

**LUMMI NATION
WASTE MANAGEMENT TEAM ANNUAL REPORT
2006**



March 2007

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Abstract

What was to become the Lummi Waste Management team was created in the latter part of 2002 to address illegal solid waste dumping on the Lummi Indian Reservation. The Lummi Indian Business Council initially fully funded this effort until U.S. Environmental Protection Agency funding was obtained to help support the effort starting in October 1, 2004. As a result of this effort, a total of 565 tons of solid waste, nearly 215 appliances, nearly 500 tires, and over 70 abandoned vehicles have been removed from the Reservation and disposed of at an off-Reservation licensed transfer station since 2002. This report gives an overview of the solid waste management efforts on the Lummi Indian Reservation since 2002 and more specific information on the Lummi Waste Management Team's clean up activities over the January 1, 2006 through December 31, 2006 period.

1. Introduction

As shown in Figure 1, the Lummi Indian Reservation (Reservation) is located in northwestern Washington State at the mouth of the Nooksack River and along the western border of Whatcom County. The Nooksack River drains a watershed of 786 square miles, flows through the Reservation near the mouth of the river, and discharges to Bellingham Bay (and partially to Lummi Bay during high flows).

The Reservation includes the Nooksack and Lummi river deltas and all tidelands adjacent to upland areas of the Reservation. In addition to riverine and coastal floodplain areas, the Lummi Reservation has two relatively large forested upland areas and a smaller upland area on Portage Island. The Reservation includes approximately 12,500 acres of uplands and 7,000 acres of tidelands. The Reservation is located at the southern extent of the Strait of Georgia and the northern extent of Puget Sound. Approximately 38 miles of highly productive marine shoreline surround the Reservation uplands on all but the north and northeast borders. The Reservation features relatively low topographic relief and a temperate marine climate. Although there is relatively dense residential development along some of the Reservation shorelines, many parts of the Reservation can be described as a rural setting.

The Reservation waters (a.k.a. Lummi Nation Waters) contain significant resources for both the Lummi Nation and the region. Numerous economically and culturally important species, including herring, salmon, oyster, manila clam, little neck clam, butter clam, horse clam, and Dungeness crab, are present in Lummi Nation waters. Estuarine waters of the Nooksack and Lummi River deltas form the interface between marine water and fresh water. Estuarine waters have a unique importance for fish habitat, as juvenile salmon reside in these waters during their acclimatization to saltwater and adult salmon during their acclimatization to fresh water. Because these water resources are vital for economic stability, growth, and the cultural and spiritual life of the community, the potential contamination of Lummi Nation surface waters has a direct, serious, and substantial effect on the health and welfare of the Lummi Nation, its members, and all persons present on the Reservation.

Reservation waters also contain large eelgrass meadows and habitat for numerous species of waterfowl, marine birds, and raptors (including the bald eagle and peregrine falcon). Nonpoint-source pollution can result in economic and cultural hardship by decreasing the health and abundance of fish, shellfish, and wildlife; cause downgrades of commercial shellfish beds; and affect human health through consumption of contaminated fish and shellfish.

In addition, because of the geographic and hydrogeologic conditions in the area, ground water resources on the Reservation are also vulnerable to pollution. Over 95 percent of the residential water supply for the Reservation is currently

