CHAPTER 7

TRANSFER FACILITIES AND SYSTEMS

This chapter addresses solid waste transfer in Pierce County. Waste transfer is the collection or interim processing of municipal solid waste prior to transport to a permanent disposal site. Included in this chapter is a description and inventory of existing transfer facilities and a discussion of needs and alternatives for three waste management systems - Pierce County/Cities and Towns, Tacoma/Ruston, and Fort Lewis/McChord Air Force Base. State regulatory requirements are covered under WAC 173-304, Minimum Functional Standards for Solid Waste Handling.

A waste transfer system is made up of facilities that transfer waste from self-haul or route collection vehicles to large capacity containers, which subsequently transport the waste to a disposal site. Transfer facilities are typically used in areas located more than 15 miles from collection routes or when special transportation containers are required to deliver waste to a remote in-county or out-of-county disposal facility. Transfer facilities are also used to consolidate commercial and self-haul loads, which in turn reduce traffic to disposal or processing sites or to process household hazardous (moderate risk) waste. The type and design capacity of a transfer facility is determined based on the projected size and characteristics of the waste stream and the anticipated number of vehicles using the facility.

Goals: Pierce County and the SWAC established the following goals for transfer of waste:

> ***Goal:*** To utilize transfer facilities and systems which provide cost and operational efficiency to the waste disposal system.
>
> ***Goal:*** To provide convenient waste transfer locations for public and commercial needs.
>
> ***Goal***: To provide opportunities for recycling to the public and commercial haulers at transfer locations.

Transfer facilities increase the efficiency of the countywide collection system by reducing self-haul travel time and by allowing collection vehicles to remain closer to routes while larger capacity vehicles make the trip to the disposal facility. Transfer facilities also provide opportunities for recovery and consolidation of recyclables for transport to markets.

7.1 Facility Types and Siting Issues

Types of facilities: In the three management systems in Pierce County, transfer facilities include publicly and privately-owned transfer stations, drop-box transfer stations, moderate risk waste fixed and mobile facilities, and an intermodal facility. There is also a privately-owned transfer facility that collects only yardwaste and wood debris. The following descriptions define each type of municipal waste transfer facility.

Transfer Station: A transfer station is a permanent, fixed facility used by self-haul customers and/or route collection vehicles to deposit collected solid waste from off-site into

a larger transfer vehicle for transport to a disposal facility. A transfer station may include baling and compaction activities, and manual or mechanical sorting of recyclables, and drop-off containers for separated wastes such as yardwaste. They may be sited adjacent to, or with, other solid waste facilities.

Drop Box Transfer Station: A drop box transfer station uses a detachable container (drop box) for receiving solid waste delivered to the site. Separate containers are provided for yardwaste and recyclables. This type of transfer facility normally serves general public self-haul customers.

Drop box facilities are designed to serve rural or low-density residential areas remote from a disposal facility or other transfer stations, or areas with particular transportation problems such as an island with only intermittent ferry service.

Moderate Risk Waste Fixed Facility: A moderate risk waste (MRW) fixed facility is used to recycle, sort, and package household hazardous and moderate risk waste prior to transport to a disposal facility. A MRW fixed facility receives hazardous waste from households and/or moderate risk waste from businesses that generate hazardous waste in quantities below the threshold for regulation under Washington's Dangerous Waste Regulations WAC 173-303. (These small business generators are generally referred to as Small Quantity Generators - SQG's.) Waste that is collected must be recycled or disposed in designated hazardous waste landfills or incinerators or handled by other alternatives allowed by law. (*The Tacoma-Pierce County Local Hazardous Waste Management Plan* provides a full discussion about moderate risk waste handling requirements.)

Mobile Collection Facility: A mobile collection facility operates for short durations at numerous locations convenient to residents in order to collect wastes generally not permitted for MSW landfill disposal. Mobile collection facilities are generally used to collect household hazardous waste only and do not serve small businesses.

Intermodal Facility: An intermodal is a facility where material is transferred from one mode of transportation to another (e.g., truck to rail). An intermodal facility typically is used to change the mode of solid waste transport from highway to rail or barge. Intermodals are generally used to ship waste out-of-county. They must be capable of efficiently handling large amounts of waste on a timely basis.

General siting issues: State regulatory design and operation requirements for transfer facilities are included in the Minimum Functional Standards for Solid Waste Handling (MFS - WAC 173-304)

Transfer stations should be located in areas of greatest need, which include urban areas where consolidation of waste may have operational and economic advantages or in rural areas where accessibility to other transfer or disposal facilities is limited.

Transfer and drop-box stations and Moderate Risk Waste facilities must be permitted through the solid waste permit process under the Minimum Functional Standards (MFS), which is administered by the Tacoma-Pierce County Health Department. For the purposes of the County's land use regulations, an MRW Fixed Facility is permitted as a transfer station. An intermodal facility would not require a permit under the MFS as long as the facility only transfers waste that is already in containers. If waste were to be delivered to an intermodal facility to be put in containers or to be processed prior to shipment, the intermodal facility would need a Solid Waste Permit.

The State's permit regulations require specific designs for the containment of waste, measures to prevent pollution of ground and surface water, odor and dust

control plans, operations plans and safety procedures, buffer areas and long-term closure plans. Included within these requirements are monitoring and maintenance of the site and vector control.

