COMPREHENSIVE PLAN

APPENDIX 6

TRANSPORTATION

November 12, 2013

APPENDIX 6

TRANSPORTATION

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I. TRANSPORTATION FACILITIES INVENTORY AND LOS ANALYSIS

Transportation in San Juan County is a complex, multimodal system dictated by geography. The county is surrounded by water and contains 176 named islands and reefs. The only way to travel between islands or to and from the mainland is via boats or airplanes. There are no land based state highways; San Juan County's highway is the state ferry route. All residents, visitors and freight are dependent on the marine and air transport systems to support the economics of the area. Once on an island, other modes of travel are available.

The 2010 Census listed the population of San Juan County as 15,769. This figure soars in the summer with visitors arriving from numerous origins to enjoy the San Juan Islands. Based on ferry ridership data presented in a report from the San Juan Islands Scenic Byway, an average of over 141,000 people arrived on Orcas Island and more than 209,000 people traveled to San Juan Island during the June through September summer months in 2011 and 2012. Based on data collected by the San Juan Islands Visitors Bureau (SJIVB) tabulating direct contacts, approximately fifteen percent of the visitors to the county come from California and nearly ten percent from Oregon. Visitors from around the state of Washington account for approximately twenty percent, but this figure is considered to be low; many Washingtonians may not contact the SJIVB before heading to the San Juan Islands. SJIVB receives inquiries from interested people in every state of the US, as well as dozens of countries worldwide.

To assess level of service needs, updated population projects and demographic data were used to assess the consistency of land use assumptions in the County's Comprehensive Plan. It was determined that the land use assumptions used in the update of the Transportation Element did not impact the land use assumptions provided in the Land Use Element. Travel forecasts were prepared for 2010 to 2021. These forecasts predict the estimated demand for new transportation facilities based on projected growth and use. Population projects, travel forecast and level of service recommendations are included in the Attachment.

A. Air Transportation

Aviation has been an important element of travel in the San Juan Islands for many years. The vast majority of air traffic now uses public airports on San Juan, Orcas and Lopez Islands, owned by the port districts in those areas. Additional landing fields exist on many other inhabited islands. Seaplanes use designated harbors in Fisherman Bay, Rosario, Deer Harbor, West Sound, Roche Harbor and Friday Harbor as well as private docks. The general location of the various air transportation facilities within San Juan County are presented in Figure 1.

1. Inventory of Existing Facilities and Services

Friday Harbor, Orcas and Lopez have commercial airline connections to Seattle, Bellingham, Anacortes and other mainland destinations, and these services are used by residents as well as visitors to the islands. Aviation is a vital transportation component connecting non-ferry served islands to other locations in the islands and to the mainland, providing passenger travel as well as freight and mail transport, medical evacuation to mainland hospitals, disaster staging/relief and other essential services.

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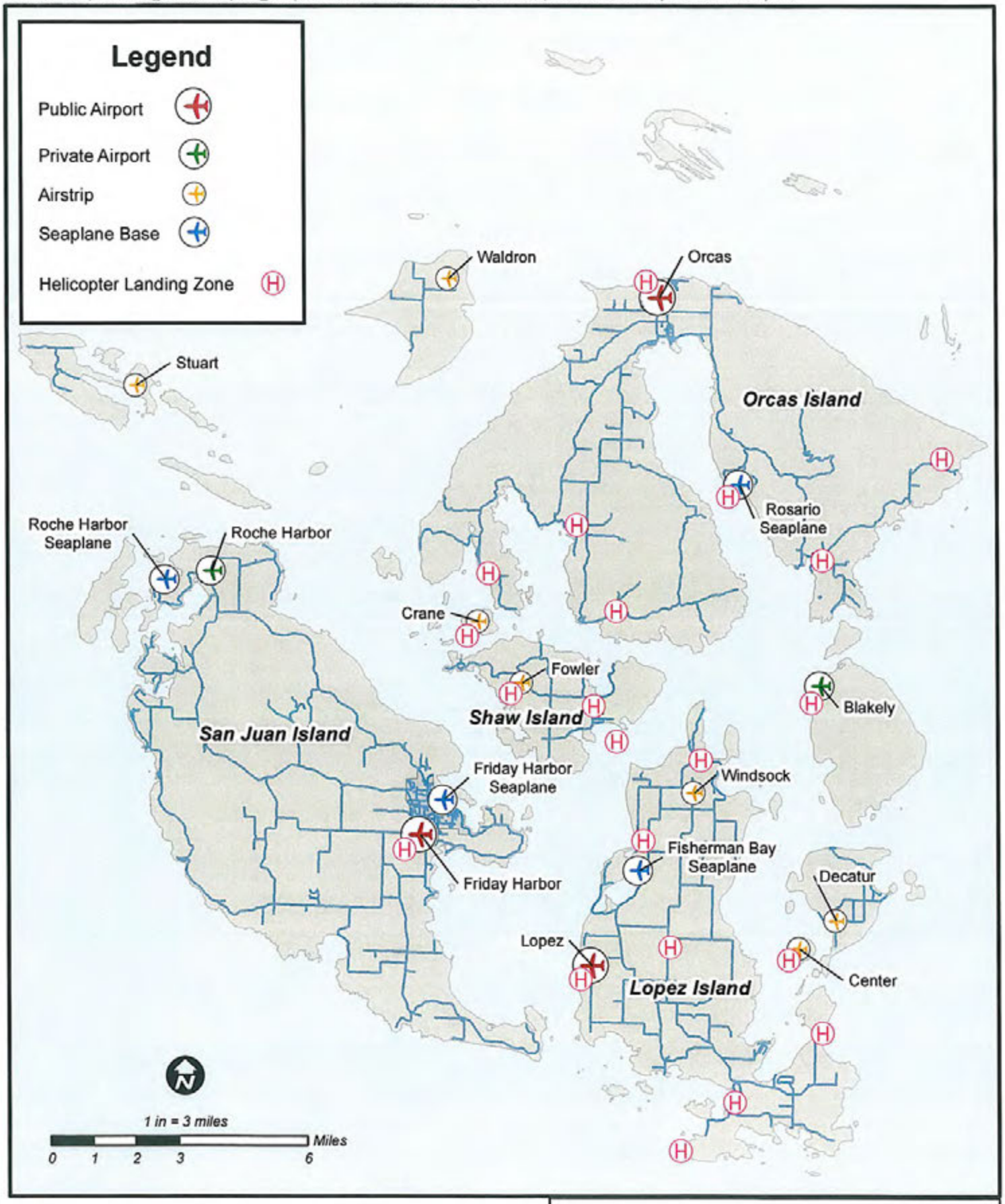

This map is a graphic representation derived from San Juan County's Geographic Information System. It is designed and intended for reference only, and is not guaranteed to survey accuracy. Information represented in this map is subject to change without notice.

Air Transportation

San Juan County, Washington

Figure 1

Drawn By: TC

1/4/2013

The Ports of Friday Harbor, Orcas and Lopez receive federal funding through the Federal Aviation Administration for improvements at the major public island airports. Capital projects funding is also available through the Washington State Department of Transportation/ Aviation Division.

a. **Friday Harbor Airport**

Friday Harbor Airport is classified as a commercial service airport which is owned and operated by the Port of Friday Harbor. Its location spans the Town of Friday Harbor's (Town) boundary with San Juan County. The airport is a "primary service" airport, with more than 10,000 commercial enplanements each year. Its location adjacent to the Town makes it a destination for recreational pilots from throughout the region.

Friday Harbor Airport has a 3,400 foot runway that is rated for aircraft of 12,500 pounds. The airport designation is "B-1 Small". The largest commercial aircraft serving the airport carry nine passengers.

The airport facilities include 55 Port-owned hangars, 45 private hangars, and 87 tie-downs of which 45 are reserved for visiting aircraft. As of 2012, the airport has 135 based aircraft. A passenger terminal provides a base for commuter airlines to conduct business. Other business activities include air freight, air charter, flight training, full-service aviation mechanic and medical evacuation to mainland hospitals by helicopter or fixed-wing air ambulance. The airport is adjacent to Peace Island Medical Center.

Friday Harbor Airport, the Friday Harbor Seaplane Base and the Roche Harbor Seaplane Base are served by U.S. Customs and Border Protection personnel who clear hundreds of international flights each year. Friday Harbor Airport has an average of 50,000 to 60,000 operations each year. Recent years have seen just over 10,000 annual passenger enplanements, with the majority of passengers embarking on flights to Seattle.

b. **Orcas Island Airport**

The Port of Orcas operates the Orcas Island Airport. The facility is classified as a commercial service airport. The taxing district owns approximately 100 acres of land within the Eastsound Subarea.

From Federal Aviation Administration (FAA) form 5010/WSDOT Aviation data, an estimated 5,000 passenger were enplaned in 2011, accompanying 6,400 commercial operations, with an estimated additional 42,000 non-commercial operations. Over 200,000 pounds of freight were delivered by air. With an existing capacity of 122,000 operations, there is sufficient capacity to meet long-term increased demand.

The airport has a 1500 sq. foot terminal, recently remodeled passenger waiting area, a public-use/conference room and office space for conducting port operations. There are 53 designated aircraft tie-down spaces, including 30 turf spots. The federal aircraft registry counts 70 aircraft using the Orcas Island Airport as their home base, meaning they are either housed on the field or have deeded residential through-the-fence access.

c. **Lopez Island Airport**

The Port of Lopez operates the Lopez Airport which is classified as a community service airport. The facility occupies 50 acres and has a 2,900 foot runway. According to the 1993 Washington State Continuous Airport System Plan, Volume 1, it is a "general aviation" airport (i.e., public/private facility with general aviation usage) and had approximately 18,250 operations in 2010. The Port of Lopez does not currently have any full-time employees and daily flight operations are not monitored. The airport office and waiting room occupies 500 square feet. There are 11 aircraft tie-down spaces available and 6 private hangars with space for 28 aircraft are located adjacent to the Port of Lopez property.

d. **Seaplane Facilities and Services**

Currently, Kenmore Aviation provides the only regularly scheduled seaplane service to San Juan County. Seaplane service is provided at the following locations: Islander/Islands Marine Center on Lopez, West Sound Marina, Deer Harbor Marina, Rosario Resort and West Sound Marina on Orcas Island, Roche Harbor Resort and Friday Harbor Marina on San Juan Island. Four flights per day are offered at all island locations.

2. Long-Range Planning Needs

As stated in the *WSDOT/Aviation 2012 Aviation Economic Impact Study*, small communities have particular challenges when it comes to the air service access they need to sustain their economic vitality and the mobility of their residents. Each of the ports is assessing the current trends to determine the most effective improvements to meet projected demands.

a. **Friday Harbor Airport**

The airport has seen a slower rate of growth in annual operations than was anticipated in the most recently adopted Airport Master Plan (2007). An updated master plan, taking into account reduced forecasts, will be completed by early 2013. The airport's capacity is projected to be sufficient for anticipated demand over the next ten years.

The Port is planning the following improvements within the next five years, and others will be identified in the master planning process.

- Update Airport Master Plan
- Identify and remove obstructions in runway approaches
- Electric system rehabilitation: gate controls, vault, emergency generator (complete)
- Rebuild of parallel taxiway, including replacement of signs and lights with energy efficient systems (complete)
- Replace runway lighting system for energy efficiency
- Construct visiting pilot welcome center
- Rehabilitate aprons
- Site preparation for t-hangars and executive hangars

- Replace hangars
- Replace or rebuild airport fuel facility

b. **Orcas Island Airport**

The latest document regarding the airport is the 2008 Airport Layout Plan (ALP), updated as part of an Airport Improvement Plan, which studied the feasibility of an instrument approach. This document noted that the existing Runway 16/34 remains at 2,900', with a parallel taxiway east of the runway, and 4 connecting taxiways. Wildlife fencing was installed in 2002, a drainage survey and 14 new hangars completed in 2003, along with substantial on-field improvements including new runway lighting, signs, wind cone and beacon replacements, and an emergency generator/electrical building. In 2006, the master plan was updated through the ALP. The next year, 2007, saw an expansion and updated lighting for the emergency medical services (EMS) helipad. A GPS approach to runway 34 was instituted in 2009. In 2010, reconstruction of the south ramp was completed, with 1/3 of the tarmac area replaced by turf tiedowns. A WSDOT/Port grant in 2011 added a 4-view webcam for pilot/public information. 2012 saw purchase of 40 acres on the west side of the airport to protect the airspace, discourage incompatible development and control of access to the airport.

By the end of 2017, the following improvements are anticipated:

- Reconstruction/repaving of the runway; movement of the taxiway 6' east; reconfiguration of the 4 runway/taxiway crossovers; stormwater improvements,
- A GPS approach to runway16
- Wildlife Hazard Assessment
- Environmental Assessment
- Update AWOS (weather reporting instruments) equipment

These improvements would bring total FAA and the Washington State Department of Transportation (WSDOT) contributions to over $10,000,000.