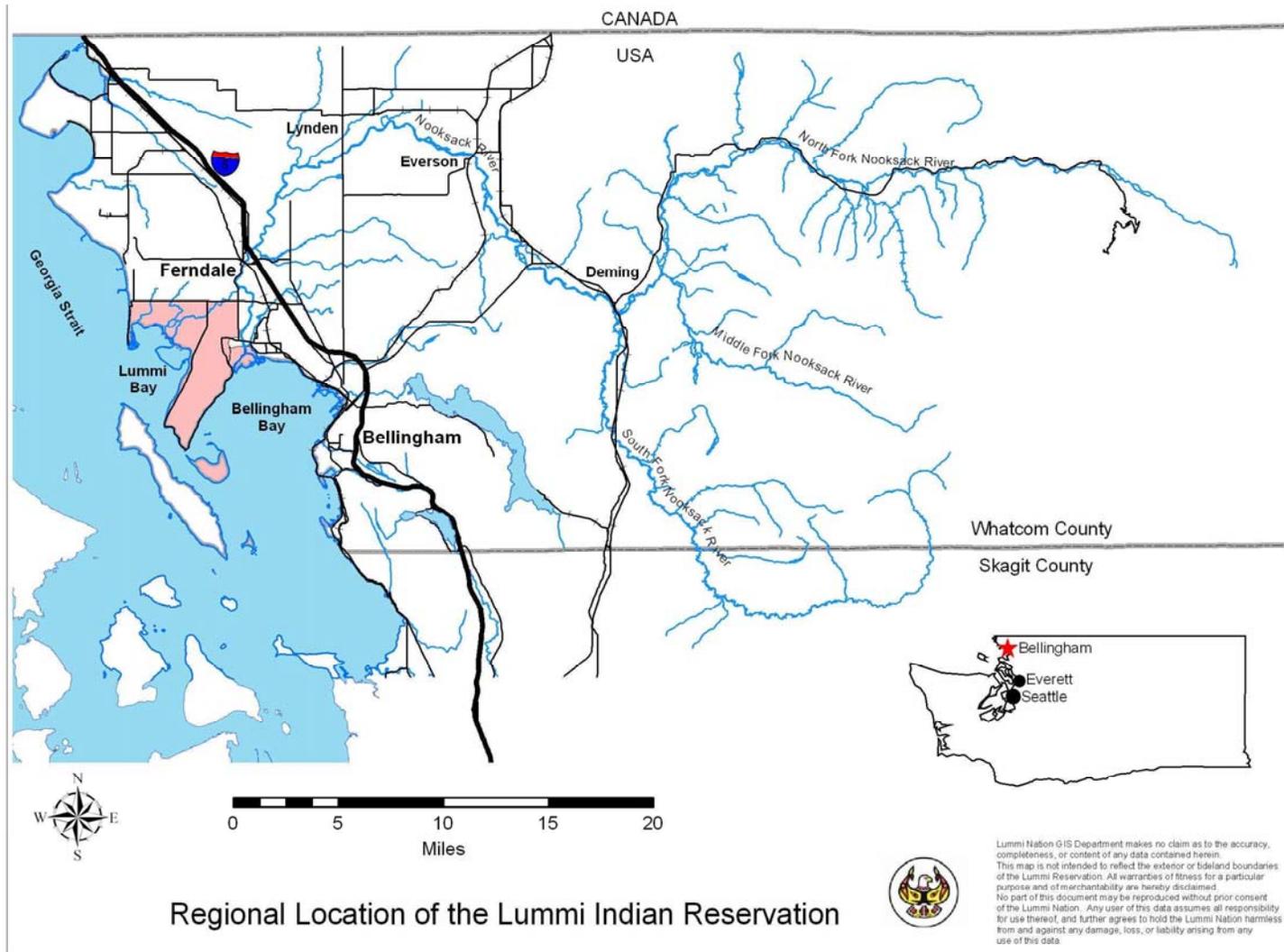


Figure 1. Regional Location of the Lummi Indian Reservation

pumped from local ground water wells. The contamination of these aquifers would adversely affect the health of persons drinking or using water from these supplies. Ground water resources are vulnerable to contamination from agricultural, residential, municipal, commercial, and industrial land uses. Ground water contamination could lead to the loss of the primary water supply source for the Reservation because water supply wells are difficult to replace, ground water contamination is very expensive to treat, and some damages to ground water caused by contamination may be impossible or unfeasible to mitigate.

2. Problem Statement and Response

Solid waste dumpsites can be a public health threat and a threat to the quality of Reservation waters. Pollutants of concern include bacteria/pathogens, metals, nutrients, pesticides, oil, grease, and other chemicals. Similar to other rural areas throughout the world, illegal solid waste dumping occurs on the Lummi Reservation and it is difficult to both identify who is illegally dumping wastes and to stop the dumping. Cleaning up the dumpsites is the most direct way of removing the potential public health threat and threat to Reservation water quality. Placing signs, preventing access to dumpsite locations, community education efforts, and providing assistance in solid waste removal are methods that can help stop illegal dumping activity.

In 2002, the Lummi Indian Business Council (LIBC – the governing body of the Lummi Nation) initiated Project Clean-Up. Project Clean-Up operated under the direction of the LIBC Vice-Chairman's Office during 2003. In 2004, Project Clean-Up was institutionalized within the administrative structure of the LIBC by moving the program from the Office of the Vice-Chairman to the Lummi Planning Department. Within the Planning Department it was renamed "Lummi Waste Management". In January 2004, the Lummi Nation also adopted a Solid Waste Control and Disposal Code (Title 18 of the Lummi Code of Laws).

