteristics;

5) Avoids sensitive habitats and areas of importance to commercial fishing;

6) Is designed, sited, constructed, operated, and maintained to avoid significant adverse impacts to the subsistence uses, air and water quality, fish and wildlife and their habitats, commercial fishing uses, and historic, prehistoric, and archaeological resources; and

7) Will not adversely impact bank erosion.

These conclusions address the enforceable policies contained within coastal zone management plan (CMP, 2000) which are important to consider under the proposed action. After careful analysis and consideration of issues submitted by the public and federal and state agencies, the USPS has determined that the proposed action is consistent with enforceable coastal zone policies in Alaska (USPS, 2000e). The USPS is currently engaged in the CZMP process with the State and if necessary, will amend this SEA upon completion of the process.

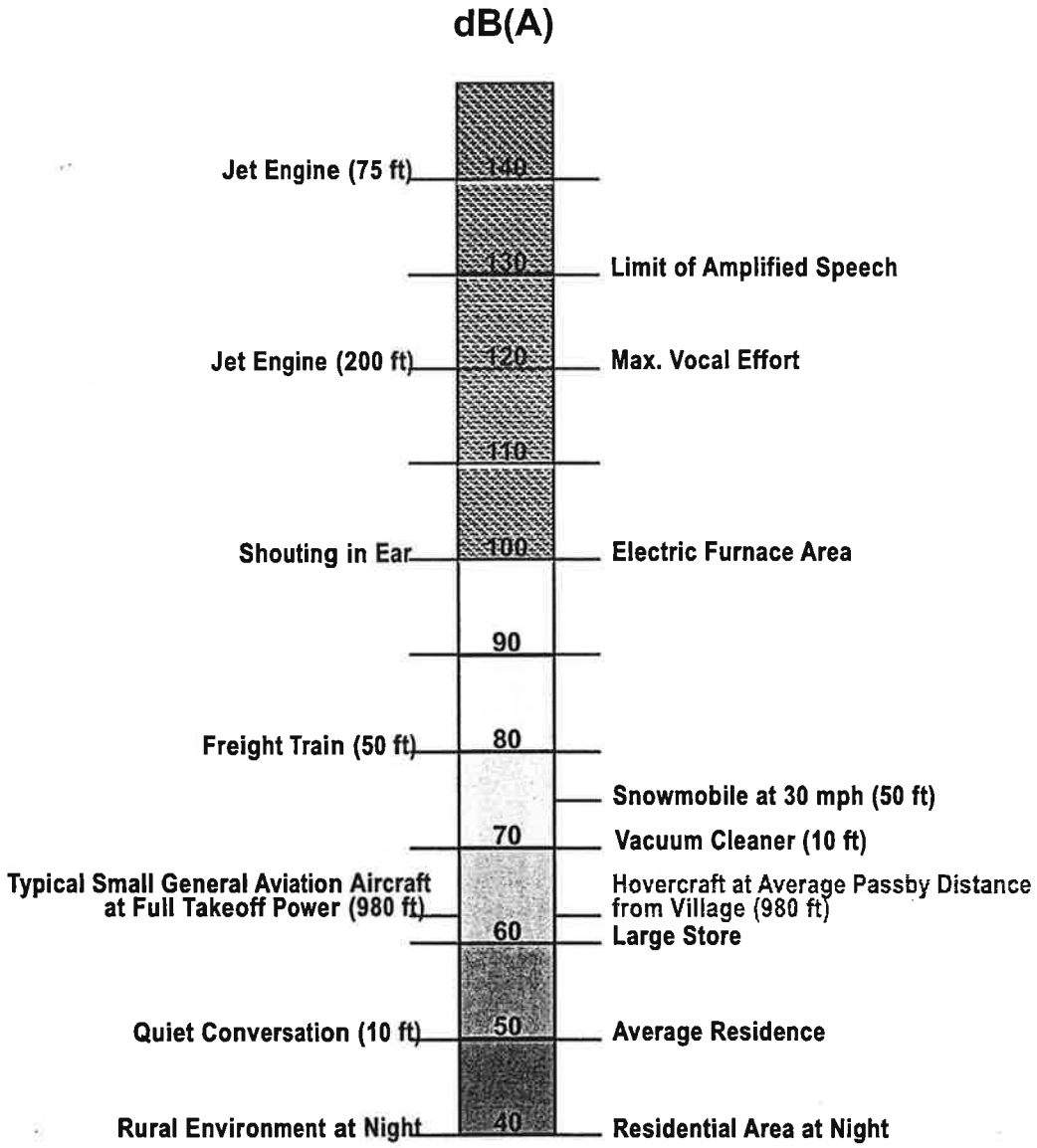
4.4 Noise

Previous studies of some hovercraft have found them to be excessively loud (Schomer, 1985; Dvornak, 1995), comparable in noise level to various military jet aircraft. Because of this, Alaska Hovercraft Joint Venture proposed the relatively quiet AP.1-88 model, during the demonstration program. However, very little noise level research had been performed on this craft. Consequently, a noise characterization study of the AP.1-88 was performed by the Volpe Center Acoustics Facility at Cook Inlet, Anchorage, Alaska in the fall of 1995 (Roof et al., 1996). (See Appendix G for noise-related definitions and methodology.) Conclusions of that study included the following:

- The sound exposure level associated with an AP.1-88 pass-by is comparable to that of a typical, twin-engine, general aviation aircraft operating at an airspeed of 120 mph and typical take-off thrust levels. The difference between the hovercraft and aircraft noise levels ranges between 4 and 7 decibels (dB) (Olmstead et al., 1997), with the AP.1-88 levels being higher. Such small differences are just perceptible to the human ear (see Figure 4.7).

- The maximum sound level associated with an AP.1-88 pass-by at 755 feet (a distance considered fairly typical for the villages in the vicinity of Bethel) is approximately equal to that of a 60 mph passenger automobile pass-by at 50 feet (Fleming et al., 1995), or that of a 30 mph snowmobile pass-by at 50 feet (Bowlby, 1995).

The Federal Transit Administration (FTA) (Hanson, 1995) and the Federal Aviation Administration (FAA) (FAA, 1989) have established criteria that are commonly used to assess potential noise impacts due to introduction of a transportation-related noise source into a given environment. The FTA criteria relates impact to change in noise level due to the introduction of a noise source, whereas the FAA criteria relate impact to an absolute noise level, neglecting the



Source: BAH and Federal Transit Administration "Transit Noise and Vibration Impact Assessment." USAF "High Frequency Active Auroral Research Program Final EIS."

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TYPICAL A-WEIGHTED SOUND LEVELS

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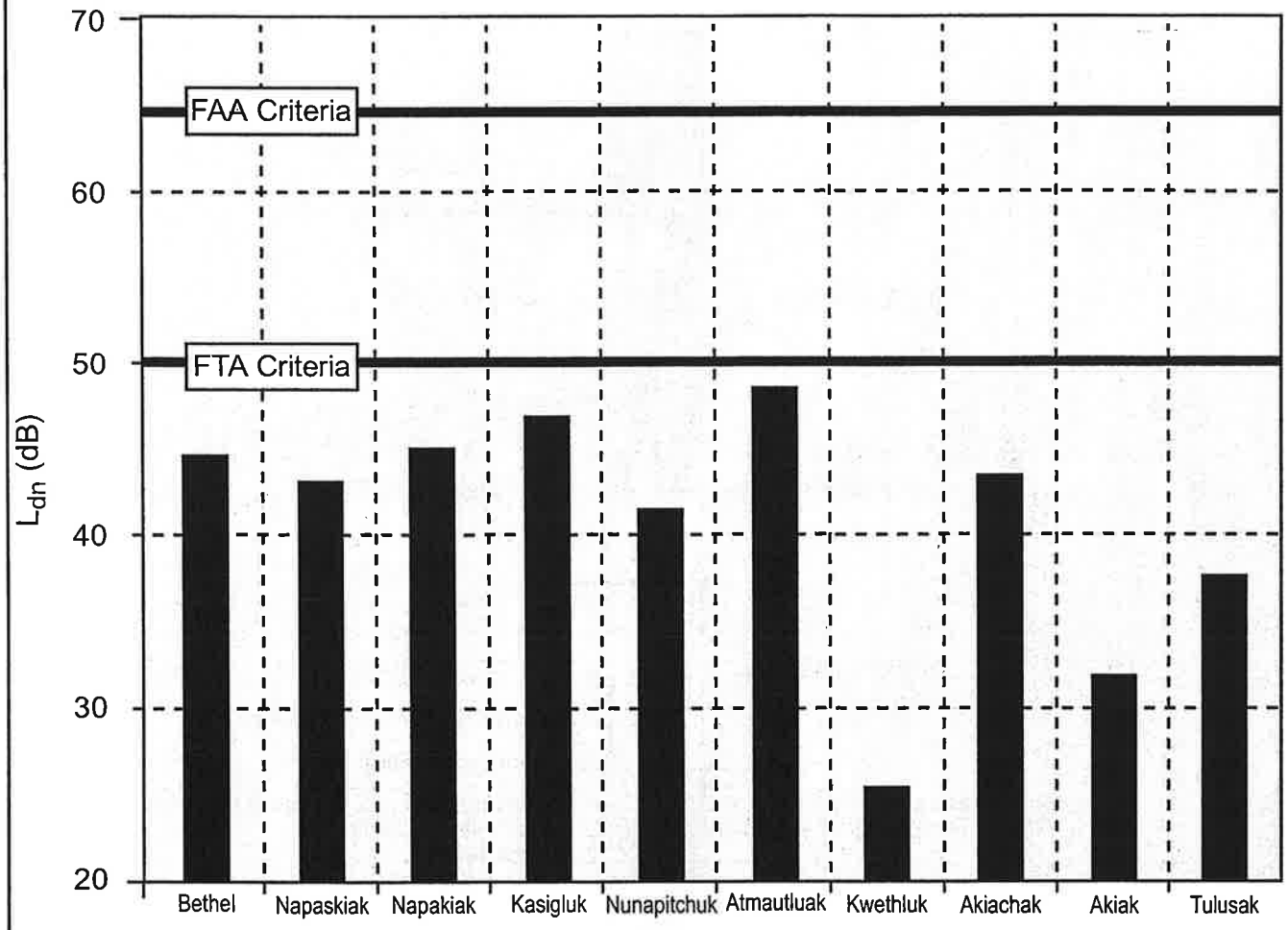
Figure 4.7



Note: Based upon the distance from landing site to nearest residence.

UNITED STATES POSTAL SERVICE	Projected Ambient Sound Levels (L_{dn}) for Villages with Hovercraft Operations USPS Transport of Alaska Bypass Mail by Hovercraft Supplemental Environmental Assessment	Figure 4.8

existing level at a location prior to introduction of the noise source. Based on FTA criteria, given an assumed ambient sound level of 40 dB (see Figure 3.1 - Farm in Valley), noise impact would occur when the introduction of the craft results in an L_{dn} of 50 dB or higher. Figure 4.8 presents predicted L_{dn} values for the loading sites at each village due to the introduction of the AP.1-88 hovercraft. Also presented in Figure 4.8 are the FTA and FAA criteria. The predicted values were computed using an empirical method consistent with that of the FAA's Integrated Noise Model (INM) (Fleming et al., 1997).

As seen in Figure 4.8, the noise associated with the proposed hovercraft operations at the closest dwelling unit for each village has been calculated to be within the appropriate FTA and FAA guidelines. Consequently, there will be no significant noise impact in the villages due to the AP.1-88. The predicted L_{dn} values were computed based upon specific hovercraft routing and operational information presented by Alaska Hovercraft JV (as discussed in Appendix F). The assumed ambient sound level is considered conservative based on the local dependence on noise generating equipment such as electricity generators, snowmobiles, four-wheelers, airplanes, automobiles, and boats. A limited village ambient sound level monitoring program during September 1997, which documented ambient sound levels averaging about 46 dB, confirmed that 40 dB is a conservative estimate for village ambient sound levels. Given higher actual ambient sound levels, the FTA criteria threshold indicated in Figure 4.8 would be raised, thereby increasing the number of allowable "No Impact" operations (see Table F-2). Noise "benefits," including the potential reduction of bypass mail airplane flights to the villages as a result of hovercraft operations, were not included in this analysis.

The noise analysis done on the AP.1-88 included residential noise receptors in Bethel and the nine villages. The study indicated that the largest portion of the noise impact is generated when the hovercraft is within 150 feet of the landing sites. This is a result of the noise characteristics of the hovercraft as it maneuvers for approaching and departing the landing sites. Where the hovercraft passes by without stopping, less noise is generated because the craft is operating at a nearly constant speed with minimal maneuvering.

Noise levels at fishing camps are anticipated to be considerably less than in the villages, as only pass-by activities would affect the camps. Thus, no significant adverse noise impacts on fishing camps or villages would be anticipated as a result of the proposed action.

4.5 Air Quality

The hovercraft operations were evaluated in two ways. First, the total amount of emissions was determined using published emission rates and times of operation. These emission rates are reported in mass per time. However, the total amount of emissions does not allow a direct comparison to the National Ambient Air Quality Standards (see Table 3.1). Since the National Ambient Air Quality Standards are related to the air we breathe, dispersion modeling was also done for carbon monoxide to determine if the standards were approached. Only carbon monoxide was evaluated because it is relatively non-reactive and as such can be modeled with current available U. S. Environmental Protection Agency (USEPA) practices.

4.5.1 Emission Rates and Total Emissions

The hovercraft uses two Deutz BF 10L413FC marine diesel engines (390 horsepower) for lift and two Deutz BF 12L413FC diesel marine engines (517 horsepower) for propulsion. Available emission rates were reported in the DPEA (USPS, 1997a). The DPEA stated that the emission

rates for all engines were similar and provided both idle and full power emission rates. The emission rates were provided for carbon monoxide, nitrogen oxides, hydrocarbons and sulfur oxides. These rates, derived from the subject document, are reported in Table 4.1. Unfortunately, the emission rate for particulate matter is not known and not reported. This is not considered to be a significant problem since no observations of a visible plume were noted during field operations in the 1997 tests. Because of these observations, Rule AAC 50.100 is not thought to be exceeded and particulate matter was not considered further.

The operation times were determined using the possible transport schedule presented in Section 2. The schedule includes both running times and waiting or idle times for the various days-of-the-week. In addition to these schedule times, a warm-up period of 15 minutes was included each day. Also, to ensure all operations are covered, an additional trip to all villages was included each week. This assumes that the mail volume will increase to warrant an additional trip to the villages each week. The operation times for running and idle are also shown in Table 4.1. For yearly estimates, a 52-week schedule was assumed.

Two scenarios were considered. In the first scenario the two lift engines were assumed to be running when unloading occurred. In the second scenario, the two lift engines were assumed to be at idle during unloading operations. In both scenarios, the two propulsion engines were assumed to be at maximum use during running and at idle during unloading operations.

Based on the emission rates per hour for each pollutant and the operation times, the total emissions that would be emitted were calculated (Table 4.1). The total emissions release does not constitute a major source as defined by the USEPA. Accordingly, the proposed action would not have a significant adverse impact on air quality.

4.5.2 Local Carbon Monoxide Concentrations

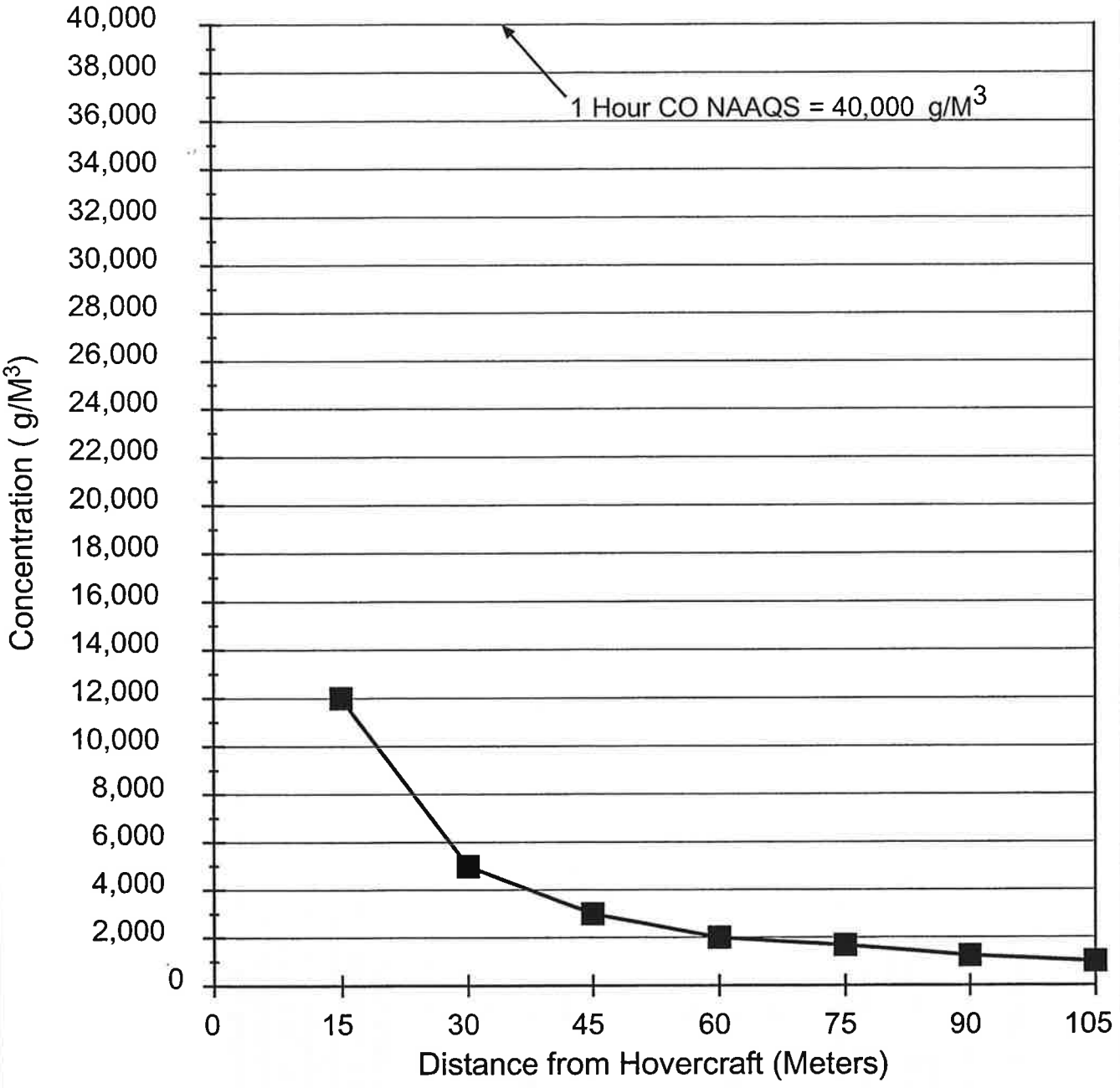
Even though the total amount of pollutant released does not constitute a major source, the impact on local concentrations was also considered. This was done by using established USEPA methodologies for dispersion modeling. A worst-case approach was taken. In this approach the worst-case weather conditions were assumed (little atmospheric mixing using stability class F and a low wind speed of 1 meter/second). To continue this worst-case approach, the dispersion calculations were done assuming the hovercraft was docked for 20 minutes, the wind was blowing directly toward the local villages, and all four engines were running at full power. The accepted USEPA Gaussian mathematical approach was used for a point source to calculate the dispersion. The standard deviations of the plume were derived for these short distances using the same approach as used in the USEPA promulgated model, CALINE3.

Figure 4.9 shows the results of these calculations. It can be seen that even using these very conservative assumptions, it is predicted that the local concentrations would only reach approximately 30 percent of the standard at 15 meters (about 50 feet) from the hovercraft. The villages are much farther away. Exceedance of the standard for carbon monoxide would not be possible at the villages. Because of the distances to the villages and the dispersion that would occur, no exceedances of the other concentration standards would be expected as well. These analyses indicate the proposed action will not have a significant adverse effect on air quality.

Table 4.1 Emission Rates and Total Emissions Released

	Pollutant	Running Emission Rate (grams/hr)	Idle Emission Rate (grams/hr)	Propulsion Engines		Lift Engines		Emissions				
				Run Time per Week (hours)	Idle Time per Week (hours)	Run Time per Week (hours)	Idle Time per Week (hours)	g/week	lb/week	lb/year	tons/year	mtons/year
Scenario 1	CO	465.3	44	32.75	10.92	42.42	1.25	71024	156.3	8129.6	4.06	3.69
	NOx	5376.8	91					810563	1784.2	92778.5	46.39	42.15
	HC	155.1	22					23853	52.5	2730.3	1.37	1.24
	SO_2	82.7	--					12436	27.4	1423.5	0.71	0.65
Scenario 2	CO	465.3	44	32.75	10.92	32.75	10.92	62876	138.4	7196.9	3.60	3.27
	NOx	5376.8	91					708336	1559.2	81077.4	40.54	36.83
	HC	155.1	22					21279	46.8	2435.6	1.22	1.11
	SO_2	82.7	--					10836	23.9	1240.3	0.62	0.56

Notes:
1. Emission Rates are as reported in USPS (1997)
2. Emissions Reported are based on 2 Lift Engines and 2 Propulsion Engines
3. Life Engines Running During Loading and Unloading at Villages
4. Engines NOT Running During Loading and Unloading at Villages
5. Run Time based on scheduled time of operations
6. Idle time includes warm-up (1.25 hours/week) and unloading time for Propulsion Engines
7. Idle time includes warm-up and unloading time in scenario 2 for Lift Engines
8. 1 metric ton (mton) = 1000 kg



Note: Based on worst case weather and all four engines operating.
NAAQS: National Ambient Air Quality Standard

UNITED STATES POSTAL SERVICE.

Local Area Carbon Monoxide Concentration Prediction Results

USPS Transport of Alaska Bypass Mail by Hovercraft
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Figure 4.9

4.6 Hazardous Materials

The hovercraft requires the use of lubricants, cleaning agents, and fuel. These materials have been a necessary part of the operations and maintenance of the hovercraft demonstration project over the last three years. In addition to the use of these materials, the hovercraft could occasionally be used to transport emergency home heating oil in the form of 55-gallon drums.

There were no reportable spills associated with the hovercraft demonstration project. To address the concern that the hovercraft would leave oil on the beach and the surface of the water at landing sites, oil was searched for after 46 landing events over a 12-day period spanning July and August of 1999. No oil was observed on the beaches and no sheen was observed on the waters of the various landing sites.

Because the operation of the hovercraft will require modest amounts of materials that are common to the operations of many modes of transportation, there will be no significant adverse impacts associated with the proposed action. The lack of reportable spills and observations made at landing sites supports this conclusion.