The Orcas Island Airport is part of NPIAS, and remains protected from incompatible land use by the creation of an airport overlay district created in 2003 and the constant vigilance by its five elected commissioners and paid staff. SJC classifies it as an essential public service.

c. **Lopez Island Airport**

A Capital Improvement Plan submitted to the FAA listed improvements to the Lopez Airport which included land acquisition. Completed projects included taxiway rehabilitation, improved lighting and navigational aids, additional paving, and perimeter fencing.

3. Demand/Capacity Analysis

The *2012 Economic Impact Study* developed by the WSDOT Aviation Division and FHWA evaluated all airports within the state to demonstrate how individual airports contribute to the well being of their communities. The study evaluated economic impacts from the perspective of airports, industry and the user.

Table 1 provides the latest data from the *2012 Economic Impact Study* on each of the listed airports within San Juan County.

Table 1. Existing Level of Activity

Location	Airport Classification	Based Aircraft[1]	Emplanements	Total Operations[2]	Total Visitor Spending
Friday Harbor Airport	Commercial	147	10,800	50,803	$ 3,679,400
Orcas Island Airport	Commercial	72	5,066	35,824	$ 2,279,700
Lopez Airport	Community Service	34	4,000	28,500	$ 2,289,600
Friday Harbor Marina	Sea Plane Base	0	2612	-	$ 807,700
Roche Harbor	Sea Plane Base	0	2977	-	$ 719,500
Rosario	Sea Plane Base	0	1413	-	$ 339,200

Source: *WSDOT Aviation Division – 2012 Economic Impact Study*

1. *Based aircraft is defined as the number of aircraft stored at a particular airport on an annual basis.*
2. *Total operations are the total estimated number of takeoffs and landings that occur at an airport.*

The premise of the economic study was that airports support a community's economic and transportation needs. "A significant share of aviation system economic contributions are from mobility and connectivity for both people and freight." The study stated that 90% of the economic activity within the county is located within 5 miles of a local airport.

B. Marine Transportation

Marine transportation services and facilities are the primary means for movement of people and goods among the islands and between the islands and the mainland; they provide a link that is vital to the existence of every aspect of life within San Juan County. Washington State Ferries (WSF) is the chief service provider and along with airports and public ports, landings and marinas, has a substantial effect on the quality of transportation and also on the type, character and functioning of surrounding land uses. In addition to public ferry service, private commercial vessels and barges provide transportation opportunities.

1. Washington State Ferry System

The marine linkage between the islands within the county and the 'mainland' of Washington State has supported the economy of the county for over 100 years. In the 1920's when the fruit growing industry in the islands was vibrant, it was the necessary marine connection

between the orchards in the island valleys and the markets throughout the state and beyond that made the farmers successful.

Washington State Ferries is the principal provider of marine transportation between the islands of San Juan County (San Juan, Orcas, Shaw and Lopez) and the mainland via Anacortes, Washington and Canada through Sidney, B.C., see Figure 2. Island terminals contain ferry holding lanes, commuter parking lots and waiting areas. Schedules and routes vary from year-to-year as well as season-to-season, but in general a greater number of larger vessels are employed in summer months than in winter.

Demand for ferry services on the San Juan County route is highly variable. That variability is manifested in substantial differences between the seasons, the day-of-the-week, and the hour of the day. The complexity of the demand variables contributes to the difficulty in planning for the impacts of ferry service throughout San Juan County.

The summer season between mid-June and mid-September is the busiest season with the highest peak demands occurring in July and August. By contrast, the least busy period is the deep winter from early January through March. The shoulder seasons in the spring and fall complete the cycle of demand through the year.

Total demand for ferry service is a composite of four segments of the traffic volume handled by WSF. The transportation needs of the County residents, commercial companies providing goods and services to those residents, and those visitors/tourists that support the County economy all contribute to the planning matrix that meets those collective demands. The fourth segment is the need to move those same customers within the islands of San Juan County.

a. **Inventory of Existing Facilities and Services**

Currently, all ferry facilities are planned to accommodate and handle the highest peak of demand occurring in the summer months.

Ferries: The assignment of ferry vessels during the year is a function of seasonal demand. The specific boats vary seasonally and also with maintenance needs and unanticipated repairs. Table 2 provides an inventory of the boats that may serve the San Juan Islands at any one time.

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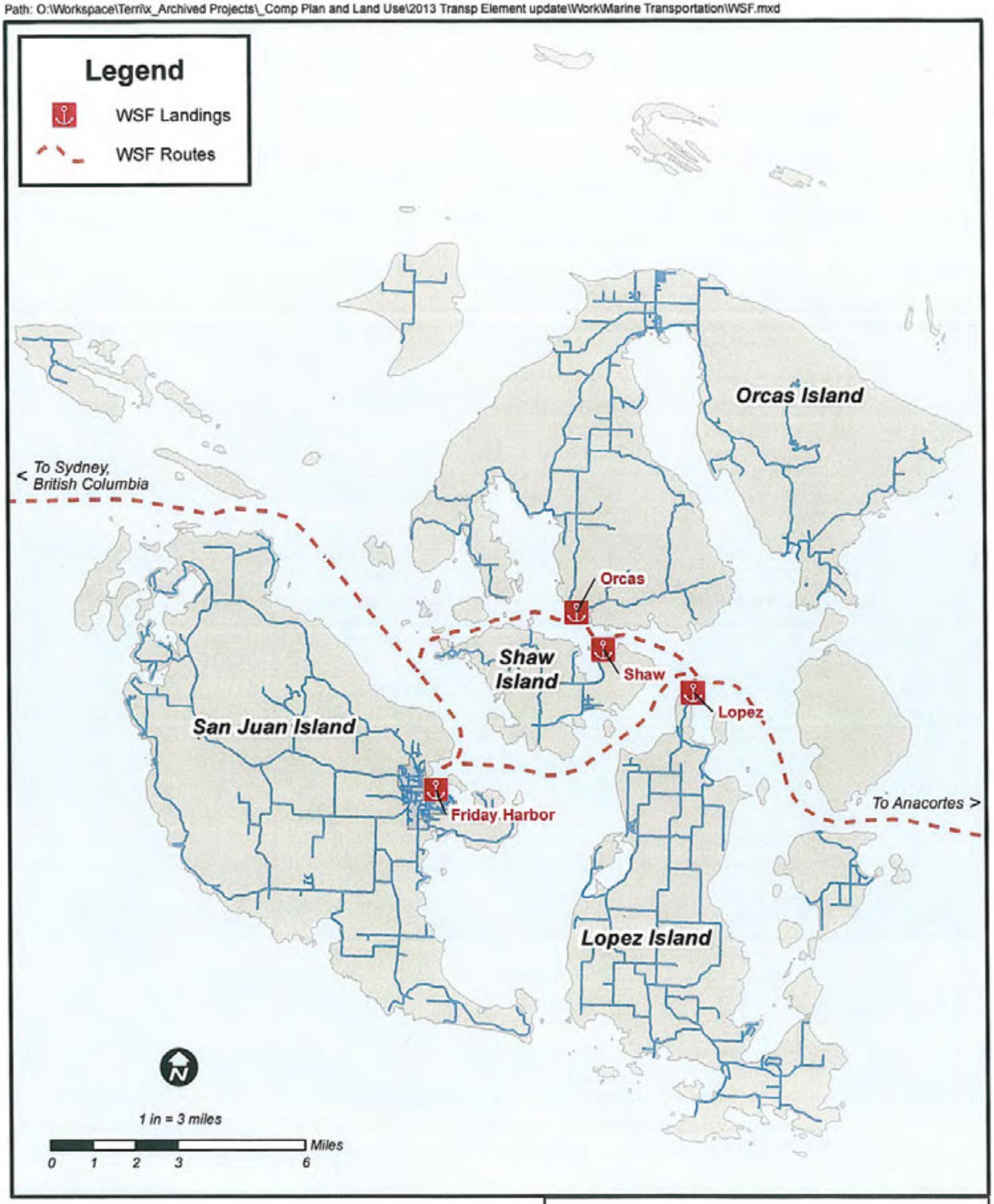

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Marine Transportation
Washington State Ferries (WSF)

San Juan County, Washington

Figure 2

Drawn By: TC

1/4/2013

Table 2. Inventory of Ferries Serving San Juan County

Ferry/Class	Year Built/Rebuilt	Service Area	Ferry Size (no. cars/no. passengers)
Elwha/Super	1967/1991	San Juan Islands	144/1,076
Yakima/Super	1967	San Juan Islands	144/2,000
Hyak/Super	1967	San Juan Islands	144/2,000
Chelan/Issaquah 130	1981	San Juan Islands / Sidney, B.C.	124/1,076
Sealth/Issaquah	1982	San Juan Islands	90/1,200
Evergreen/Evergreen State	1954/1988	Inter-island	87/983
Hiyu/Hiyu	1967	San Juan Islands	34/200

During the summer period there are five vessels assigned to the Anacortes terminal. In general, three of the ferries are 'super-class' providing service between Anacortes and the four island terminals. One is an Issaquah-class boat assigned to the International service connection with Sidney, B.C. The fifth ferry is a smaller boat assigned to inter-island service. The five ferries represent 25% of the current WSF fleet, although the San Juan Islands represent 10% of the total system traffic demand.

During the shoulder seasons, fall and spring, one Super class ferry is typically removed. The two remaining Supers continue to provide mainland service and the Issaquah-class ferry divides service with one round-trip per day to Sidney, B.C. and service to the islands on the second work shift. The inter-island service remains the same.

In the winter period, service is discontinued to Canada, and that vessel provides service to the islands. During this season, the inter-island ferry is not in service on the weekends such that for three months there are two different schedules for the weekly period. The four ferries assigned to the islands represent 20% of the fleet providing service to about 7% of the system demand.

Ferry Parking: WSF provides parking facilities at each of the island ferry terminals and has a contract with San Juan County for maintenance of the parking lots.

San Juan Island: WSF operates a paved park and ride lot for ferry patrons located south of the intersection of Nichols Avenue and "B" Street just east of the upper auxiliary holding area. This lot has a capacity of 57 spaces. Some walk-on ferry patrons park in front of the Town of Friday Harbor's Sunken Park at the intersection of "B" Street and Nichols Avenue and some park on Nichols Avenue adjacent to the north boundary of the upper boundary of the upper auxiliary holding area.

Orcas Island: WSF provides parking in two areas at the Orcas ferry terminal located in Orcas Village. West of the upper holding lanes are 20 parking spaces along the southern boundary of the entrance to the holding lanes. Parking is available at this location daily excluding Sundays and holidays and is primarily used by commuters and day trippers.

Just to the south of the upper holding lanes is another parking area which contains 36 parking spaces with one ADA parking stall. This lot is adjacent to the public restroom and is used by commuters and long-term travelers. This parking lot is posted for a maximum parking limit of 72 hours. This parking lot is typically full, particularly in the summer months. Overflow parking tends to occur at various locations within Orcas Village. Overflow parking along road shoulders, particularly along Orcas Road to the north and Killebrew Lake Road to the east, are the areas most impacted during the summer season. These areas are uncontrolled and unsigned.

WSF owns a parcel just to the north of the holding lanes. In the past, there was discussion of the parcel being developed for additional parking, but there are no current plans to do so. To the east of the ferry terminal and adjacent to the Post Office, there are three private parking lots. Directly north of the loading ramp is a waiting area with a ferry ticket vending machine and newspaper box.

Lopez Island: Parking is provided for ferry patrons in two areas in close proximity to the Lopez terminal. A WSF-owned, gravel parking lot containing 58 spaces is located 200 feet south of the terminal building and east of the vehicle holding area. The parking lot is posted for a maximum parking limit of 72 hours. This parking lot is usually filled to capacity during the summer months. When the lot is full, overflow traffic parks along the western road shoulder beyond Penny Lane (entrance to Land Bank preserve). The shoulder is posted for no parking from 1 a.m. to 5 a.m.

A small paved parking lot owned by WSF is located across from the terminal building and contains 14 spaces signed for 10 minute parking. Four spaces are reserved for ferry employees and 2 more spaces are labeled for ADA with one spot for the local taxi. The total present parking supply in the vicinity of the Lopez Island ferry terminal is approximately 79 spaces.

The remoteness of the terminal location means that there is no other alternative to parking or being dropped off at the terminal except for the use of a taxi available on the island. There are no park and ride lots on Lopez.

There are four car holding lanes. The easternmost lane (Lane 1) is reserved for Anacortes-bound vehicles. When the number of cars exceeds the lane capacity, cars park and wait along the eastern road shoulder. During the peak summer periods, the extension of Lane 1 may contain cars backed up in the shoulder nearly to Odlin Park, a distance of one mile to the south.