Facilities should be sited to prevent or reduce impacts to other land uses. It is generally appropriate to site these facilities with other solid waste recycling or waste processing or composting facilities, industrial-scale intermodal transportation facilities, or on the site of a closed landfill.

Transfer facilities should be sited to provide good public access and with convenient access to major haul routes such as freeways and rail-lines. In rural areas, other public facilities that are generally considered compatible include fire stations, public works road shops, and maintenance facilities. Advantages in co-locating these facilities include shared access and compatibility for similar intensity of use. In addition, transfer facilities need to be sited to minimize impacts to sensitive noise receptors such as schools, hospitals, libraries, churches, parks, rest homes, and residential areas.

Just like any other business, potential sites for transfer facilitates must be evaluated to determine the mitigations necessary to protect historic properties, archeological sites, and natural resources, fish and wildlife habitat, and critical areas such as geologic and flood hazard areas, wetlands, aquifer recharge areas. The design and operation requirements of the Solid Waste Permit are intended to protect and mitigate environmental impacts on wetlands, aquifer recharge areas, and ground and surface waters. Siting a facility in shoreline areas is not allowed under Pierce County's Shoreline Management Regulations.

Other issues that must be considered for evaluation of individual sites include impacts from odor, noise, dust, litter, the attraction of vermin and wildlife, and traffic. Buffering, landscape screening, and fencing can reduce the impacts and improve aesthetic appearance. In addition to the State's buffering and emission control measures, the Pierce County Development Regulations contain additional buffering requirements to mitigate these impacts. These regulations are designed to be compatible with the State's requirements.

Once a facility is sited and operated according to state requirements, it should have no significant impact upon ground or surface waters, soils or air. Permit operations are monitored by the Health Department and violations can result in the loss of the permit and closure of the facility.

7.2 Existing Facilities and Systems

The existing system evolved as a mixture of public and privately owned facilities that focused on delivering waste to three landfills - Hidden Valley, City of Tacoma, and Fort Lewis Landfill. During the last seven years, the three transfer systems have been modified to accommodate the addition of disposal, processing, and recycling facilities including Tacoma's RDF plant and renovated steam plant, and the County's yardwaste composting facility. While long-range disposal decisions are being evaluated, the systems have been adapted to incorporate shipment of some waste out-of-county. However, the focus of collection and transfer of garbage remains on using the same historical solid waste sites.

These facilities are listed on Table 7.1 and located on Map 7.2.

7.2.1 Pierce County/Cities and Towns

System description: The County government's solid waste transfer system consists of four transfer stations, three rural

drop-box facilities, and one intermodal transportation facility. Most of the transfer capacity is under private ownership. This limits Pierce County government's control over the transfer system because the County is dependent upon the operation of the private facilities. The County-owned facilities are small and could not be adapted to provide capacity to handle all of the waste.

Two transfer stations are owned by collection companies and operated solely for the convenience of their route collection vehicles. Neither facility is open to the general public, although one facility provides drop-off containers for selected recyclable materials. The County-owned transfer station is located on the site of a closed, County-owned landfill and is open to both route collection vehicles and residential and commercial self-haulers. This facility is operated under contract with a private company. The fourth transfer station is located at the closed Hidden Valley Landfill and began solid waste transfer operations upon the closure of the landfill in January 1999. This facility, although privately owned, allows use by public and commercial self-haulers and route collection vehicles.

All three rural drop-box facilities are owned by the County and are open to the public solely for self-haul residential waste. Each is located at historic "dump" or gravel mine sites as a convenience to the citizens in these rural or isolated locations. None handle sufficient volumes nor have the capability to containerize waste for export.

All transfer facilities open to the public provide drop-off recycling facilities for mixed waste paper, cardboard, magazines, glass, aluminum, tin, recyclable plastics and yardwaste. White goods (appliances) are also provided separate bays for drop off; however, there is a processing charge to pay for processing, such as removal of pollution-causing chemicals from old refrigerators.

For the purposes of the Plan the privately owned yardwaste/woodwaste transfer facility is considered as a recycling processing facility because it does not contribute to the management system for handling municipal solid waste. This transfer type of facility is described in more detail in Chapter 6 Waste Processing Facilities.

Table 7.1

Municipal Solid Waste Transfer Facilities Serving The Pierce County System

Transfer Facility	Operating Schedule	Design Capacity (tons/day)	1997 Tonnage
Publicly-Owned Facilities			
Purdy Transfer Station 14515 54th Avenue NW (Gig Harbor Peninsula)	Wednesday-Sunday 9 a.m. to 5 p.m.	300	39,130 (107 tpd)
Prairie Ridge Drop Box Station Corner of Prairie Ridge Road and South Prairie Road (Near Bonney Lake)	Wednesday-Sunday 9 a.m. to 5 p.m.	NA [1]	2,168 (6 tpd)
Key Center Drop Box Station 5900 Block of Key Peninsula Highway	Wednesday-Sunday 9 a.m. to 5 p.m.	NA [1]	927 (2.5 tpd)
Anderson Island Drop Box Station 9607 Steffenson Road	Schedule Varies [2]	NA [1]	148 (0.4 tpd)
Privately-owned facilities			
Murrey's	NA [3]	200	200 tpd
LeMay Enterprises	NA [3]	300	200 tpd
Hidden Valley [4]	Everyday 8 a.m. - 5 p.m.	600-800 [5]	NA
Additional facilities			
Intermodal Facility	NA [3]	NA [6]	

[1] Each facility includes four 50-cubic yard open-top roll-off containers. Each facility is serviced approximately once per week to ensure there is adequate capacity for self-haul waste drop-off.