4.7 Socioeconomics

4.7.1 Safety

The results of the demonstration project have shown that transporting bypass mail is safe (USPS, 2000b). Except for the days when the ice was forming in the fall or breaking up in the spring, the hovercraft delivered mail six days a week. Communication on safety issues between Alaska Hovercraft Joint Venture and the village residents helped in maintaining a good safety record. Experience gained from the demonstration project indicates that the use of the hovercraft will not have a significant adverse impact on safety.

A secondary and positive safety impact associated with the use of the hovercraft is that there is another mode of transportation, in addition to aircraft, that is readily available during emergencies. If runways were too muddy or the weather was poor, the use of aircraft for an emergency situation might not be feasible. In 1998 and 1999, there were a total of nine instances where the hovercraft was used to transport people during medical emergencies when use of an aircraft was not possible (3 from Akiak, 3 from Kwethluk, 1 from Nunapitchuk, 1 from Akiak, and 1 from Napakiak).

4.7.2 Local Employment and Economics

Experience during the demonstration project has shown that while the proposed action may result in minor shifts in employment, overall local employment opportunities will not decline.

It will be necessary for the selected hovercraft contractor to employ some number of local residents in Bethel to accomplish their day-to-day operations. With the loss of revenue associated with transport of bypass mail to Tuluksak and Atmautluak, some bush air carriers will be faced with the decision of either curtailing or eliminating service out of Bethel. Since there are other destinations out of the Bethel hub and other hubs to which the air carriers could shift operations, it is anticipated that the overall impact on employment would be minimal.

The selected hovercraft contractor would employ, at a minimum, one agent in each village to help transfer bypass mail from the hovercraft to the village. In addition, the air carrier

transporting first class and priority mail would also employ, at a minimum, one agent in each village to transfer the mail from aircraft to the post office. It is not known if the total dollars paid to all these agents will be less or more than when all the mail was transported by airplane. Those contracts and the amounts paid are negotiated with the individual agents. However, the agents are paid according to the weight of the mail they transport and the total amount of mail should not change. Thus, there is the likelihood that the village agents' pay may not change significantly.

Reliable transportation of passengers and freight could result in some economic stimulation. Mail delivery and travel between villages will be more predictable using transportation that is not inconvenienced by extremes of weather and conditions of runways. Over the past 3 years, ridership has increased especially during times when conditions do not allow aircraft to fly (spring thaw, low visibilty, soft runways, standing water).

4.7.3 Bush Air Carriers

Currently, air carriers transport priority mail to the nine villages in the proposed action. Air carriers also transport bypass mail to Atmautluak and Tuluksak. Under the proposed action, the transport of bypass mail to Atmautluak and Tuluksak will be shifted from air carriers to the hovercraft. As a result, the bush air carriers that transport bypass mail to these two villages will lose approximately $540,000 in revenue per year, but will retain the revenue associated with transport of priority mail (Table 4.2). The revenue forgone by the bush air carriers will not be lost to the economy because hovercraft operations will result in local village operations to receive and deliver the mail.

At Bethel, bush air carriers that lose the bypass mail volume may respond by pulling out of the market or reducing their hub work force. These are more likely to be the carriers that fly cargo only, rather than those that provide full service (i.e., cargo and passengers). The selected hovercraft contractor may employ some of the individuals that may lose their jobs as a result in the shift in mail service.

The current level of passenger service will likely be maintained. Experience with the diversion of mail from air to surface transportation in other areas of Alaska and in Bethel during the demonstration project has shown that when companies withdraw passenger service, these services are often picked up by another air carrier. As evidence, the level of passenger service to the villages via air carrier is currently similar to the level that existed prior to the implementation of the demonstration project. Any reduction in air carrier passenger service that is not picked up by another air carrier will be at least partially offset by the passenger carrying capability of the hovercraft.

Because the air carriers can expand service to the other 18 villages out of the Bethel hub or fly out of other hubs, the impact of the proposed action on the bush air carrier industry in the Bethel area will not be significant.

Table 4.2 Weekly Revenue for Bush Air Carriers between Bethel and the Subject Villages

Subject Village	Total Weekly Mail Revenue	Weekly Priority Mail Revenue that will Remain	Variance
Akiachak	$288	$288	(0)
Akiak	$204	$204	(0)
Atmautluak	$3,131	$157	($2,974)
Kasigluk	$473	$473	(0)
Kwethluk	$257	$257	(0)
Napakiak	$201	$201	(0)
Napaskiak	$106	$106	(0)
Nunapitchuk	$280	$280	(0)
Tuluksak	$7,694	$343	($7,351)
TOTAL:	$12,634	$2,309	($10,325)

Note: Data from January 2000

4.8 Subsistence Activities and Commercial Fishing

The conclusion of the DPEA (USPS, 1997a) was that the operation of the hovercraft would not significantly affect subsistence activities or commercial fishing. Although the DPEA concluded that there would be no impact, the USPS agreed to conduct monitoring studies during the demonstration project. The monitoring studies that are relevant to commercial fishing are presented in Section 4.1. They confirm the conclusion of the DPEA. Results of studies conducted during the monitoring program are used in this section to better understand the potential for impacts from the proposed action. The subsistence questions answered via monitoring included:

- Is gillnet subsistence and commercial fishing affected by the passage of the hovercraft?
- Is blackfish subsistence fishing affected by the passage of the hovercraft?

Gillnet Catch

Gillnet fishing on the Kuskokwim and Johnson Rivers is an important means of subsistence fishing for residents and is the primary means of commercial salmon fishing. To assess if the hovercraft might be having an effect on subsistence and commercial gillnet fishing, fishing studies were conducted to discern possible differences in catch rates when the hovercraft travels by a gillnet (USPS, 2000a). The fishing experiment involved using pairs of net sets: test-sets (short net sets during which the hovercraft passed by) and control-sets (sets of the same duration without the hovercraft passing by). The test and control sets of each paired set were fished in the same location, one immediately after the other. Two types of nets were employed in the monitoring efforts: set nets, which are anchored in place often with one end attached to shore, and drift nets, which are allowed to drift with the current.

With the methods employed, higher catches in test sets would have indicated that fish are being driven into the nets, thus improving fishing success. Higher catches in control sets would have indicated that the opposite was occurring. In both 1998 and 1999, the difference between test

and control catch rates was not statistically significant (Figure 4.10). Thus based upon the results of the large statistical sample size (110 paired tests), the available evidence indicates that there will be no significant positive or negative effects of the hovercraft on subsistence or commercial gillnet catches.

Winter Blackfish Fishing

In response to concerns raised by residents of villages on the Johnson River, monitoring was undertaken during late January 2000 to evaluate the hovercraft's potential effects on blackfish subsistence fishing.

There was concern that the noise, currents, and underwater pressure produced by the hovercraft near fishing areas might scare blackfish away, thereby reducing the overall number of blackfish available for harvest. Similarly, there was concern that the disturbance might affect fishing success by causing the blackfish to stay away from rather than congregating in the fishing holes. The purpose of the monitoring was to determine if hovercraft operations drive fish away from traps or alter behavior such that they are less likely to enter the traps.

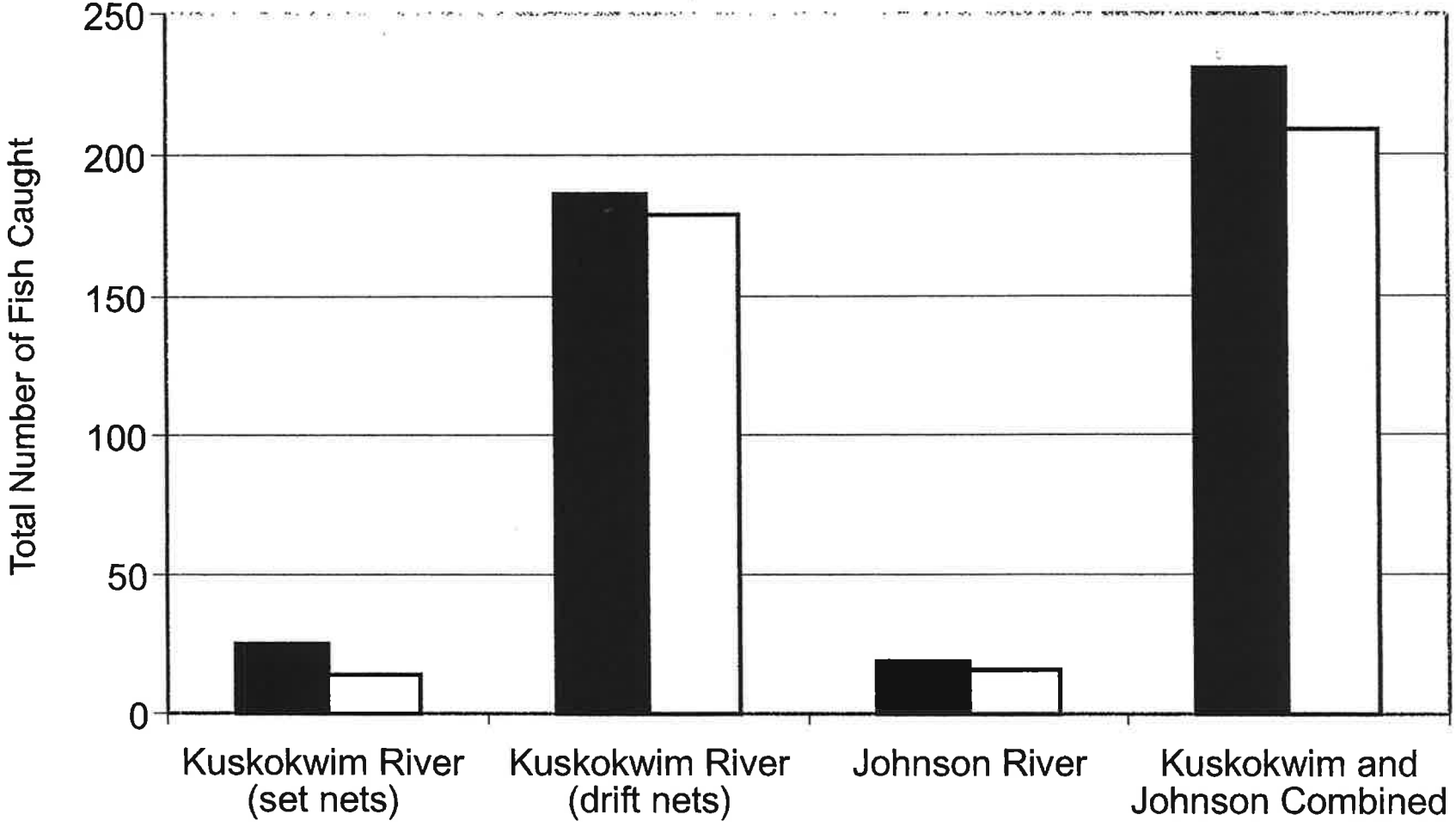
The results of the monitoring indicated that the hovercraft and snowmobile traffic (studied for comparison purposes) on the Johnson River did not have any significant adverse effect on blackfish behavior or fishing success (USPS, 2000a). Blackfish were observed using an underwater camera while the hovercraft passed by at varying distances (50 to 100 feet) from a fishing hole with a trap in place. During some of the passes, the blackfish exhibited slightly more swimming activity, but did not scatter or leave the water in the hole. During other passes, no change in behavior was noted. The abundance of blackfish in a given fishing hole did not change after the hovercraft had passed by the hole. No changes in fishing success were observed that were attributable to the hovercraft. Local fishermen interviewed during the monitoring study reported that the blackfish eventually leave the area near the village and move downstream as winter progresses. All the information gathered indicates that the proposed action of transporting bypass mail using a hovercraft would have no significant adverse impact on winter subsistence fishing for blackfish. Several fishermen reported that they were catching many more blackfish this year than during the previous two winter seasons and had pulled their traps because they had plenty of blackfish stored away (Esi Twitchell, pers. comm.; Levi Brink, pers. comm.; and others).

Subsistence Use of Wildlife

Based upon the results of the analyses presented in Section 4.1, no significant adverse impacts to wildlife subsistence resources are anticipated, including waterfowl, furbearers and large mammals. This conclusion, coupled with the fact that the proposed action will not affect the accessibility to subsistence resources, leads to the overall conclusion that the proposed action would not have significant adverse impacts on subsistence use of wildlife.

Conclusion on the Potential Impacts to Subsistence Activities and Commercial Fishing

Based upon the available evidence, the proposed action would have no significant adverse effect on the availability or abundance of fish for subsistence and commercial fishing (see Section 4.1.1). Furthermore, based upon the evidence, the proposed action would have no significant adverse effect on the success of subsistence or commercial fishing using gill nets or winter subsistence fishing for blackfish. Finally, the proposed action would not have a significant adverse impact on subsistence use of wildlife (see Sections 4.1.2 and 4.1.3).



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Results of Gillnet Fishing Experiments

USPS Transport of Alaska Bypass Mail by Hovercraft
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Figure 4.10

5.0 Comparison of Alternatives/Conclusions

The no-action alternative, transport of bypass mail by air carrier, is the condition that existed prior to implementation of the hovercraft demonstration project. The proposed action is the transport of bypass mail by hovercraft on a permanent, year-round basis to nine Alaskan villages. The environmental impacts associated with the no action alternative were evaluated in the DPEA and are incorporated by reference in this SEA since they have not changed. The potential impacts associated with the proposed action were evaluated in this SEA and are compared to those of the no-action alternative in Table 5.1. The conclusion of the evaluation is that the proposed action would result in no significant adverse impacts on human health or the environment.

Table 5.1 Comparison of Environmental Consequences of Alternatives

Resource	Alternative	
	No Action	**Proposed Action**
Fish and Wildlife	No change.	No significant adverse impact.
Threatened and Endangered Species	No change.	No impact.
Aquatic Resources	No change.	No significant adverse impact.
Noise	No change.	No significant adverse impact.
Air Quality	No change.	No significant adverse impact.
Hazardous Materials	No change.	No significant adverse impact.
Socioeconomics	No change.	No significant adverse impact.
Safety	No change.	No significant adverse impact.
Subsistence/ Commercial Fishing	No change.	No significant adverse impact.

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Appendix A

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Mr. Glen Tarr
AVCP
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Mr. Mike O'Brien
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Mr. Carl Pavilla
Natural Resource Specialist
Atmautluak Traditional Council
PO Box 6568
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Mr. Mike Rearden
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PO Box 346
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Dr. Paul Valihura
Hovercraft Committee Vice Chair
Volpe Center
Dept. of Transportation
Kendall Sq.
Cambridge MA 02142-1093
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Valihura@volpe.dot.gov

Mr. Glenn Van Valin
Alaska Hovercraft J.V.
Bethel AK 99559
Ph: (907) 543-1919
Fax: (907) 543-1921
GlenV@ahv.lyden.com

Hovercraft Village Distribution List

Ms. Annie Andrew
Tribal Administrator
Kasigluk Traditional Council
PO Box 19
Kasigluk AK 99609
Ph: (907) 477-6405
Fax: (907) 477-6212

Ms. June Ayagalria
Tribal Administrator
Napakiak I.R.A. Council
PO Box 2
Napakiak AK 99634
Ph: (907) 589-2135
Fax: (907) 589-2136
June_Ayagalria@AVCP.org

Mr. Earl Chase
Tribal Administrator
Nunapitchuk I.R.A. Council
PO Box 130
Nunapitchuk AK 99641
Ph: (907) 527-5705
Fax: (907) 527-5705

Mr. Sammy Jackson
Tribal Administrator (Ex. Dir.)
Akiak I.R.A. Council
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Mr. Phillip Nicholai
Tribal Administrator
Napaskiak Traditional Council
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Napaskiak AK 99559
Ph: (907) 737-7364
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Mr. John Owens
Tribal Administrator
Kwethluk IRA Council
PO Box 129
Kwethluk AK 99621
Ph: (907) 757-6714
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Mr. Jackson Lomack
Tribal Administrator (C.E.O.)
Akiachak I.R.A. Council
PO Box 70
Akiachak AK 99551
Ph: (907) 825-4626
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Mr. Nelson Nicholai
Tribal Administrator
Atmautluak Traditional Council
PO Box 6568
Atmautluak AK 99559
Ph: (907) 553-5335
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Appendix B – Notice of Intent

Appendix B – Notice of Intent

Notice of Intent

The United States Postal Service intends to prepare a Supplemental Environmental Assessment to address the potential environmental impacts that might be generated by a mail transport program involving Hovercraft in the Bethel, Alaska area.

The proposed action is to transport bypass mail by hovercraft between Bethel and nine villages surrounding the Kuskokwim, Johnson, and Pikmiktalik rivers. First-class, express and priority mail will continue to be transported daily by aircraft. The proposed action, including the "no action" alternative of maintaining the use of aircraft for mail transport, will be addressed. The service area includes Bethel and the nine villages of Akiak, Akiachak, Atmautluak, Kasigluk, Kwethluk, Napakiak, Napaskiak, Nunapitchuk, and Tuluksak.

The Supplemental Environmental Assessment is being prepared in accordance with the National Environmental Policy Act and its implementing regulations and procedures set forth in the Code of Federal Regulations and the USPS Facilities Environmental Handbook.

Anyone wishing to provide written comments regarding this proposed program should submit them by February 29, 2000 to:

Mr. Jim Nawrot
United States Postal Service Headquarters
475 L'Enfant Plaza, SW Room 7826
Washington, DC 20260-7133

The final document will be released for public review upon completion. Anyone requiring more information about the Supplemental Environmental Assessment Report should contact Jim Nawrot at the above address or by telephone at (202) 268-4373.

Appendix C – List of Agencies/Individuals Contacted and Example Scoping Letters

Appendix C – List of Agencies/Individuals Contacted and Sample Scoping Letter

In addition to the federal and state regulatory agencies, organizations, and community representatives of the Hovercraft Committee, the following persons were contacted:

Ms. Judith Bittner
State Historic Preservation Officer
Office of History and Archaeology
Division of Parks and Outdoor Recreation
3601 C St., Suite 1278
Anchorage, AK 99503-5921

Mr. Gary Wheeler
Ecological Services
US Fish and Wildlife Service
605 West 4th Avenue, G-2
Anchorage, AK 99501

Mr. John Leeds
U.S. Army Corps of Engineers District, Alaska
Regulatory Branch
Corner of Plum and Bluff Avenues
Anchorage, AK 99506-0898

Tuluksak Native Community Council
PO Box 95
Tuluksak, AK 99679

U.S. Department
of Transportation

**Research and
Special Programs
Administration**

John A. Volpe
National Transportation
Systems Center

55 Broadway
Kendall Square
Cambridge Massachusetts 02142

January 19, 2000

Ms. Judith Bittner
Office of History and Archaeology
State Historic Preservation Officer
Division of Parks and Outdoor Recreation
3601 C St., Suite 1278
Anchorage, AK 99503-5921

Subject: Mail Transport by Hovercraft to Nine Villages near Bethel, Alaska

Dear Ms. Bittner:

The United States Postal Service (USPS) is proposing a program to transport bypass and non-priority mail by hovercraft (also known as air-cushioned vehicle) on a year-round basis to nine villages near Bethel, Alaska. The U.S. Department of Transportation, Volpe National Transportation Systems Center (Volpe), as part of a broad program of environmental support to the USPS, is engaged in a Supplemental Environmental Assessment (EA) of the proposed action. The preparation of this Supplemental EA is in accordance with the National Environmental Policy Act (42 U.S. C. 4321 *et seq.*), the Council on Environmental Quality regulations (40 CFR 1500), and USPS regulations (39 CFR 775). Concurrent with the NEPA process, the USPS intends to meet their obligations under the National Historic Preservation Act of 1966. In accordance with Section 106 of the Act, I am writing to request information on whether any district, site, building, structure, or object that is included, or eligible for inclusion in, the National Register of Historic Places, may be present in the program's service area illustrated on the attached transport route map. Hovercraft operations for this project are planned to begin on July 1, 2000. A decision to proceed with the action will not be made until the environmental review process is completed.

The purpose of the project is to transport bypass and non-priority mail to nine remote villages near Bethel, Alaska (see attached Transport Route Map). First-class, express and priority mail will continue to be transported daily by aircraft. The Supplemental Environmental Assessment will consider the use of a typical or characteristic hovercraft vehicle. Two feasibility studies were completed that considered the technical aspects of hovercraft technology in the Yukon Delta area of Alaska (Arthur D. Little, *Hovercraft Technology*, U.S. Postal Service, September 1994; and Arthur D. Little, *Hovercraft and Pressure Ridges*, U.S. Postal Service, October 1994). The studies concluded that current hovercraft technology was found to be appropriate in the Alaskan environment. Furthermore, an Environmental Assessment was completed in July 1997 *(Final Alaska Hovercraft demonstration Project Environmental Assessment and Finding of No Significant Impact*, U.S. Postal Service, July 1997), and it was concluded that there would not be a significant adverse impact on the Kuskokwim, Johnson and Pikmiktalik River environments from use of the Hovercraft to transport mail during a two-year demonstration project.

Ecological monitoring was accomplished during the two-year demonstration project and the results will be included in the Supplemental EA.

The hovercraft will transport bypass and non-priority mail by using the corridors of the Kuskokwim, Johnson, and Pikmiktalik Rivers, and will not go onto the tundra. The planned schedule involves departure from Bethel and travel up the Kuskokwim River on Monday, Wednesday, and Friday to transport bypass mail to the villages of Kwethluk, Akiachak, Akiak, and Tuluksak. The hovercraft will depart from Bethel and proceed down the Kuskokwim and up the Johnson and Pikmiktalik Rivers on Tuesday, Thursday, and Saturday to transport bypass mail to the villages of Napaskiak, Napakiak, Atmautluak, Nunapitchuk, and Kasigluk. At the end of each day, the hovercraft will return to Bethel. The hovercraft may occasionally make additional trips if mail volume warrants. No docks, ramps or other structures are planned to be constructed for mail transport operations at the villages. At each village an agent will meet the hovercraft at the river's edge to receive the mail for delivery to the village and transfer outgoing mail to the hovercraft for transport elsewhere. Although not part of this Federal action, the hovercraft may have the capability of hauling freight and providing passenger service.

Local villagers landing their boats have previously disturbed the delivery sites at each village. Access back to the villages from the river's edge is along established trails, water bodies, or roads. Thus, no additional roads or paths back to the villages will need to be constructed. The landing sites and transport routes were selected to maintain adequate distance from residences. This mitigation strategy, along with observing noise-reducing speed limits and other operational procedures as the hovercraft approaches the delivery sites, will allow the operation to remain below the Federal Aviation Administration recommended maximum of 65 dB (A) time-weighted day/night noise levels. Any necessary construction for a hovercraft hangar and ancillary buildings at Bethel will satisfy all Federal and State regulations.