During 2002 and 2003, Project Clean-Up was funded by the LIBC. During calendar year 2004, the activities of the Lummi Waste Management were largely funded by the LIBC and partially funded by a U.S. Environmental Protection Agency (EPA) grant (starting on October 1, 2004). During calendar year 2005, Lummi Waste Management was largely funded by an EPA grant (Assistance ID No. BG-97042601-2) and during 2006 the program was completely funded by an EPA grant (Assistance ID No. BG-97042601-3). The costs associated with this program include supporting salaries and benefits of the clean-up crews, providing materials (e.g., gloves, safety vests, signage, plastic bags, tools, equipment, gates, vehicles, repair and maintenance, fuel), and dumping fees. As described in more detail below, during 2006 a replacement tractor was purchased and four new gates and one replacement gate were installed.

3. Project Clean-Up/Lummi Waste Management Results

Lummi Waste Management staff pick up materials from solid waste dumpsites either by hand, with hand tools, or with the use of a small front-end loader with a “thumb” that was purchased for Project Clean-Up during 2003 and replaced with a new tractor during 2006. Figure 2 and Figure 3 show the tractor purchased in 2006 cleaning up a solid waste dumpsite. The collected materials are transported to the nearby solid waste transfer station for disposal using a flat bed truck and/or trailer purchased in 2003 for the project and/or in the bed of a pickup truck. Hazardous materials (e.g., paint, oil, car batteries, pesticides, household cleaners) are separated and transported to the hazardous waste collection site operated by Whatcom County near the Bellingham airport.

In addition to purchasing the primary clean-up equipment (small front-end loader, flat bed truck, and trailer) during 2003, Project Clean-Up staff posted signs to encourage people not to litter and/or to report violators to the Lummi Law and Order department and gated off seven areas where illegal dumping was a recurrent problem. Figure 4 through Figure 9 show examples of these gates and signs. Of the seven locations that were gated during 2003, one gate was vandalized during 2005 to the extent that it needed to be replaced (Figure 7 and Figure 9). This vandalized gate was replaced during 2006 and four additional locations where illegal dumping was a recurrent problem also had gates installed during 2006. The locations of these gates are shown in Figure 17 and Figure 18.



Figure 2. Waste Management Team Tractor Cleaning Up a Dump Site



Figure 3. Waste Management Team Tractor in Action



Figure 4. A typical *No Dumping* sign on the Lummi Reservation.



Figure 5. Kwina Slough, vehicle access to this site is permanently restricted and solid waste dumping from this area stopped.



Figure 6. Limited seasonal access has reduced illegal dumping at this popular boat launch site.



Figure 7. Vandals destroyed this gate along the Lummi River during 2005 – it was replaced during 2006.



Figure 8. New gate installed during 2006 – located below gate shown in Figure 6.



Figure 9. Replacement gate installed during 2006 to replace gate vandalized in 2005.

During 2006 the Lummi Waste Management Team also supported four beach clean-up efforts. Two of these efforts were in conjunction with the Northwest Indian College and two were in conjunction with local residents near Gooseberry Point. The results of these beach clean-up efforts are shown in Figure 10 through Figure 13.



Figure 10. Beach along Lummi Shore Road with illegal dumpsite.



Figure 11. Beach along Lummi Shore Road after clean up efforts.



Figure 12. Solid waste collected during a Gooseberry Point Beach clean up effort.



Figure 13. Gooseberry Point Beach area after collected solid wastes removed.

In addition to clean-up activities, Project Clean-Up staff distributed a brochure that described the program and encouraged recycling and the proper disposal of household hazardous wastes. The Lummi Waste Management has continued this public information and education effort and has published descriptions of their services in a brochure and in the community newspaper, and has acquired and distributed brochures on proper solid waste disposal, hazardous material disposal, waste reduction, and recycling.

3.1 Project Clean-Up Activities During 2003

In 2003, Project Clean-up removed 67.7 tons of solid waste from illegal dumpsites on the Reservation and 86.5 tons of solid wastes from the houses and property of elderly and disabled tribal members (combined over 150 tons). The

program helped 123 tribal elders living on the Reservation. The solid waste was transported to the Recycling and Disposal Services collection site located along Slater Road (approximately 2 miles from the northeastern corner of the Reservation). Figure 14 shows the locations of clean-up activities during 2003.



Figure 14. Project Clean-Up Sites during 2003

3.2 Lummi Waste Management Team Activities During 2004 and 2005

Clean-up activities continued during 2004 and 2005. Clean-up locations over the October 1, 2004 through December 31, 2005 period are shown in Figure 15 and Figure 16. Figure 15 shows the locations where access gates were installed during 2003 and where solid wastes were removed from illegal dumpsites during 2005.