Available services within the Lopez terminal include a ferry ticket vending machine, newspaper box, community bulletin board and used books for sale which is stocked by Friends of the Lopez Library. Outside the terminal are three portable toilets within the small paved parking lot. Two more portable toilets are located on the rise east of the large, gravel parking lot.

A privately-owned espresso stand with vending machines is located adjacent to the small, paved parking lot and is typically open during the shoulder and summer seasons with limited hours.

Shaw Island: The Shaw Island ferry landing was rebuilt in the mid-1990's and currently includes two regular holding lanes, one oversize holding lane, and 6 parking spaces which include one ADA space. A restroom facility, small customer waiting room and ferry office are also located at the dock. A bike rack is located east of the transfer span.

One holding lane is used exclusively for inter-island ferry traffic and can accommodate 11 – 12 vehicles. The second holding lane is used exclusively for the Anacortes-Shaw route and can accommodate 12 – 13 vehicles. Capacity of the holding lanes is usually adequate for vehicle queuing, except for busy days and weekends in the summer when the Anacortes lane is regularly overloaded. Overloading of the ferry holding lanes oreates a safety concern as vehicles queued for the ferry extend out into the northbound driving lane of the county road up a steep hill and around a blind corner.

In addition to the facilities provided by Washington State Ferries, there is a privately owned store with about 8 parking spots located just north of the ferry holding lanes. The store is the only commercial retail facility on Shaw Island and is regularly visited during daylight hours throughout the year. The store complex includes the Shaw Island Post Office which generates a significant number of vehicle trips each day. Traffic visiting the store and/or post office must cross the loading and unloading ferry traffic to reach their destination.

A privately owned gravel parking area, adjacent to and west of the county road between the ferry holding lanes and the oversize vehicle lane, is available for public parking. This area is often filled to, or beyond, capacity during the daytime because it is used by commuters who walk on the interisland ferry. Approximately 10 parking spaces are available in this location.

Long term lease parking is provided by the Shaw General Store to the east of the ferry holding lanes. Approximately 10 – 12 spaces are available. Several of these spaces are permanently leased by utility service providers such as OPALCO, Century Tel, and San Juan County.

b. **Long-Range Planning Needs**

In 2009, the Washington State legislature adopted the Washington State Department of Transportation Ferries Division Final Long-Range Plan: 2009-2030 (Long-Range Plan). The goal of the WSF Long-Range Plan was to establish new operational and pricing

strategies to meet the needs of ferry customers and identify vessel and terminal operations and capital requirements into the future. One of the primary challenges since the adoption of the Long-Range Plan has been to identify a stable source of capital funding. The funding source has yet to be identified, thus a number of the projects and programs identified in the Long-Range Plan have not yet been implemented.

To provide a frame of reference for the long-range planning needs of the ferry system in San Juan County, a brief discussion of the history of the ferry system within San Juan County is presented below followed by the pertinent sections of the Long-Range Plan and a discussion of the status today based on current legislation and/or funding.

Historical Background: After a long period of service throughout the islands by independent transportation providers, Black Ball Lines of Port Angeles, WA became the primary operator of ferry service from the mainland to the islands of San Juan County. The State of Washington purchased the assets of Black Ball in 1951 with the intention of only running the ferry service until cross-sound bridges were constructed. The bridges never materialized and the Washington State Ferries came into existence. During the following fifty years WSF expanded terminals at ferry served communities throughout the Sound including the four within the County, and at Anacortes, WA. The fleet of ferry vessels was also expanded beginning with the construction of the Evergreen Class vessels during the 1950's. Currently, WSF has a fleet of 20 vessels.

In 1937, the motor vehicle excise tax (MVET) was established. During the 1990s, MVET was a major source of revenue for operations and for capital expansion of the ferry system. With the population of Washington State expanding at a significant rate, the MVET provided a substantial revenue stream that allowed for planning of additional expansion of the system to include multi-modal terminals and the next generation of ferries to replace an aging fleet.

That revenue stream collapsed in 1999 with the voter approved Initiative 65 (I-695) and the legislative repeal of the MVET in 2000. WSF lost approximately 20% of its operating support and 75% of its dedicated capital funds. Since that time, the revenue for operations has been replaced by dramatic increases in the tariffs charged to customers through the fare box. During the decade from 2000-2010, tariffs increased dramatically in San Juan County. Historical analysis has shown that for every 5% in fare increases, the traffic volumes have decreased by about two percent.

As a result of this change in the source of funding for WSF operations, and the inaction of the State Legislature to establish a long-term funding plan for capital replacement and expansion, the future of marine transportation services as provided by WSF is very much undefined.

Ferries: In the WSF Long-Range Plan, WSF lays out a number of philosophies and techniques to continue to provide service to the various communities by maximizing the efficiency with which it provides service. Demand projections for the San Juan Islands route estimate that this route will represent the second largest projected increase within

the WSF system. To accommodate these increased needs with the reduction in funding since 2000, WSF plans to implement operational and pricing strategies. WSF states that the San Juan Island route is primarily affected by growth in population.

Ferry Terminals: In the Long Range Plan, WSF identified terminal preservation and improvements programs. The terminal preservation program focuses on identifying the needs for operating at current service levels and maintaining and preserving existing capital assets. The San Juan Islands route terminals identified for essential preservation projects are shown in Table 3, as listed in the WSF Long-Range Plan.

Table 3. Essential Terminal Preservation Projects
(2008, $ Millions)

Terminal	Slip Preservation	Trestle	Wingwalls & Dolphins	Buildings & Overhead Loading	Other	Total
Anacortes	$8.0	$17.7	$21.4	$39.7	$7.5	$94.3
Friday Harbor	$1.5	$8.4	$7.9	$1.6	$3.1	$22.4
Orcas	$4.6	$2.8	$7.1	$1.0	$1.4	$17.0
Lopez	$11.7	$2.2	$6.5	$0.7	$1.6	$22.8
Shaw	$1.3	$3.2	$3.1	$0.1	$0.3	$8.1

***Source**: WSF 2009 Long Range Plan*

To date in 2011, WSF has repaved the holding lanes and improved the pedestrian bridge at the Anacortes terminal. No other terminal improvements have been initiated and funding sources are yet to be identified.

Other types of terminal improvements included transit-related improvements such as improved terminal access for pedestrians and transit vehicles. However, funding for these projects was deferred by the Legislator until such time as increased walk-on ridership was realized, additional transit service is available and pre-design studies are received.

Ferry Parking: The WSF Long-Range Plan did not address the issue of ferry parking in the long-term.

c. **Level of Service Analysis**

Ferries: WSF's previous LOS measure, adopted in 1994, was based on the number of ferry sailings a walk-on, vehicle, or commercial vehicle had to wait before boarding a ferry during the peak period. This measure, called "boat-wait", was generally set at one boat wait for vehicles on most ferry routes. However, this measure did not apply to San Juan County routes due to the low frequency, complex routing, and non-commute nature of routes serving San Juan County. The only San Juan County boat-wait LOS measure adopted by WSF was a zero-boat wait for all pre-registered commercial vehicles.

This performance measure was revised in 2009 with the adoption by the State Legislature of the WSF Long-Range Plan. The Long-Range Plan eliminated the wait based LOS measure and moved to a measure of percent of sailing full during a specific month. Percent sailings full are measured in the westbound peak direction for the months of January, May and August. Two performance thresholds were identified: Level 1, which indicates when demand management and peak spreading strategies should be implemented and Level 2, which indicates when additional capacity may be needed. The intent of the revised LOS measure is to "move [the] ferry system planning away from thinking primarily about peaks and more about how to best fit the service to the overall demand and filling up the space outside the peaks."

To determine where LOS standards might be appropriately set, WSF conducted an analysis using 2006 ridership data adjusted to reflect the 2030 demand forecast, as shown in Table 4. The Anacortes-San Juan Islands route is currently exceeding Level 1 standards in May and August, but is well below the Level 2 standards. This indicates a high level of seasonal travelers, compared with residential and/or commuter travelers. When a large portion of sailings are filled, it indicates congestion and overloaded sailings. Standards for summer months reflect additional recreational ridership and specifically for the San Juan Islands route, it reflects a greater seasonality in recreational ridership. In addition, the San Juan Islands have a unique sailing schedule that accommodates several destinations. The forecasted 2030 percent sailings for the Anacortes-San Juan Islands route will also remain well below Level 2 standards, indicating that no additional ferry capacity is needed in the next 20 years.

Table 4. Estimated Percent Sailing Full by Route

Route	2006 Westbound Weekly Average			2030 Expected Westbound Weekly Averages		
	January	May	August	January	May	August
Anacortes-San Juan Islands	10%	31%	36%	24%	48%	45%
Proposed LOS Standards by Route						
	Level 1 Standards (spread demand and improve customer experience)			**Level 2 Standards** (efficiently used assets, consider additional investment)		
Anacortes-San Juan Islands	25%	30%	35%	65%	75%	85%
Anacortes-Sidney	N/A	50%	50%	N/A	100%	100%

***Source**: WSF 2009 Long Range Plan*

WSF cautions that it important to consider these LOS in conjunction with a vehicle reservation system and other adaptive management strategies so that is not indicative of

degradation of service. Also, because of the financial situation faced by WSF, this two-tiered LOS reflects that assets are fully utilized before significant capital investments are considered.

To address exceeding the first level of LOS, WSF is proposing implementation of a vehicle reservation system as the primary demand management tool. A pilot program of the reservation system had been proposed for the Friday Harbor/Anacortes leg of the San Juan Route to begin in the summer of 2010, but the program was delayed and a new estimated date has not been released. WSF maintains that the reservation system would be designed individually for each route. A few common elements of the reservation system are: (1) that a percent of spaces would be reserved for sailing time; (2) preference would be given to emergency vehicles, vanpools and carpools, commuters, local residents and commercial traffic; (3) reservation fees and partial or entire pre-payment of fees, and 4) timing and phase-in of the system.

Ferry Parking: Table 5 estimates the level of service for ferry parking facilities based on the estimated number of parking spaces available at the ferry terminals per 100 County residents. The estimated number of available parking spaces was tallied by San Juan County.

Table 5. Level of Service – Ferry Parking Facilities

Ferry Terminal Location	2010				2021			
	Population	Capacity	Ratio	LOS	Population	Capacity	Ratio	LOS
San Juan	7,581	57	0.75	F	9,537	57	0.60	F
Orcas	5,006	56	1.12	F	6,169	56	0.91	F
Lopez	2,383	79	3.32	D	3,050	79	2.59	D
Shaw	237	25	10.55	A	291	25	8.59	A

***Source**: WSF 2009 Long Range Plan*

As noted earlier, there is nothing in the WSF Long Range Plan to address LOS in ferry parking facilities.

2. Passenger Ferries

Passenger ferries from Bellingham (San Juan Cruises), Port Townsend (Puget Sound Express) and Seattle (Victoria Clipper) land at the Port of Friday Harbor and Orcas Landing during the summer tourist season.

In the winter months of 2005/2006, a passenger-only ferry pilot project was conducted. The study was funded by the US Federal Transit Administration and conducted by the Whatcom Council of Governments (WCOG) and the Port of Bellingham with the intention of identifying data on potential markets and service characteristics for a passenger-only ferry between the City of Bellingham and the Town of Friday Harbor.

During the pilot study, there were two round-trips daily on weekdays for a one-way cost of $10 for adults and $5 for youths. The trip took one hour and forty minutes. At the conclusion of the pilot study, it was decided that the results were favorable enough to warrant proceeding to the next step.

Based on the results of the pilot study, a "Passenger-Only Ferry Study and Business Plan" (Passenger Ferry Study) was developed in 2008 to develop an approach to providing high-speed passenger-only ferry service between Bellingham and Friday Harbor. The benefits identified with such a service were many and included stronger regional connections, commuter access and increased tourism commerce. The route was also identified as having the potential for lower seasonality effects (such as is experienced by the WSF system) stemming from its substantial commuter base rather than a pure tourist base.

The business model proposed a public-private partnership with the Public Partners (WCOG, the Ports of Bellingham and Friday Harbor) and a private vessel operator. The boat was to be a high-speed aluminum catamaran ferry that would provide four daily round-trips between Bellingham and Friday Harbor. The one-way fares were to be $20 each for resident adults, $25 for non-residents and $15 for youths. A discount commuter book was also proposed. The estimated crossing time was to be one hour and forty minutes.

The success of the concept was the ability to serve the interests of a wide variety of stakeholders and the forging of community partnerships and linkages. Another critical element identified was the need for strong intermodal connections at either end to allow riders to leave their personal vehicles and access the destinations needed in a timely, efficient, clean and cost-effective manner. The first year of operation was estimated to cost between $2.8 and $3.2 million.