The USPS has proposed several strategies to reduce potential concern as part of the project. The hovercraft will not operate in those sections of the rivers used during Commercial Openings. In addition, the hovercraft can augment its operation with other transportation modes (i.e., airplanes, boats, trucks, etc) to satisfy delivery standards.

Please advice me of any environmental concerns that you feel should be addressed in the Supplemental EA. I kindly request that you send your comments to me by February 29, 2000 so I can consider them in the Supplemental EA. Should you have any questions, please contact Jose G. Mantilla at (617) 494-2464 or by email at mantilla@volpe.dot.gov, or myself at (617) 494-2918 or by email at valihura@volpe.dot.gov.

Sincerely,

Paul J. Valihura, Ph.D.
Volpe National Transportation Systems Center

Enclosures: 1. Transport Route Map

John A. Volpe
National Transportation
Systems Center

**Research and
Special Programs
Administration**

January 19, 2000

Mr. Gary Wheeler
U.S. Fish and Wildlife Service
Ecological Services – Anchorage
605 West 4th Avenue
Anchorage, AK 99501

Subject: Mail Transport by Hovercraft to Nine Villages near Bethel, Alaska

Dear Mr. Wheeler:

The United States Postal Service (USPS) is proposing a program to transport bypass and non-priority mail by hovercraft (also known as air-cushioned vehicle) on a year-round basis to nine villages near Bethel, Alaska. The U.S. Department of Transportation, Volpe National Transportation Systems Center (Volpe), as part of a broad program of environmental support to the USPS, is engaged in a Supplemental Environmental Assessment (EA) of the proposed action. The preparation of this Supplemental EA is in accordance with the National Environmental Policy Act (42 U.S. C. 4321 *et seq.*), the Council on Environmental Quality regulations (40 CFR 1500), and USPS regulations (39 CFR 775). The purpose of this letter is to notify you of the proposed project and to solicit your comments on specific environmental concerns that should be addressed in the Supplemental EA. Concurrent with the NEPA process, the USPS intends to meet their obligations under the Endangered Species Act (ESA) of 1973. In accordance with section 7 c(1) of the Act, I am writing to request information on whether any species, or their critical habitats, which are listed or proposed to be listed, may be present in the program's service area illustrated on the attached map. Hovercraft operations for this project are planned to begin on July 1, 2000. A decision to proceed with the action will not be made until the environmental review process is completed.

The purpose of the project is to transport bypass and non-priority mail to nine remote villages near Bethel, Alaska (see attached Transport Route Map). First-class, express and priority mail will continue to be transported daily by aircraft. The Supplemental Environmental Assessment will consider the use of a typical or characteristic hovercraft vehicle. Two feasibility studies were completed that considered the technical aspects of hovercraft technology in the Yukon Delta area of Alaska (Arthur D. Little, *Hovercraft Technology*, U.S. Postal Service, September 1994; and Arthur D. Little, *Hovercraft and Pressure Ridges*, U.S. Postal Service, October 1994). The studies concluded that current hovercraft technology was found to be appropriate in the Alaskan environment. Furthermore, an Environmental Assessment was completed in July 1997 *(Final Alaska Hovercraft demonstration Project Environmental Assessment and Finding of No Significant Impact*, U.S. Postal Service, July 1997), and it was concluded that there would not be a significant adverse impact on the

Kuskokwim, Johnson and Pikmiktalik River environments from use of the Hovercraft to transport mail during a two-year demonstration project. Ecological monitoring was accomplished during the two-year demonstration project and the results will be included in the Supplemental EA.

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Sincerely,

Paul J. Valihura, Ph.D.
Volpe National Transportation Systems Center

Enclosures: 1. Transport Route Map

John A. Volpe
National Transportation
Systems Center

**Research and
Special Programs
Administration**

January 19, 2000

Contact person
Agency
Address
City, State and Zip code

Subject: Mail Transport by Hovercraft to Nine Villages near Bethel, Alaska

Dear Sir or Madam:

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Please advice me of any environmental concerns that you feel should be addressed in the Supplemental EA. I kindly request that you send your comments to me by February 29, 2000 so I can consider them in the Supplemental EA. Should you have any questions, please contact Jose G. Mantilla at (617) 494-2464 or by email at mantilla@volpe.dot.gov, or myself at (617) 494-2918 or by email at valihura@volpe.dot.gov.

Sincerely,

Paul J. Valihura, Ph.D.
Volpe National Transportation Systems Center

Enclosures: 1. Transport Route Map

Appendix D – Responses to Scoping Letters

11-12-99

COMMUNITY SURVEY ON HOVERCRAFT
BY: NELSON NICHOLAI

QUESTION 1.: HOW DID IT EFFECT THE WILDLIFE WHEN IT USED TO LAND HERE IN ATMAUTLUAK?

QUESTION 2.: WHAT ABOUT THE WILDLIFE; HOW IS IT DOING AFTER IT STOPPED LANDING HERE IN ATMAUTLUAK?

ON QUESTION 1.:

MOST OF THE COMMUNITY IN THIS VILLAGE OF ATMAUTLUAK DIDN'T LIKE THE HOVERCRAFT LANDING HERE IN ATMAUTLUAK.

THE ANSWER FOR THE WILDLIFE MOSTLY DECLINED LIKE THE WATERFOWL, FISH, AND OTHER SPECIES SUCH AS: MINKS, RABBITS, FOXES, AND OTHER ANIMALS.

THE FISHES USED TO BE PLENTY AND USED TO BE BIG BUT NOW, THEY GOT SMALLER.

THE DUCKS, GEESE, AND OTHER WATERFOWLS ALSO DECLINED, AND SEEMED TO MOVE FURTHER AWAY FROM THE AREA THAT THE NOISE YOU CAN HEAR FOR ? MILES AWAY, BEFORE IT LANDS HERE TO ATMAUTLUAK.

THE COMMUNITY WERE EXCITED THAT IT DOESN'T LAND HERE TO ATMAUTLUAK ANYMORE. WHILE ASKING THE QUESTIONS OF THE COMMUNITIES; THE PEOPLE OF ATMAUTLUAK SUGGESTED THAT THEY SAW SOME DEAD FISHES' FLOATING NEAR THE RIVER BANKS DURING SUMMERTIME. SMALL FISHES' WERE MOSTLY FLOATING BUT, NOT MANY OF THE BIGGER ONES.

PEOPLE'S NETS USED TO CATCH PLENTY BEFORE IT STARTED LANDING HERE TO ATMAUTLUAK. AFTER THAT, PEOPLE'S NETS STARTED TO CATCH LESS, MOSTLY ON THE SMALLER FISHES.'

PEOPLE COMPLAINED ABOUT THE NOISY LIKE, IT'S A POLLUTION THAT IT IS EFFECTED BY THE AREA, SCARING THE WATERFOWLS AWAY.

ON QUESTION 2.:

WHEN THE HOVERCRAFT STOPPED LANDING HERE TO ATMAUTLUAK, THE COMMUNITY WERE EXCITED TO SEE MORE WILDLIFE ANIMALS. THE WATERFOWLS HAD COME BACK: DUCKS, GEESE, AND OTHER SPECIES, EVEN DURING THE FALL TIME, THE PEOPLE SEE MORE BIRDS FLYING ABOVE ATMAUTLUAK AND IN SOME AREAS.

THE FISH GOT BIGGER, AFTER THE HOVERCRAFT STOPPED COMING HERE TO ATMAUTLUAK. THE PEOPLE'S NETS CATCH MORE BIGGER FISH EVEN, DURING WINTER FALL FREEZE UP. THE BLACK FISH TRAP CATCHES MORE PIKES DURING THE SUMMER. WHEN PEOPLE GO UP AND DOWN JOHNSON RIVER, THEY HARDLY SEE DEAD FISH FLOATING NEAR BY, EVEN SMALL FISH. PEOPLE STARTED SEEING BIG FISH, CARIBOU'S MOOSE AND OTHER WILDLIFE ANIMALS AROUND THE AREAS.

THE OTHER QUESTIONS I ASKED WERE; WHAT DO THEY THINK ABOUT THE HOVER CRAFT WHEN IT USED TO LAND HERE IN ATMAUTLUAK? I ANSWERED, "WHEN THE HOVERCRAFT USED TO COME HERE TO ATMAUTLUAK, PEOPLE DIDN'T LIKE IT AND IT WAS DECREASED. THE WILDLIFE DECLINED WHEN IT USED TO LAND HERE IN ATMAUTLUAK."

NELSON NICHOLAI'S
REPORT

Appendix E – Comments on the Draft SEA and USPS Responses

E-1: Comments Received During Comment Period

E-2: Comments Received After Comment Period

Appendix E-1 – Comments Received During Comment Period

NAPASKIAK TRIBAL COUNCIL
P.O. Box 6009
Napaskiak, Alaska 99559
(907) 737-7364 • Fax (907) 737-7039

April 25, 2000

To Whom It May Concern:

Subject: Proposed USPS Permanent Hovercraft Mail Service

I am writing on behalf of the Native Village of Napaskiak (Napaskiak Tribal Council) the governing body for Napaskiak. We receive bypass mail services from the USPS through Lynden transport via Hovercraft. This project started in our village and others on the Kuskokwim River, despite concerned opposition from our various tribal members and village elders.

This letter is in regards to the comments from the observations by the Native Village of Napaskiak. Although there are some finding of no significant impacts on the operation of the hovercraft there is an impact, and the impact needs to be noted. We feel there are some discrepancies noted by us in the proposal to provide permanent delivery via hovercraft.

The discrepancies are noted as follows:

1.1 Introduction - "The purpose of the project was to determine if hovercraft technology is a reliable method of transporting mail in this region of Alaska... Near the completion of the first two years of the demonstration project, it was evident that more time was needed to evaluate hovercraft mail transport...."

In our opinion the hovercraft mail service is just as reliable or worse than the fixed wing aircraft service as was done before. There are times of high wind, rough waters, breaking up ice and freezing up ice where it can not travel on the river in a year, combined that is equal to or more "down time" than fixed wing aircraft in a couple of years. Why did they need the extension to evaluate the project? To cut down the ratio of the time the hovercraft was in operation to maintenance and out of commission? 3 1

1.2 Purpose and Need: "The project is needed to assist the USPS in meeting its mission in the Bethel area, which is to provide prompt, reliable and efficient postal service within mail service standards. This commitment extends to providing service at the highest level of quality and at the lowest possible cost. Specifically, a proven method of transport bypass mail to rural areas surrounding Bethel is needed that will economically satisfy bypass mail service standards (USPS, 2000c)"

Prompt? The mail service has slacked a great deal since the hovercraft has started its operation. The general merchandise store in Napaskiak orders via bypass mail to save on cost of goods and the frozen goods arrive thawed out and canned goods arrive frozen. Reliable? The hovercraft has a three times a week schedule compared to 2 or 3 times a day 6 days a week with fixed wing airplane to Napaskiak. Not to be too critical, out of three years now it only has met the schedule 2 – 3 consecutive months total out of 36 months. The goods that we order by regular parcel post now take a month or even longer compared to up to 2 - 3 weeks. Mail that is ordered that is shipped parcel post have little or no storage, and it has to be transported from the 2

main airlines, by truck to the hovercraft, hovercraft to the villages, the pallets get broken down in the villages because the village staff people do not have sufficient enough transportation to pack the cargo by pallets (a move that was done before the cargo transported to the villages by airplane), both ways there is damage to our mail, more so with the hovercraft. Efficient? A mechanic works through out the night after just about every trip just to perform maintenance on the hovercraft so it can be operational, think of the overtime hours spent on the maintenance and spare parts used. Three diesel engines consume 60 gallons an hour and these trips that the hovercraft takes on a daily basis up and down the river well exceed 6 hours, which is at a minimum of 360 gallons of fuel per day. The cost of heating fuel number 1 (the only fuel that would be used in exremely cold weather, #2 will gel at a certain temperature) costs well over $70.00 for a 55-gallon container. Who is paying for the maintenance of the hovercraft to deliver mail for us? We are, the price of a postage stamp rose from .32 cents to .33 cents since the hovercraft started. 4

Prompt? Reliable? Efficient? If anything, to our opinion, the hovercraft operation has proven to be just the opposite of those three words within mail service standards. It is lowest level of quality at the highest possible cost in our opinion.

We live in a harsh environment with a network of lakes, wetlands and rivers. Before the airplane, one or two people delivered mail with dogsleds and boats (alternative methods at work: phased out by the fixed wing airplane). Historically, mail was delivered by airplane for so many years (since the first airplane citing over 70 years ago), because of our unique environmental setting. Therefore, our area breeds a different kind of pilot, the Bush Pilot. The cost of a six-passenger airplane now costs $90.00 to $120.00 compared to $60 - $65 for a five-minute one-way ticket to Bethel. This is after the hovercraft steering committee said they would not adversely affect the airplane transportation in our area. The cost is outrageous but we have learned to survive. 5

1.4 Public Involvement – "... The USPS believes that public involvement is fundamental to understanding the culture and tradition of the local people as well as understanding the environmental process and proposed actions. As a consequence, the USPS has made extraordinary effort over the last three years to engage native Alaskans, the local residents, the general public, and resource agencies..."

The USPS and the hovercraft steering committee came to introduce the idea of the hovercraft as mail service well after they were thinking about starting such a service and after the idea has started rolling with some legislatures backing the idea. Public involvement? At that meeting, our elders and people attending the meeting voiced their concerns, but they were politely brushed off (a slap in the face for speaking our mind) The USPS understands the culture and tradition, but they do not have the general idea. The river and the surrounding environment is the backbone of our society and we live off the land, the food from the grocery stores serve as a subsidy to our life style. The hovercraft being used weighs several tons and it needs several tons or more of thrust to lift it on a cushion of air to be able to travel. I am scared to think about the noise and vibration extending into the river when it is traveling. Doesn't noise travel farther in water than air? 6 7

1.4.2. Hovercraft Committee – "An additional avenue of public involvement over the past three years was the use of a voluntary Hovercraft Committee, formed prior to the beginning of the demonstration project... the Committee has served as an informal conduit of information from the federal, state, and local representatives on the operational and environmental performance of the hovercraft... Public attendance and comment was encouraged at these meetings."

Although it is stated here, the hovercraft committee has no voice in the HC meetings. The Committee, for the most part, is there for informational purposes. The HC Committee Chair has the final say in all the decision-making (See attached complaint letter). Democracy is not exercised. Public attendance and comment was encouraged at these meetings, but the ideas presented to the HC Committee were heard but nothing was done towards or about the issues. It is for this reason; Napaskiak does not attend the HC Committee meetings. 6

2.1 Proposed Action – "... permanent, year-round basis from the City of Bethel to nine Alaskan villages... Atmautluk, Kasigluk, Napakiak, Napaskiak, Nunapitchuk, Kwethluk, Akiachak, Akiak and Tuluksak... The RFP for hovercraft mail service issued by the USPS does not stipulate the type of hovercraft to be used, the location in Bethel at which it will be housed, specific landing sites at the nine villages, transport schedules or transport routes..."

A permanent year round basis for mail service? A true permanent year round basis for mail service is a fixed wing aircraft. They do not stop transport during the dangerous freeze up of the river or dangerous break-up of ice on the river. Throughout this proposal it is proposed and states the above quoted items are things concrete. This is contradictory to the above proposed action. 8

2.2 Other Action Alternatives – "... planes are sensitive to weather conditions and cannot be used during spring thaw when airfields are too muddy for landings..."

It is to our understanding, that airports through out the state (especially YK Delta area) are being upgraded. Y-K Delta residents recall and frequently state of their observations of the hovercraft being stranded on the riverbanks on the Kuskokwim during severe summer winds. As we all know, we live in a harsh environment, which can turn rancid with a flip of a coin. And the Bush pilots, as stated before, are well capable of handling this type of weather. 3

With this letter we submit our comments to the proposed operation of the hovercraft on a permanent year round basis. If you have any questions please don't hesitate to contact Phillip Nicholai Jr., Tribal Administrator at the above phone number and address.

Respectfully Submitted,
Native Village of Napaskiak

Chris G. Larson, Chief

Cc: AVCP, Inc. Environmental
Hovercraft Committee
file

NUNAPITCHUK, LIMITED
PO Box 129
Nunapitchuk, Alaska 99641-0129
(907)527-5717 phone
(907)527-5229 fax

April 25, 2000

Paul J. Valihura
Senior Environmental Scientist
Volpe National Transportation Systems Center
Kendall Square
Cambridge, MA 02142

Subject: USPS Hovercraft comments

I am writing on behalf of the Board of Directors, Management & Staff of Nunapitchuk, Limited General Store, one of the main grocery & general merchandise retailers of our community. Before the Hovercraft project started on the Kuskokwim a few years ago, we mainly received our merchandise through the USPS bypass system which delivered to us with airplanes. We order large quantities of merchandise one week at a time, and back then, when the bypass plane delivered to our village, it took many, many trips thousands of pounds at a time. Sometimes, it took all day and into the after-hours of the business day. But, at least the frozens came into the store still frozen, and the produce fresh and not moldy. We have since given up on keeping fresh produce on hand since the hovercraft came to be in our town. I'll say one good thing about the hovercraft: at least we get our merchandise in one trip, all at once, when it gets here. 2

I am opposed to the hovercraft project becoming a permanent fixture in our region because now the cost of plane transportation has skyrocketed, sometimes out of the reach of our fellow citizens, most who are on public assistance and strapped for cash. But, sometimes there is no choice but to take a plane into Bethel, because of bad river conditions, despite the outrageous airfare. Airplanes are the main mode of transportation around here, and the airlines have been forced to up their fares since the implementation of the hovercraft program. Mail gets here only a few times a week, compared to daily everywhere else in the United States. Break-up time is coming soon too...do you know how we are going to get our by-pass in by then? 5 8

Sincerely,

Elaine G. Andrew
Bkkpr.

City of Nunapitchuk
PO Box 190
Nunapitchuk, AK 99641
(907) 527-5327 fax 5011

April 25, 2000

Paul J. Valihura
Senior Environmental Scientist
Volpe National Transportation Systems Center
Kendall Square
Cambridge, MA 02142
Fax (612) 494-2789

The Community of Nunapitchuk on numerous joint venture meetings has opposed the hovercraft operation fearing that our livelihood might be impacted permanently. Our community is dependent upon living off the land and river. We subsistence for the Tundra whitefish, pike, black fish, waterfowl, land mammals, etc. It is evident that these species are still around but in lesser numbers. The main white fish species that we want to eat is primarily affected whereby it is caught very rarely by all gill-netters in our nearby lakes. Our community with the same as neighboring villages of Kasigluk and Atmautluak want and hunt this whitefish that is almost becoming extinct. Efforts by local fishermen show that they now have to scavenge to other Kuskokwim tributaries below the mouth of Johnson River to try and catch these delicacies for the upcoming winter. In the two-year period of hovercraft demonstration there have been significant impacts to the decrease of white fish to our community. 7

Also the hovercraft operation significantly slowed down the mail system and increased airfares thereby disrupting our quality of life. Examples of these are that produce arrives rotten and mildewed. Orders from urban Communities especially Anchorage, Alaska take longer to arrive to our village. And some mail never reach their destinations and the new regulations under the workforce development programs have affected reporting requirements at the end of each month to public assistance recipients (of which our communities are members) with provisions for five (5) day penalties in which if not received within that time limit that they will be eliminated from the program. The hovercraft operation will not be an acceptable form of mail service due to time constraints with a massive amount of miles to cover in enormous southwest region in the big State of Alaska. More than 50% of our citizens must get public assistance because of inadequate infrastructure. So the level of the quality of life is adversely affected in the high rise of airfares to my community public assistance participants, and further to all citizens of the nine villages being served by the hovercraft operation in the Kuskowim River drainage. 2 5

There are no employment opportunities except maybe one and on occasion couple of laborers in our village but a degree of transportation opportunities of heavy appliances and of goods has been appreciated. In terms of passenger service it rates maybe 50-50 because on the one hand it is too slow and on the other inexpensive compared to the hovercrafts adversely effected local airlines airfares. In summary, our airport unloading access area on the riverbank near our Airport is becoming messy and the soil is being damaged. 9

Tremendous pressure from heavy merchandise develop obnoxious winds thereby creating sand and gravel to be up heaved to nearby boats and sometimes flipping small boats parked too close to the unload area. Vibrations are immense and spawning of our local aquatic and marine mammal animal life is at risk, which will adversely affect our subsistence way of life. Marine mammals such as seals sometimes migrate up the Johnson River during August of each year which are at risk of being scared back out to sea and land animals such as Caribou, reindeer, otter, beaver, rabbit, wolverine, waterfowl, and Moose are also at risk. We know that noise produced by the hovercraft is loud and animals shy away from loud noises of any nature. We cannot solely depend on the white mans contraptions and overall domestic imports because our ancestors have warned us not to depend on them but to live off the land as much as possible although utilizing modern technologies. Hovercraft operation is in opposition to our neo-subsistence lifestyle.

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Adversely impacting the white fish, waterfowl, including all marine and land mammals is in direct violation of our Yupik culture and is in opposition to Coastal Zone Management policy objectives. They are adopted by the Cenaliulriit Coastal Resource Service Area which stipulates under their goals that development be conducted in a manner compatible with sensitive fish and wildlife populations and habitats of which a key objective is to protect river, stream, and lake habitats from **disturbances** or alterations that would diminish their ability to provide productive habitats for fish and wildlife resources. Hovercraft operation is 100% disturbance to fish and wildlife. It is also detrimental to higher cost of airfares because small bush pilots are deprived of a federal subsidy for mail service. Delayed arrival of products results in rotten/mildew produce and slow passenger delivery especially when we have competitive hospital appointments. I mean that health care is hard to miss especially when there is very limited capital (public assistance and food stamp recipients) and when the hospital appointments are delayed another two to three months then you are in trouble. This will eventually happen in Bethel when your dental appointment could be delayed anywhere from 2-3 months.

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Sincerely Yours,

Robert Nick

Rn;ejw

Robert Nick/Mayor

CC: AVCP,INC.
Div. of Gov.Coord.Maureen McCree
Cenarliulriit Gail Alstrom

Nunapitchuk IRA Council
P.O. Box 130
Nunapitchuk, AK 99641
(907) 527-5705 fax 5721

April 28, 2000

Paul J. Valihura
Senior Environmental Scientist
Volpe National Transportation Systems Center
Kendall Square
Cambridge, MA 02142
Fax (612) 494-2789

The following summary of comments, concerns, and statements were made by many members of our local governments, City Council, Tribal Council, elders and interested parties regarding the means of using the hovercraft for the delivery of by-pass mail to the Native Village of Nunapitchuk. Prior to the start of this project, members of U.S.P.S. came and met with our local councils and right from the start, we opposed the use of hovercraft for delivery of by-pass mail.

What is by-pass mail?