In addition to their regular workload, Lummi Waste Management staff has continued to support the jail alternative/community services work crews during weekends. These crews, which are not paid, are primarily youth offenders. During these community service clean-up efforts, Lummi Waste Management staff provide informal education about the potential affects that illegal dumping can have on their community and their lifestyle and also provide written information/brochures.

Along with ongoing work to ensure the waterways of the Reservation are free of waste, Lummi Waste Management has also continued to assist elder and disabled tribal members with their waste management. This is accomplished by providing clean-up services to eligible households (tribal elder or tribal member with disabilities) on a once per year basis. Figure 16 shows the locations and range of quantities of wastes removed from individual residences. This service was provided to a total of 193 residences of elder and/or disabled tribal members over the October 1, 2004 through December 31, 2005 period.

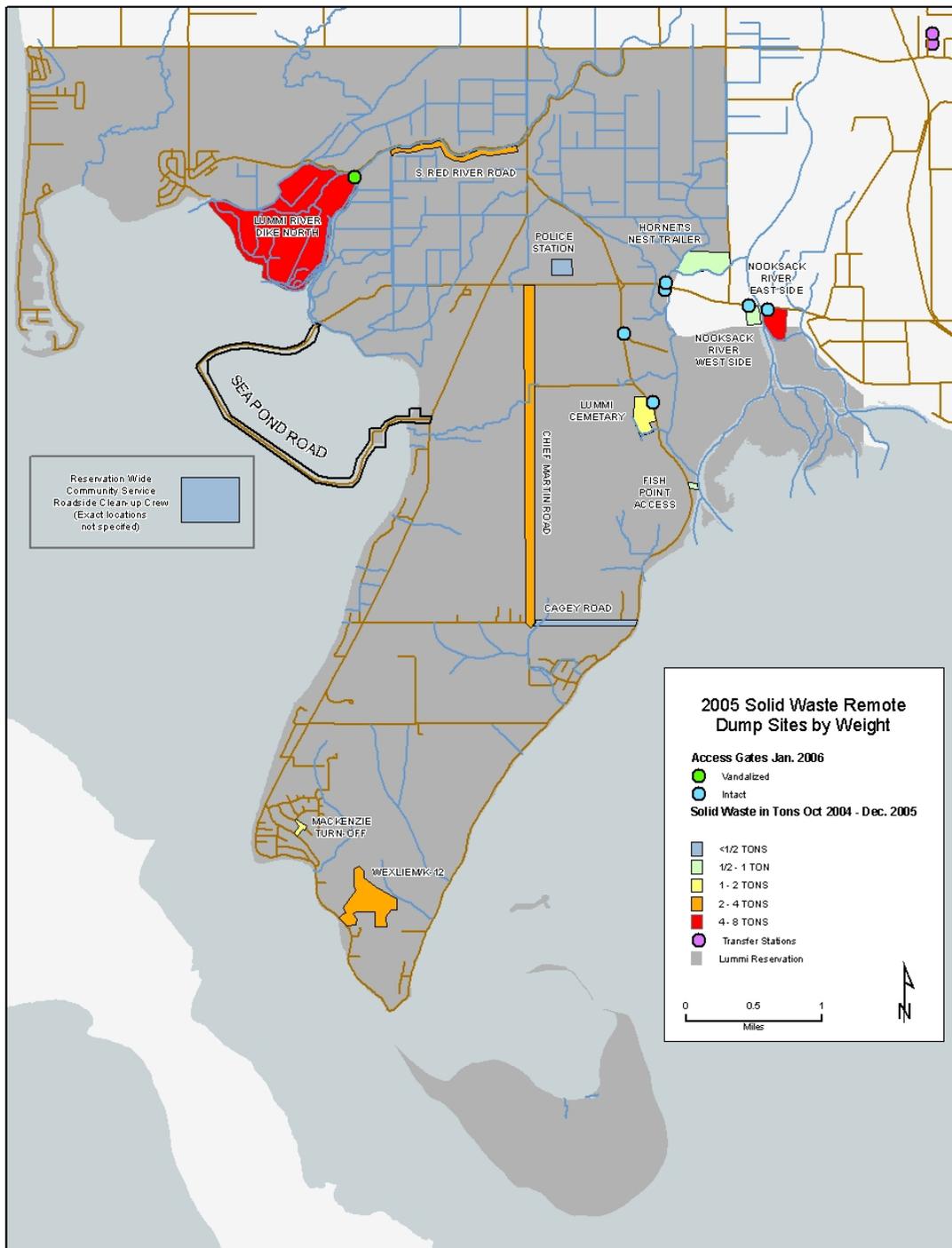


Figure 15. Locations Of Solid Waste Dump Sites And Clean-Up Activity During 2005

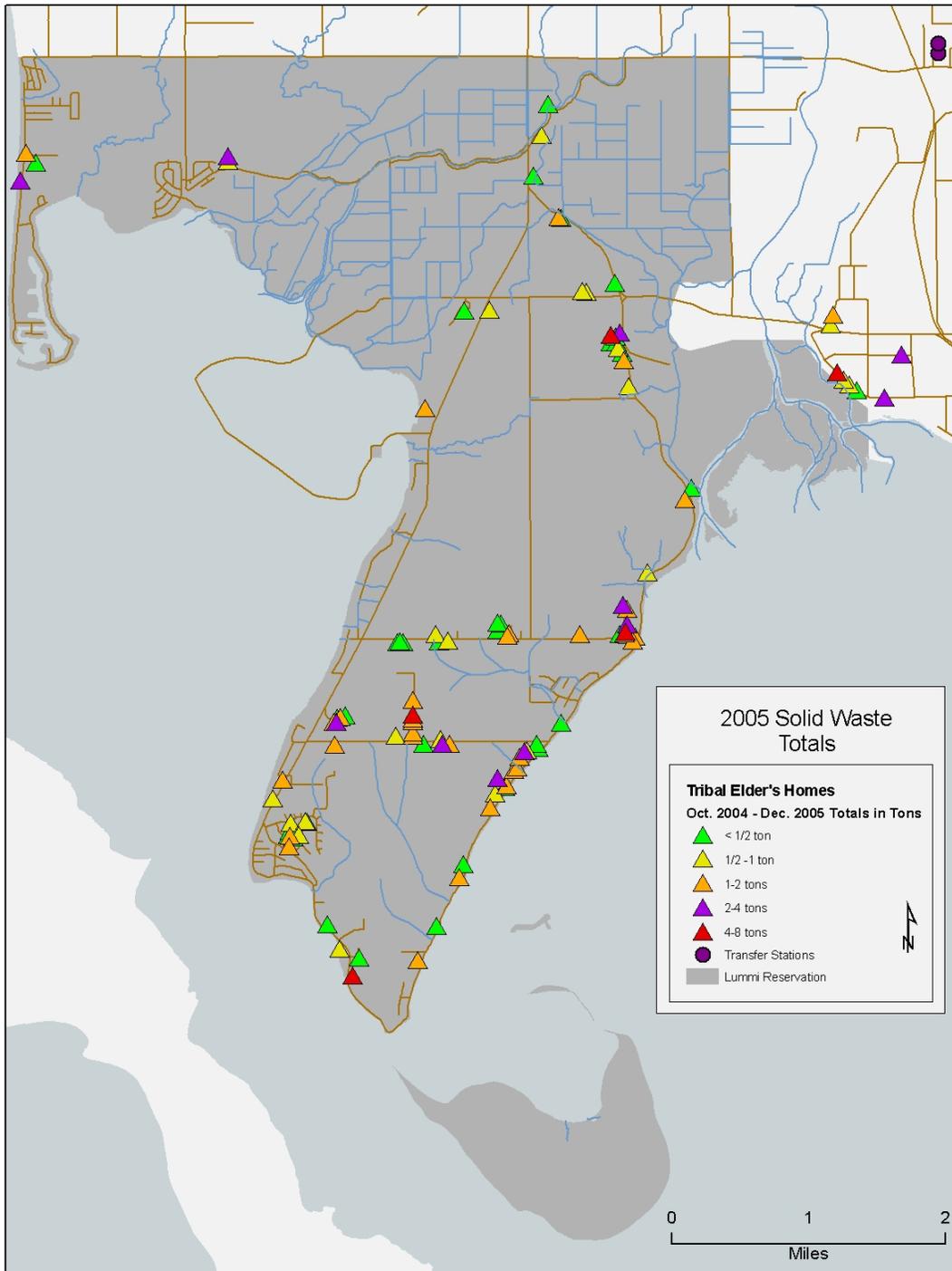


Figure 16. Locations of Residences of Tribal Elders or Tribal Members with Disabilities that we helped by Lummi Waste Management during 2005

3.3 Lummi Waste Management Team Activities During 2006

As described above, clean-up activities continued during 2006 and included additional community-based beach clean up efforts. Clean-up locations over the January 1, 2006 through December 31, 2006 period are shown in Figure 17 and Figure 18. Figure 17 shows the locations where access gates were installed during 2003 and 2006 and where solid wastes were removed from illegal dumpsites during 2006.