In the WSF 2009 Long-Range Plan, the legislature directed WSF that it is not to provide passenger-only ferry service. Where local providers view that service as a way to improve service or fill potential gaps, it is expected that locally-funded passenger-only ferry service will be evaluated and pursued.

As of 2013, the concept of the passenger-only ferry has not progressed beyond the Business Plan presented in 2008. It is maintained that with the current communities and the slow economy, there is not enough potential ridership to support such a service, nor is there enough funding to initiate the operation or subsidize the on-going financial requirements.

A hospital was recently opened in Friday Harbor, late in 2012. The hospital is a sister to the one in Bellingham. It has been conjectured that many of the employees could come from Bellingham and make use of a passenger-only ferry, which would provide a solid commuter base for the ferry.

3. County Marine Facilities

Because of the marine orientation of the San Juan Islands docks, floats and ramps, both public and private facilities are a significant part of the transportation system. Public marine facilities are, in a sense, a continuous part of the County road system, and therefore, the

responsibility of the County Figure 3 presents the location of the various county marine facilities. Private docks are owned, maintained and used by the owners and their guests.

a. **Inventory of Existing Facilities and Services**

San Juan County Public Works Department currently operates and maintains 9 public docks with floats, 8 boat ramps (7 barge/landing craft capable) and leases with two outer island moorage docks. County Parks operates and maintains 1 boat ramp. All county-owned marine facilities are for limited-time day use only. Table 6 provides an inventory of the County Marine Facilities

Roche Harbor Dock and Float, San Juan Island: A dock and float built in 2011 on leased land east of the private boat ramp at the Roche Harbor Resort. The float is connected to the dock with a gangway. Dock space is available for outer island residents only by permit with parking for vehicles permitted annually by Public Works.

Small Pox Bay Ramp, San Juan Island: Within San Juan County Park on the west side of San Juan Island, County Parks owns a concrete launching ramp serving recreational boating needs only. The ramp was reconstructed in 1997 and is in good condition, but prone to siltation.

Parking for ramp and park use is available for up to 7 vehicles with boat/kayak trailers.

Jackson Beach, San Juan Island: This Port of Friday Harbor facility contains a recreational dock and ramp with public parking. The County's barge landing site is also located at Jackson Beach.

Prevost Harbor Dock and Float, Stuart Island: The facility is located in Prevost Harbor on the northeast side of Stuart Island. The drive-on pier was constructed in the early 1950's as a joint County/US Coast Guard pier and later turned over to San Juan County. The pier contains a small cantilevered building located midway out on the north side and an extension on the north side provides access to a float which is accessed via an aluminum gangway.

No public parking is available.

Reid Harbor Ramp, Stuart Island: A concrete log boat ramp built in 1993 extends into the shallow, flat tidal beach at the head of Reid Harbor in the center of Stuart Island. The facility is used as both a boat ramp and a barge landing facility.

The adjacent state owned parking lot holds 13 vehicles.

Deer Harbor Marina Float, Orcas Island: County Public Works leases float space from Deer Harbor Marina in a 25 year lease. Mooring is by permit only. The facility serves the private and commercial needs of outer island residents, primarily those from Waldron Island. There is a 1000-pound capacity loading crane, owned and maintained by Public Works.

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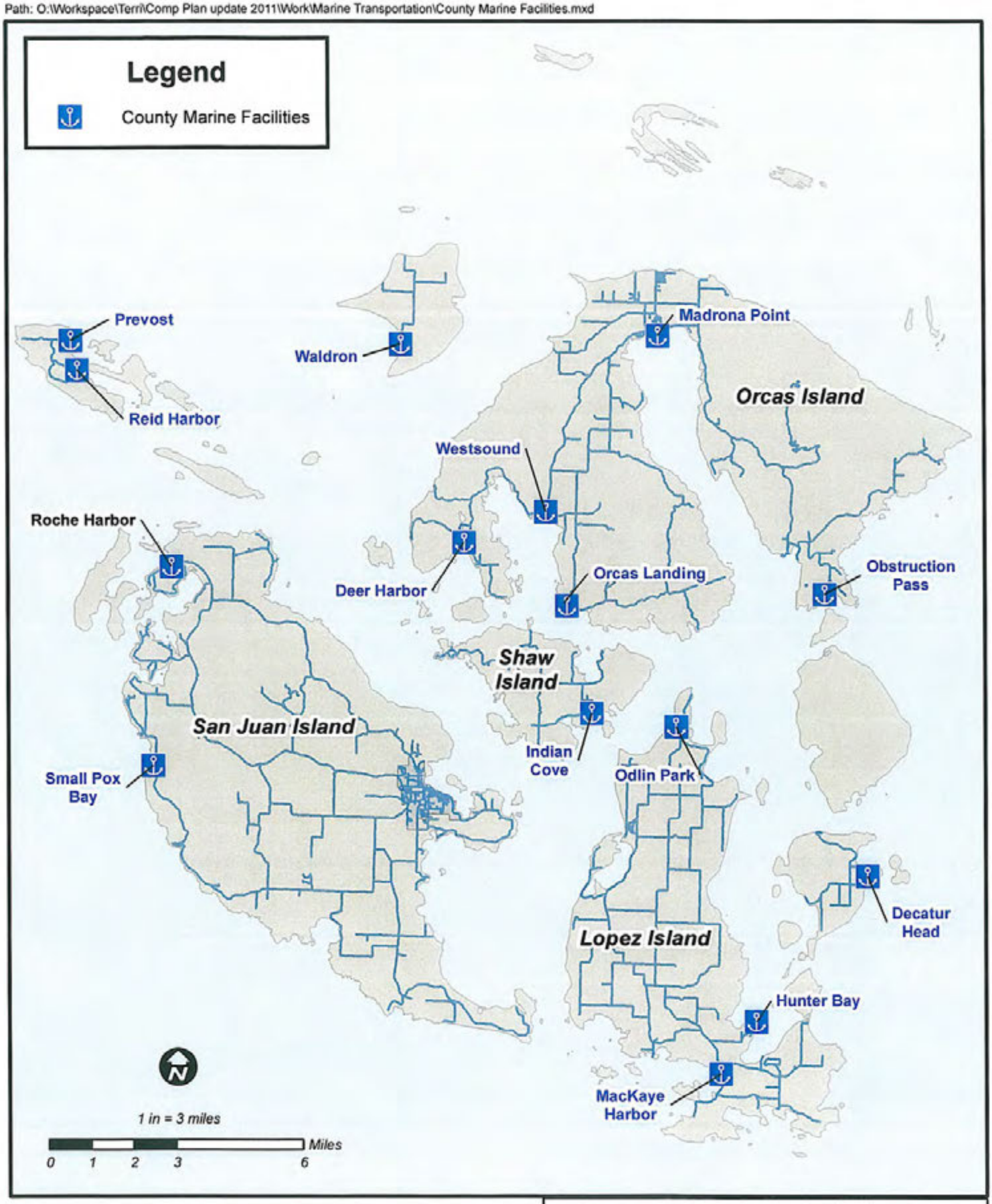

SAN JUAN COUNTY WASHINGTON

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Marine Transportation
County Marine Facilities

San Juan County, Washington

Figure 3

Drawn By: TC

Date: June 2011

Table 6. County Marine Facilities

District	Island	Name	Dock	Float	Ramp*	Parking
1	San Juan	Roche Harbor Resort	12' x 45'	8' x 60'		25 by permit only
		Small Pox Bay Ramp			13' x 100'	7 day use
		Jackson Beach			Hard packed beach*	Port of Friday Harbor
	Stuart	Prevost Dock and Float	12' x 228' 8' x 28'	8' x 60'		None
		Reid Harbor Ramp			16' x 75'	13
2	Orcas	Deer Harbor Marina		120 l.f.		None
		Madrona Point	14 x 112'	8' x 40'		None
		Obstruction Pass	12' x 107'	10' x 40'	16'x 100'*	19-25
		Westsound	7' x 154'	2 floats – 8' x 40' ea		6
		Orcas Landing	3200 sf pier; 2700 sf dock	20' x 29' 18' x 18' 10' x 40' 10' x 150'		4 at pier; 7 above facility
	Waldron	Cowlitz Bay	12' x 184'	14' x 32'	Hard packed beach*	None
3	Lopez	Hunter Bay	12'x 80'	9'6" x 80'	14' x 120'	At least 9, permit only
		MacKaye Harbor		8' x 60'	12' x 120'*	Numerous unmarked spaces
		Odlin Park	22' x 24' & 11' x 48'	10' x 50'	24' x 110'*	None only for marine facilities
	Shaw	Indian Cove			12' x 28'	None only for marine facilities
		Neck Point Cove			Gravel beach at high tide*	None
	Decatur	Hermitage			16' x 110'*	Limited parking in Co. ROW

** barge/landing craft capable*

Currently, there is no dedicated parking that goes with the public mooring, although some users do park on the south end of Upper Deer Harbor Road approximately 1/8 mile east of the marina. Generally, parking at Deer Harbor is a problem, especially during the summer months. Acquisition of a suitable parking facility is an on-going challenge that has not been resolved.

Madrona Point Dock and Float, Orcas Island: This seasonal dock is located just outside of Eastsound. The dock is connected to a float via a gangway. The float and gangway are removed by November 1 each year and stored in a protected harbor until April 1. Movement during storms could cause damage to the piling and the attachment mechanism.

Obstruction Pass Dock, Float and Ramp, Orcas Island: The marine facility is located at the end of Obstruction Pass Road on the southeastern tip of Orcas Island. The drive-on pier is connected to the float via a gangway. West of the dock and float is the ramp. The ramp is constructed of concrete logs.

The facility provides primary commercial and community linkage to Blakely and Obstruction Islands. All gasoline and propane currently delivered to Orcas is offloaded at this ramp. The public paved parking lot provides space for 19-25 cars.

Orcas Landing Dock and Float, Orcas Island: This public marine facility contains a drive-on pier with a small building. To the east, a small float is reserved for the Sheriff's boat. To the east, three floats provide mooring for up to 4 hours. A gangway on each side of the pier provides access to the floats.

There is little public parking available at the site. Adjacent to the pier are four spaces – 2 ADA, one for the sheriff and one for the County. On the northern elevated boundary are seven reserved parking spaces.

Westsound Dock and Float, Orcas Island: This facility is located south of Deer Harbor Road at MP 0.85 on the southwestern portion of Orcas Island. The pier was constructed in 1989, along with two floats. There is a stairway to the beach. The marine facility primarily serves recreational boaters and some light commercial use.

There is parking for about 6 cars along Deer Harbor Road; it is often crowded during the summer months.

Cowlitz Bay Dock, Float and Ramp, Waldron Island: The facility consists of a pier with a turning apron leading to a gangway down to a float, also described as a hammerhead dock. There is a small hand-operated jib crane and a small wooden building on the dock but no utilities.

The facility is located at the end of Cowlitz Bay-Waldron Center Road. There is no parking on the road. The area south of the dock has road access and is popularly used as a ramp for boat launching and also functions as a barge landing. While there is no

structure formally built as a boat 'ramp', the site is hard packed and serves the needs of the island for delivery of essential supplies and materials.

Hunter Bay Dock, Float and Ramp, Lopez Island: The Hunter Bay marine facilities are located at the south end of Lopez Island at the end of Crab Island Rd. The pier is connected by a steel and wood gangway leading down to a monolithic timber float on the westerly side of the dock. The facility is the primary dock used by residents of Decatur and Center Islands. The reinforced concrete ramp is located to the east of the dock. The ramp serves both recreational and light commercial needs.

While there is some general parking, most of the parking spaces in the area require a County permit.

***MacKaye Harbor Float and Ramp, Lopez Island*:** The grooved timber float was installed in 2000. It is attached by an ADA accessible aluminum gangway to a concrete abutment at the shore. The reinforced concrete plank ramp was replaced in 2009 and is located just to the west of the float. It serves as one of the few commercial loading/unloading facilities on Lopez Island. One-third of the float on the shore side is unusable during lower tide conditions.

Adjacent to the float and ramp is a large unpaved parking area that has room for numerous cars and boat trailers.

Odlin Park Dock, Float and Ramp, Lopez Island: Odlin Park is a popular County Park located on the north side of Lopez Island, one mile from the ferry terminal. The dock and float are located at the end of Odlin Park Road at MP 0.34 with the final ¼-mile being a one lane primitive road behind a locked gate. The facility serves mostly recreational boaters, and also light commerce and commercial fishery activities. Occasionally, it is used for loading/unloading private passenger ferries and also serves passenger feeder boats during emergency outages at the Lopez ferry terminal.

The drive-on pier includes an approach apron with an aluminum gangway that leads to a heavy-duty timber float. The float was rebuilt in 2006.

The concrete reinforced log ramp is located within Odlin Park at MP 0.25 at the end of Odlin Park Road. The road and all marine facilities are under the jurisdiction of Public Works. It is one of the few commercial loading/unloading facilities on Lopez Island. It is also used by recreational boaters.