1) By-pass mail is frozen foods such as:
    a) Meats
    b) Poultry
    c) Ice cream and other frozen snacks
2) Dry goods ordered in season such as:
    a) Clothing
    b) Hardware
    c) Groceries
    d) Fresh produce
3) All other products ordered in large volumes and parcel post products.

Why is the Postal Service using the hovercraft?

1) To determine if hovercraft technology is a reliable method of transporting mail in this region.
2) To provide prompt, reliable, and efficient postal service within mail service standards.
3) To save the U.S.P.S. expenses that we were told needs to reduce postal service expenses.

Meeting after meeting, during the last two years, the topic of the hovercraft comes up and discussions ensue. The following are some of the issues brought forth.

1) We were made to understand that this method of by-pass delivery of mail with the hovercraft would be a two year project to see if this method would be more economical rather than using aircraft as had been done for the past century. During a meeting last spring a question was asked if the hovercraft is

saving the U.S. Postal Service expenses. The answer was that the project is costing more than it had planned. So why is the Postal Service wanting to continue this method at twice the cost of delivery.

The current schedule for Nunapitchuk's hovercraft service is Tuesday, Thursday and Saturday, and the new schedule is to provide service two times a week. This reduction in service would greatly reduce promptness of delivery, the efficiency of service, and the reliable timely delivery of by-pass mail. The following aircraft companies provide daily and twice daily service to this village: 10

1) Hageland Aviation – Twice daily
2) Yute Air – When there is traffic
3) Grant Aviation – Daily
4) A.T.S. – When there is traffic
5) Arctic Circle Air – When there is traffic
6) Camai Air – Has not been servicing Nunapitchuk
7) Yukon Aviation – When there are charters
8) Craig Air – When there are charters

Also, it has been seen since the hovercraft has been in operation, the airlines such as Yute Air, Penn Air, Ace Cargo and Frontier Air stopped or slowed service to the village of Nunapitchuk. Therefore, flights to and from Nunapitchuk are less and causing some people to spend the night in Bethel or having to wait another day here because there aren't enough flights to get on. 5

Local stores order their merchandise via by-pass mail to bring prices down. Frozen products have arrived thawed out and food products such as canned goods have arrived frozen. The Johnson river route has two villages on thee same trip, so by-pass mail is sometimes delivered in other delivery days in which case it is kept two more days in the Bethel warehouse. 2

Nunapitchuk is located on the banks of the Johnson River in one of Alaska's many wetland areas and is within the boundaries of Clarence Rhodes National Wildlife Refuge. The people in this village subsist on the fish of the lakes and rivers. These fish are fresh water fish namely:

1) White fish (5 species)
2) Pike
3) Cisco'
4) Lush fish
5) Black fish
6) Shee fish

These fish spawn in the headwaters of the many rivers, lakes and wetlands of what we call tundra.

We are also located in the nesting habitat of waterfowl, i.e. geese, swans, cranes, and all the small duck species. Prior to the use of the hovercraft, we used to see the mother ducks with duckling's swimming along the Johnson River and immediate riverside coves and also lakes. In the two years the hovercraft has been in operation, these ducks/duckling's in tow are absolutely no longer seen in the Johnson River below the village in the hovercraft's route. These ducks nest in the marshy wetland banks of the Johnson River. Many times, the hovercraft has been seen traveling over the very nesting habitat, because the river meanders quite a bit. If the river were a straight line, the hovercraft would not need to go over these nesting areas. 7

Nunapitchuk, in its determination to stop the use of the hovercraft, joined the Association of Village Council Presidents and other villages in their lawsuit to seek an end to this costly U.S.P.S. project. We are in total agreement with Napaskiak resident's assessment that this project is the lowest level of quality at highest possible cost.

Our airport has scheduled to be upgraded and lights put in which will allow the most reliable mode of travel and transport of goods to this village. 3

Finally, we agree with our elders that it would be okay to use the hovercraft in the winter, but not in the summer when waterfowl are breeding and people are subsistence fishing for their winter food supply.

Thank-you for this opportunity to express our comments on the proposed year round operation of the hovercraft on a permanent basis.

Sincerely,

Jimmy P. Stevens Sr.
President
Nunapitchuk IRA council

Cc: A.V.C.P. Inc.
Attn: Glenn Tarr

Cenaliulriit
Attn: Gail Armstrong

Maureen McCree, Senior Project Review Coordinator
Division of Governmental Coordination

USPS Responses to Comments on the Draft Supplemental Environmental Assessment for Hovercraft Transport of Alaska Bypass Mail

1. **Why was the hovercraft demonstration project extended for a year?**

Commentor:
Mr. Chris G. Larson, Chief, Native Village of Napaskiak, April 25, 2000 comment letter

Response:
The first two years of the hovercraft demonstration project clearly demonstrated that hovercraft technology is a reliable method of transporting mail in this region of Alaska. The project was extended for one year to enable the completion of the biological monitoring program. All of the environmental and safety studies planned to be conducted took longer than two years to complete. In addition, if the USPS does decide to proceed with permanent service, the extra time is useful to prepare for the USPS procurement process and avoid a break in service. The extension allowed sufficient time to complete a two-year monitoring cycle, evaluate the findings, complete winter blackfish observations, make a determination on continuance, prepare a solicitation, evaluate offers, award a contract, and begin service.

2. **The quality of service has decreased. Delivery of mail is slower and the mail is often damaged.**

Commentor:
Mr. Chris G. Larson, Chief, Native Village of Napaskiak, April 25, 2000 letter
Ms. Elaine G. Andrew, Nunapitchuk Limited, April 25, 2000 letter
Mr. Robert Nick, Mayor, City of Nunapitchuk, April 25, 2000 letter
Mr. Jimmy P. Stevens, Jr. , President, Nunapitchuk IRA Council, April 28, 2000 letter

Response:
First class and priority mail will continue to be delivered by aircraft, as it was prior to the hovercraft demonstration project. Bypass and non-priority mail is delivered by hovercraft at a frequency that meets mail service standards. The USPS believes that the quality of service has increased with the receipt of entire orders at one time rather than piece meal delivery of orders over several airplane trips or days. Less handling reduces damage and potential for losing pieces of a shipment. The hovercraft provides same day delivery of entire orders, thus allowing better control of inventorying and order processing. All practical measures are taken to avoid mail damage. When damaged goods are received the Bethel Postmaster should be notified at once to help determine how the damage occurred and prevent future incidents of damage.

3. **The hovercraft is less reliable than fixed-wing aircraft. The anticipated upgrade of some airports will only increase the reliability of fixed-wing aircraft.**

Commentor:

Mr. Chris G. Larson, Chief, Native Village of Napaskiak, April 25, 2000 letter
Mr. Jimmy P. Stevens, Jr., President, Nunapitchuk IRA Council, April 28 letter

Response:
When aircraft transported bypass and non-priority mail, the mail could not be transported if weather conditions did not allow aircraft to fly. Airport upgrades may increase the reliability of aircraft service, but will not reduce the occurrences where aircraft cannot fly due to poor weather conditions. In addition, soft runways during spring thaw will still preclude landing because upgrades will consist of gravel and not pavement. The hovercraft, however, has greater flexibility to operate during inclement weather and during spring thaw. Furthermore, mail transport by hovercraft may be supplemented with alternate modes such as trucks, boats, snowmobiles, all terrain vehicles, and aircraft. The use of the hovercraft and alternate methods will increase the reliability of bypass mail transport.

4. Does the hovercraft save USPS money? If not, why transport the mail by hovercraft?

Commentor:
Mr. Chris G. Larson, Chief, Native Village of Napaskiak, April 25, 2000 comment letter
Mr. Jimmy P. Stevens, Jr. , President, Nunapitchuk IRA Council

Response:
One of the purposes of the demonstration project was to determine whether transport of bypass and non-priority mail by hovercraft was cost-effective. The conclusion of the demonstration project was that use of the hovercraft is cost-effective. Use of the hovercraft to transport bypass and non-priority mail will save the USPS money. If the hovercraft is more expensive than airplanes, the contract will not be awarded.

5. The cost of passenger service on aircraft has increased. The loss of a federal subsidy for mail service to small bush pilots has contributed to the increase. Higher airfares are particularly difficult for community public assistance participants. The hovercraft, while less expensive than current air fares, is not convenient. There are fewer aircraft passenger flights available. It is difficult to get to and from appointments in other communities.

Commentor:
Mr. Chris G. Larson, Chief, Native Village of Napaskiak, April 25, 2000 letter
Ms. Elaine G. Andrew, Nunapitchuk Limited, April 25, 2000 letter
Mr. Robert Nick, Mayor, City of Nunapitchuk, April 25, 2000 letter
Mr. Jimmy P. Stevens, Jr. , President, Nunapitchuk IRA Council, April 28 letter

Response:
The USPS's analysis in the Draft Supplemental Environmental Assessment (DSEA) shows that although there has been a decrease to air cargo service to the villages, the availability of passenger service has remained at similar levels to those existing prior to the initiation of hovercraft service. Although the hovercraft also carries passengers, given that the level of passenger air service has remained essentially the same, the impacts on cost are not significant.

For one thing, the number of passengers traveling on the hovercraft is relatively small when compared to the number of passengers who fly. The hovercraft passenger numbers only increase significantly during times when planes cannot fly.

Other factors likely contribute to the claimed rate increases. For example, higher fuel costs throughout the country are having an enormous effect on costs within the entire transportation industry. Thus, the alleged higher cost of airfares may not be attributable solely to the hovercraft operation.

There is no subsidy for bypass mail unless the postal-wide institutionalized cost is considered a subsidy. No local subsidies are in place, or ever have been. People in Alaska pay the same Parcel Post rate for bypass mail as do all other Parcel Post customers nationwide, and will continue to do so.

With the introduction of the hovercraft, the number of choices of travel methods has increased. When time is important, individuals can choose to fly. When time is less important, individuals can travel on the hovercraft, which has been less expensive than air travel. Furthermore, when air carriers cannot fly as a result of poor weather or soft runways, the hovercraft is available as another alternative to the airplane. There is no shortage of on-call air taxies. Air carriers can be easily scheduled for rides to and from appointments in other communities.

6. The comments and concerns of citizens were noted but actions were not taken to address them.

Commentor:
Mr. Chris G. Larson, Chief, Native Village of Napaskiak, April 25, 2000 letter

Response:
On the contrary, comments and concerns of citizens did result in actions. The USPS conducted numerous public meeting and information exchange opportunities in support of the Demonstration Project Environmental Assessment, established a Hovercraft Committee, and requested public and resource agency input into the ecological monitoring and the Supplemental Environmental Assessment. These public involvement efforts are described in Section 1.4 of the Supplemental Environmental Assessment. State and federal regulatory agencies, which are tasked with representing the interests of the public, were involved throughout the project and the preparation of the environmental documentation. These agencies also made sure that public interests were being satisfied. These opportunities for public input resulted in direct actions taking place. The following are examples of some of the direct actions resulting from citizen input:

- noise monitoring to validate estimated levels;
- establishing a Hovercraft Committee with citizen representation;
- USPS meeting each month to discuss concerns and suggestions;
- informational exchanges with village elders on where to monitor;
- speaking with local ice fishermen on how to monitor blackfish;

- providing free teleconferencing to the Hovercraft Committee;
- providing winter underwater noise monitoring; safety monitoring;
- replacing winter net poles that may have been knocked over by the hovercraft;
- winter blackfish fishing monitoring;
- agreeing to alter operation near migrating caribou herds;
- monitoring landing site impact to small fish;
- monitoring the potential of hurt fish after the hovercraft passed;
- monitoring the impact to nesting birds;
- looking for oil spills;
- monitoring the potential of hurting small fish in shallow water;
- presentations at each village to provide information on the overall results of the ecological monitoring program;
- altering the hovercraft speed to accommodate local concerns;
- relocating landing areas in the winter;
- accepting invitations that were extended by villages to meet with USPS;
- monitoring the potential impact to subsistence gill netting;
- not operating in that part of the river used during commercial openings;

The USPS and other federal and state regulatory agencies listened and many actions did occur.

7. There may be biological impacts associated with the use of the hovercraft.

Commentor:
Mr. Chris G. Larson, Chief, Native Village of Napaskiak , April 25, 2000 letter
Mr. Robert Nick, Mayor, City of Nunapitchuk, April 25, 2000 letter
Mr. Jimmy P. Stevens, Jr. , President, Nunapitchuk IRA Council, April 28, 2000 letter

Response:
The Demonstration Project Environmental Assessment (DPEA) concluded that operation of the hovercraft would not significantly impact fish and wildlife. Results of biological monitoring studies conducted during the three-year demonstration project support that conclusion. Several in-field studies were conducted (please see Sections 4.1, 4.2, and 4.8 of the Supplemental Environmental Assessment). The USPS evaluated the impact of the hovercraft on adult fish mortality, juvenile fish mortality, and habitat use by waterfowl. More than 4,000 miles of the hovercraft route were checked for dead or injured fish, 8,500 fish were seined, 13,000 yards of beach were checked for stranded fish, stranding observations were made at over 70 landing events, and more than 10,000 birds were observed. In total, over 2,000 hours were spent in the field by trained biologists addressing the question of whether the hovercraft poses a significant

threat to populations of fish and wildlife. While the hovercraft will cause some minor impacts, none have been determined to be significant.

The DPEA and monitoring studies have also indicated that noise generated by the hovercraft will not have a significant adverse impact on fish. Literature on this issue was reviewed, summarized, and presented in the DPEA. The literature review indicated that the underwater noise level of the hovercraft is less intense than that produced by surface vessels, that fish may ignore the same noise or movement if it continues over a long period of time, and that sound has not been shown to consistently guide or deter fish movements.

In response to concerns raised by residents of villages on the Johnson River, monitoring was also undertaken during late January 2000 to evaluate the hovercraft's potential effects on blackfish subsistence fishing. There was concern that the noise, currents, and water displacement produced by the hovercraft near fishing areas might scare blackfish away, thereby reducing the overall number of blackfish available for harvest. Similarly, there was concern that the disturbance might affect fishing success by causing the blackfish to stay away from rather than congregating in the fishing holes. Thus the purpose of the monitoring was to determine if hovercraft operations drive fish away from traps or alter behavior such that they are less likely to enter the traps. The results of the monitoring indicated that the hovercraft and snowmobile traffic (studied for comparison purposes) on the Johnson River did not have any significant adverse effect on blackfish behavior or fishing success.

8. **The proposed action is infeasible. Due to freeze-up and break-up, the hovercraft cannot be used on a permanent, year-round basis to transport the mail.**

Commentor:
Mr. Chris G. Larson, Chief, Native Village of Napaskiak , April 25, 2000 letter
Ms. Elaine G. Andrew, Nunapitchuk Limited, April 25, 2000 letter

Response:
Although the hovercraft does not operate during freeze-up or spring break-up, there are many occasions when mail cannot be transported using aircraft (e.g., during bad weather and spring thaw). The hovercraft can operate in weather and at time that airplanes can not, this was particularly evident over the past three years from the hovercraft participating in medical evacuations after airplanes could not be used. During freeze-up, break-up, severe inclement weather, and/or maintenance, mail transport by hovercraft may be supplemented with alternate modes such as trucks, boats, snowmobiles, all terrain vehicles, and aircraft. The use of alternate modes will increase the reliability of mail transport by hovercraft. Thus, service levels will be maintained during freeze-up and break-up.

9. **The landing area at Nunapitchuk is becoming messy and the soil is damaged. Sand and gravel is heaved up to nearby boats and sometimes boats located too near the landing area are flipped.**

Commentor:
Mr. Robert Nick, Mayor, City of Nunapitchuk, April 25, 2000 letter

Response:
Some disturbance of the soil and vegetation is to be expected at landing sites. At Nunapitchuk the hovercraft lands adjacent to where boats are pulled onshore. Thus, the direct impact from the hovercraft is confined to that area. The boat-landing site receives additional erosion action from boats that are traveling to Atmautluak. The 15 to 20 yard wide slough that is adjacent to the landing site is used as a convenient short cut to Atmautluak. As each motor boat passes close by their wake causes accelerated erosion to the landing site.

In three years of operation there were two incidents of overturned boats. In both of these incidents the boats did not have operators in them and they were tied off at the landing site. The owners were compensated by the hovercraft contractor for the inconvenience. Based on two incidents over the hundred of landings and thousands of miles the hovercraft traveled it can be concluded that the hovercraft operates in a safe manner. To prevent these incidents, the hovercraft operator has changed his landing procedures. Now a deck hand or village agent moves the boats that are tied too close to the landing area and replaces the boat after off-loading bypass mail. This new procedure minimizes the potential of these isolated incidents.

10. **The proposed action will reduce the frequency of delivery of mail in Nunapitchuk from three days per week to two days per week. This reduction in service will reduce the promptness of delivery, the efficiency of service, and reliable, timely delivery of bypass mail.**

Commentor:
Mr. Jimmy P. Stevens, Jr. , President, Nunapitchuk IRA Council, April 28, 2000 letter

Response:
With respect to the frequency of deliveries, the USPS has established definitive service standards that apply to bypass mail. The proposed frequency of delivery meets those standards. Alaska and all other states are under the same standards for this class of mail. In that respect, the USPS is not operating differently in Alaska than any other state. Use of the hovercraft will not reduce the amount of bypass mail that has been transported each week to Nunapitchuk. In fact, more bypass mail, freight and passengers can be accommodated using the hovercraft. First-Class Mail delivery will not be affected by the hovercraft and will still be delivered daily.

The purpose of the hovercraft demonstration project was to determine whether the hovercraft could transport a class of mail via surface transportation in a more reliable manner with less damage. The hovercraft has proven to be more reliable. Entire shipments are moved to their destination on the hovercraft, a feature that was not possible with bush aircraft. Also, the hovercraft moved mail during the cold winter months when planes could not fly. During the winter months, in addition to the increase in reliability, the established service standards were maintained. Damage to and loss of the mail was reduced because shipments were able to move in pallet loads until arrival at their destination.

As with any new transportation method, especially one involving large pallets of by-pass mail containing a wide variety of goods, there was and still may be some room for improvement. For example, in response to complaints that frozen foods were reaching their destinations thawed, the hovercraft contractor has installed a chiller and freezer at its home base in Bethel.

Frozen foods are placed there immediately upon receipt and are loaded onto the hovercraft last. While on the hovercraft, they are covered with insulating blankets until reaching their destination. The experience so far has been that the goods are still frozen solid by the time they are unloaded. The installation of the chiller for such goods as produce should alleviate the problem of spoilage.

11. Operation of the hovercraft is inconsistent with Coastal Zone Management policy objectives because it adversely impacts fish and wildlife.

Commentor:
Mr. Robert Nick, Mayor, City of Nunapitchuk, April 25, 2000 letter

Response:
The State CZM declared the hovercraft demonstration project was consistent with CZM enforceable policies. Biological monitoring studies were conducted during the demonstration project to verify that the fish and wildlife populations would not be adversely affected in the operations area (please see Sections 4.1, 4.2, and 4.8 of the Supplemental Environmental Assessment). While the hovercraft will cause some minor impacts, none have been determined to be significant (note response to #7 above). Based on the characteristics of the project and the analyses of the monitoring data collected during the demonstration project, the USPS has concluded that the proposed action is also consistent with CZM enforceable policies.

12. With the hovercraft operating, it difficult to make health care appointments.

Commentor:
Mr. Robert Nick, Mayor, City of Nunapitchuk, April 25, 2000 letter

Response:
With the introduction of the hovercraft, the number of choices of travel methods has increased. The hovercraft does not preclude the use of aircraft to make health care appointments. When time is important, individuals can choose to fly. When time is less important, individuals can travel on the hovercraft, which has been less expensive than air travel. There is not a shortage of on-call air taxies for health appointments. Rides with air carriers can be easily scheduled to and from health care appointments. When air carriers cannot fly as a result of poor weather or muddy airfields, the hovercraft is available as another alternative to the airplane. The usefulness of the hovercraft to help with health care is evident over the past three years when the hovercraft was used for medical evacuations when aircraft could not fly.

Appendix E-2 – Comments Received After Comment Period

Arthur Heckman Sr., Chairperson
Myron P. Naneng, Sr., President
Phone (907) 543-7300
Fax (907) 543-3369

AVCP, INC.
The Association of Village Council Presidents
Office of Administration, Planning Department
Pouch 219, Bethel, AK 99559

Akiachak
Akiak
Alakanuk
Andreafski
Aniak
Atmautluak
Bethel
Bill Moore's Sl
Chefornak
Chevak
Chuathbaluk
Chuloonawick
Crooked Creek
Eek
Emmonak
Georgetown
Goodnews Bay
Hamilton
Hooper Bay
Lower Kalskag
Upper Kalskag
Kasigluk
Kipnuk
Kongiganak
Kotlik
Kwethluk
Kwigillingok
Lime Village
Marshall
Mekoryuk
Mtn. Village
Napaimiut
Napaklak
Napaskiak
Newtok
Nightmute
Nunam Iqua
Nunapitchuk
Ohogamiut
Oscarville
Paimiut
Pilot Station
Pitka's Point
Platinum
Quinhagak
Red Devil
Russian Mission
Scammon Bay
Sleetmute
St. Mary's
Stony River
Toksook Bay
Tuluksak
Tuntutuliak
Tununak
Umkumiut

To: Paul Valihura, Senior Environmental Scientist
Volpe National Transportation Systems Center
From: Glen Tarr, Environmental Planner, AVCP
Phone: (800) 478-3521 ext 7393 *or* (907) 543-7393
Fax: (907) 543-2776
Date: May 11, 2000

Subject: Comments on the Draft Supplemental Environmental Assessment for Hovercraft Transport of Alaska Bypass Mail

Dear Dr. Valihura:

The following comments regard the Draft Supplemental Environmental Assessment (DSEA) for proposed hovercraft bypass mail operations in the vicinity of Bethel. I believe they show strong evidence for significant and potentially significant impacts on subsistence wildlife populations. Because of the level of detail required by these comments, I have been unable to address statements in the DSEA regarding other issues. While I still hope for the opportunity to address some of these other issues in the future, I believe the impacts shown here are extremely serious, and more than sufficient to make insupportable a finding of no significant impact.

For ease of reference, I have organized the comments according to headings found in the DSEA. Comments follow the DSEA statements (quoted in italics) which they address.

FISH

"Similarly, eggs of many other fish species should not be affected, since they too are spawned in tributaries. The DPEA (USPS, 1997) conclusion is supported by the results of studies conducted by AGRA (1998) . . . ." p. 35.