Lummi Waste Management staff also continued to support the jail alternative/ community services work crews during weekends. Along with ongoing work to ensure the waterways of the Reservation are free of waste, Lummi Waste Management has also continued to assist elder and disabled tribal members with their waste management. This is accomplished by providing clean-up services to eligible households (tribal elder or tribal member with disabilities). Although previously this clean up service has been provided on a once per year basis, due to solid waste accumulation at some tribal elder homes, several homes were provided clean-up services on more than one occasion during 2006.

Figure 18 shows the locations and range of quantities of wastes removed from individual residences during 2006. A comparison of Figure 15 with Figure 17 and Figure 16 with Figure 18 reflects the increased focus on illegal dumpsites during 2006.

Table 1 summarizes the total amount of solid wastes removed by Lummi Waste Management over the January 1, 2006 through December 31, 2006 period. As shown in Table 1, mixed household waste was by far the largest category of solid waste removed and disposed of at the off-Reservation transfer station. There were also a total of 62 appliances, 195 tires, and 20 abandoned vehicles removed from the Reservation over this period.

Table 1. Summary of Solid Wastes Disposal over the January 1, 2006 through December 31, 2006 Period

Solid Waste Category	Quantity
Mixed Household Waste/Garbage	124 tons
Yard Waste ¹	
Wood ¹	
Metal ¹	
Washers/Dryers	42 Units
Refrigerators	26 Units
Tires (Rim Off)	88 Units
Tires (Rim On)	107 Units
Abandoned Vehicle	20 Units

¹ Yard waste, wood, and metals were not separately accounted for on the weight tickets from the transfer station during 2006.