There is no parking specifically dedicated to the marine facilities. All parking is part of the County Park complex.

Indian Cove Ramp, Shaw Island: The ramp is located within Indian Cove County Park at the end of Shaw Park Road. Since it is located on a very flat, shallow beach above +10 MLLW, the wooden ramp can only be used at high tide to launch small recreational boats. Commercial landing craft can often only access it 2 or 3 times per year.

Shaw Landing Dock, Shaw Island: The small dock and stairway is located adjacent and to the southwest of the state ferry loading area. There is currently no float and no beach access from the facility.

Neck Point Cove, Shaw Island: The site is located is located at the County road end. At high tides, landing craft barges are able to deliver essential supplies and materials on the gravel beach.

Decatur Head Ramp, Decatur Island: The concrete log ramp was reconstructed in 2009. It is located at the end of Davis Beach Road and serves the commercial, transportation and recreational needs of island residents as both a ramp and a barge landing site. Limited parking is available within the County ROW.

b. **Long-Range Planning Needs**

The following projects have either been identified and included in the County's Six-Year Transportation Improvement Program or the latest Annual Dock Report or identified as concepts worth investigating further.

Small Pox Bay Ramp, San Juan Island: The ramp is maintained by County Parks and requires silt removal periodically. Based on the 2006 Annual Dock Report, the ramp is anticipated to have a useful life until 2018.

Madrona Point Dock and Float, Orcas Island: Consider rebuilding or replacing the float to allow year-round day moorage.

Obstruction Pass Dock, Float and Ramp, Orcas Island: Construct a new Obstruction Pass Boat/Barge Ramp. This ramp was repaired with 8" deep concrete logs in 2004. This ramp is an important water access for Orcas Island. It is the alternative launch site for autos via barge when the state ferry service is interrupted. When Orcas Island has ferry service interruptions, as it did just a few years ago, this new ramp would provide a safe place to land and launch cargo and autos. Ramp replacement is not currently on the Six Year TIP.

***Westsound Dock and Float, Orcas Island*:** Explore leased, permitted parking with Orcas Island Yacht Club which is located next door.

Orcas Landing Dock and Float, Orcas Island: Long range improvements were identified in a 2008 Structural Report and through a master plan public process. Marine improvements identified included a lower profile bracket to be installed for small boats/kayaks, replacement of pile caps and decking, and modifications to accommodate ADA facilities. Additional improvements could include installing bollards at the head of the pier, extending guardrails at the top end of the west gangway and add additional guardrails around public access areas.

Hunter Bay Dock, Float and Ramp, Lopez Island: The concrete ramp at Hunter Bay is deteriorating. The lower portion of the ramp exhibits significant cracking and breaks, which will soon impact the upper portion of the ramp. The logs are too thin to sustain the

heavy equipment which is frequently loaded from the ramp. This ramp should be removed and replaced. The design for this facility is scheduled to commence in 2014 with float and dock replacement scheduled for 2017. Applicable grant funding should be evaluated.

Odlin Park Dock, Float and Ramp, Lopez Island: The Odlin Park Float was removed, inspected, and repaired during the winter of 2005-2006. It was found to be in poor condition. The original design included splicing two sections together at mid-length. This lack of structure continuity causes the float to behave poorly and has led to a shortened useful life. The piling needs to be replaced with steel piling. The design of the float and pile replacement was initiated in 2012. After an anticipated two year permit process, construction is anticipated to occur in 2015 or 2016, depending on funding sources.

Level of Service Analysis

Level of service for County docks is based on the lineal footage of useable dock space per residential dwelling unit within the designated service area. County Code 18.60.200 defines the standards as LOS C for Type 1 docks, LOS D for Type 2 and LOS F for Type 3 docks. Table 7 identifies the location of the County docks and the areas they serve.

Table 7. County Service Area

	Service Area	Dock Location
Type 1[1]	Center, Decatur, Frost, Trump	Hunter Bay, Lopez Island
	Blakely, Obstruction	Obstruction Pass, Orcas Island
	Waldron, Wasp	Deer Harbor, Orcas Island
	Stuart, Henry, Pearl, Johns, Cactus, O'Neal, Spieden	Roche Harbor, San Juan Island
Type 2[2]	Stuart	Prevost
	Waldron	Cowlitz
	Decatur	-
Type 3[3]	San Juan	-
	Orcas	Eastsound, Westsound, Orcas Landing
	Lopez	Odlin, MacKaye Harbor
	Shaw	-

Notes: *[1]**Type 1** – County docks located on ferry-served islands which provide primary access for non-ferry served islands.*

[2]*Type 2 – County dock located on non-ferry served islands with County roads.*
[3]*Type 3 – County docks that provide recreational uses or access between ferry-served islands*

Table 8 identifies the estimated existing and projected number of residential dwelling units within each service area. These estimates are then used to calculate the existing and projected LOS based on the LOS policies for County docks.

Table 8. County Dock Level of Service

	2010				2021			
	Demand	Capacity	Ratio	LOS	Demand	Capacity	Ratio	LOS
Type 1								
Center Decatur Frost Trump	129	185	1.43	B	133	185	1.39	B
Blakely Obstruction	40	187	4.68	A	44	187	4.25	A
Waldron Wasp	69	120	1.741	B	69	120	1.74	B
Stuart Henry Pearl, Johns Cactus O'Neal Spieden	62	120	1.94	B	71	120	1.69	B
Type 2								
Stuart	35	376	10.74	A	41	376	9.17	A
Waldron	69	248	3.59	A	69	248	3.59	A
Decatur	67	0	0	F	81	0	0	F
Type 3								
San Juan	76	0	0	F	96	0	0	F
Orcas	76	885	11.64	A	96	885	9.22	A
Lopez	76	238	3.13	A	96	238	2.48	B
Shaw	76	0	0	F	96	0	0	F

Source: Transpo Group, 2011

4. Barges and Landing Craft

Several private barge companies serve the islands with most freight needs. Humpback Hauling is a United States Coast Guard certified barge that can carry up to 49 passengers

and regularly moves vehicles and freight throughout the islands. In the case of an emergency, Humpback Hauling is contracted with the County to provide emergency evacuation services from marine access locations. Other private barging businesses provide similar services to other outer islands. A number of the County ramps are routinely used for delivery of freight and construction materials. Two are located on Lopez Island at Odlin Park and MacKaye Harbor and the other is on Orcas Island at Obstruction Pass.

C. Land Transportation

San Juan County contains 270 miles of roads located on 7 islands. The roads are classified as Major Collectors, Minor Collectors, and Local Access Roads. The County currently has four bridges, all on Orcas Island. In the past 6 years, the County has made a dedicated commitment to non-motorized transportation and has constructed over 8 miles of trails.

In 2008, county roads on San Juan and Orcas Islands, along with the marine route from Anacortes to the Islands, were designated in the San Juan Islands Scenic Byway. Figure 4 shows the official route of the byway. The County is a member of the scenic byway stakeholder group and has participated in the development of the 2012 Scenic Byway *Corridor Management Plan* and various grants. Successful grant projects are included the county's Six-Year Transportation Plan and those projects involving the roads are implemented in compliance with county standards and safety protocols.

The Town of Friday Harbor (Town) on San Juan Island developed the Transportation Element of their Comprehensive Plan in 2002. The Town operates and maintains approximately 13 miles of arterials and local access roads. Traffic circulation within the Town is affected by the loading/unloading of the Washington State Ferry at the harbor and the primary access points to destinations throughout the island. The Town will soon be updating its Comprehensive Plan.

1. Roads

a. Inventory of Existing Facilities and Services – County Roads

The County is divided into three districts. The road crew in each district is responsible for operation and maintenance of the facilities within each of the districts. Roadway maintenance includes mowing and brushing within the road right-of-way to maintain site distance, sign installation, repairing and paving the roads, and general preservation of the facilities. Figures 5 through 9 present the roads within each of the districts.

b. Level of Service Analysis – County Roads

The level of service (LOS) for the County's roadways were updated based on the 2000 Highway Capacity Manual. The updated LOS thresholds for all LOS values are shown below in Table 9.

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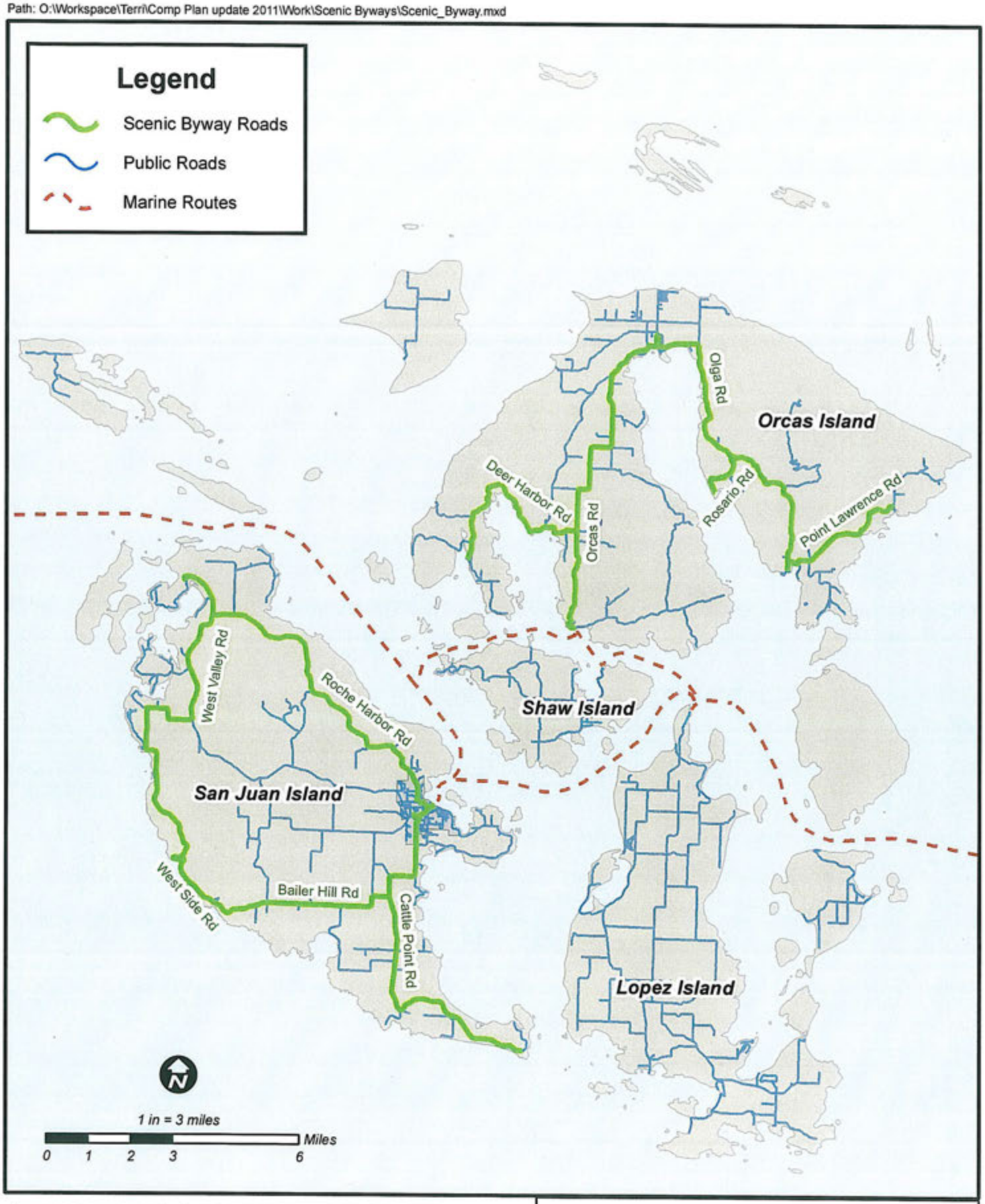

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San Juan Islands Scenic Byway