The AGRA study does not support this conclusion. The AGRA study states: "The Kuskokwim River provides spawning, rearing and overwintering habitat for some species of whitefish (Scott and Crossman, 1973). Unidentified species of whitefish have been documented spawning in the mainstem river between Bethel and Akiachak (Department of Fish and Game 1986b)." Hovercraft Impact Assessment. AGRA Earth and Environmental Inc., 1998. p16 (AGRA 1998). The AGRA study did not itself document direct hovercraft impacts to eggs or fry because it was not designed to detect such impacts. The sonar studies mentioned in the DSEA only detect adult fish. AGRA solicited the cooperation of Alaska Hovercraft JV and the United States Postal Service (USPS) to test the potential for direct impacts to fry by running over captive fry in shallow water with the hovercraft. Although Alaska Hovercraft was willing to participate 1

in the study, the USPS refused. Personal communication, Allison Kelley, AGRA staff scientist, 1998.

Potential Adult Fish Mortality

"Furthermore, in its independent study completed for the Calista Elders Council, AGRA (1998) concluded that the impact on salmon from the hovercraft is not significant." p. 36.

This conclusion can only be assumed to apply to direct impacts on adult salmon. AGRA's study did not address impacts to fry. 2.

Potential Juvenile Fish Mortality in Shallow Water Areas

"There was a concern that the turbulence caused by the rapid water displacement under the craft could injure or kill small fish in those shallow areas." p. 36.

Monitoring Team Began With Assumption of Impacts Being Highly Unlikely 3.
The monitoring team conducted an extensive investigation of the hovercraft's wake, but provided no information on the turbulence and water displacement below the vehicle, or on the spray which the hovercraft throws high into the air. The team may not have considered these to be potentially serious impacts. The Demonstration Project Environmental Assessment (DPEA) stated that "potential impacts on adult and juvenile fish from pressure waves would be insignificant since the hovercraft exerts very low pressure (less than 2 pounds per square inch [psi] on the water." DPEA at 59. It also claimed that juvenile fish would be unlikely to be exposed to the hovercraft at all, listing several plausible sounding reasons such as the "tendency of downstream migrants to move at night and remain on bottom during day." DPEA at 58. As I was new to Alaska when the DPEA came out, I remember being impressed that a consulting company from New England would know so much about the behavior patterns of our downstream migrants.

DPEA Was Wrong 4.
Now, three years later, it turns out none of that is true. Juvenile fish are common in shallow water during the day (see Final Monitoring Report at 64 which estimates about 100 fish per 50'; see also Final Monitoring Report at 76: which estimates "thousands of fish" at landing sites). Fry have been found stranded on landing sites up to 50 feet away from the water, assumedly picked up and hurled there by the hovercraft's powerful spray. See Final Monitoring Report at 75. And the USPS Final Monitoring Report admits to finding levels of hovercraft related death and injury rates significantly above control levels for juvenile fish in shallow water on the Kuskokwim. Final Monitoring Report at 64.

Insufficient Information on Areas of High Impact 5.
The argument has now shifted from whether impacts occur to whether they occur at a significant level. Unfortunately, the monitoring program has been slow to accommodate this shift. Information necessary to estimate the level of hovercraft impact in different areas has been left out of the monitoring report. For instance, some areas showed very low levels of

injury to fish in shallow water while others showed injury rates approaching 50%. See Final Monitoring Report, Appendix D, sites BSK-2 and BSK-3. It would be good to know what it is about the sites with high rates which makes them more dangerous. The shallow water study does not even provide data on how shallow the water at each site was. We are given no information on how much turbulence the hovercraft causes, or on how that relates to water depth or to hovercraft speed. We don't know how far down the hovercraft pushes the surface of the water. It may be that in sufficiently shallow water the hovercraft temporarily exposes the river bottom beneath it. Any fry which found themselves beached in this way might be highly susceptible to getting picked up by wind from the lift engines and either slammed against the bottom or hurled out with the spray.

We are given no characteristics on the spray itself, despite the fact that is apparently the spray and not the wake which is primarily responsible for stranding fish. See Final Monitoring Report at 72. All we know at this point is that there is something going on at some sites resulting in particularly high levels of injury. Before the USPS can realistically support a finding of no significant impact it needs to find out what that something is and determine how often it shows up. The USPS may not simply ignore these high rates of injury by averaging them in with lower rates at other sites.

"The proportion of dead or injured fish was slightly greater for the test events (3.0%) than for the control events (1.8%) in the Kuskokwim River (Figure 4.1). In the Johnson River, the proportion of dead or injured fish was slightly greater in the control events (3.0%) than in the test events (0.6%) (Figure 4.2)." p. 37

Indications of Problems

If seinings were conducted using the same methods and in roughly the same locations in both test and control areas, it is extremely curious that significantly more fish were injured in control nets than in test nets on the Johnson. (Significance levels are reported in the Final Monitoring Report). This is an indication that something has gone wrong with the study. The Final Monitoring Report lists average numbers of dead or injured fish in Kuskokwim test and control seinings as 1.9 and 1.4 respectively. Averages for test and control on the Johnson are given as 0.6 and 7.0 fish respectively. An average of 7.0 fish is extremely high in comparison to the other figures, and explains the unexpected significant result for control seinings on the Johnson. 6.

Data Entry Error

An examination of the actual data shows the following numbers of dead or injured fish in the 12 Johnson control seinings: 0, 0, 0, 0, 6, 1, 1, 51, 18, 3, 0, 3: ave = 6.92. This shows that the high average is almost completely explained by the extremely high count of 51 dead or injured fish in one of the seinings. This seining was supposedly conducted at 13:16 (1:16 pm) on August 14, 1999 at location BSJ-3. The interesting thing is that only 39 minutes later the monitoring team conducted a test seine at location BSK-3. BSJ-3 is the farthest testing site up the Johnson, more than half way to Kasigluk from the Johnson's mouth. BSK-3 is halfway between Bethel and Akiachak. There is no way the monitoring team could have completed a seine at BSJ-3 and then traveled to BSK-3 in 39 minutes. Furthermore, no test seine is listed 7.

for the control seine at BSJ-3, and no control seine is listed for the test at BSK-3. Finally, the numbers of dead or injured fish observed at the BSK-3 seine are also quite high (54 dead or injured, 67 unharmed). It therefore seems obvious that the seine at BSJ-3 was actually conducted at BSK-3 and simply recorded incorrectly.

This alone would account for the unusual conclusions regarding the Johnson, but there is further evidence of problems with the data. For instance, the last Johnson control count of 3 dead or injured fish exactly duplicates, including time and place, the third to last Johnson control count of 3 dead or injured fish. The count is therefore assumedly a duplicate which should be thrown out. It is not clear, however, whether the duplicate replaced an actual seining which still needs to be found and put back into the data set. The discussion in the monitoring report, as well as in the DSEA both refer to 21 seinings on the Johnson river. Without the duplicate there are only 20.

Inappropriate Data Removal

8.

The data table lists 8 observations which were purposely kept out of the data set for various reasons. Two of those observations were of unusually high counts of dead or injured fish supposedly taken on August 14th, 1999 at BSJ-2 and BSK-2 at 10:23 and 10:57 respectively. (I say "supposedly taken" for reasons which I will come to shortly). The explanation provided for excluding these observations is: "Bad set: fish just post-larval, very warm water, caused high mortality". This is not a valid reason to exclude data. Unless the monitoring team has reason to think that post-larval fry are not going to be exposed to the hovercraft in warm water ever again the sample must be considered representative of the normal range of conditions on the river. Furthermore, the test seine at BSK-2 "thrown out for bad set" has percentages of dead or injured fish which are extremely similar to percentages found at BSK-3 three hours later. (654 out of 1479 – 44.2% versus 54 out of 119 = 45% respectively). BSK-3 and BSK-2 are very close to each other, so high percentages at one serve as evidence that high percentages at the other on the same day are not anomalous. It makes very little sense to exclude one from the data set and not the other.

More Data Entry Error

9.

Just as the two counts made at BSK-3 and "BSJ-3" 39 minutes apart on August 14th are probably actually both from BSK-3, the two counts at BSK-2 and "BSJ-2" made earlier on the same day and then "thrown out for bad set" were probably both taken at BSK-2. As with the first pair, it would not be possible to complete a control seine at BSJ-2 and then travel to BSK-2 in the 34 minutes available. The BSJ-2 control also lacks an associated test seine at that location, and the numbers of fish observed are similar to those observed at BSK-2. The two seines "thrown out for bad set" should therefore be put back into the data set, and the control should very likely be changed from BSJ-2 to BSK-2.

Questionable Timing of Events

10.

The timing on some of the other seine observations is suspicious. For instance, on August 16th, a control seine was supposedly conducted at BSK-4 at 13:00, exactly the same time the hovercraft is listed as having passed by (controls are supposed to be conducted in the absence of hovercraft), and two minutes prior to the time a test seine was supposedly conducted at the

same location. Sixteen minutes after that test seine the data sheet lists another test seine being conducted at BSK-6. Two further test seines were supposedly conducted at BSK-6 on that day at the same time (14:30). A final test seine was conducted at that location only 20 minutes later. These are merely examples and several more instances of questionable timing exist. The monitoring team needs to re-examine the data and either provide an explanation for overlapping or conflicting times or else provide the actual timing of events. It should also address the following two questions: 1) was enough time provided between successive test seines at the same location to allow fry to repopulate the area to background levels between tests? and 2) if two or more test samples were taken roughly simultaneously at roughly the same location, shouldn't they be treated as paired or combined samples rather than as independent?

Paired Data

The issue of paired samples brings up yet another problem with this study. To minimize and account for variability from sources other than presence or absence of the hovercraft, control and test seines should be paired. They should taken by the same people at locations and times that are as close together as possible without influencing each other. This seems to have been done often, but not consistently. Results should then be listed as pairs of data, preferably in some kind of chronological and geographical order so that the reviewer does not have to guess at which observation is supposed to serve as control for which test. The high degree of randomness with which the data is listed in the Final Monitoring Report serves to hide questions of timing, not to mention mistakes of data entry such as those mentioned above. 11.

Inappropriate Statistical Test

Most importantly for the issue of paired data, the fact that control and test seines were for the most part taken spatially and temporally close to each other means that the chi squared contingency table alone is not an appropriate statistical test for comparing them. The contingency table assumes random samples. If each test seine has consistently higher numbers of dead and injured fish than its control, and if the numbers of both test and control tend to vary greatly with time and location, then the contingency table will fail to note significant differences which in fact exist. A glance at the data sheet in the Final Monitoring Report shows that the data do in fact vary greatly with time and location. In addition to the chi square tests, the monitoring team therefore needs to apply a statistical test for paired data, such as the Wilcoxon paired sign rank test used in the gillnetting analysis. 12.

Sampling Locations and Sampling Bias

Finally, the monitoring team did not sample equally at each site. Instead, they apparently took many more samples at sites showing less hovercraft impact. For instance at BSK-3 only three seines were conducted and only 2 were reported, (the control on August 14th was reported as taking place at BSJ-3). Those three seines yielded a combined total of 107 dead or injured fish out of 552 total (19.4%). In contrast, BSK-4 was sampled 22 times for a total of 15 dead or injured fish out of 1,591 total (0.94%). The Final Monitoring Report provides no explanation as to why the site with low numbers of dead or injured fish was sampled more than seven times more often than the site with high numbers of dead or injured, but the potential for this sampling bias to greatly skew the results in favor of "no impact" is clear. 13.

This is not an isolated example. Similar observations could be made about the three samples at BSK-2 (one of which was reported as occurring at BSJ-2 and one of which was thrown out for "fish just post-larval, very warm water") versus the 21 samples at BSK-6.

"*These data indicate that the passage of the hovercraft did not significantly harm fish and that the act of seining was responsible for most of the injury and mortality observed.*" p. 37.

Not True for Kuskokwim, Inconclusive for Johnson.

14.

These data indicate exactly the opposite for the Kuskokwim, since the study found significantly higher numbers of dead or injured fish in test sets on that river, (a point which the DSEA fails to mention). In the Johnson the study noted significantly higher numbers in control sets, but if we remove the duplicated data and assume that the August 14th control seine at "BSJ-3" was actually conducted at BSK-3 as evidence indicates, then the differences become insignificant ($X^2 = 2.47 < 3.84$, $p > 0.05$, $df = 1$). Further basic revisions, such as conducting the correct statistical test for paired data, reinserting the two samples removed for post-larval fry in warm water, accounting for timing discrepancies, and removing the serious sampling bias exhibited by this study may reveal greater hovercraft impacts.

May Not Combine Effects to Lessen Impacts

15

After reporting the separate results found for the Kuskokwim and the Johnson rivers, the DSEA goes on to list the combined results for both rivers, which according to the Final Monitoring Report do not show significant differences between hovercraft and control. Where significant effects are found for one region but not another, however, it is not appropriate under the National Environmental Policy Act (NEPA) or the Coastal Zone Management Act (CZMA) to combine impacts of the two regions in order to reach a conclusion of no significant impact overall. Local impacts are still impacts and must be treated as such.

"*Clearly, most of the fishes caught in both test and control events were unharmed.*" p. 37.

Enough Were Harmed to Demonstrate a Serious Potential for Significant Impacts

16.

The low overall average incidence of dead or injured fish reported from the test sets (80 out of 4,044 total, or 1.9%) does leave the impression of limited overall impact. However, if we include results from the test seine left out of the data for "fish just post-larval, very warm water" on August 14th, the figure jumps to 13.28%. This is still likely to be a conservative estimate because it only counts fish which were obviously and immediately injured. Fish fry are fragile, as anyone dependent on subsistence fishing out here will tell you. If they are banged around they may suffer no immediately apparent effects and still die later. This may be the true explanation for the test set taken at BSK-6 on July 9th, in which 94 whitefish fry (out of 223 total seined fish) were put into a bucket alive and later found dead. The monitoring team kept that sample out of the data set based on the belief that the hovercraft hadn't killed them. If the hovercraft actually was the culprit, reinserting the sample into the data set would increase the total percentage of dead or injured fish to 14.4%. Since this represents overall impact, local effects are likely to be even stronger. The study's large and unexplained sampling bias in favor of sites tending to produce fewer injured fish is also likely

to have caused the results to seriously underestimate the actual impacts. Finally, since the monitoring team took no information on site characteristics, they have no idea how common are sites with definitive characteristics similar to the high injury sites from the study. If such sites are more common than in the study; if for instance they are dependent on bottom characteristics which occur less often near low gradient beaches than they do elsewhere, then actual hovercraft impacts on fish populations would again be much higher than suggested.

Estimate of Impact

In comparison to the test seines, if we similarly include the excluded control data from August 14th, the percentage of dead or injured in the control seines increases to 7.66%. Ignoring all considerations other than percentage totals with the excluded August 14th data reincluded, the hovercraft would be directly responsible for killing or injuring (13.28% - 7.66%) 5.62% of all the fish fry it passes over in shallow water. This would be in addition to impacts caused by stranding. 17.

Stranding at Landing Sites

"*Using this information,* [based on the hovercraft schedule proposed in the DSEA] *the total number of chum salmon fry stranded was estimated by multiplying the total number of landings during the 4 weeks when chum fry migrate (56) by the average number of salmon fry stranded per landing (2.5). This calculation yields 140 stranded salmon fry per year at landing sites on the Kuskokwim River.*" p. 43.

Hovercraft Schedule

Normally, it would be appropriate to use the hovercraft schedule proposed in the DSEA since that involves affecting more villages and more miles of river than the current schedule. However, the current schedule of 3 stops per week at each village involves more landings, and hence a higher potential impact for this calculation. Since the existing Request For Proposals (RFP) assumes the current schedule will continue, at least in the near future, that schedule should form the basis of impact calculations in this instance. 18.

Migration Dates

Secondly, chum salmon fry begin their migration to the ocean at least as soon as breakup, (personal communication; Charlie Burkey; Alaska Dept. of Fish and Game, May 4th, 2000), which is generally around the second week of May. Hence we should assume 6 weeks during which they will be in the rivers. Since the hovercraft generally does not run during the week of breakup, there would be 5 weeks during which chum fry would be subject to strandings. 19.

Arrivals and Departures

Third, the monitoring team only searched for stranded fry after the hovercraft arrived at a landing site. There is no reason to think the hovercraft wouldn't be just as capable of stranding fish during its departure. Strandings might even be more likely on departure, since fish could be blown up on shore by either the lift engines or the rear-facing thrust engines. Since the monitoring team found fish up to 50 feet from shore, (Final Monitoring Plan at 75) and since it never found fish stranded by the wake alone (Final Monitoring Plan at 73, 74), it 20.

is reasonable to assume that the spray and not the wake is primarily responsible for stranding fish.

Bethel Landings

Finally, the monitoring team's calculation leaves out landings at Bethel. There is no reason to assume chum fry would not be stranded here also. 21.

Expected Number Found

This brings the calculation to: [(5 villages x 5 weeks x (3 arrivals +3 departures per week) + (1 village x 5 weeks x (6 arrivals + 6 departures per week)] x 2.5 chum – 525 (not counting extra trips). 22.

Fry Stranded vs. Fry Found

The monitoring team assumed their searches found 100% of all fish stranded, regardless of the type of substrate, inclement weather, lighting conditions, differing skill levels among searchers, or any other factors. They could have tested this assumption in several ways, such as having two people search the same area to corroborate each other's findings, but they did not. A 1996 study of fry stranded by an AP-188 hovercraft on the Iskut river has this to say: 23.

> "Regarding location effectiveness, I assumed one fish found for each 25 stranded in the area examined. This may be very conservative. Difficulty in finding fish that were known to be at a particular location, difficulty of seeing them among the small debris on the sand, the extreme difficulty of finding them among the gravel and cobble sections, and the likelihood that birds had eaten some of the fish that were stranded on the sand, governed this assumption."

"Some Impacts From the Use of a Hovercraft on the Iskut River", *prepared for* Friends of the Stikine Society, Gordon Hartman, PhD., 1996 at 9.

Revised Estimate of Chum Stranded at Landing Sites

Fish that are merely injured rather than dead may be easier to spot. Of the 85 stranded fish found at landing sites around Bethel, 67 (roughly 80%) were dead and the rest were injured. To keep the estimate conservative, it might therefore be reasonable to lower the scaling factor to 80% of Dr. Hartman's, making it 20 instead of 25. This brings the total number stranded at landing sites per year to at least 525 x 20 = **10,500 chum**. 24.

"With this number of landings, it is estimated that about 420 juvenile whitefish could be stranded on an annual basis."

Revised Estimate of Whitefish Stranded at Landing Sites

Based on factors discussed above, a more accurate but still conservative estimate of whitefish strandings would be as follows: (7 villages x 26 weeks of open water x (3 departures + 3 arrivals per wk per village)) + (1 village x 26 wks x (6 departures + 6 arrivals per wk)) x 0.71 25.

whitefish per search x 20 whitefish stranded per whitefish found – at least **19,936 stranded whitefish** per year.

Note that this estimate assumes a total of 52 whitefish found per 73 searches (= 0.71 whitefish/search) rather than the monitoring team's figure of 58 found (= 0.8 whitefish/search). The total of 52 is supported by the data table in the Final Monitoring Report at 75. Use of the original figure would raise the final estimate.

Stranding from Operating in Shallow Water and Near Shore

"Assuming a range of 0.5 to 5.0 percent of the total distance is traveled on or near low-gradient beaches and the stranding rate is 0.004 fish per yard (e.g., 1 fish every 250 yards of affected beach), the annual stranding is estimated to be between 58 to 560 chum salmon fry." p. 44.

Insupportable Assumptions

First of all, 4 chum salmon found per 900 yards searched yields 1 fish every 225 yards, not every 250. Secondly, there is no reason to assume strandings are limited to low gradient beaches. Such an assumption might be more supportable if it were primarily the wake and not the spray which strands fish. However, the Final Monitoring Report specifically states: "These results [wake monitoring in 1998] indicate that the wave does not result in stranded fish." Further indications include the distances from the water which stranded fish have been hurled (see Final Monitoring Report at 75), as well as the fact that about 80% of the fish stranded at landing sites were found dead while the rest were injured; this despite the fact that the monitoring team conducted its searches immediately after the hovercraft's arrival. Spray from the hovercraft lift engines blows high into the air, so any fry blown with it onto land would be stranded regardless of the type of beach. Rather than trying to estimate the amount of low gradient beach the hovercraft passes per week, we should therefore estimate the percentage of time the hovercraft passes over shallow water. 26.

Percentage Over Shallow Water

This is going to be considerably higher. The hovercraft tends to cut close to banks as it navigates around curves. It drives up and over sandbars and mudflats. Particularly at low tide there are many shallows which would be difficult to avoid even if the hovercraft were trying to avoid them. Since we need to come up with some estimate, 10% would probably be quite conservative. 27.

Revised Estimate of Chum Stranded By Shallow Water Pass-bys

If we assume, as does the DSEA, that the hovercraft will travel about 400 miles per week in the Kuskokwim, then in 5 weeks of operation during the chum fry outmigration the hovercraft will go 2,000 miles. 10% of that, or 200 miles will be over shallow water. At 1 stranded fry found for every 225 yards, that translates to 1,564 fry. And at 20 fry total for every one found, the total number of chum stranded comes to at least **31,289 chum per year.** 28.

"Twenty-two whitefish were also observed stranded during the on-shore / near shore test events. Based on three Johnson River tests and 31 Kuskokwim River tests, the average number of juvenile whitefish stranded [per yard] *was calculated at 0.0025 . . . ."* p. 44.

29.

Corrected Estimate of Whitefish per Yard
Total yards of beach searched for those 34 tests was 6,925. See Final Monitoring Report at Appendix D. Twenty two fish in 6,925 yards = 0.0032 fish per yard.

"Assuming a 26-week transport period, a travel distance of 622 miles per week (on the Kuskokwim, Pikmiktalik and Johnson rivers), and affected shoreline values of 0.5 to 5.0 percent, the number of whitefish fry stranded on low-gradient beaches per year is estimated to be between 356 and 3,558."

30.

Revised Estimate of Whitefish Stranded by Shallow Water Pass-bys
A more accurate but still conservative estimate would be: 0.0032 whitefish found per yd x 1760 yds/mi x 622 total mi/wk x 0.10 shallow water distance/total distance x 26 wks x 20 whitefish per whitefish found = **at least 182,161 stranded whitefish fry.**

Stranding From Unplanned Stops on Beaches

"Using this value [40 unplanned stops in 26 weeks of operation during open water] *and the number of whitefish stranded per unplanned stop. (3.5, or 21 fish / 6 stops), results in an estimate of about 140 whitefish stranded per year at unplanned stops on beaches."* p. 45.

31.

Revised Estimate of Whitefish Stranded by Unplanned Stops
After which, figuring in an estimated 20 fish present per fish found yields **2800 whitefish** fry stranded per year at unplanned stops.

Other Fish
Additionally, the monitoring team also found 11 sucker fish fry stranded during their 6 unplanned stops. See Final Monitoring Report at Appendix D. 40 unplanned stops per year x 11 fish per 6 stops x 20 fish per fish found = an additional **1,467 fish**. Although sucker fish are not nearly as important to subsistence fishing as whitefish, they are used for that purpose. Furthermore, since there is no reason to assume that suckers are any more susceptible to stranding than other species, the 11 suckers found might realistically be considered representative of all the non-whitefish species in the river. This time it was suckers, next time it could be sheefish or salmon.