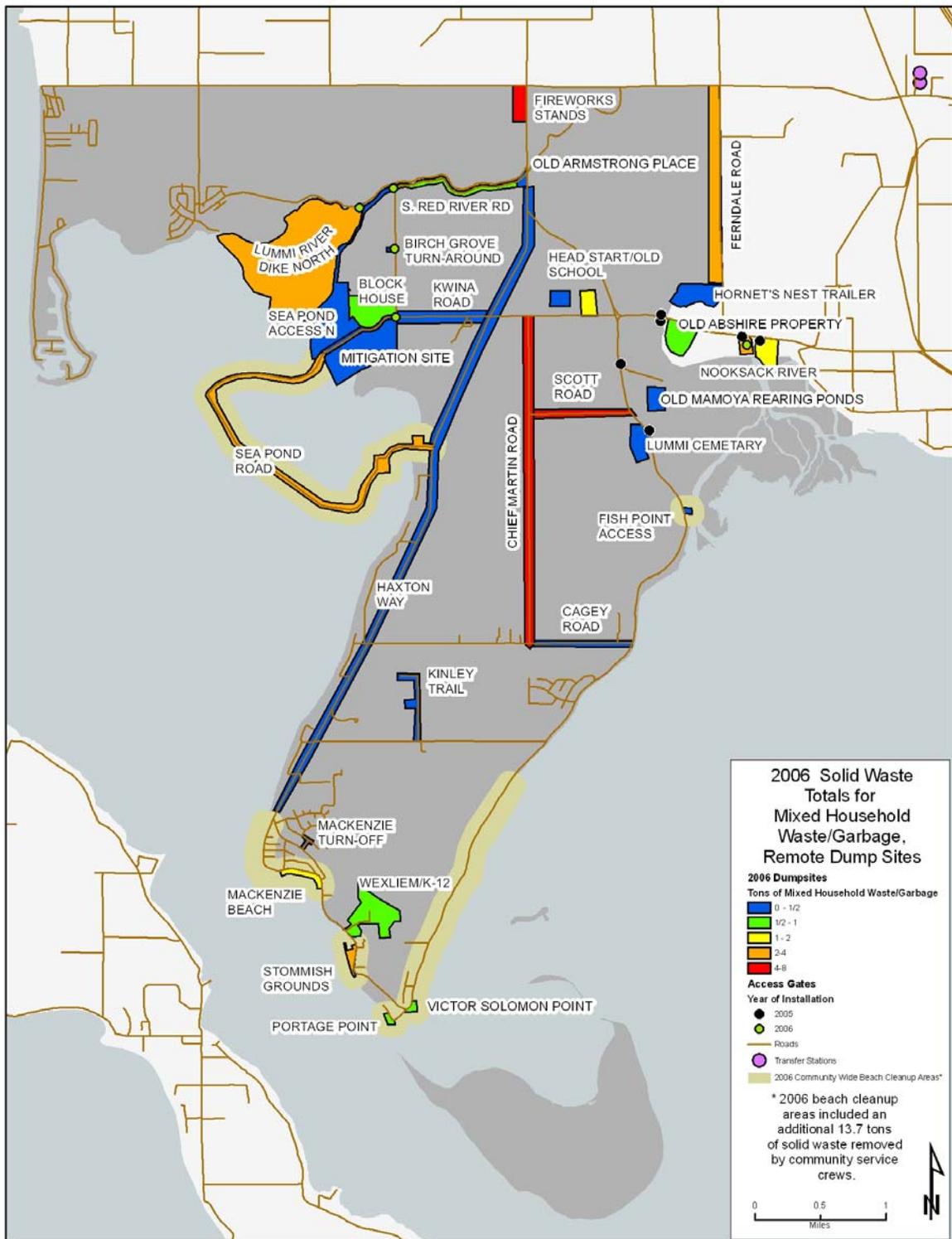


Figure 17. Locations Of Solid Waste Dump Sites And Clean-Up Activity During 2006

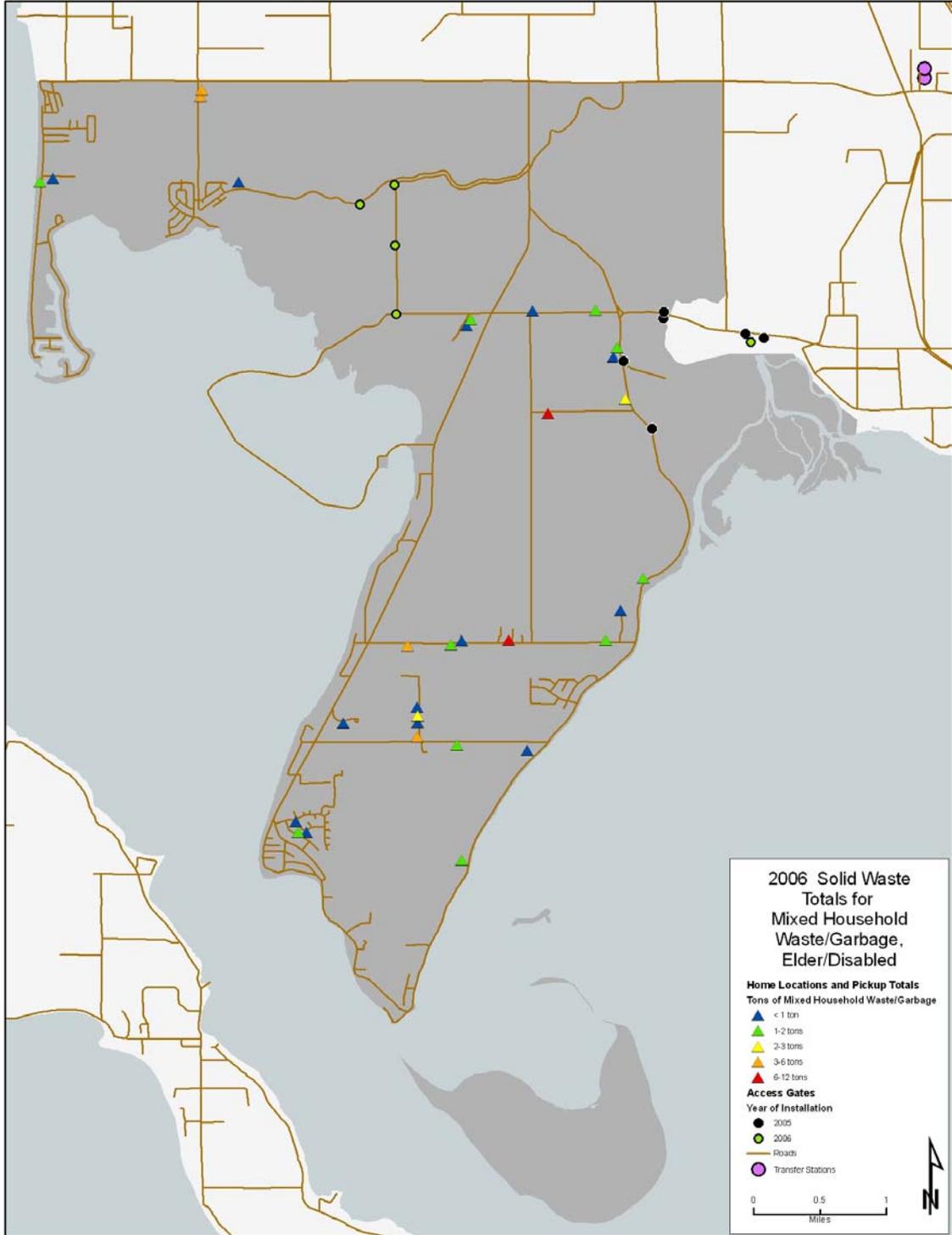


Figure 18. Locations of Residences of Tribal Elders or Tribal Members with Disabilities that we helped by Lummi Waste Management during 2006

Several sites, particularly the sites along the Nooksack River below Marine Drive and along Chief Martin Road, were locations where there has been frequent/recurring solid waste dumping and associated clean-ups. The location along North Red River Road where the gate was vandalized is also a location where frequent dumping occurred. These sites required clean up actions on five to eight separate occasions during 2006. Figure 19 through Figure 28 are a series of photographs taken before and after clean-up activities during 2006.



Figure 19. Illegal dumpsite in remote area before clean-up



Figure 20. Illegal dumpsite in remote area after clean-up



Figure 21. Illegal dumpsite in remote area before clean-up



Figure 22. Illegal dumpsite in remote area after clean-up



Figure 23. Illegal dumpsite in remote area before clean-up



Figure 24. Illegal dumpsite in remote area after clean-up



Figure 25. Solid wastes at a tribal elder home before clean-up



Figure 26. Tribal elder home after solid wastes removed



Figure 27. Illegal dumpsite in remote area before clean-up



Figure 28. Illegal dumpsite in remote area after clean-up

4. Discussion/Conclusion

Gates and signage have proven to be effective in preventing illegal solid waste dumping at some locations on the Reservation – particularly along Kwina Slough. However, the need to access areas behind gates has limited the effectiveness of these gates at other locations. For example, the areas on both sides of the Nooksack River below Marine Drive that are used for launching fishing boats, has been cleaned up five to eight times during 2006. To partially address this issue, a new gate was installed along the west side of the river to prevent access to an isolated area located beyond where fishing boats are generally launched. Prior to its replacement, the vandalism of one of the gates along North Red River Road temporarily re-opened a previously closed area and resulted in further dumping activities.