San Juan County, Washington

Figure 4

Drawn By: TC

Date: June 2011

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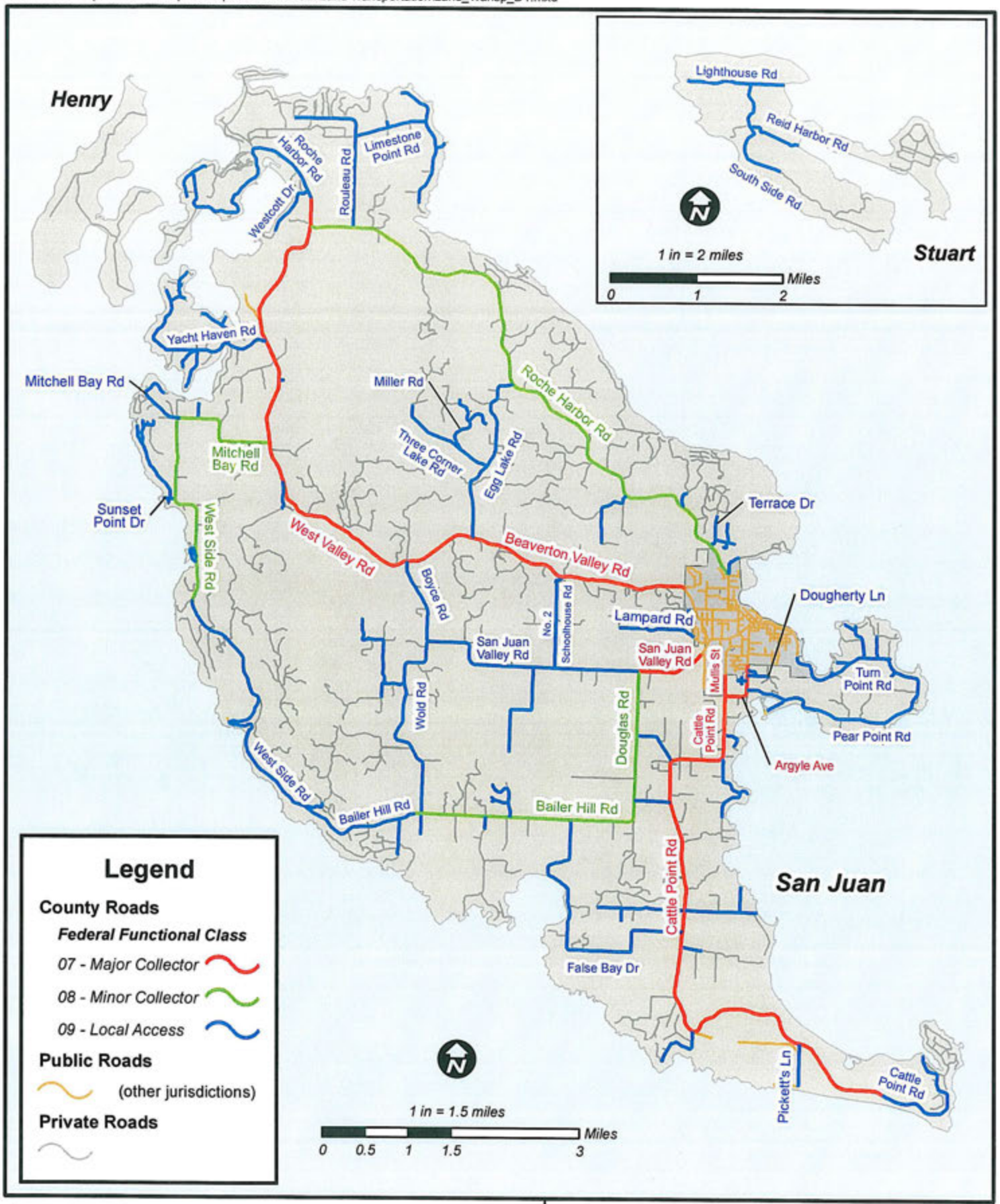

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Roads - District 1
San Juan & Stuart Islands

San Juan County, Washington

Figure 5

Drawn By: TC

Date: June 2011

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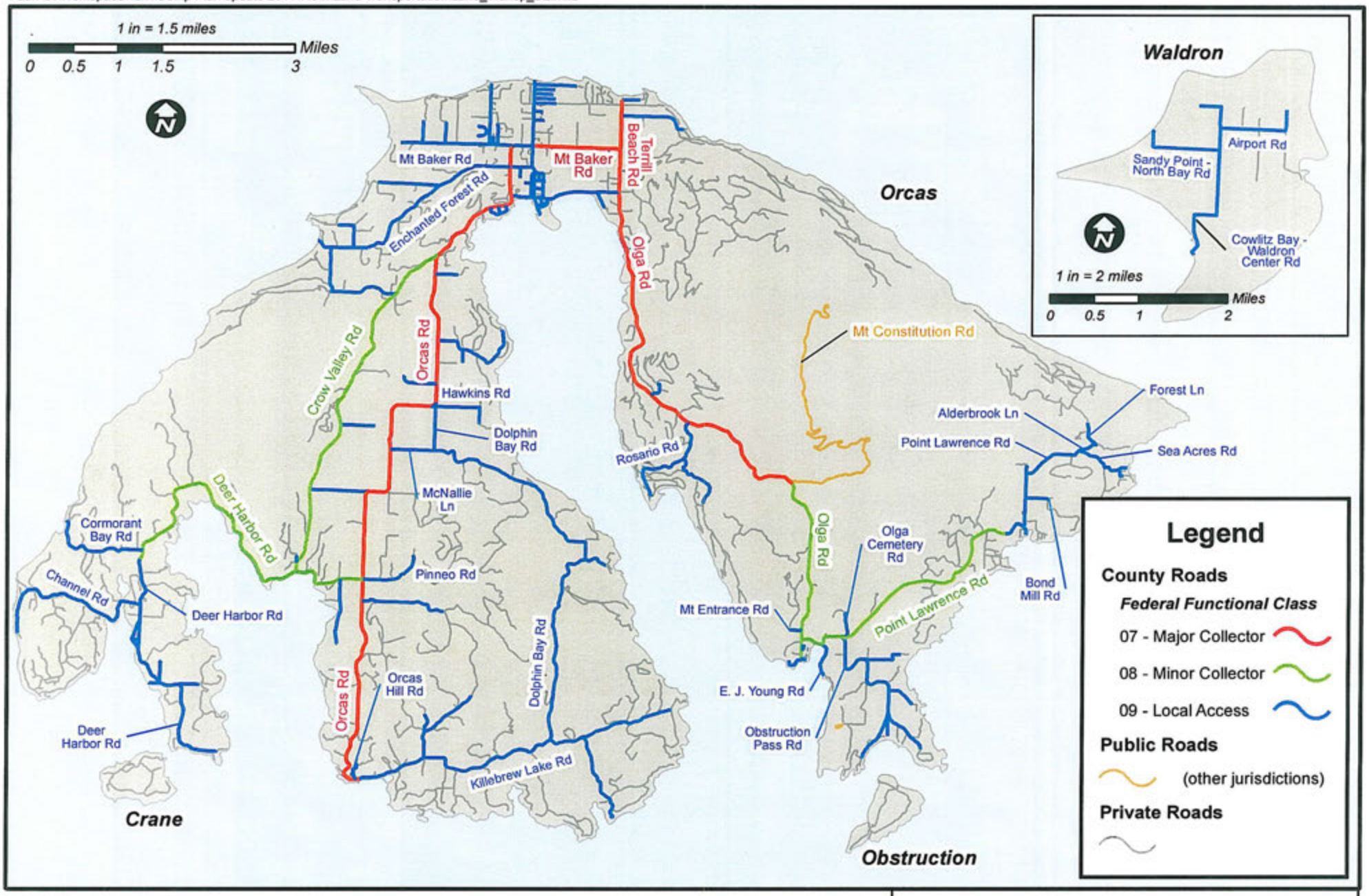

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Roads - District 2
Orcas & Waldron Islands

San Juan County, Washington

Figure 6

Drawn By: TC

Date: June 2011

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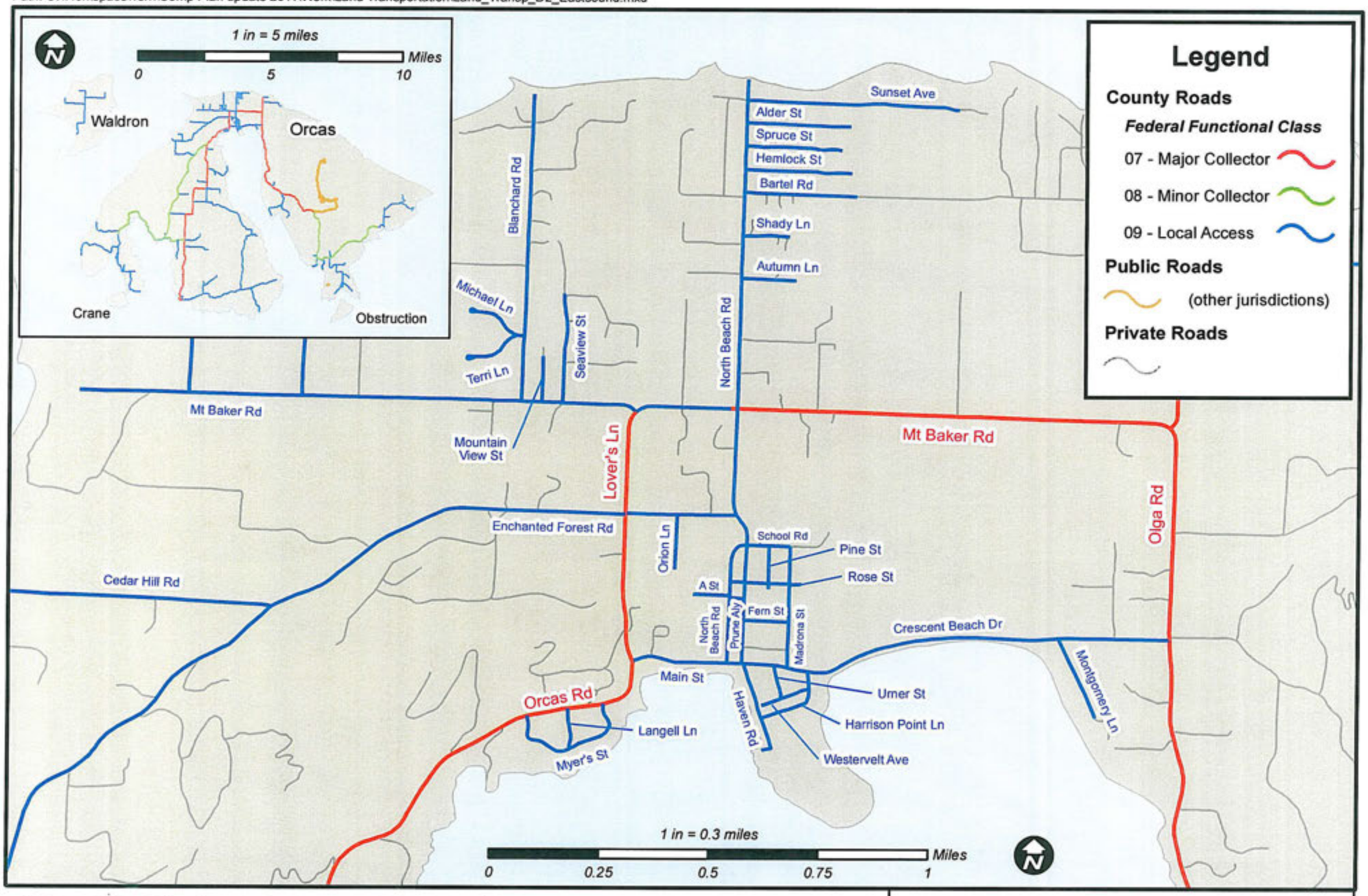

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Roads - District 2
Orcas Island - Eastsound & Vicinity