32.

Unplanned Stops Yield Unusually High Results
A final note of concern regarding the results for unplanned stops is that they yielded results which are so much higher than those for shallow water pass-bys. Out of 480 yards searched at 6 unplanned stops, 32 fish were found stranded. This translates to 67 fish in 1000 yards, as compared with a total of 27 fish in 6,925 yards for the shallow water pass-bys. The number of yards searched at each unplanned stop (80) may even be inflated since the spray would have to be powerful indeed to throw a fish 40 yards in either direction. Two factors may be

33.

responsible for the higher numbers: First, a hovercraft coming in to stop may be traveling slower than one cruising along shore. This might increase the amount of time it spent over fish in shallow water, and could also increase the amount by which the water surface was depressed. See AGRA 1998 at 25.

Secondly, fish may be slower to sense and get out of the way of a hovercraft coming in from deeper water. Shallow water may increase the turbulence which the hovercraft produces, allowing fish to sense it from farther away. Also, fish fry may be adapted to stay in the shallows if they detect turbulence in deep water, since normally such turbulence would indicate a boat. Finally, a hovercraft approaching from deep water might tend to herd fish ahead of it into more shallow water before actually passing over them.

Implications for Hovercraft Travel Over Sandbars

34.

The important point about these speculations is that the second line of reasoning mentioned above would apply any time the hovercraft crossed over a sandbar or mudflat from deeper water. There would be no requirement for the vehicle to make an unplanned stop. We currently have no information regarding how often the hovercraft does this, but it is likely to be fairly common, perhaps 3 times per day. The 6 unplanned stops yielded 32 stranded fish found, or 5.3 fish per stop. If that type of thing were to happen 3 times per day, 5 days per week for 26 weeks, the resulting number of stranded fish would be: 5.3 fish found x 3 crossings per day x 5 days per wk x 26 wks per year x 20 fish per fish found = **41,340 additional fish stranded per year.**

Summary of Potential for Stranding Juvenile Fish

"Based on the estimates for landing sites, operation in shallow water near shore, and unplanned stops on beaches, the total number of chum salmon fry stranded on an annual basis would range from about 200 to 700. For whitefish, the estimated annual number of fry stranded would range from about 920 to 4,120." p. 45.

Salmon

35.

Based on review of the existing data, the total number of chum salmon fry stranded on an annual basis would be at least 10,500 at landing sites + 31,289 from shallow water pass-by's – **41,789 chum**. Although no other salmon species were observed in the study, as the DSEA points out this was likely due to the timing of the monitoring. DSEA at 45. Based on relative abundances of other salmon species, "[t]he number of coho fry stranded would be expected to be similar and the number of chinook, sockeye, and pink fry stranded would be expected to be far less." Id.

Whitefish

36.

Total whitefish stranded would be at least 19,936 at landing sites + 182,161 from shallow water pass-by's + 2,800 from unplanned stops = **204,897 whitefish.**

Other
Additional strandings of random species could range from 1,467 (if strandings are based on unplanned stops) to 41,340 (if strandings are based on crossing over land). 37.

Shallow Water Impacts
These figures are in addition to fish killed or injured in shallow water but not stranded, for which a reasonably conservative estimate would run about 5.62% of fish present. 38.

Mammals

"Occasional disturbance of mammals could occur due to its noise and presence. However, such instances are expected to be few and insignificant due to the low populations along the river corridor, the secretive nature of the furbearers, the intensive subsistence activity, the transient nature of the disturbance, and the acclimation of resident mammals to the considerable vehicle traffic already on the rivers." p. 46.

Kuskokwim
The AGRA 1998 study (cited in the DSEA at 36) includes extensive analysis of mammal impacts. On the Kuskokwim, the study found significantly more hare droppings and browsed plants in control areas than on the hovercraft route, indicating depressed levels of hare populations in the vicinity of the hovercraft. AGRA 1998 at 20. It also found a significant correlation of both hare scat (id. at 21) and mammal tracks (id. at 23) with distance to the hovercraft route. "In other words, the proximity of the hovercraft passage coincided with decreased presence of mammals along the shore." Id. at 21. 39.

Johnson
On the Johnson, the AGRA study found that "[s]cat of mammals, particularly fox, was also [significantly] more abundant in the control area." (id.) indicating depressed mammal population levels in the vicinity of the hovercraft. As with the Kuskokwim, the study also found that in test areas "proximity of the hovercraft passage coincided with decreased presence of birds and mammals along the shore of the Johnson River." Id. 40.

Upland Game Birds
The mention of "birds" above apparently refers to upland game birds. A comparison of droppings and browse plant utilization between the two rivers indicated that "there were more upland game birds, such as ptarmigan, on the Johnson River and that there were also more mammals, particularly fox. By contrast, there were more hare on the Kuskokwim River." Id. at 19. Comparisons of browse and droppings between test and control areas on the Johnson indicated significantly depressed levels of upland game birds in the vicinity of the hovercraft. Although this is the "mammals" section, since the DSEA did not consider impacts on upland game birds at all I am including reference to AGRA's results here. 41.

Flushing of Waterfowl

"The results of these studies indicate that, under the proposed action, waterfowl would react to the hovercraft in a manner similar to the disturbance produced by a motorboat." p. 47.

42.

Not True for Most Ducks and Geese

Actually, study results showed that geese on the Kuskokwim and ducks on both the Kuskokwim and Johnson are significantly more likely to flush from the hovercraft than they are from motorboats. Although the monitoring team presented no statistical analyses of their data, they did summarize the data according to species. Final Monitoring Report at 40, 41. Chi-square contingency tables constructed from this information reveal the following. (Values of χ^2 at 3.84 or more indicate significant results at $p = 0.05$. Degrees of freedom for all cases = 1):

Kuskokwim Geese:
149 of 156 flushed from hvr (95.5%). 124 of 194 flushed from boat 63.9%). $\chi^2 = 50.1$.
Kuskokwim Ducks:
429 of 434 flushed from hvr (98.8%). 211 of 223 flushed from boat (94.6%). $\chi^2 = 10.33$.
Johnson Ducks:
1468 of 1609 flushed from hvr (91.2%). 596 of 764 flushed from boat (78.0%) $\chi^2 = 81.32$

43.

Inconclusive for Other Waterfowl

Chi-square comparisons were not possible for other waterfowl because of low numbers in one or more categories. (Chi-square tests are generally inappropriate if any cells have expected values less than 1 or if 20% or more of the cells have expected values less than 5).

44.a.

A Giant Flushing Sound

The USPS might argue that even if the hovercraft tends to flush waterfowl significantly more often, the absolute differences are not great enough to make up for the fact that there are more boats on the river than hovercraft. While this may be so, the distance at which waterfowl flush from the hovercraft is likely to be much greater than for boats. As comments to the DPEA from the U.S. Fish and Wildlife Service (FWS) pointed out: "The hovercraft has a sound exposure level ranging over 100 dB at about 200 ft and about 83.8 dB at **4,000 ft**! A level of 83.3 dB isn't all that far from 90 dB – at which point 100% flushing occurs. In other words, there could be flushing at distances of up to about 2/3 of a mile." Letter from Ann Rappoport, USFWS to Paul Valihura, ETC, June 13, 1997, reprinted in DPEA Appendix D. A moving wall of sound 2/3 of a mile in diameter centering on the hovercraft and flushing most everything in its path would likely pose a significant impact. Flushed birds which landed ahead of the hovercraft would likely flush again when the hovercraft caught up, a process which could repeat several times. By contrast, it may be possible for boats to travel down the middle of the channel without flushing large numbers on either shore, or at least to travel close to one bank without flushing many birds on the opposite bank. Neither the DSEA nor the Final Monitoring Report provides any information on how far any of the water craft were from shore, or on distances to flushed birds. This despite the fact that the monitoring

team supposedly recorded the distance of closest approach to each bird group. Final Monitoring Report at 10.

Waterfowl Use of River Habitat

"The results of this study indicate that the proposed action of transporting bypass mail using a hovercraft would not have significant adverse impacts on waterfowl use of the habitat along the rivers." p. 48.

44 b.

The results of this study are inconclusive. The large variation in bird numbers for the five transects demonstrates that the "control" areas chosen are probably not good indicators of background levels for birds in the test areas. The hovercraft may or may not be affecting waterfowl numbers, but regardless of that, something else is affecting them more. That something is most likely habitat differences between the transects. This is why the FWS stressed the importance of collecting baseline data back in 1995. Letter from Ann Rappoport, USFWS to Yvonne DaCunha Wecker, USPS, June 14, 1995, reprinted in DPEA Appendix G. If the USPS intends to delay extending the hovercraft route to Tuluksak until after this summer, I would strongly encourage them to take the opportunity to collect baseline data for the stretch between Akiak and Tuluksak now so that comparisons can be made once hovercraft operations begin in the area.

Breeding Waterfowl

"The results of aerial surveys of waterfowl use on the Kuskokwim river during the demonstration project indicated no statistical difference in the distribution of waterfowl between the control and operational areas." p. 51.

45

Incorrect Figures

The reason the monitoring team found no statistical differences is that they performed the analysis incorrectly. Not only does the statistical analysis reach incorrect P values based on the figures provided (of birds per mile in various categories), those figures are themselves incorrect. For instance, 254 birds were observed in 4 flyovers of transect K-2, which is 2.5 miles long. See Final Monitoring Report at 49. The number of birds observed per mile of transect would therefore be 254 divided by (2.5 x 4), or 25.4 birds per mile. (For purposes of this discussion the term "birds" refers to waterfowl.) The Final Monitoring Plan lists this number as 39.7. Final Monitoring Plan at 50. Almost all the numbers in the table are similarly off.

46

Corrected Figures

I have recalculated the tables from pages 50 and 60 of the Final Monitoring Report to show the actual values for Kuskokwim and Johnson aerial transects (assuming that the transect lengths and bird counts at least are correct) and am including the revised tables below. In addition to birds per mile for various categories, the tables also include actual bird counts and transect lengths in each category so that the source of the figures will be evident. The categories for Total Birds/mile and River Birds/mi involved 4 flyovers, so distances were

multiplied by 4, with the exception of transects P-106, 107, 110 and 112, which involved 3 flyovers. "Birds <200/mi" and "Birds >200/mi" involved 3 flyovers. "Off River Birds/mi" involved one flyover, for which distance was calculated by adding the "<200" and ">200" distances.

Mann Whitney Rank Sum Test

The tables also show the corrected P values for the Mann-Whitney Rank Sum Test, which is the statistical test supposedly used by the monitoring team. The test works by ranking values from both the control and test transects according to highest, second highest, etc., and then summing the ranks of the smaller group (the control group in these cases) to obtain a value of W. The farther W is from its expected value of E(W), the less are the differences between control and test transects likely to be due to chance. The likelihood of chance differences is reflected by the P value. By convention, when P is 0.05 or less the differences are considered so unlikely to be from chance that they are significant.

Corrected Statistical Test Results

As comparison will show, the P values I obtained are all quite different from the monitoring team's. See Final Monitoring Report at 50, 60. I have included rankings, W values, expected values, standard errors, and associated Z values so that a reviewer knowledgeable with the test can follow how I reached my conclusions. The monitoring team has not done this, and it is not at all apparent how they reached the figures they did.

Significant Differences

46.

The corrected P values show significant differences on the Kuskokwim between control and test transects for both Total Birds per Mile of Transect (P = 0.032), and Birds Per Mile Off the River (P = 0.023). In other words: 1) The total number of waterfowl is significantly lower where the hovercraft operates on the Kuskokwim than where it does not; and 2) In May 1998, significantly fewer birds were found off the river in areas of the Kuskokwim where the hovercraft operates than in areas where it does not. The first of these conclusions is most noteworthy, since it shows overall impacts involving all the data. However, the second conclusion is also important because it shows impacts on birds just arriving in May to begin breeding. Such data is not available for 1999, since the monitoring team combined their counts for June, July and August. This combination was performed despite the fact that the purpose of this study was supposedly to show impacts on breeding waterfowl, (see "Breeding Waterfowl" sections in the Final Monitoring Report at 45 and the DSEA at 48), and waterfowl do not breed in August.

Other Explanations

47.

The monitoring team might argue that comparisons of total birds per transect are misleading. If waterfowl are particularly attracted to river habitat for instance, then the transect with more river is likely to have an inherent advantage when comparing overall bird numbers per mile. Such an advantage would disappear when birds per mile of river habitat were compared separately. While this is true, it is merely cause for more investigation, not for throwing out significant results. Certainly in the case of the Kuskokwim the advantage, if one exists, did [illegible] when birds per mile of river habitat were examined for 1998. Appropriate

statistical tests should help determine to what extent, if any, differing amounts of river habitat have affected the results. Using that information it should be possible to control for those effects. In the absence of such demonstrations however, the significant results should stand.

"The results of the aerial surveys comparing waterfowl use on the Johnson River with waterfowl use on the Pikmiktalik River during the demonstration project also indicated no statistical differences . . . ." p. 51.

This is true, although the corrected P values for the Johnson are once again different from those obtained by the monitoring team. See revised table, below. Furthermore, although none of the differences were significant, the data do show a trend towards greater waterfowl numbers in the control transects for 4 of the 5 categories. The monitoring team should provide information on the extent to which the trend manifested for the June and July 1999 data alone, since this would be more indicative of effects on breeding waterfowl. It would also be interesting to parse out the effect of adding 4 extra transects to the study in 1999.

Conclusion on the Potential for Impacts from the Proposed Action

"Based upon the results of the two years of monitoring during the demonstration project, no significant adverse impacts to waterfowl or birds in general would result from the proposed action." p. 57.

Monitoring results point to significant and potentially significant impacts not only to waterfowl, but also to local mammal populations and to fish populations. Poor fishing returns have resulted in disaster declarations for this region for the past two consecutive years. The people of this region can not afford the hovercraft. It is a matter of money in the pocket and food on the table, as well as of healthy ecosystems and wildlife populations. Tribal councils and residents from every village served by the hovercraft have complained repeatedly of hovercraft impacts and of the refusal of anyone to do anything about them. The time has now come to stop pretending the hovercraft has no harmful effects, and to begin working with tribal councils on a government to government basis instead of continuing to railroad through this damaging and failed experiment.

Sincerely,

Glen Tarr

Glen Tarr
Environmental Planner, AVCP

Kuskokwim Aerial Transects

Transect	Transect Length	River Dist	<200 Dist	>200 Dist	Total Birds	Total Birds/Mi	Rank Total/mi	River Birds	River Birds/mi	Rank Riv Birds/mi	Birds <200	Birds <200/mi	Rank Birds <200/mi	Birds >200	Birds >200/mi	Rank Birds >200/mi	Birds Off Riv 98	Off Riv Birds/mi	Rank Off Riv Birds/mi
C-1	2.5	0.7	0.2	1.6	227	22.70	3	0	0.00	13	1	1.67	12	62	12.92	2	164	91.11	1
C-2	2.5	0.9	0.2	1.4	145	14.50	6	94	26.11	3	3	5.00	9	19	4.52	11	29	18.13	5
C-3	2.5	0.9	0.3	1.3	690	69.00	1	620	172.22	1	10	11.11	7	12	3.08	13	48	30.00	4
C-4	2.5	0.9	0.2	1.4	218	21.80	4	54	15.00	5	19	31.67	2	83	10.24	5	102	63.75	3
C-5	2.5	0.6	0.7	1.3	177	17.70	5	17	7.08	8	0	0.00	13	136	34.87	1	24	12.00	8
C-6	2.5	0.7	0.2	1.6	82	8.20	10	3	1.07	12	9	15.00	5.5	44	9.17	6	26	14.44	7
K-1	2.5	0.5	0.4	1.6	89	8.90	9	33	16.50	4	4	3.33	10	17	3.54	12	35	17.50	6
K-2	2.5	0.2	0.2	2.1	254	25.40	2	6	7.50	7	9	15.00	5.5	80	12.70	3	159	69.13	2
K-3	2.5	0.3	0.2	1.9	140	14.00	7	47	39.17	2	42	70.00	1	38	6.67	9	13	6.19	12
K-4	2.5	0.7	0.2	1.6	109	10.90	8	27	9.64	6	6	10.00	8	58	12.08	4	18	10.00	9
K-5	2.5	0.7	0.5	1.4	65	6.50	13	9	3.21	9	4	2.67	11	34	8.80	7	18	9.47	10
K-6	2.5	0.4	0.5	1.7	75	7.50	12	2	1.25	11	35	23.33	3	29	5.69	10	9	4.09	13
K-7	2.5	0.7	0.5	1.4	77	7.70	11	8	2.86	10	23	15.33	4	33	7.86	8	13	6.84	11

Average Control =	25.65		Average Control =	36.91		Average Control =	10.74		Average Control =	12.47		Average Control =	38.24						
Average Test =	11.56		Average Test =	11.45		Average Test =	19.95		Average Test =	8.09		Average Test =	17.60						
W =	29		W =	42		W =	48.5		W =	38		W =	28						
E(W) =	42		E(W) =	42		E(W) =	42		E(W) =	42		E(W) =	42						
SE =	7		SE =	7		SE =	7		SE =	7		SE =	7						
Z =	-1.857		Z =	0.000		Z =	0.929		Z =	-0.571		Z =	-2.000						
p =	0.032		p =	0.500		p =	0.176		p =	0.284		p =	0.023						

Johnson Aerial Transects

Transect	Transect Length	River Dist	<200 Dist	>200 Dist	Total Birds	Total Birds/Mi	Rank Total/mi	River Birds	River Birds/Mi	Rank Riv Birds/mi	Birds <200	Birds <200/mi	Rank Birds <200/mi	Birds >200	Birds >200/mi	Rank Birds >200/mi	Birds Off Riv 98	Off Riv Birds/mi	Rank Off Riv Birds/mi
P-1	2.5	0.2	0.7	1.6	147	14.70	8	5	6.25	13	4	1.90	17	92	19.17	7	46	20.00	2
P-2	2.5	0.4	1	1.1	172	17.20	4	2	1.25	17	16	5.33	15	98	29.70	2	56	26.67	1
P-3	2.5	0.2	1.7	1.5	82	8.20	13	25	31.25	4	1	0.20	18	44	9.78	13	12	3.75	12
P-4	2.5	0.1	0.2	2.2	65	6.50	15	1	2.50	16	6	10.00	11	49	7.42	14	9	3.75	13
P-5	2.5	0.1	0.2	2.2	200	20.00	3	5	12.50	9	41	68.33	1	131	19.85	6	23	9.58	5.5
P-106	4.7	0.2	0.2	4.3	374	26.52	2	7	11.67	10	19	31.67	3	348	26.98	3	NA		#N/A
P-108	3.6	0.3	0.7	2.7	85	7.87	14	7	7.78	12	21	10.00	11	57	7.04	15	NA		#N/A
J-1	2.5	0.5	1.2	0.9	142	14.20	9	33	16.50	7	38	10.56	8	57	21.11	4	14	6.67	8
J-2	2.5	0.2	0.2	2.1	153	15.30	7	19	23.75	5	13	21.67	5	105	16.67	9	16	6.96	7
J-3	2.5	0.1	0.2	2.2	162	16.20	5	21	52.50	1	6	10.00	11	112	16.97	8	23	9.58	5.5
J-4	2.5	0.2	0.2	2.1	276	27.60	1	27	33.75	3	25	41.67	2	188	29.84	1	36	15.65	3
J-5	2.5	0.3	1	1.2	130	13.00	11	42	35.00	2	23	7.67	13	53	14.72	11	12	5.45	9
J-6	2.5	0.4	0.2	1.7	114	11.40	12	27	16.88	6	8	13.33	7	59	11.57	12	20	10.53	4
J-7	2.5	0.4	0.2	1.9	160	16.00	6	16	10.00	11	17	28.33	4	116	20.35	5	11	5.24	10
J-8	2.5	0.8	0.2	1.4	25	2.50	17	0	0.00	18	9	15.00	6	9	2.14	17	7	4.38	11
J-9	2.5	0.7	0.3	1.5	20	2.00	18	13	4.64	14	3	3.33	16	1	0.22	18	4	2.22	14
J-110	3.7	0.6	0.9	2.1	67	6.04	16	25	13.89	8	28	10.37	9	14	2.22	16	NA		#N/A
J-112	3.6	0.5	0.2	3	143	13.24	10	4	2.67	15	4	6.67	14	135	15.00	10	NA		#N/A
					Average Control =	14.43		Average Control =	10.46		Average Control =	18.20		Average Control =	17.13		Average Control =	9.11	
					Average Test =	12.50		Average Test =	19.05		Average Test =	15.33		Average Test =	13.71		Average Test =	6.06	
					W =	59		W =	81.00		W =	76.00		W =	60.00		W =	33.50	
					E(W) =	66.5		E(W) =	66.50		E(W) =	66.50		E(W) =	66.50		E(W) =	37.50	
					SE =	11.04		SE =	11.04		SE =	11.04		SE =	11.04		SE =	7.50	
					Z =	0.680		Z =	1.313		Z =	0.861		Z =	-0.589		Z =	-0.533	
					p =	0.248		p =	0.095		p =	0.195		p =	0.278		p =	0.298	

USPS Responses to Comments from AVCP on the Draft Supplemental Environmental Assessment for Hovercraft Transport of Alaska Bypass Mail

The Association of Village Council Presidents (AVCP) submitted untimely comments regarding the United State Postal Service's Draft Supplemental Environmental Assessment (DSEA) for Hovercraft Transport of Alaska Bypass Mail. Despite the fact that these comments were submitted well after the comment period closed, the following are the USPS responses. Underlined comments are verbatim comment headings from the letter. The heading was typically followed by commentary. To aid the reader, the USPS sometimes quotes portions of the commentary when a specific point was being made. The first two responses to comments (under the subject Fish) refer to specific comments (put in quotes below) that were not presented under a heading but also had commentary following it. Again, the responses address both the comments and following commentary. To further aid the reader, comment numbers have been added by the USPS.

FISH

1. **AVCP Comment:** AGRA study does not support this conclusion.

Response to AVCP Comment: The comment refers to the following sentences from page 35 of the SEA: *"Similarly, eggs of many other fish species should not be affected, since they too are spawned in tributaries.*

The DPEA (USPS, 1997) conclusion is supported by the results of studies conducted by AGRA (1998)..."