[2] The Anderson Island Drop Box Station operates on a winter and summer schedule. From October 1 through March 31, the station is open Sunday from 10 a.m. to 2 p.m. and Monday from 1 p.m. to 5 p.m. From April 1 through September 31, the station is open from 10 am to 6 p.m. both Sunday and Monday.

[3] Transfer facility is not open to public use.

[4] Transfer station will handle solid waste when the existing landfill is closed in late 1998. Operating schedule is to be negotiated

[5] Facility is designed to handle 600 tons per day, on average, and 800 tons per day maximum.

[6] The intermodal facility has no capacity limitation that affects its ability to handle current and projected future growth

Publicly-owned facilities: Each facility, owned by the County is operated under contract by Land Recovery, Inc. These facilities have the ability to expand to serve the needs of growing rural populations by increasing days or hours of operation, increasing the number of containers, or more frequent transfer of containers.

Purdy: The Purdy Transfer Station is a direct load facility located at the closed Purdy Landfill site on the Gig Harbor Peninsula. The County's yardwaste composting facility is also located at the site. Waste is accepted from route collection vehicles and residential and commercial self-haulers. The waste is hauled via transfer truck to Hidden Valley Landfill for disposal.

Anderson Island: The Anderson Island drop box site is located on an old "dump" site of approximately 25 acres which served island residents and summer tourists prior to its closure as a "dump" in November 1985. The containers are hauled via roll-off truck to the Hidden Valley Transfer Station. Haul distance to Hidden Valley is approximately 30 miles and includes a ferry crossing.

Key Center: Formerly an open dump site, this drop box station is located on the Key Peninsula in western Pierce County. The waste is hauled to the Purdy Transfer Station and reloaded into larger capacity transfer trailers en route to Hidden Valley Transfer Station.

Prairie Ridge: The Prairie Ridge drop box station is located northwest of South Prairie, adjacent to a County-owned gravel pit south of Bonney Lake. Waste from this facility is hauled approximately 15 miles to the Hidden Valley Transfer Station.

Privately-owned facilities: Presently, Murrey's Disposal and Harold LeMay Enterprises operate two privately-owned transfer facilities in Pierce County. Both of these facilities utilize a direct discharge system to large open-top trailers. A third private facility is located at the Hidden Valley Landfill site and is owned by Land Recovery, Inc.

Murrey's Disposal Transfer Station: This transfer station is located at the Company's headquarters on 70th Avenue East, just north of the Puyallup River between the cities of Fife and Puyallup. Approximately 90 percent of the waste collected by Murrey's, (and affiliated companies, American, and D.M. Disposal) is handled at this facility with the rest directly hauled by collection vehicle to Hidden Valley. Loaded transfer trailers are either hauled approximately 10 miles to Hidden Valley or taken to the intermodal facility where they are hauled via rail to the Roosevelt Regional Landfill. Approximately 95 percent of the waste handled at the transfer station is hauled out-of-county for disposal as allowed under agreements with the County. The facility is not open for public disposal.

LeMay Enterprises: This transfer station is located at 3902 Steilacom Boulevard. The facility operates two 114-cubic yard (25-ton) transfer trailers which service both drop box (primarily construction material) and route collection vehicle waste. Approximately 60 percent of the waste collected by LeMay companies, Pierce County Refuse and Lakewood Refuse, is handled at the transfer station. The remainder is hauled by collection vehicle to Hidden Valley. Transfer trailers loaded at the facility are hauled to the intermodal facility for transport by rail to the Roosevelt Regional Landfill. The facility is not open for public disposal, but does have a public drop-off site for recyclables (no buy-back).

Hidden Valley: In early 1996, construction was completed on the third privately owned transfer station. The facility, located at the closed Hidden Valley Landfill, began operation in January 1999. Owned and operated by

Land Recovery, Inc., the facility accepts waste from residential and commercial haulers. The facility was designed to handle 600-800 tons of solid waste per day with the potential to double capacity. This facility is conveniently located at a familiar countywide disposal site.

Intermodal export facility: Pierce County solid waste disposed out-of-county is routed through an intermodal facility located on Burlington Northern's property located within the Port of Tacoma. Waste from Tacoma also goes through this facility. Transfer containers delivered to the facility are loaded onto rail cars for transport to an out-of-county disposal site. Land Recovery, Inc. leases and operates the facility, which consists of a concrete and asphalt paved area, approximately 150 by 1800 feet. The paved area located between siding tracks serves for container delivery, storage, and loading.

7.2.2 Tacoma Facility and System

The City of Tacoma collects and provides disposal for wastes generated within the Tacoma City limits independent of Pierce County. However, a limited quantity of waste generated outside of the City limits is accepted at the Tacoma Sanitary Landfill. In 1993, a transfer station constructed at the landfill began operation. Solid waste is hauled directly to the landfill site by commercial collection vehicles and residential and commercial self-haulers. Haul distances within the City vary, ranging up to 10 miles.

In 1999, approximately 20 percent of the waste disposed was processed into fuel, 15 percent was landfilled at the Tacoma Landfill; and 65 percent was taken to an outside landfill through the transfer facility. Currently, the waste transferred offsite is disposed at the

304th Landfill. The transfer facility currently handles approximately 400 tons of waste per day, operating near capacity.