San Juan County, Washington

Figure 7

Drawn By: TC

Date: June 2011

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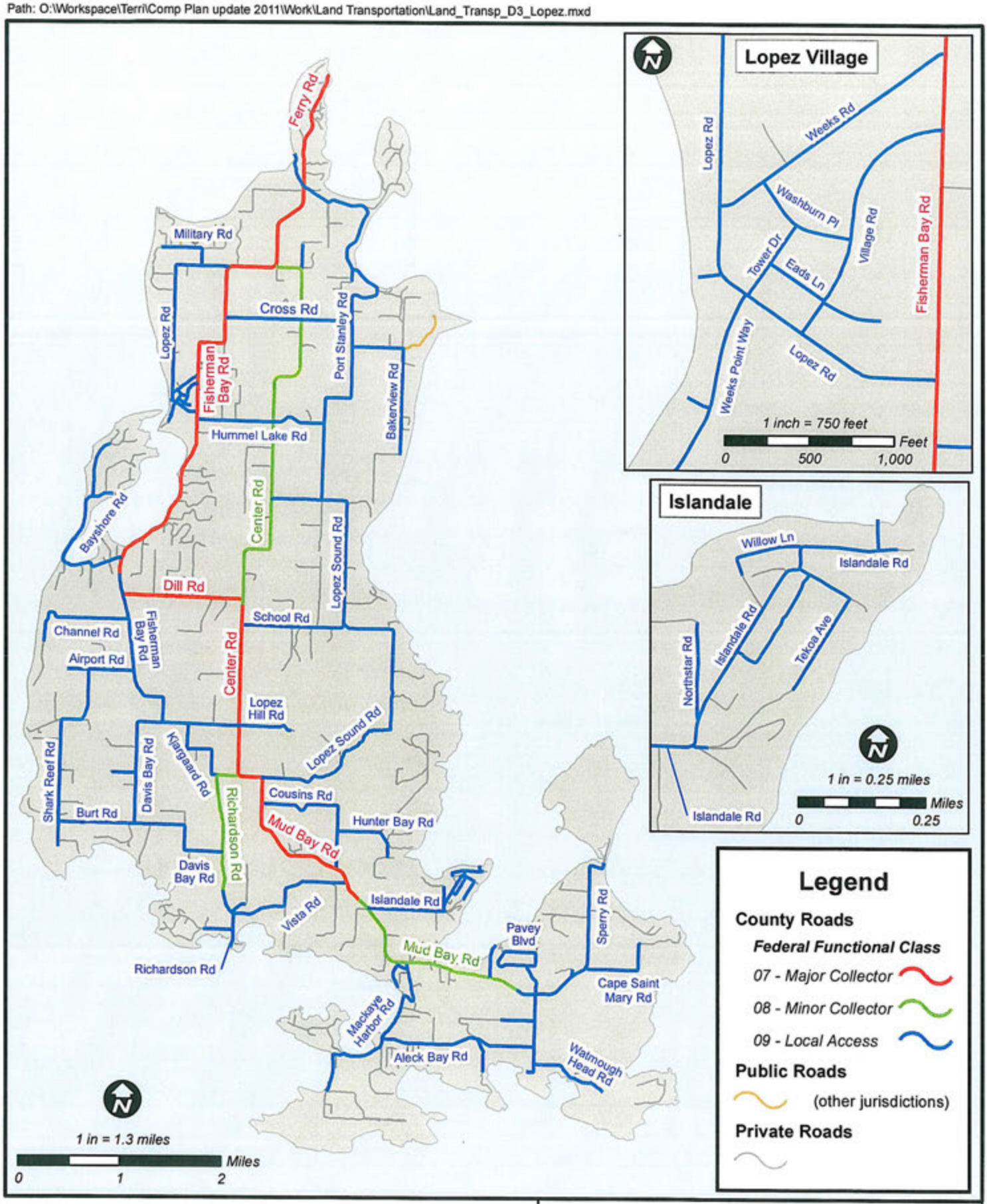

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Roads - District3
Lopez Island

San Juan County, Washington

Figure 8

Drawn By: TC

Date: June 2011

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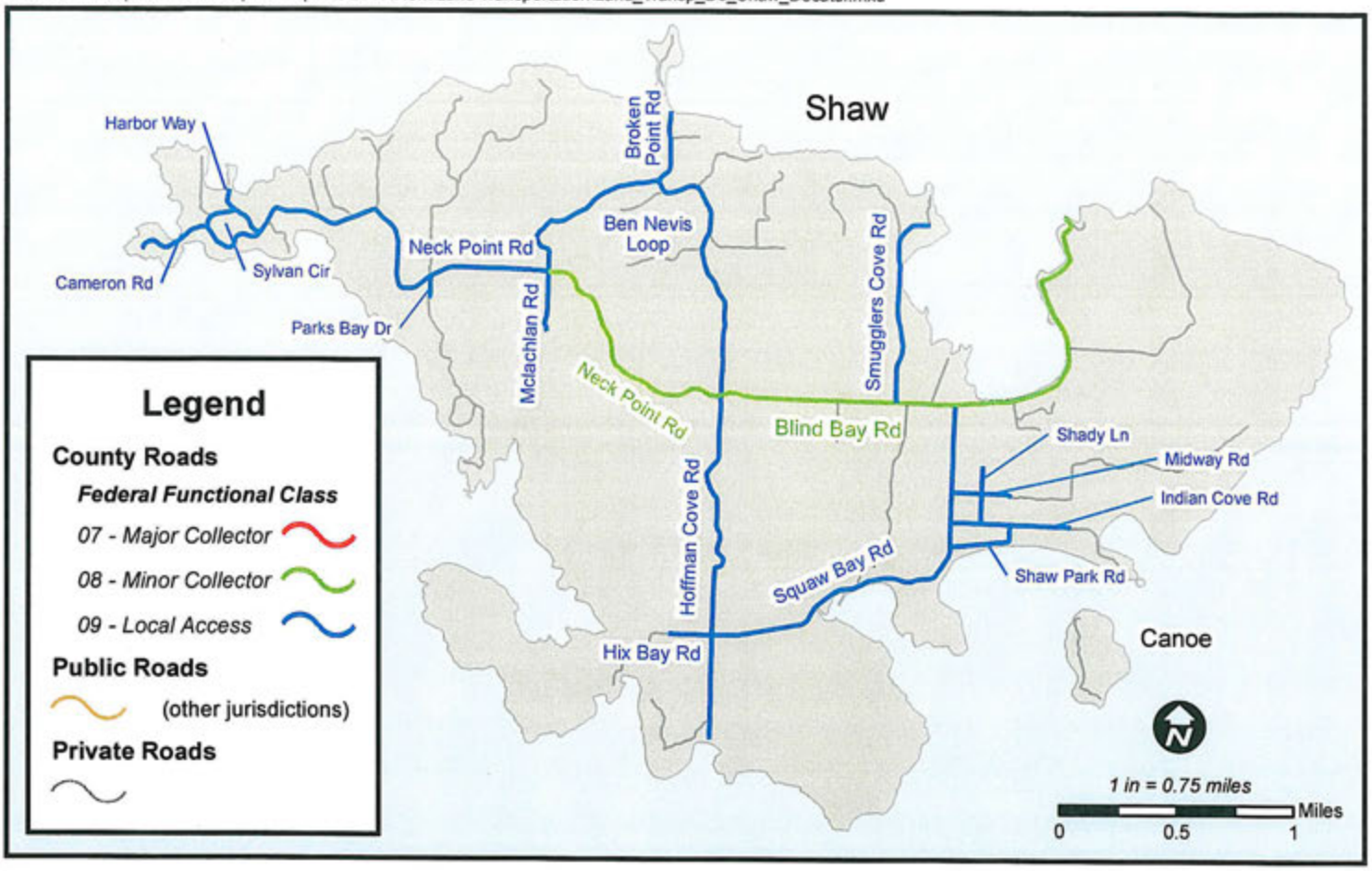

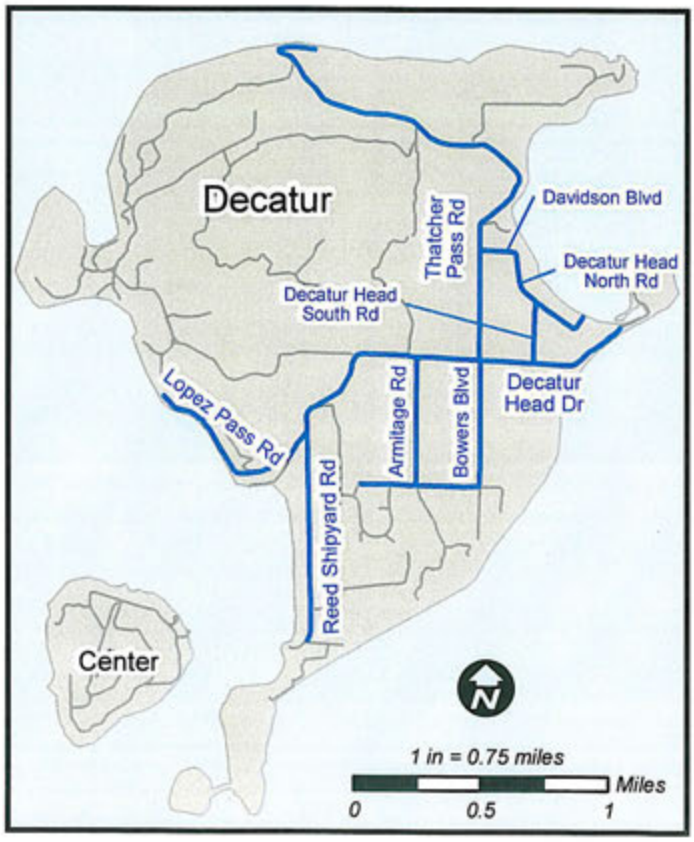

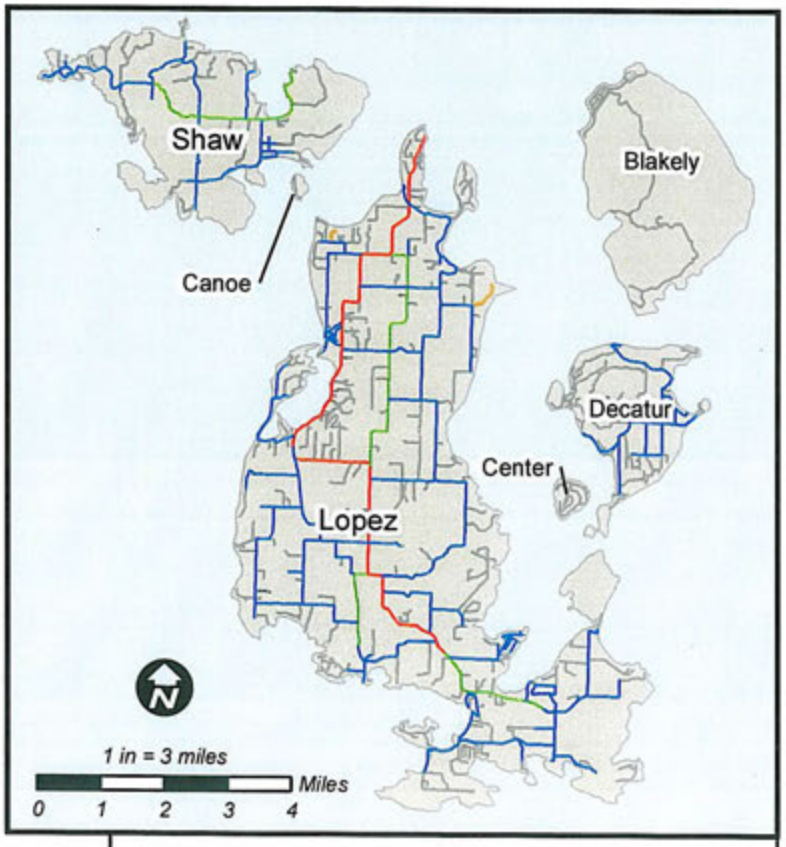

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Roads - District 3
Shaw & Decatur Islands

San Juan County, Washington

Figure 9

Drawn By: TC

Date: June 2011

Table 9. County Collector Roads AADT LOS Standards[1]

Terrain	LOS A/B	LOS C	LOS D[2]	LOS E	LOS F[3]
Rolling **Level**	< 1,360 < 2,000	1,360 -2,790 2,000 -3,500	2,790 -4,380 3,500 -6,170	4,380 -11,670 6,170 -14,000	> 11,670 > 14,000

Source: *Transpo Group, 2011*

Notes:

1. *Proposed Standards from the HCM 2000*
2. *LOS D is San Juan County's adopted LOS standard for County collector roadways, per County Code 18.60.200.*
3. *The roadway capacity used to establish the LOS F threshold assumed the following: 10-foot travel lanes, no shoulders, 60/40 directional split, 10-percent trucks, 4-percent recreational vehicles, K-factor of 0.10 to convert peak hour capacity to a daily volume capacity.*

Existing and forecast average daily roadway volumes and level of service were calculated for County collector roadways using average annual daily traffic (AADT) counts. AADT is the typical description for the two-way traffic count for a roadway in a 24-hour period. A factor is applied to the AADT to adjust for seasonal variation. The 2021 forecasted volumes were developed by applying a forecast blended growth rates across all islands. The current and projected traffic counts and LOS on San Juan Island are shown in Table 10 and demonstrate that all San Juan Island collector roadways meet the County's standard of LOS D or better. Only one roadway segment operates at LOS D in 2010 and three segments in 2021.