The comment inappropriately combined these sentences and took them out of context. The second sentence above is the first and thesis sentence of the next paragraph regarding a conclusion of the DPEA. The DPEA conclusion mentioned in the DSEA is that operation of the hovercraft should not have significant beneficial or adverse impacts on important fish in the Kuskokwim, Johnson, and Pikmiktalik Rivers. This was supported by the overall conclusion of potential impact on fish and fish habitat in the AGRA report: *"Results from this study indicated no evidence of direct impact on fish or to fish habitat"* p.24 (AGRA, 1998).

Subject: Potential Adult Fish Mortality

2. **AVCP Comment:** This conclusion can only be assumed to apply to direct impacts on adult salmon

Response to AVCP Comment: The comment refers to the following sentence from page 36 of the SEA: *"Furthermore in its independent study completed for the Calista Elders Council, AGRA (1998) concluded that the impact on salmon from the hovercraft is not significant"*. This statement goes beyond assumptions. It is directly applicable to adult salmon, as indicated by the section heading, but to avoid confusion the word "adult" will be added before "salmon" in this sentence in the Final SEA.

Subject: Potential Juvenile Fish Mortality in Shallow Water Areas

3. **AVCP Comment:** Monitoring Team Began with Assumption of Impacts Being Highly Unlikely

Response to AVCP Comment: Contrary to AVCP's allegation, the monitoring team did not begin with the pre-conceived assumption that impacts would be unlikely. On the contrary, the monitoring team objectively investigated the potential for impacts to juvenile fish. The team looked at beaches and investigated wakes the first year. The monitoring during 1999 was supplemented with studies involving sampling with beach seines immediately after the hovercraft's passage through shallow water to further investigate the possibility of impacts on juvenile fish.

The contention that the monitoring team did not consider the potential impact from turbulence under the craft or from the spray from the craft is untrue. The monitoring was modified in 1999 to directly assess potential impacts on juvenile fish in shallow areas of the rivers to address these exact concerns. The seining studies in shallow water were designed to capture fish immediately after the hovercraft's passage to assess whether fish were being injured or killed by turbulence, or other factors, in shallow water. Additionally, as part of the seining studies, the beaches adjacent to the seining locations were checked for fish that might have been stranded from the wake and spray of the hovercraft as it passed by.

It should also be emphasized that monitoring was accomplished at the suggestion and direction of village elders. The people who have lived in this region have traditional knowledge and it was based on this knowledge that monitoring objectives were developed. The Postal Service accomplished the monitoring based on that traditional monitoring.

4. **AVCP Comment:** DPEA Was Wrong

Response to AVCP Comment: The information presented in the DPEA was correct. The DPEA was written based on the best information available at the time, in the absence of actual field data upon which to base these conclusions. The conclusions of the DPEA have been validated by the results of the extensive monitoring program. The suggestion that there is minimal potential impact to salmon smolts that migrate at night and remain on bottom during the day is most likely true for chinook and coho smolts. As stated in the DPEA, smolts of chum, sockeye salmon commonly migrate during the day.

5. **AVCP Comment:** Insufficient Information on Areas of High Impact

Response to AVCP Comment: The two seining sites pointed out in the commentary were control sets without any hovercraft effect present. These two particular sites had a softer, muddier substrate than did the other sites used in the monitoring and led to more mud in the seine and an extraordinary amount of net-related mortality. Therefore, the USPS discontinued use of these sites to avoid biasing the data toward higher mortality at control sites.

During the stranding checks of beaches, the USPS checked for stranded fish to the furthest extent of the water reach up the beach. During both years, beaches were surveyed by walking at least two lines parallel to the shore for a measured distance. The length of the beach surveyed was dependent upon the topography of each site but was typically about 200-300 yards. The lines were approximately 5 feet apart with the first about 5 feet from the water. Additional lines

were walked as necessary to cover the area that was affected by the wake. The extent was readily apparent by the wet sand and puddles of water.

6. **AVCP Comment:** Indications of Problems

Response to AVCP Comment: See comment below on data entry error.

7. **AVCP Comment:** Data Entry Error

Response to AVCP Comment: The USPS thanks the reviewer for pointing out the data entry error. However the error in the data point was that BSK-3 was incorrectly labeled and should have been listed as BSJ-3. The number of dead or injured fish in this seining event was 54, which compares favorably with the 51 observed in the control seining at this location. This supports the findings that the hovercraft is not significantly injuring juvenile fish in the Johnson River.

The commentor points out a duplicate record for control data on the Johnson River (8/21/99, at 10:18am). This error will reduce the dead or injured total for control seinings on the Johnson River by 3 fish, but will not change the conclusion that the hovercraft is not significantly injuring juvenile fish in the Johnson River.

After making the two corrections discussed above, the correct proportions of dead or injured fish are:

Kuskokwim River: Test (0.7%) Control (1.8%)

Johnson River: Test (3.9%) Control (2.9%)

8. **AVCP Comment:** Inappropriate Data Removal

Response to AVCP Comment: The data were removed from the data set for appropriate reasons. The fish in question were alive and uninjured when collected. However, the large number of fish caught required a longer processing time to clear the seine of fish. These fish were temporarily enclosed by the seine in very shallow (<6 inches) of water, where the combination of very warm water (less dissolved oxygen), a large number of fish, and handling stress led to increasing mortality. During this time in a small volume of very warm water, with limited dissolved oxygen available, the fish began to expire rapidly. Therefore, the mortality observed during these sampling events was undoubtedly a result of the extraordinary stress from handling.

The handling stress during these particular events was greater than anticipated because unexpectedly large numbers of very small fish, from hundreds to thousands, were caught during each event. Since the methodology called for counting the number of fish caught in each sampling event, the sheer number of fish that had to be processed (identified, sized, and counted) caused a great increase in the amount of time necessary to complete each event. The increase in processing time undoubtedly led to an increase in the stress on the fish. Therefore, these events were considered aberrant and it was considered appropriate to omit the results

from these particular events before analyzing the data. This comports with accepted methodology. See Response No. 16 below.

9. **AVCP Comment:** More Data Entry Error

Response to AVCP Comment: BSK-2 should be BSJ-2. However this does not change the fact that both sets were bad sets and the dead and injured fish were an artifact of handling.

10. **AVCP Comment:** Questionable Timing of Events: "The timing of some of the other seine observations is suspicious..."

Response to AVCP Comment: To increase the amount of data gathered from beach seine sampling, two monitoring teams were deployed in separate boats on selected days in August 1999. This accounts for the similar times and proximity of the sampling. A third boat was also involved at the same time to complete waterfowl observations independent of the fish surveys.

11. **AVCP Comment:** Paired Data: "The issue of paired samples brings up yet another problem with this study. To minimize and account for variability from sources other than presence or absence of the hovercraft, control and test seines should be paired. They should be taken by the same people at locations and times that are as close together as possible without influencing each other...."

Response to AVCP Comment: The beach seine sampling was not designed as paired test and control sets. The "control" sampling was designed to check for injury and mortality arising from capture and handling. Additionally, the "control" sampling was also done at the request of the US Fish and Wildlife Service to show that the shallow areas where the "test" sampling was to take place had juvenile fish present. Based on the numbers of fish caught in both the test and control events, there were usually fish in these shallow areas.

Although the "test" and "control" sampling were not paired for experimental purposes, the "control" sampling was done at the same beach areas, but downstream of the "test" sampling locations on a given day, and were conducted by the same field team. The "control" sampling was also conducted before the hovercraft passed through the area.

12. **AVCP Comment:** Inappropriate Statistical Test:

Response to AVCP Comment: The suggestion of using the Wilcoxon paired rank test is inappropriate because the sampling was not conducted as paired sets. Rather, the use of a Chi-square contingency table to test whether the frequency of dead or injured fish caught was independent of or dependent on the type of seine set was appropriate.

13. **AVCP Comment:** Sampling Locations and Sampling Bias: "Finally, the monitoring team did not sample equally at each site. Instead, they apparently took many more samples at sites showing less hovercraft impact...."

Response to AVCP Comment: The monitoring frequency at each location was not determined in any way by the proportions of dead or injured fish caught, but rather by logistical considerations on a given day, such as the time required to reach a certain location before the hovercraft passed by and the tide level at a given time. Therefore, sampling locations and frequencies were adjusted in the field as conditions dictated, without any consideration given to proportions of dead or injured fish caught. Every effort was made to ensure that sampling locations were similar. Furthermore, the claim that specific sampling locations would result in less injured fish than others during the sampling is unsupportable. Experience shows that the tide levels, river flow, time of day, and location of the fish migrating all change continually. These dynamic conditions at each site preclude the ability to predict the probability of finding more or less fish at a given site, as suggested by the comment.

The sampling locations were appropriate, as shown by the final results where similar numbers of fish were caught in both "test" and "control" samples (4,044 and 4,782, respectively) and similar numbers of dead or injured fish were found (80 and 116, respectively).

The commentary regarding use of data that were omitted prior to analysis is addressed by the response to Comment 8 Inappropriate Data Removal.

14. AVCP Comment: Not True for Kuskokwim, Inconclusive for Johnson

Response to AVCP Comment: The statement: "*these data indicate that the passage of the hovercraft did not significantly harm fish and the act of seining was responsible for most of the injury and mortality observed*" on p.37 of the SEA remains true.

The statement is supported by the fact that 4,044 fish were caught in test seine sets and only 80 (1.9%) of these were dead or injured, and that similar numbers, 4782 fish of which 116 (2.4%) were dead or injured, were observed in control seine sets. As explained previously, including inappropriate data points, making incorrect statistical analyses, as well as other fundamentally improper assumptions will provide results that do not properly portray the scientific results obtained from the monitoring.

15. AVCP Comment: May Not Combine Effects to Lessen Impacts: "Where significant effects are found for one region but not another however, it is not appropriate under the National Environmental Policy Act (NEPA) or the Coastal Zone Management Act (CZMA) to combine impacts of the two regions in order to reach a conclusion of no significant impact overall."

Response to AVCP Comment: As documented in the DSEA, the differences in mortality between test and control events were similar within each river and in the combined data set. These results show that there is no significant impact in either river or in both rivers combined.

16. AVCP Comment: Enough Were Harmed to Demonstrate a Serious Potential for Significant Impacts: "The low overall average incidence of dead or injured fish reported from the test sets (80 out of 4,044, or 1.9%) does leave the impression of limited overall impact. However, if the USPS includes results from the test seine left out

of the data for "fish just post-larval, very warm water" on August 14, the figure jumps to 13.28%."

Response to AVCP Comment: The fish from this test event were clearly harmed by extraordinary handling stress and should not be included in the data set. As stated earlier, similar seining sites were selected based on gradient, substrate, and other physiographic features.

When conducting fieldwork, conditions sometimes arise that cause bad data to be generated due to conditions uncontrollable by the study team and these data must be excluded prior to analysis. Thus, it is appropriate to assess the usability of data based on sound scientific reasons before one evaluates the data. If the usability of the data is not assessed prior to analysis, then the use of poor quality data that arise from artifacts of sampling can lead to erroneous conclusions. Also note the responses to Comments 8 and 13 regarding "Inappropriate Data Removal" and "Sampling Locations and Sampling Bias".

The inclusion of the omitted seine sets from the data analysis shows that the USPS was not trying to hide anything from the reader. Otherwise, these data could have been excluded from the report because they were unusable. However, it is appropriate and truthful to identify these data points as poor samples on the data logs and to not use them in the data analysis.

The conclusion that statement: "*these data indicate that the passage of the hovercraft did not significantly harm fish and the act of seining was responsible for most of the injury and mortality observed*" on page 37 of the SEA remains true.

17. **AVCP Comment:** Estimate of Impact: "In comparison to the test seines, if the USPS similarly includes the excluded control data from August 14th, the percentage of dead or injured in the control seines increases to 7.66%."

Response to AVCP Comment: As mentioned above, these data are unusable for valid scientific reasons. The mortality observed was attributable to extraordinary handling stress and was therefore omitted from the overall evaluation. As shown by the data, essentially all of the mortality observed was an artifact of the act of seining and not an impact from the hovercraft.

Subject: Stranding at Landing Sites

18. **AVCP Comment:** Hovercraft Schedule

Response to AVCP Comment: The DSEA is evaluating the proposed action as described in the document.

19. **AVCP Comment:** Migration Dates: "...there would be 5 weeks during which chum fry would be subject to strandings."

Response to AVCP Comment: It is possible that chum smolts could potentially exposed to hovercraft operations for five weeks. Four weeks was used as an average estimate given that breakup occurs very late in certain years. However, when using 5 weeks instead of 4 weeks, the estimate of potentially stranded chum fry is 175 per year at landing sites on the Kuskokwim

River. This number of stranded fry would be a negligible fraction of the chum salmon population, considering the numbers of chum salmon fry in the river at this time. Furthermore, considering all the sources of mortality in salmon populations from the time they are fry to when they return to the Kuskokwim River, the impact on salmon fry at landing sites would not be measurable in the numbers of returning salmon. This changes does affect the conclusion in the DSEA of no significant impacts.

20. **AVCP Comment:** Arrivals and Departures: "Third, the monitoring team only searched for stranded fry after the hovercraft arrived at a landing site. There is no reason to think the hovercraft wouldn't be just as capable of stranding fish during its departure."

Response to AVCP Comment: The people who live in the village have local knowledge of fish resources. This traditional knowledge has been developed over many generations and is very important to understanding potential impacts. It was the result of a report from the village of Napaskiak that small fish were being washed up on shore when the hovercraft landed that the monitoring was based. Based on this traditional knowledge fish monitoring was needed to observe landings not departures. In addition, although departures were not checked, the reasoning was that fish are likely pushed away as the hovercraft approaches the river and thus would not be pushed up on shore and thus potentially stranded.

21. **AVCP Comment:** Bethel Landings: "Finally, the monitoring team's calculation leaves out landings at Bethel."

Response to AVCP Comment: The Bethel landing site was not included in the monitoring and stranding estimates because of the nature of this landing. The Bethel landing is not characteristic of the other landing sites. The Bethel landing ramp is a steep gradient in a highly disturbed area directly adjacent to where gravel barges dock routinely. Therefore, this site was not considered appropriate for characterizing the impacts of the hovercraft at the other landing sites, which were typically low gradient. Additionally, the monitoring team frequently used the Bethel landing for logistical purposes such as staging, picking up and dropping off team members, and waiting for others, throughout the monitoring campaigns, and never found any stranded fish there.

22. **AVCP Comment:** Expected Number Found: "This brings the calculation to: [(5 villages x 5 weeks x (3 arrivals + 3 departures per week) + (1 village x 5 weeks x (6 arrivals + 6 departures per week)] x 2.5 chum = 525 chum…"

Response to AVCP Comment: Based on the responses above, the USPS disagrees with the basis, inputs, and results of this comment. The USPS agrees that a 5 week period for chum fry migration is reasonable. However the USPS disagrees with the stranding potential for departures and the addition of Bethel as an additional village in the calculation. In addition, the calculations are based on the schedule presented in the DSEA. Therefore, the estimation is based on [(5 weeks x 2 days per week x 4 villages)+ (5 weeks x 3 days per week x 2 villages)] x 2.5 chum = 175 chum fry.

23. **AVCP Comment:** Fry Stranded vs. Fry Found: "The monitoring team assumed their searches found 100% of all fish stranded, regardless of the type of substrate...."

Response to AVCP Comment: While the use of a scaling factor such as this might be useful at certain locations, the nature of the substrate in the Kuskokwim and Johnson rivers would make the use of such a factor unnecessary. The substrate mentioned in Hartman's study (*Some Impacts From the use of a Hovercraft on the Iskut River*, G.F. Hartman, June 1996) consisted of an abundance of small debris overlying gravel and cobble, which is not in any way similar to the fine sand and mud substrate beach found along the Kuskokwim and Johnson rivers. The beaches and landings that were checked for stranding in this study had very little debris and were generally smooth sandy beaches where stranded fish were readily apparent. A small number of fish could have been missed, but this would not have been frequent because of the intense search pattern employed during the searches for stranded fish. Additionally, since the searches were conducted immediately after the hovercraft had passed (as opposed to the much longer times used in the Iskut River study), there was little chance for birds to eat stranded fish before the search was completed, nor were any birds observed doing so. Thus the use of a scaling factor is unnecessary and inappropriate.

Furthermore, in Hartman's study some of the fish that were counted were in an advanced state of decomposition, which would necessitate using such a scaling factor because of the time lag between the strandings and the observations. In contrast, the observations in this study were conducted immediately or very soon after the hovercraft had passed, thus eliminating this potential source of error.

24. **AVCP Comment:** Revised Estimate of Chum Stranded at Landing Sites: "This brings the total number stranded at landing sites per year to at least 525 x 20 = 10,500 chum."

Response to AVCP Comment: As explained above, using a scaling factor (i.e. 20) is unnecessary and inappropriate because of the characteristics of the beaches and landing sites and the methods used to conduct the searches in this study. However, the revised estimate of the stranding impact using a five-week exposure period is 175 chum salmon fry per year, as compared to the original estimate of 140 chum fry per year, based on a four-week period. This revised estimate does not change the conclusion that the number of stranded fry would be a negligible fraction of the chum salmon population, considering the numbers of chum salmon fry in the river during this period. Furthermore, considering all the sources of mortality in salmon populations from the time they are fry to when they return to the Kuskokwim River, the impact on salmon fry at landing sites would not be measurable in the numbers of returning salmon.

25. **AVCP Comment:** Revised Estimate of Whitefish Stranded at Landing Sites: "...x 20 whitefish stranded per whitefish found = at least 19,936 stranded whitefish per year.

Response to AVCP Comment: As explained above, using a scaling factor (i.e. 20) is unnecessary and inappropriate because of the characteristics of the beaches and landing sites and the methods used to conduct the searches in this study. The revised estimate, using 0.71 stranded whitefish fry per landing and 520 landings, is 369 whitefish fry potentially stranded

per year, as compared with the original estimate of 420 whitefish fry per year. The 369 stranded whitefish fry would be a negligible fraction of the whitefish population, considering the large numbers of whitefish fry in the river. Furthermore, considering all the sources of mortality in whitefish populations from the time they are fry to when they mature, the impact on whitefish populations from stranding at landing sites is insignificant.

Subject: Stranding from Operating in Shallow Water and Near Shore

26. AVCP Comment: Insupportable Assumptions: "First of all, 4 chum salmon found per 900 yards searched yields 1 fish every 225 yards, no every 250."

Response to AVCP Comment: The simple summation of total yards divided by the total fish is one of the basic mistakes made by the layperson in assessing potential impacts. It is inappropriate to sum the total yards surveyed and divide by the total fish observed to calculate the overall fish stranded per yard of beach. There are not 900 observations of one-yard length, but rather 5 observations of stranded fish per yard, with varying lengths observed. The appropriate approach is to calculate the fish stranded per yard for each individual observation event because this method accounts for differences in fish density in the shallows on any given observation day. This approach is appropriate because the beach and stranding conditions were comparable among observations, but fish density could not be controlled for. Therefore, the USPS stands by the calculation of 0.004 fish per yard for stranded chum fry.

27. AVCP Comment: Percentage Over Shallow Water: "This is going to be considerably higher."

Response to AVCP Comment: The USPS feels that the range estimated for low-gradient beaches would adequately cover the percentage of shallow water present because the majority of the shallow areas are associated with low-gradient beach areas. In developing the 0.5 to 5 percent estimate, the USPS considered that the hovercraft runs though shallow areas, particularly around sharp bends in the river. This estimate was developed based on personal observations of the hovercraft operation, field conditions, and field experience by the monitoring team on similar projects.

28. AVCP Comment: Revised Estimate of Chum Stranded by Shallow Water Pass-bys: "...this translates to 1,564 fry. And at 20 fry total for every one found, the total number of chum stranded comes to at least 31,289 chum per year."

Response to AVCP Comment: As stated above, the USPS does not concur with the assumptions used in the estimate presented in the comment and this value appears to be grossly overestimated for the reasons discussed above. The revised estimate using a 5-week period in the river for chum smolts, and the other assumptions listed in the DSEA, is 70 to 704 chum fry stranded per year. This result does not change the conclusion in the DSEA that the number of stranded fry would be a negligible fraction of the chum salmon population, considering the numbers of chum salmon fry in the river during this period. Furthermore, considering all the sources of mortality in salmon populations from the time they are fry to when they return to the Kuskokwim River, the impact on salmon fry at landing sites would not be measurable in the numbers of returning salmon.

29. **AVCP Comment:** Corrected Estimate of Whitefish per Yard: "Total yards of beach searched for those 34 tests was 6,925. Twenty two fish in 6,925 yards = 0.0032 fish per yard."

Response to AVCP Comment: The method used to arrive at this estimate is incorrect (see response above for Comment 26 Insupportable Assumptions). However, the estimate presented in the DSEA needs to be slightly changed because the average for the fish per yard observations was calculated incorrectly using the wrong denominator. The correct estimate should be 0.0029 fish per yard, as compared to the estimate presented in the DSEA of 0.0025 fish per yard. This change does not change the conclusions stated in the DSEA that the number of whitefish fry potentially stranded would be a negligible fraction of the whitefish population, considering the large numbers of whitefish fry in the river.

30. **AVCP Comment:** Revised Estimate of Whitefish Stranded by Shallow Water Pass-bys: "A more accurate but still conservative estimate would be 0.00032 whitefish found per yd x 1760 yds/mi x 622 total mi/wk x 0.10 shallow water distance/total distance x 26 wks x 20 whitefish per whitefish found = at least 182,161 stranded whitefish fry."

Response to AVCP Comment: This number appears to be grossly overestimated for the reasons discussed in the responses above. The estimate presented in the DSEA (356 to 3558) has been changed in the FSEA to 413 to 4127 whitefish fry stranded per year. This revision does not change the conclusion of the DSEA that the number of whitefish fry potentially stranded would be a negligible fraction of the whitefish population, considering the large numbers of whitefish fry in the river.

Subject: Stranding From Unplanned Stops on Beaches

31. **AVCP Comment:** Revised Estimate of Whitefish Stranded by Unplanned Stops: "...figuring in an estimated 20 fish present per fish found yields 2800 whitefish fry stranded per year at unplanned stops."

Response to AVCP Comment: As discussed above, using a factor of 20 fish for each fish found is inappropriate for this study. The correct estimate as presented in the DSEA is about 140 whitefish fry stranded per year at unplanned stops.

32. **AVCP Comment:** Other Fish: "Additionally, the monitoring team also found 11 sucker fry stranded...40 unplanned stops x 11 fish per 6 stops x 20 fish per fish found = an additional 1,467 fish..."

Response to AVCP Comment: It is recognized that other fish can be stranded, but again using a factor of 20 fish per fish found is inappropriate. Other fish were stranded so infrequently, that they were clearly not significant.

33. **AVCP Comment:** Unplanned Stops Yield Unusually High Results

Response to AVCP Comment: As discussed, the calculations only involved whitefish because that is the focus of the paragraph and the calculations were done correctly. Although the comment presents several points, these are only conjecture and there is no basis to accept them.