A Household Hazardous Waste (HHW) program was implemented to insure environmental protection of the Tacoma Landfill, storm and sewer systems, and to provide citizens with an environmentally acceptable alternative for HHW disposal. In October 1990, Tacoma began operation of a temporary, fixed Household Hazardous Waste Collection Facility at the city landfill. In 1994, the facility was redesigned and upgraded to serve both Tacoma and Pierce County system residents. The County pays for HHW collection services based on the level of county resident participation.

Tacoma also developed a Mobile HHW Collection Unit. The Mobile HHW Facility currently operates once annually for two weeks at a site located in northeast Tacoma. An agreement between Tacoma and Pierce County will allow for mobile HHW collection on a countywide level. All waste collected at the mobile HHW facility is brought back to the permanent facility for processing.

Household hazardous waste accepted include:

- Antifreeze
- Poisons
- Flammable Liquids, Solvents
- Flammable Liquids, Poisons
- Corrosive Liquids, Alkaline
- Corrosive Liquids, Acids
- Other Corrosives
- Flammable Gas Aerosols
- Paint, and related wastes
- Flammable Solids
- Chlorinated Liquids

There are a number of local and regional businesses which process hazardous waste. Because of their availability, the City's facility does not accept waste from small quantity generators.

7.2.3 Fort Lewis/McChord AFB System

Waste collected on Fort Lewis and McChord Air Force Base is taken to the existing Fort Lewis recycling center. Currently, the Fort has a contract for long-haul with Waste Management which hauls MSW to the landfill in Arlington, Oregon. Waste at the landfill and recycling center site is put into transfer trailers with the use of front-end loaders. Fort Lewis is in the process of building a full-scale transfer facility and modifying the existing recycling center on the site.

Since 1946, Fort Lewis has used and closed ten landfill sites on the military reservation. In addition, McChord AFB has been disposing their MSW at the Fort Lewis landfills since the early 1970's, when the McChord AFB sanitary landfill closed.

Map 7.2 illustrates the location of transfer facilities in Pierce County.

Insert Map 7.2

7.3 Needs and Alternatives

In 1997, the three systems (Pierce County, Tacoma, and Fort Lewis/McChord AFB) handled approximately 1,750 tons of waste per day, a portion of which was shipped out-of-county for disposal. By 2017, the systems are projected to need capacity to handle between 2,100 and 2,300 tons per day (based on the current per capita disposal rate, a 50 percent recycling rate, and projected population growth). Long-term projections are in Chapter 3 Waste Analysis.

Based on the continually changing recycling industry, some materials currently being disposed have the potential to be removed from the waste stream. If the quantities are reduced, it could substantially change the projections for future transfer capacity needs.

The configuration of all three systems to provide this future transfer capacity will depend on whether long-term disposal will be provided in-county or through an out-of-county facility. Other factors which could influence overall capacity needs include whether Tacoma's steam plant and RDF facility can expand processing capacity

7.3.1 Pierce County System

There are three basic needs of the Pierce County transfer system: (1) to provide long-term transfer capacity for either in-county or out-of-county disposal; (2) to provide opportunities to remove additional recyclable materials from the waste disposal stream; and (3) to provide the most convenient and cost-effective customer service to all geographic areas within the county. The following discusses these needs in more detail.

#1. ***Long-term transfer capacity:*** With planned modifications to private transfer facilities and the opening of the new transfer station, the Pierce County transfer system will have an estimated total capacity of 1,500 tons per day by late 1998.

The majority of the transfer capacity, 500 tpd, is provided by three transfer facilities: Purdy (100 tpd), Murrey's (200 tpd), and Lakewood (200 tpd), with the remaining tonnage directly hauled to the Hidden Valley. Most of the waste delivered to the Murrey's and Lakewood transfer facilities is sent to the intermodal facility for transport out-of-county. The County-owned drop boxes only account for 8.8 tons per day, all of which must be hauled to either Purdy or Hidden Valley. Proposed changes to the waste compaction systems in place at the Murrey's and Lakewood facilities will add some additional capacity to the system in the short-term (perhaps a total of 100 tpd each) but are being implemented primarily because they will significantly increase the efficiencies of operating these sites.

The County-owned Purdy Transfer Station provided capacity for about 100 tons per day. Although the facility is permitted to handle a maximum of 300 tpd, this level is unattainable due to its location on the Gig Harbor Peninsula and the customer service base.

During 1997, the Hidden Valley Landfill handled approximately 571 tons per day of waste delivered to it directly by self-haulers and route collection vehicles, in addition to the 108 tons per day originating at Purdy and the three residential drop boxes. The new Hidden Valley Transfer Station handles 600-800 tons per day. Its operation does not provide additional transfer capacity to handle growth in the waste stream since it "replaces" the landfill at the same site that handled up to 1,000 tons per day.

Required future transfer system capacity: By 2017, it is estimated that the County's transfer needs will grow between 23 to 68 percent to 1,239 to 1,689 tons per day. This assumes that all waste presently handled by LRI, the waste collection companies, and the County transfer stations, continues to be handled within the system.

Table 7.3 shows the projected transfer capacity for the County's system requirements over the next 20 years. These projections will be affected by both the total quantity of waste disposed and the relative quantities that are direct-hauled to a landfill and processed through transfer stations. Five factors affect the amount of waste disposed: 1) changes in the recycling rate; 2) changes in the per capita disposal rate; 3) population growth at levels other than projected; 4) changes in waste generation as a result of economic activity, and 5) whether tipping fee increases will force more tonnage out of the system. Because of these variable factors, long-term capacity needs can only be estimated. Yearly monitoring of disposed tonnages is necessary to revise projections based on any of these factors.