Controlling illegal dumping along relatively isolated areas of the Reservation, such as along Chief Martin Road, is more difficult. Overall, there have been recurrent violations at about a quarter of the major illegal dumpsites. Solid waste dumping is not a large problem in more populated/less remote areas of the Reservation. Generally, the amount of solid waste dumped on existing sites is far less than existed there before the initial clean-up. With closure of popular dumpsites, however, new sites are being abused.

Table 2 summarizes the quantities and types of solid wastes removed from the Reservation on an annual basis over the 2003 through 2006 period.

Table 2. Summary of Solid Wastes Disposal over the January 1, 2003 through December 31, 2006 Period

Solid Waste Category	2003¹	2004	2005	2006	Total
Mixed Household Waste/Garbage	154 tons	179 tons	108 tons	124 tons	565 tons
Yard Waste ²		17 tons	8 tons		25 tons
Wood ²		0.6 tons	1.7 tons		2.3 tons
Metal ²		0.0 tons	0.3 tons		0.3 tons
Washers/Dryers		50 Units	29 Units	42 Units	121 Units
Refrigerators		45 Units	22 Units	26 Units	93 Units
Tires (Rim Off)		68 Units	34 Units	88 Units	190 Units
Tires (Rim On)		132 Units	62 Units	107 Units	301 Units
Abandoned Vehicle		32 Units	21 Units	20 Units	73 Units

¹ Types of solid wastes not categorized during 2003.

² Yard waste, wood, and metals were not separately accounted for on the weight tickets from the transfer station during 2006.

Considering the quantity of material removed over the life of the program, and the potential public health threat and water quality threat represented by the solid

wastes, the program is an important community service and has been very helpful in improving the Reservation environment.

In an effort to develop a more holistic approach to solid waste management, the Lummi Nation has applied for a grant through the EPA FY07 Tribal Solid Waste Management Assistance Project to secure funding to develop an integrated solid waste management plan. If this grant is awarded, an integrated solid waste management plan will be developed and approved by September 30, 2008. During the development of this integrated management plan, the activities of the Lummi Waste Management team will be evaluated and any needed changes to this program or the overall approach to solid waste management will be identified and evaluated.