34. **AVCP Comment:** Implications for Hovercraft Travel over Sandbars

Response to AVCP Comment: This comment is pure speculation with no supporting evidence to back it up. One cannot use the data obtained from the unplanned stops to extrapolate to sandbar crossings because during normal operations the hovercraft is traveling above hump speed, which was not the case when it made the unplanned stops. Therefore, use of these non-typical landing events to speculate on potential impacts from sandbars crossings is inappropriate.

Subject: Summary of Potential for Stranding Juvenile Fish

35. **AVCP Comment:** Salmon: "Based on review of the existing data, the total number of chum salmon fry stranded on an annual basis would be at least 10,500 at landing sites + 31,289 from shallow water pass-bys = 41,789 chum."

Response to AVCP Comment: These numbers are grossly overestimated, due to the use of inappropriate assumptions, as pointed out in the responses to Comments 24 and 28 (Revised Estimate of Chum Stranded at Landing Sites and Revised Estimate of Chum Stranded by Shallow Water Pass-bys). The USPS stands by the revised estimate above and the statement in the DSEA that the number of coho fry stranded would be expected to be similar and number of chinook, sockeye, and pink fry stranded would be expected to be far less.

36. **AVCP Comment:** Whitefish

Response to AVCP Comment: These numbers are grossly overestimated, due to the use of inappropriate assumptions, as pointed out in the responses to Comments 25 and 29 (Revised Estimate of Whitefish Stranded at Landing Sites and Revised Estimate of Whitefish Stranded by Shallow Water Pass-bys). The USPS stands by the revised estimate above and the statement in the DSEA that the number of whitefish fry potentially stranded per year is not significant given that it represents about 1 to 6 adult whitefish per year.

37. **AVCP Comment:** Other

Response to AVCP Comment: These numbers are grossly overestimated, due to the use of inappropriate assumptions, as pointed out in the response to Comment 32 Other Fish. The USPS stands by the statement in the DSEA that there will be no significant adverse impact on fish associated with the proposed action.

38. **AVCP Comment:** Shallow Water Impacts: "The figures are in addition to fish killed or injured in shallow water but not stranded, for which a reasonably conservative estimate would run about 5.62% of fish present."

Response to AVCP Comment: The actual potential non-stranding impact to fish in shallow water is much lower than this as indicated by the results of the shallow water beach seine studies (see response to Comment 17 Estimate of Impact). These results indicated that the hovercraft did not significantly harm juvenile fish in shallow water and that most of the mortality and injury observed came from the capture and handling of the fish. The correct values are 2.0% for test and 2.4% for control, indicating a negative 0.4%, which is equivalent to zero percent impact, as compared to the incorrect and unsupported value of 5.62% suggested in the comment.

Mammals

39. **AVCP Comment:** Kuskokwim: "The AGRA 1998 study included extensive analysis of mammal impacts…"

Response to AVCP Comment: A cause and effect relationship between the hovercraft and the observations was not demonstrated in the AGRA study. It is likely that other factors are influencing their results. For example, no evidence is presented that AGRA controlled for habitat quality within each of their habitat types. Secondly, the proximity of the area sampled and the use of this area for subsistence harvests could be an important factor affecting the results.

The AGRA report does not appear to represent an extensive study for any impacts, specifically mammals. Due to the short time period of the study, and other shortcomings, the report appears to be more of a casual observation, i.e., a "snap shot" and although useful for conversational purposes, it is the Postal Service's opinion that it does not establish scientifically valid results. The study, as compared to the USPS study, falls short for the following reasons: 1) monitoring methodologies were not peer reviewed by resource agencies prior to conducting the study; 2) the AGRA report itself was not peer reviewed by resource agencies; 3) the monitoring staff appears to have been less experienced and had fewer credentials; 4) a much smaller monitoring staff spent much less time in the field; 5) no draft report was provided for comments by resource agencies or the public; 6) no maps, location coordinates, or sampling locations were provided; and 7) the AGRA team used very limited sampling points, raising question about the statistical validity of the findings. Therefore, it is the Postal Service's opinion that little or no credence can be given to the AGRA study, in contrast to the USPS's long-term, rigorous, scientific and peer-reviewed study.

40. **AVCP Comment:** Johnson

Response to AVCP Comment: See response to Comment 39 Kuskokwim.

41. **AVCP Comment:** Upland Game Birds

Response to AVCP Comment: See response to Comment 39 Kuskokwim.

Waterfowl

Subject: Flushing of Waterfowl

42. AVCP Comment: Not True for Most Ducks and Geese

Response to AVCP Comment: As documented in the Summary Report, waterfowl flush the majority of the time in response to either craft. Although the commentor claims a significant difference exists in flushing, the key point as shown in the subsequent aerial monitoring, is that the flushing effect does not affect the overall availability of the resource for subsistence harvest because the birds do not leave the area. This point was documented in the DPEA and supported by the decision of the U.S. Court of Appeals for the Ninth Circuit (Akiak Native Community vs. USPS, Case: 98-35466, 05/25/00).

43. AVCP Comment: Inconclusive for Other Waterfowl

Response to AVCP Comment: The fact that there are low numbers of other waterfowl species in both the hovercraft and control areas shows that these species do not extensively use the river habitat, and thus there is little potential for impact.

44 a. AVCP Comment: A Giant Flushing Sound

Response to AVCP Comment: It was recognized in the Summary Report that the hovercraft flushes waterfowl. As stated above in the response to Comment 42, the key point is not whether they flush, but rather whether they leave the area after flushing. It was conclusively shown in the motorboat and aerial surveys that waterfowl are not being driven from the area.

Subject: Waterfowl Use of River Habitat

44 b. AVCP Comment: The results of the study are inconclusive.
Response to AVCP Comment: The USPS feels that the results of the study were conclusive based upon the variation observed and captured within the study. A total of 337 miles of transects were surveyed by motorboat, with 1311 waterfowl observed, and approximately 1780 miles of aerial transects were surveyed over 2 years, with 4865 waterfowl observed. Based on the analysis of the results of these surveys, there does not appear to be an effect on waterfowl use of river habitat.

Furthermore, the people who live in the village have local knowledge of waterfowl resources. This traditional knowledge has been developed over many generations and is very important to understanding potential impacts. Based on the traditional knowledge, these transects were discussed with village elders and it was agreed that they provided the proper representation of habitat. In addition, these transects were also reviewed by the local resource agencies and the general public who did not disagree with their locations.

Waterfowl use of the Kuskokwim and Gweek rivers was significantly less than waterfowl use on the slough, but use of the Kuskokwim River and the Gweek River was not significantly different. Since the Kuskokwim River has more boat traffic than the Gweek River, fewer waterfowl might have been expected to use the Kuskokwim River. These observations suggest that multiple factors, such as habitat quality, affect waterfowl use of these areas.

The USPS stands by the conclusion present in the DSEA that the results of the study indicate that the proposed action would not have significant adverse impacts on waterfowl use of the habitat along the rivers.

Subject: Breeding Waterfowl

45. AVCP Comment: Incorrect Figures

Response to AVCP Comment: The figures and tables have been corrected as part of an erratum that will accompany the Final SEA. However, the statistical conclusions and p-values are correct as presented and no significant differences were found.

46. AVCP Comment: Significant Differences

Response to AVCP Comment: No significant differences in waterfowl abundance were found between the control transects and hovercraft operational area transects. Thus, no effect from the hovercraft is shown by these data.

47. AVCP Comment: Other Explanations

Response to AVCP Comment: The results were standardized by length of a given habitat on each transect to account for just such a bias. Therefore the standardized results are directly comparable and no significant differences were found between control and operational areas in any of the habitats.

SEA Conclusion on the Potential for Impacts from the Proposed Action

The comments and responses above do not change the conclusions presented in the DSEA. The results of the monitoring show no significant impacts to fish, mammals, or waterfowl. Although some impact to juvenile fish in shallow water, mostly from stranding at landing sites, was documented, it has been shown that this impact is quite small considering the vast numbers of salmon and whitefish fry found in these rivers each year and is clearly insignificant.

Appendix F – Fish and Wildlife Species Discussed in Text

Appendix F – Fish and Wildlife Species Discussed in Text

Common Name	Scientific Name
Fish	
Arctic grayling	*Thymallus arcticus*
Alaska blackfish	*Dallia pectoralis*
Chinook salmon	*Oncorhynchus tshawytscha*
Chum salmon	*Oncorhynchus keta*
Coho salmon	*Oncorhynchus kisutch*
Humpback whitefish	*Coregonus pidschian*
Northern pike	*Esox lucius*
Pink salmon	*Oncorhynchus gorbuscha*
Round whitefish	*Prosopium cylindraceum*
Sheefish	*Stendos leucichthys*
Sockeye salmon	*Oncorhynchus nerka*
Mammals	
Beaver	*Castor canadensis*
Beluga whale	*Acipenser huso*
Black bear	*Ursus americanus*
Caribou	*Rangifer tarandus*
Grizzly bear	*Ursus arctos*
Lynx	*Felis lynx*
Mink	*Mustela vison*
Moose	*Alces alces*
Pine marten	*Martes americana*
Red fox	*Vulpes vulpes*
River otter	*Lutra canadensis*
Short-tailed weasel	*Mustela erminea*
Birds	
American peregrine falcon	*Falco peregrinus anatum*
Bald eagle	*Haliaeetus leucocephalus*

Appendix G – Noise Computational Methodology

Appendix G – Noise Computational Methodology

This Appendix is a more detailed presentation of the material in Section 4.8, including terminology and a computational example.

Acoustic Terminology

Day-Night Average Sound Level (DNL, denoted by the symbol L_{dn}). L_{dn} is a 24-hour, time-averaged L_{AE} (see definition below), adjusted for average-day sound source operations. The adjustment includes a 10-dB penalty for operations, denoted by the symbol N, occurring between 10:00 pm and 7.00 am, local time. L_{dn} is computed as follows:

$$L_{dn} = L_{AE} + 10\times\log_{10}[N_{DAY} + N_{EVE} + 10\times N_{NIGHT}] - 49.4 \quad \text{(dB)}$$

where

L_{AE}	=	Sound Exposure Level in dBA (defined below);
N_{DAY}	=	number of operations between 7:00 am and 7:00 pm, local time;
N_{EVE}	=	number of operations between 7:00 pm and 10:00 pm, local time;
N_{NIGHT}	=	number of operations between 10:00 pm and 7:00 am, local time;

49.4 = a normalization constant which spreads the acoustic energy associated with hovercraft operations over a 24 hour period, i.e., $10\times\log_{10}$(86,400 sec per day) = 49.4 dB.

Given the assumption that all AP.1-88 operations occur between 7:00 am and 10:00 pm, local time, the L_{dn} equation reduces to the following:

$$L_{dn} = L_{AE} + 10\times\log_{10}N - 49.4 = L_{Aeq,24h} \quad \text{(dB)}$$

Decibel. A unit of measure used to describe relative difference in power, usually between acoustic or electric signals, equal to one-tenth the base-10 logarithm of the ratio of two levels. For the purposes of this document, the reference level is 20 microPascals (μPa), or the threshold of human hearing.

Maximum A-Weighted Sound Level with slow-scale response characteristics (MXSA, denoted by the symbol L_{ASmx}). The maximum A-weighted sound level associated with a given event (see Figure J.1). Slow-scale response effectively damps a signal as if it were to pass through a low-pass filter with a time constant of 1000 milliseconds.

Sound Exposure Level (SEL, denoted by the symbol L_{AE}). L_{AE} is equal to ten times the logarithm to the base ten of the ratio of a given time integral of squared, instantaneous A-weighted sound pressure, divided by the squared reference sound pressure of 20 μPa, and normalized to a one-second duration. The time integral must be long enough to include a majority of the sound source's acoustic energy. As a minimum, this integral should encompass the 10 dB down points. For the purposes of the data presented in this document, L_{AE} was computed using data encompassed by the 15 dB down points (see Figure F.1).

L_{AE} Data for the AP.1-88

Computed noise levels at Bethel and nine remote Alaskan villages due to AP.1-88 hovercraft operations are presented in this Appendix. The noise levels were computed using a methodology similar to that used by the Federal Aviation Administration's (FAA) Integrated Noise Model (INM) (Fleming, et al., 1997). Specifically, the Volpe Center's Acoustics Facility performed a noise characterization study of the AP.1-88 (Roof, et al., 1996), including the development of a Noise-Power-Distance (NPD) database of the craft. Summarized in Table F.1, this data base, along with other pertinent operational information, was used to obtain the L_{AE} for the residential structure in each village which was expected to be subjected to the greatest noise impact due to AP.1-88 operations. The L_{AE} values were then used to compute the L_{dn} values for each village, which are presented in Table F.2.

The pass-by L_{AE} values presented in Table F-1 are those generated by the AP.1-88 under typical power and cruise-speed operating conditions, and normalized to Standard-Day Atmospheric conditions, i.e., temperature of 15°C and relative humidity of 70%. Average temperatures for the villages may be less than this, but generally lower temperatures coincide with lower levels of humidity and greater sound absorption (i.e., lower sound levels). The distance values presented in the table represent the closest point of approach between the AP.1-88 and an observer location, in this case the closest residential structure in each Alaskan village. Another very important assumption inherent in these data is that the AP.1-88 travels along an infinitely long, straight path, or a straight path which is long enough to include the majority of the AP.1-88's acoustic energy. The latter appeared to be a reasonable assumption for pass-by operations of the craft, given the proposed AP.1-88 routing information provided by Alaska Hovercraft JV. It should be noted that detailed information for distances in the village of Tuluksak is currently not available. As such, a worst-case distance to closest residence value of 300 feet, as observed in Atmautluak, was chosen for Tuluksak.

Table F.1 LAE Data for AP.1-88 Pass-by Events

Pass-by Distance (ft)	L_{AE} (dB)
200	100.8
400	97.0
630	94.8
1000	92.3
2000	88.4
4000	83.8

Additionally, it was determined in the noise characterization study that the L_{AE} value for a typical approach/departure operation of the AP.1-88, defined as the combination of a single approach and departure, is as follows:

Approach/Departure L_{AE} at 100 ft: 98.3 dB

This value represents the arithmetic average of the L_{AE} values measured for the combined approach/departure operations (Roof et al.). The distance of 100 ft refers to the distance between the craft and the receiver at the stop and start of each approach and departure test, respectively.

SAMPLE L_{dn} CALCULATION

This section presents a step-by-step example of using the L_{AE} data presented in Section 4.8 to compute the resultant L_{dn} at the Alaskan village of Akiachak due to the proposed introduction of the AP.1-88 hovercraft. L_{dn}, defined in the Terminology section, is the most commonly used noise descriptor for assessing community noise impact.

Figures F.2 and F.3 show "L_{dn} or $L_{Aeq,24h}$" versus distance for a single operation of the AP.1-88 hovercraft. It should be noted that the L_{dn} and $L_{Aeq,24h}$ noise descriptors are equivalent to each other, given that the assumed hours of operation for the AP.1-88 are 7:00 am to 10:00 p.m., local time.

Figure F.2 presents pass-by configuration data. These data are nothing more than a graphical representation of the L_{AE} data presented in Table F.1, with a constant value of 49.4 dB subtracted from them. This constant value is simply a normalization constant which spreads the acoustic energy associated with AP.1-88 operations over a 24 hour period, i.e., $10\times\log_{10}(86{,}400 \text{ sec per day}) = 49.4$ dB. The pass-by curve (Figure F.2) is conservative in that it assumes propagation over an "acoustically hard" surface (e.g., water or concrete). Note: It is expected that propagation for the pass-by operations will occur primarily over water in the vicinity of Bethel, AK, since the Postal Service has required that all operations associated with the proposed mail delivery service take place on the area waterways. Propagation over ground surfaces that are not considered acoustically hard, will likely result in lower sound levels, as compared with propagation over water.

Figure F.3 presents three curves representing the approach/departure configuration data. These were derived using the average approach/departure L_{AE} value of 98.3 dB at 100 feet, which is highlighted in the figure with the "boxed asterisk." The middle curve, originating at the known data point, represents sound absorption over an "acoustically soft" surface. It is drawn assuming a slope of 7.5 dB per doubling of distance (dB/dd) which is considered typical over ground types such as short-grass-covered terrain. The lower curve (greater ground attenuation effect, re the 7.5 dB/dd curve) represents sound absorption over softer, more absorptive ground, typical of thick vegetation or terrain covered with freshly fallen snow. The upper curve (less ground attenuation effects, re the 7.5 dB/dd curve) represents sound absorption over an "acoustically hard" surface. For all computations presented herein and for independent application of this assessment methodology, the upper, more conservative curve (least ground attenuation affect, re the 7.5 dB/dd curve) is used. This conservative approach ensures that any errors inherent in the process will result in an over-prediction of the noise level.

The following is a step-by-step computation of the L_{dn} descriptor for the village of Akiachak. It is considered to be typical of the other villages in the vicinity of Bethel, as well:

Given: 3 pass-by operations per week;

3 approach/departure operations per week;

a pass-by distance to the nearest residential structure (at closest-point-of-approach) of 1500 ft;

a distance of 500 ft between landing site and nearest residential structure;

Step 1: Use the "L_{dn} or L_{Aeq24h}" curve (Figure J-3) to obtain the L_{dn} value for a pass-by distance of 1500 ft.

L_{dn}(pass-by) = 41.0 dB

Step 2: Use the uppermost "L_{dn} or L_{Aeq24h}" curve (Figure J-3) to obtain the L_{dn} value for an approach/departure at a distance of 500 ft.

L_{dn}(app/dep) = 38.5 dB

Note: The L_{dn} values found in Steps 1 and 2 are for a single, daily operation only. The remainder of the steps must be carried through in order to calculate a final L_{dn}.

Step 3: Using "dB-addition", calculate the overall L_{dn} for a single, daily operation.

$41.0 \text{ dB} + 38.5 \text{ dB} = 10 \times \log(10^{(41.0)/10} + 10^{(38.5)/10}) = 42.9 \text{ dB}$

Step 4: Compute the average number of <u>daily</u> approach/departure operations and pass-by operations.

3 approach/departures per week = 0.43 operations per day

3 pass-bys per week = 0.43 operations per day

Note: These calculations assume that all operations occur between 7:00 am and 10:00 pm local time. If this is not the case, this process is not applicable.

Step 5: Compute L_{dn} taking into account operations.

$L_{dn(w/\ ops)} = 42.9 \text{ dB} + 10 \times \log_{10}(0.43 + 0.43) = 42.3 \text{ dB}$

Final L_{dn} = 42.3 dB

This final L_{dn} can now be compared with two commonly referenced noise impact criteria, that of the FAA and that of the FTA. The FAA uses a 65 dB L_{dn} limit for determining noise-compatible residential land use. In addition, assuming an ambient noise level of 40 dB as representative, FTA criteria state that "no impact" occurs when project noise levels, in this case noise levels due to AP.1-88 operations, are less than approximately 50 dB L_{dn}. In the case of the Akiachak sample calculation, both criteria are satisfied.

DISCUSSION

The final L_{dn} values computed for the residential structure in each village that is expected to be subjected to the greatest noise impact due to AP.1-88 operations are presented in Table E.2. These values were based on the best available site data as determined from USGS topographic maps, aerial photographs of the villages provided by Aeromaps of Anchorage, AK, and landing site locations as provided by Alaska Hovercraft JV. As presented, the L_{dn} value for each village satisfies both the FAA and FTA noise-impact criteria discussed in Section 4.8. If deemed necessary, fishing camps along the rivers may be considered during future monitoring programs.

Also presented in Table F.2 is the maximum allowable increase in average weekly operations without incurring a significant noise impact, as defined by the more stringent FTA criteria, for each village. These data are not representative if there are changes in other operational variables, e.g., landing site locations.

Table F.2 AP.1-88 Hovercraft Noise Levels at Alaskan Villages

VILLAGE	Pass-by Operations			Approach/Departure Operations			Final L_{dn} (dB)	Maximum Allowable Increase In Weekly Operations Without Significant Noise Impact
	Distance (ft)[a]	No. of Avg-Day Operations (per day)[b]	Single-Operation L_{dn} (dB)	Distance (ft)[a]	No. of Avg-Day Operations (per day)[b]	Single-Operation L_{dn} (dB)		
BETHEL	1200	1.85	42.0	(NA)[c]	(NA)[c]	(NA)[c]	44.7	23.8
AKIACHAK	1500	0.57	41.0	500	0.57	38.5	43.5	30.8
AKIAK	(NA)[d]	(NA)[d]	(NA)[d]	1125	1.00	32.0	32.0	439.6
ATMAUTLUAK	375	1.15	48.0	(NA)[c]	(NA)[c]	(NA)[c]	48.6	9.1
KASIGLUK	500	1.15	46.5	(NA)[c]	(NA)[c]	(NA)[c]	47.1	13.3
KWETHLUK	(NA)[d]	(NA)[d]	(NA)[d]	1665	0.57	28.0	25.6	1933.4
NAPAKIAK	1062	1.43	42.5	375	0.57	40.5	47.6	11.9
NAPASKIAK	1250	1.43	41.5	625	0.57	36.0	45.6	18.9
NUNAPITCHUK	(NA)[d]	(NA)[d]	(NA)[d]	350	1.15	41.0	41.6	48.3
TULUSAK	(NA)[d]	(NA)[d]	(NA)[d]	350	1.15	37.0	37.6	121.8

Note: With the exception of Tuluksak, locations of structures and distances were derived from aerial photographs taken between June 1983 and September 1994.

[A] Distance values were measured from aerial photographs, taken by Aeromaps (Anchorage, AK), between June 1983 and September 1994.

[B] No. of Average-Day Operations calculated by dividing no. of average-week operations by 7 days per week.

[A] Distance values were measured from aerial photographs, taken by Aeromaps (Anchorage, AK), between June 1983 and September 1994.

[C] (NA) = Not Applicable. It was determined, based on proposed hovercraft routes, that for certain villages the noise contribution associated with certain operations (pass-by or approach/departure) to the overall L_{dn} was negligible. Specifically, for Bethel, Kasigluk and Atmautluak, it was observed that some residences would be subjected to the sound energy associated with only pass-by operations, and some to that associated with a combination of both pass-bys and approach/departures. In each of these three cases, it was determined that the residences exposed only to pass-by operations would be subject to a greater noise impact.

[D] (NA) = Not Applicable. It was determined, based on proposed hovercraft routes, that for certain villages the noise contribution associated with certain operations (pass-by or approach/departure) to the overall L_{dn} was negligible. Specifically, for Nunapitchuk, Kwethluk, Akiak and Tulusak, it was observed that some residences would be subjected to the sound energy associated with only approach/departure operations, and some to that associated with a combination of both pass-bys and approach/departures. In each of these three cases, it was determined that the residences exposed only to approach/departure operations would be subject to a greater noise impact.