If a new landfill is opened within Pierce County, it is likely that some waste currently hauled by route collection vehicles to Hidden Valley would also be hauled directly to the new landfill. This would free up existing capacity at the new Hidden Valley Transfer Station for future waste generation. However, the more remote a new landfill is, the less waste that will be direct-hauled by collection vehicles.

Table 7.3 Pierce County System Long term capacity needs [1]

	Growth Rate in Tons per Day		
	1 percent [2]	2 percent	2.5 percent
1996 Actual Tonnage : 1005 tons/day			
1997	1016	1026	1031
1998	1026	1046	1056
1999	1036	1067	1083
2000	1046	1088	1110
2001	1057	1110	1138
2002	1067	1132	1166
2003	1078	1155	1195
2004	1089	1178	1225
2005	1100	1202	1256
2006	1111	1226	1287
2007	1122	1250	1319
2008	1133	1275	1352
2009	1144	1301	1386
2010	1156	1327	1421
2011	1167	1353	1456
2012	1179	1380	1493
2013	1191	1408	1530
2014	1203	1436	1568
2015	1215	1465	1608
2016	1227	1494	1648
2017	1239	1524	1689

[1] The dark line indicates years when needed handling system capacity may exceed existing handling capacity.

[2] As discussed in Chapter 3 Waste Analysis, waste reduction and recycling activities have had a major impact upon Pierce County's waste stream. The column with a one-percent growth rate roughly reflects MSW disposal trends since 1993.

Intermodal facility capacity: The capacity of the existing intermodal facility is adequate to meet anticipated future needs; however, if long-term out-of-county disposal is chosen, additional long haul containers, staffing, and equipment will be required. Lack of an adequate number of containers has occasionally been a problem due to train delays and due to the railroad companies holding containers at the intermodal facility until train size is maximized. Containers held too long may cause odor problems in the Port and along the rail routes. In addition, there is also a need for emergency storage capacity in case rail transport is suspended due to derailments, or impassable rail-lines caused by flooding or landslides as occurred in 1995 and 1996. Emergency storage capacity would be essential if there is no in-county landfill disposal capacity.

Transfer station capacity: Based on current projections for transfer station requirements, the existing system appears to have capacity to handle future waste needs under most disposal scenarios through the year 2009, and, perhaps, under some scenarios for the entire 20-year planning period.

Alternatives for expanding capacity: If disposal out-of-county becomes the preferred alternative, additional transfer capacity will depend upon future waste generation, recycling rates, and other factors outside the control of the Pierce County waste management system and choices made by the County. The County will need to consider how to ensure continued, cost-effective services without having control over private transfer capacity. For any option that would require expansion of the two private transfer facilities, the County would need to establish a more formal, contractual relationship with Murrey's and LeMay Enterprises. The County's contract agreement with LRI already governs use of the Hidden Valley Transfer Station.

Four alternatives are available for increasing transfer capacity to meet the needs of an out-of-county disposal system for the long-term.

- INCREASE THE CAPACITY OF THE HIDDEN VALLEY TRANSFER STATION**:** Land Recovery, Inc. designed the transfer station so that it could be expanded beyond its 600 to 800 tons per day capacity. Its site design and the agreement between Pierce County and LRI, which governed its construction and future operations, identifies the potential for doubling its size to 1,200 to 1,600 tons per day. Without other changes to the transfer system, this change would increase capacity to a range of 1,800 to 2,200 tons per day

- COMPACT AND CONTAINERIZE WASTE AT PURDY**:** As previously discussed, because of its location on the Gig Harbor Peninsula, the Purdy Transfer Station is not a candidate for expansion. Waste generated and handled by the Purdy and Key Center facilities, however, could be containerized at Purdy and shipped directly to the intermodal facility, thus bypassing the Hidden Valley Transfer Station and, in effect, increase the transfer capabilities of the system. Without other changes to the transfer system, this change would increase system capacity to a range of 1,300 to 1,500 tons per day.

If large amounts of material could be diverted from the disposed waste stream, such as through waste reduction or recycling, it is likely that implementing only one of the above alternatives would be required. It is also possible that a 100 percent long haul system could be operated without relying on the Murrey's and Lakewood facilities. However, there may be benefits to continuing to depend upon these facilities because of their proximity to the Tacoma railhead intermodal facility.

■ INCREASE THE CAPACITY OF THE MURREY'S AND LAKEWOOD FACILITIES: Planned expansions will increase the capacity at the Murrey's and Lakewood facilities to approximately 300 tons per day each. Routing changes, site expansion, and other activities undertaken by the haulers could further increase these facilities' capacity. At this point it is uncertain exactly how much additional capacity could be moved through these stations. The County would need to explore the willingness of these companies to enter into additional contractual relationships.

■ SITE AND CONSTRUCT NEW, CENTRALLY LOCATED TRANSFER STATIONS**:** Such facilities would be used in conjunction with the existing facilities and could be a joint project by the County with Tacoma. The new transfer station could also possibly be combined with an intermodal facility or refuse companies could site a new private transfer facility to serve a particular city or area

#2. *Recycling capacity at transfer stations:* As identified in Chapters 3 and 4, there are opportunities to remove additional recyclable materials from the waste disposal stream; in particular, compostable organics, CDL, and paper. Programs developed under new waste reduction/recycling (WRR) policies may require modification of the existing transfer facilities and will likely require continued monitoring of the waste stream to evaluate effects upon disposal tonnages or commodity percentages.

*Private sector recycling**:*** It is expected that private recycling capacity will continue to grow (as it has) under the County's current WRR policies, particularly if commodity markets improve and stabilize. Increases in disposal rates may continue to support private development of WRR capacity if recycling collection becomes a cheaper option than disposal. Therefore, flexibility of the existing transfer system is needed to adapt to changes in the recycling processing facilities within Pierce County. In addition, flexibility allows the system to adapt to probable long-term technological changes that are expected to occur in the collection, processing, and recycling of waste materials.

Short-term capacity needs: For the short-term, with continued growth in the private recycling industry, the County should pursue cost-efficient methods to remove additional compostable organics and CDL from the waste disposal stream. This may be achieved through minor modifications to the Purdy Transfer Station, the three drop-box facilities, and the Hidden Valley Transfer Station. Modifications would involve implementing source-separation at the transfer facilities of CDL and selected organic materials for transport to processing or composting facilities.

Long-term capacity needs: For the long-term, the County may choose to consider siting its own materials recovery facility (MRF), particularly if private recycling capacity does not continue to grow. Before making a decision to site its own MRF, the County would need to carefully explore why private sector recycling capacity did not grow as expected. If, despite the efforts of the private sector, there is additional demand for local processing capacity (in terms of quantity of capacity or quality of services offered) and a long-term outlook for positive markets for recycled materials, the County may wish to further explore siting a MRF to serve demonstrated unmet demand for capacity. A similar examination of private sector capacity in the early 1990's spurred Pierce County to site a yardwaste composting facility.

A more detailed discussion of a County MRF is included in Chapter 6.

#3. *Cost effectiveness and customer service:* Additional self-haul capacity in eastern and southern rural Pierce County may be needed to handle proposed developments and growth, and discourage illegal dumping.

Eastern Pierce County: The proposed Cascadia development, south of Bonney Lake, is projected to add upwards of 10,000 residents and an unknown number of businesses within the next 20 years. This development is located in eastern Pierce County within the Prairie Ridge drop-box service area.

The project developer estimates at full build-out by 2017, that the development will generate a potential volume of approximately 53 tons per day. The hauling company serving this area, Murrey's, has indicated there is sufficient capacity to handle this tonnage by route collection vehicles and at their transfer facility. However, the development and other subdivision growth in the area may generate a need to expand capacity for self-haul customers or as a partial deterrent to illegal dumping. It is too early to project the effects of growth. Recent population growth in the area has not caused problems for the facility probably because the area is becoming more urbanized and new residents use to an urban style of life are more likely to sign up for garbage service rather than self-haul.

If the population growth exceeds the capabilities of the small Prairie Ridge drop-box facility, the County might want to consider developing a full-scale transfer station, similar to the Purdy facility, either at the existing drop-box site or a new site. The benefits of a full-scale transfer facility include the added ability to handle route collection vehicles in addition to self-haul, and the potential for a more cost-effective transport of waste by using transfer trailers rather than route-collection vehicles as the main means of moving the waste.

The cost-effectiveness of this alternative would depend upon decisions about long-term disposal and other transfer system modifications made to accommodate future growth, such as expansion of private facilities for more efficient handling of waste sent to the intermodal facility. If the facilities are expanded, the demand for additional capacity at the drop box facility will be less.

Southern Pierce County: Growth is also expected to occur in the Elbe/Ashford area of southern Pierce County. Presently, this area, which does not have a convenient, regional disposal facility for local residents, experiences substantial illegal dumping. Siting a new drop-box facility in this area, as well as additional recycling drop-off sites coupled with a strong public outreach campaign may alleviate some of the illegal dumping problems. In addition, assisting in the community planning process should help ensure that adequate self-haul or route collection service is provided to residents of new developments. If an in-county landfill is located in this area it might reduce the need for facilities to serve self-haul customers.

The National Park Service and timber companies have also experienced major illegal dumping in this area. Coordinating with the Park Service to provide improved drop-off facilities for summer visitors might reduce the potential for illegal dumping within the Park. (A more detailed discussion about illegal dumping and alternatives is found in Chapter 10 Enforcement and Administration.)

7.3.2 Tacoma/Ruston System

The City plans to fill the Central Areas of the Tacoma Landfill to the maximum grade allowed by its permits. In 1998, the Tacoma landfill was granted an extension to continue landfilling until 2004. With an extension, it is estimated that approximately 20,000 tons of waste will be disposed in the landfill per year until closure.

Currently, Tacoma waste is routed to either the RDF facility or the city transfer station. The transfer station is already operating near capacity. If the RDF facility and steam plant processed additional material, it would decrease the quantity of material sent to the transfer station. However, even with this modification, long-term transfer capacity would likely need to be expanded to handle the projected waste quantities. The configuration of the existing station does not allow for expansion; however, a similar facility could be constructed adjacent to the existing facility.

Tacoma has recently completed an evaluation of options for future operation of the RDF facility and steam plant. Options considered include: (1) closing both facilities; (2) maintaining current processing levels; or (3) increasing the quantity of RDF processed and types of fuel used. The City is scheduled to decide on its preferred alternative during the year 2000.

7.3.3 Fort Lewis/McChord AFB System

Fort Lewis built a transfer station which began operation in 1999 and is continuing to study its options to expand recycling.

7.3.4 Joint Opportunities

Given the similarity of needs between the three waste management systems, joint efforts may present the most cost-effective approach for dealing with independent system needs. Two such opportunities exist:

- Development of a coordinated approach to provide or obtain guarantees for long-term transfer capability within the county and to an intermodal facility. This would be most advantageous if in-county landfill disposal capacity is not available.
- Consideration of a coordinated approach to maximize waste incineration at the Tacoma Steam Plant in order to reduce the need for out-of-county disposal capacity and associated transfer capacity. A number of factors would need to be addressed in assessing the feasibility of this concept including permit conditions, required standby capacity, and cost.

7.4 Evaluation Criteria

Table 7.4 describes technical, economic, and environmental criteria to use in evaluating transfer alternatives, if needed. The specific criteria to be considered will depend on whether or not siting of a new transfer station is involved. In planning for future changes, the impacts of both individual facilities and the system as a whole must be considered. The trade-offs between specific local impacts at multiple locations will need to be evaluated. Table 7.5 provides a summary of technical, environmental, and economic considerations for the transfer alternative.

Table 7.4 Evaluation Criteria – Solid Waste Transfer Facilities	
Criteria	Related Questions and Issues
Technical Criteria	
1. Site Access	• Is the site located such that it provides reasonably convenient service to commercial haulers and self haul customers?
2. Customer Service (System – All Facilities)	• Does the system provide an adequate and reasonably equitable level of service to self-haul customers? • Does the system adequately address transfer needs resulting from population growth in specific geographic areas?
3. Compatibility with existing and planned waste reduction and recycling programs	• Does the transfer system compliment and is it compatible with source-separated WRR programs? • Is it flexible enough to adapt to changing conditions? • Does it provide required provisions for collection?
4. Compatibility with disposal system	• Does the system adequately address near-term and long-term needs?
5. Provisions for future expansion	• Does the system have the capability to be expanded to meet long-term projected transfer needs and unanticipated increases in transfer needs?
Environmental Criteria (for siting a new facility)	
1. Earth	• How much clearing is required? • What are the potential impacts to wetlands and other sensitive areas?
2. Air	• What is the potential for off-site odor impacts? How effective/expensive would odor controls be to implement?
3. Land Use	• How noisy would such a facility be? • What are the relevant zoning/comprehensive plan requirements? • Could there be aesthetic impacts? • What are the traffic impacts to the surrounding community? • What are the transportation needs and impacts? • What are the offsite impacts resulting from development of new and expanded transfer facilities?
4. Water	• What is the potential for leachate to be generated at such a facility? • How much process water is required? • What are the potential impacts from surface water runoff from the facility?
Economic Criteria	
1. Life-cycle cost	• What is the life cycle cost per ton and how does it compare to other transfer options?
2. Financial risks	• How capital-intensive would the facility be? • What will be the cost impact to the system and how likely is it that competing facilities would draw waste away from the transfer system thereby reducing the need for the facility?

Table 7.5 Overview of Pierce Transfer Facilities and Systems Alternatives			
Alternative	**Technical Criteria**	**Environmental Criteria**	**Economic Criteria**
1 To Increase Long Term Capacity [1]:			
1A Increase the capacity of the Hidden Valley Transfer Station	• Location provides reasonably convenient services. • Continues current level of service to self-haul customers. • Compatible with current WRR programs and flexible to adapt to changing conditions. • Maximum potential expanded capacity unknown.	• Existing facility capable of being expanded with relatively minor on-site environmental impact. Off-site impacts limited to traffic.	• Addition to existing building relatively low cost option. Overall effect would be to lower per ton transfer costs (due to increased waste throughput). • Should be cost competitive with other options.
1B Compact and containerize waste at Purdy	• Essentially same level of service as current. • Relatively small increase in capacity compared with expansion of Hidden Valley or new Central Transfer Station.	• On-site impacts relatively minor. • Some increase in traffic to and from sites.	• Relatively low cost.
1C Increase capacity of the Murrey's and Lakewood Facilities.	• Essentially the same level of convenience as current. • Relatively small capacity increase compared with expansion of Hidden Valley Transfer Station or new Central Transfer Station. • Proximity to Tacoma railhead facility.	• Relatively minor modifications; should not create significant environmental impacts. • May increase traffic volumes.	• Relatively low cost.
1D Site and construct new, centrally located transfer station.	• New design could maximize layout and operating efficiencies. • Could be built with expanded capacity for accepting source-separated materials. • May be difficult to find a suitable location that meets public approval. Typically difficult to site.	• Construction of a 700-1000 tpd central transfer station would result in - Clearing of 8-15 acres - Potential impacts to wetlands - Construction related impacts,(i.e. noise, traffic, dust) - Potential off-site impacts (i.e., aesthetics, traffics, surface water runoff) • May be difficult to find a suitable location that meets public approval. Typically difficult to site.	• Relatively high capital and operating costs. Potential savings on transportation costs, depending on location. • Could be developed jointly with Tacoma, which would reduce costs. • Could be a smaller facility sited by a refuse hauler to serve a particular city.

[1] The existing transfer capacity of the Pierce County System is likely sufficient to at least 2009 and may be sufficient beyond that time under either in-county or out-of-county disposal alternatives. The alternatives for increased capacity are only for the long term and if an out-of-county disposal system is chosen.

Table 7.5 Overview of Pierce Transfer Facilities and Systems Alternatives			
Alternative	**Technical Criteria**	**Environmental Criteria**	**Economic Criteria**
2. To Increase Recycling Capacity and Maximize Transfer Capacity.			
2A Increase recycling capacity at transfer stations, particularly for CDL (See processing alternatives 1A, B, & C in Chapter 6)	• Simple technology – typically manual sorting. • Possible increase in congestion at existing facilities. • Compatible with WRR programs. • Compatible with any disposal alternative.	• Potential impact for off-site noise impacts if activities are not in enclosed building. • Other impacts expected to be minimal.	• Low capital cost. • If customer sort is used, lower operating cost. • If operators sort material, higher capital and labor cost.
2B County-owned waste separation and recovery facility that separates recyclables from mixed municipal solid waste (dirty MRF). (See Chapter 6 for detailed description)	• Proven technology. • Would have to be sited with or as a transfer station. • May not be compatible with exiting source-separation WRR programs. • Flexible to adapt to changed market conditions. • Would be technically compatible with any disposal choice. • Capacity only limited to size, hours, equipment.	• A "less stable" feedstock, potential impacts to water (leachate protection), air (equipment exhaust and dust), land and traffic (similar to transfer stations). • May be difficult to find a suitable location that meets public approval. • Minimal impacts to earth, as siting would likely avoid impacts to wetlands and sensitive areas.	• Risks in a competitive environment for disposal services. • For a County-owned MRF—capital and operating cots, minus commodity revenue, may not compete favorably with traditional recycling and disposal services. • Capital intensity varies from highly mechanized to low technology.
2C County-owned recycling processing facility that separates commingled recyclables ("clean MRF). (See Chapter 6 for more detail)	• Proven technology. • Compatible with existing programs but may compete with existing private sector facilities. • Flexible to adapt to changed market conditions. • Technically compatible to any disposal choice. • Capacity limited only by size, hours, equipment.	• A more predictable and stable feedstock, likely to produce fewer impacts than processing of mixed waste. • Siting would be similar to any other industrial-scale business.	• Risks in a competitive environment for disposal services. • Capital and operating costs, minus commodity revenue, may not compete favorably with traditional privatized processing in the Pierce County system. • Capital intensity varies from highly mechanized to low technology.

Table 7.5 Overview of Pierce Transfer Facilities and Systems Alternatives			
Alternative	**Technical Criteria**	**Environmental Criteria**	**Economic Criteria**
3. To Improve Cost-Effectiveness and Customer Service.			
3A Increase self-haul capacity at Prairie Ridge.	• Zoned appropriately but surrounded by residential neighborhoods. • Centrally located to area residents. • Room to expand. • Compatible with remainder of system.	• Minimal impacts. Improvements would be designed to ease access by current users and vehicles.	• Already in planning stages—costs estimated around $200,000.
3B Develop full scale transfer station at Prairie Ridge.	• Zoned appropriately but surrounded by residential neighborhoods. • Centrally located to area residents. • Room to expand. • Compatible with remainder of system. • No urgent need identified.	• Potential impacts include air and noise if vehicle traffic and equipment use increases. • If moved to a nearby location, potential for other impacts.	• Replacing the current facility with a full service facility would cost at least ten times more than an upgrade. Costs could be spread over the entire system.
3C Site new drop box facility in southern Pierce County.	• Compatible with existing collection systems and any disposal alternative. Would make disposal and recycling facilities closer to waste generation and accessible to seasonal residents and tourists.	• Positive impacts in reducing illegal dumping and littering. • Potential for air, noise, and traffic impacts.	• Rural drop box transfer stations may cost up to $200 per ton received to build and operate, but costs could be spread over entire waste stream to minimize impacts.
3D Coordinate with National Park Service to provide improved drop off service for park visitors.	• May not require a formal site; education and outreach may be sufficient or may result in placement of more or larger litter barrels and recycling collection sites. • Compatible; may help to reduce illegal dumping.	• Minimal environmental impacts and may improve environmental quality by reducing illegal dumping.	• Costs would vary with intensity of effort.

7.5 Recommendations

County-owned transfer facilities

#7-1 Transfer service to the public through rural transfer facilities should be continued.

#7-2 The Pierce County Solid Waste Division shall investigate usage patterns at County-owned transfer facilities to determine the cost-effectiveness of existing services. The County will evaluate if usage patterns indicate that facilities should be closed or the hours of operation modified, if there is a need for new facilities, and if there is a demonstrated need to expand the list of materials collected at the existing transfer sties. The study should also review ownership options for new transfer stations.

Recycling facilities

#7-3 Transfer facilities shall continue to provide opportunities to recycle and, where feasible, provide systems which allow for the source-separation of other potentially recyclable materials (i.e. demolition).

Transshipment facility

#7-4 As becomes necessary to ensure sufficient transfer capability, Pierce County should obtain the use of additional transshipment facilities, public or private, for transferring waste to out-of-county disposal facilities.

Reserve transfer capacity

#7-5 Pierce County encourages private transfer facilities located within Pierce County to reserve transfer capacity for waste generated within Pierce County.

Tacoma Recommendation

#7-6 The City of Tacoma should continue to evaluate the need for transfer facilities, along with export of waste options, both as primary and supplementary solid waste disposal options for the City. The City may implement any of these options in order to meet its solid waste disposal needs.