Table 10. San Juan Island - County Roads LOS

County Road #	Mile Post	Road Name	Terrain	2010 or *2012*[1]		2021[2]	
				AADT	LOS	AADT	LOS
Major Collectors							
7	0.46	Argyle Rd	Rolling	*2,073*	A/B/C	2,507	A/B/C
18	0.65	Mullis Rd	Level	2,691	A/B/C	3,035	A/B/C
18	0.75	Cattle Point Rd	Level	*3,160*	A/B/C	3,733	D
3	0.83	Roche Harbor Rd	Level	4,014	D	4,527	D
7	0.92	Argyle Road	Flat	1,416	A/B/C	1,597	A/B/C
1	1.00	San Juan Valley Rd	Level	*2,651*	A/B/C	3,117	A/B/C
2	1.05	Beaverton Valley Rd	Rolling	*2,648*	A/B/C	1,889	A/B/C
18	1.95	Cattle Point Rd	Level	*2,327*	A/B/C	2,854	A/B/C
18	2.61	Cattle Point Rd	Rolling	1,923	A/B/C	2,169	A/B/C
2	3.52	Beaverton Valley Rd	Rolling	1,265	A/B/C	1,427	A/B/C
18	3.87	Cattle Point Rd	Rolling	1,163	A/B/C	1,311	A/B/C
2	4.75	West Valley Rd	Rolling	*1,612*	A/B/C	1,677	A/B/C
18	5.22	Cattle Point Rd	Rolling	947	A/B/C	1,068	A/B/C
18	5.75	Cattle Point Rd	Rolling	698	A/B/C	787	A/B/C
18	6.82	Cattle Point Rd	Rolling	600	A/B/C	676	A/B/C
2	6.91	West Valley Rd	Rolling	813	A/B/C	917	A/B/C
2	9.60	West Valley Rd	Rolling	834	A/B/C	940	A/B/C
2	9.72	Roche Harbor Rd	Level	*1,295*	A/B/C	1,262	A/B/C
2	10.82	Roche Harbor Rd	Rolling	*1,058*	A/B/C	1,135	A/B/C
Minor Collectors							
1	2.15	Douglas Rd	Rolling	*1,538*	A/B/C	1,742	A/B/C
3	2.15	Roche Harbor Rd	Rolling	2,840	D	3,203	D
1	3.52	Bailer Hill Rd	Rolling	1,108	A/B/C	1,250	A/B/C
3	5.00	Roche Harbor Rd	Rolling	*1,905*	A/B/C	2,166	A/B/C
1	6.23	Bailer Hill Rd	Rolling	*814*	A/B/C	883	A/B/C
3	6.53	Roche Harbor Rd	Rolling	2,087	A/B/C	2,354	A/B/C
3	7.63	Roche Harbor Rd	Level	1,720	A/B/C	1,940	A/B/C
1	14.67	Mitchell Bay Rd	Rolling	*841*	A/B/C	924	A/B/C

[1] *San Juan County Public Works*
[2] *Transpo Group, 2011*

As shown in Table 11, all Orcas Island collector roadways meet the County's standard of LOS D or better. Only one roadway segment operates at LOS D in 2010 and three segments in 2021.

Table 11. Orcas Island - County Roads LOS

County Road #	Mile Post	Road Name	Terrain	2010 or *2012*[1]		2021[2]	
				AADT	LOS	AADT	LOS
Major Collectors							
57	0.03	Terrill Beach Rd	Rolling	*1,382*	A/B/C	1,525	A/B/C
52	0.08	Lovers Ln	Rolling	2,127	A/B/C	2,617	A/B/C
58	0.10	Mount Baker Rd	Level	*1,428*	A/B/C	1,875	A/B/C
52	0.46	Lovers Ln	Rolling	1,979	A/B/C	2,434	A/B/C
57	0.68	Terrill Beach Rd	Level	632	A/B/C	778	A/B/C
4	0.75	Orcas Rd	Rolling	*1,993*	A/B/C	2,338	A/B/C
58	0.79	Mount Baker Rd	Rolling	*1,829*	A/B/C	1,924	A/B/C
58	1.17	Mount Baker Rd	Rolling	*2,283*	A/B/C	2,843	D
4	3.92	Orcas Rd	Level	*2,167*	A/B/C	2,361	A/B/C
4	6.93	Orcas Rd	Rolling	*3,116*	A/B/C	3,261	D
4	7.00	Orcas Rd	Level	*3,514*	D	4,650	D
4	9.45	Olga Rd	Rolling	*2,674*	A/B/C	2,875	D
4	11.50	Olga Rd	Rolling	*2,325*	A/B/C	2,554	A/B/C
Minor Collectors							
45	0.10	Deer Harbor Rd	Rolling	*572*	A/B/C	1,261	A/B/C
63	0.10	Point Lawrence Rd	Rolling	*939*	A/B/C	1,209	A/B/C
51	0.16	Crow Valley Rd	Rolling	745	A/B/C	916	A/B/C
63	0.56	Point Lawrence Rd	Rolling	540	A/B/C	664	A/B/C
45	1.00	Deer Harbor Rd	Rolling	1,060	A/B/C	1,304	A/B/C
51	1.90	Crow Valley Rd	Rolling	*931*	A/B/C	1,198	A/B/C
63	3.31	Point Lawrence Rd	Rolling	252	A/B/C	310	A/B/C
51	3.59	Crow Valley Rd	Rolling	*1,488*	A/B/C	1,807	A/B/C
45	3.80	Deer Harbor Rd	Rolling	942	A/B/C	1,159	A/B/C
45	4.36	Deer Harbor Rd	Rolling	881	A/B/C	1,084	A/B/C
4	14.36	Olga Rd	Rolling	*1,086*	A/B/C	1,388	A/B/C
4	15.94	Olga Rd	Rolling	253	A/B/C	312	A/B/C

[1] *San Juan County Public Works*
[2] *Transpo Group, 2011*

As shown in Table 12, all Lopez and Shaw Island collector roadways meet the County's standard of LOS D or better in both 2010 and 2021.

Table 12. Lopez and Shaw Islands - County Roads LOS

County Road #	Mile Post	Road Name	Terrain	2010 or *2012*[1]		2021[2]	
				AADT	LOS	AADT	LOS
Major Collectors (all on Lopez Island)							
108	0.10	Dill Rd	Level	*674*	A/B/C	664	A/B/C
114	0.10	Mud Bay Rd	Level	*1,114*	A/B/C	1,181	A/B/C
5	0.16	Ferry Rd	Level	633	A/B/C	654	A/B/C
103	0.40	Fisherman Bay Rd	Level	689	A/B/C	712	A/B/C
114	0.55	Mud Bay Rd	Rolling	906	A/B/C	937	A/B/C
103	1.75	Fisherman Bay Rd	Level	*1,141*	A/B/C	1,149	A/B/C
5	1.98	Ferry Rd	Level	*1,128*	A/B/C	1,144	A/B/C
103	2.26	Fisherman Bay Rd	Level	1,689	A/B/C	1,746	A/B/C
114	2.30	Mud Bay Rd	Level	857	A/B/C	886	A/B/C
103	3.00	Fisherman Bay Rd	Level	2,186	A/B/C	2,259	A/B/C
103	3.76	Fisherman Bay Rd	Level	1,300	A/B/C	1,343	A/B/C
103	4.00	Fisherman Bay Rd	Rolling	*1,288*	A/B/C	1,348	A/B/C
5	6.17	Center Rd	Level	1,661	A/B/C	1,717	A/B/C
5	7.12	Center Rd	Rolling	*1,277*	A/B/C	1,369	A/B/C
Minor Collectors – Lopez							
5	2.24	Center Rd	Level	446	A/B/C	461	A/B/C
114	2.94	Mud Bay Rd	Level	508	A/B/C	525	A/B/C
5	3.30	Center Rd	Level	*619*	A/B/C	535	A/B/C
5	4.85	Center Rd	Level	*1,327*	A/B/C	1,123	A/B/C
5	8.10	Richardson Rd	Level	269	A/B/C	278	A/B/C
5	9.20	Richardson Rd	Rolling	259	A/B/C	267	A/B/C
Minor Collectors – Shaw							
96	1.00	Blind Bay Rd	Rolling	292	A/B/C	359	A/B/C
96	2.21	Blind Bay Rd	Rolling	207	A/B/C	234	A/B/C

[1] *San Juan County Public Works*
[2] *Transpo Group, 2011*

c. **Long-Range Planning Needs – County Roads**

Between the early 1970s to early 1990s, traffic volumes increased by about 5%/year. However, growth rates on county collector roadways more recently have slowed and

forecasted growth is project to be between 0.3% and 1.9%, depending on the island. These figures are based on 2010 Census figures and the Office of Financial Management projections. This decline is attributed to factors such as the aging County population which tends to drive less, decrease in ferry traffic and inconsistent data collection locations. In most locations, maintenance and gradual upgrading to meet State and County standards are expected to provide adequate capacity and traffic safety to meet anticipated increases in traffic volumes.

Safety for all forms of transportation remains a long term goal for the County. An analysis of accident data from 2001 through mid-2011 was recently conducted. The majority of injury and/or fatal crashes in San Juan County involve a single vehicle (83%). Of the crashes that are classified as road departure accidents, 65% involve collision with a fixed object, such as trees, ditches or earth/rock banks. And 60% of the crashes occurred at a horizontal curve. These crash volumes may be partly attributed to narrow road surfaces, poor or no road shoulders, presence of objects like trees and fences in road right-of-way, and curvy roads. But while these may contribute to local vehicular crashes, they are also elements of scenic, rural character enjoyed by travelers on many island roads. One of the long term planning goals of the County will be to balance the need for increased safety along roadways with recognizing the need to maintain the scenic characteristics.

2. Bridges

a. Inventory of Existing Facilities and Services

San Juan County Public Works Department maintains four bridges on Orcas Island. There are no County bridges on the other islands.

***Deer Harbor Bridge (Bridge No. 2146A)*:** Constructed in late 1970 and early 1971, this bridge is located at milepost 0.22 on Channel Road. It crosses a salt water estuary that is nearly dry at low tide. The bridge is a three-span timber bridge with an overall length of fifty-one feet. The bridge originally had a laminated timber deck which was replaced earlier and again in 2009 with a new timber plank deck. The bridge has thirteen lines of timber stringers supported by transverse timber pile bents, consisting of a timber cap and four 12-inch diameter treated timber piles per bent. During removal and replacement of the decking in 2009, there was no evidence of "Vee" rot in the top of the original stringers. In 2009, the pile caps were reinforced with steel channel sections (C12x20.7) and new timber pile bent bracing. The piles are checked for soundness when the bridge is inspected every two years. The bridge is classified as Functionally Obsolete (FO), because of the narrowness of the bridge. Repair and replacement of the north timber backwall was completed earlier. This required removing and replacing the northerly approach fill.

Moran State Park Bridge (Bridge No. 9227A): Located at milepost 14.35 on Orcas Road, this one-lane earth-filled concrete arch bridge was constructed in 1921 by Robert Moran. The bridge is founded on bedrock, spans Cascade Creek in Moran State Park, and is adequate for current loads. The bridge is not scour critical. In the past, the

concrete bridge rails and overhead concrete portal have sustained damage from over-height vehicles. The bridge is inspected every two years by Washington State Department of Transportation (WSDOT) bridge inspectors. The bridge is classified as Functionally Obsolete (FO), because of the narrowness of the bridge and the angle of the road approaches. There is an oversize restriction on the bridge because the bridge is narrow and on a curve; extra wide or long vehicles, such as mobile homes, may strike the supports or the sides of the bridge. In spring 2005, the overhead portal was repaired by Washington State Department of Transportation (WSDOT) maintenance personnel because of a "high-load" hit in September 2004. In the 1990's, the County received grant funding to replace the bridge, but public opinion from residents forced the County to abandon plans for replacing the bridge. Replacement of the bridge will be challenging because of right-of-way issues and agency-wide competition for bridge replacement funds through the Federal/WSDOT BRAC program. A yield sign has been installed on the northbound lane and the Public Works department continues to monitor traffic safety.

West Sound Bridge (Bridge No. 9247A): Located at milepost 0.72 on Deer Harbor Road, this bridge was rebuilt in 2001 by adding new precast pre-stressed concrete deck slabs, two reinforced cast-in-place concrete pile caps supported on four 10-inch diameter piling behind the original "U-shaped" concrete retaining walls, and new timber posts and railing. The original retaining walls are cracked and deteriorating because of age and tidal action. The bridge crosses a small saltwater estuary at West Sound

Pt. Lawrence Road Bridge at Buck Bay: Completed in the fall of 2011, this 43-foot span pre-stressed concrete bridge spans Cascade Creek at Buck Bay at milepost 0.3 on Pt. Lawrence Road on the southeast side of Orcas Island, just east of the community of Olga. The bridge replaced two culverts, which were insufficient to pass flood water, and led to overtopping the road. The bridge consists of a reinforced cast-in-place concrete deck on top of seven 24-inch deep pre-stressed precast concrete channel beams. The abutments are cast-in-place concrete cap beams supported on eight 14-inch diameter steel piling per abutment. An 18-foot wide channel was created in place of 30-inch and 18-inch culverts. Salmon Recovery Board funds and County Road Funds were used to fund the design and construction.

b. **Long-Range Planning Needs**

Deer Harbor Bridge: The County has been working with environmental groups to assess the environmental impacts of the existing structure. A federal grant was secured in 2012 to replace the existing bridge with a wider span which will allow for recovery of the estuary habitat. Design will begin in 2013 with construction estimated to take place in 2015/16. In the meantime, the approaches have been posted to limit trucks to a single lane on the bridge.

Moran State Park Bridge: The bridge structure is adequate, but the narrow roadway may require a new bridge within the next 15 years.

Westsound Bridge: The bridge was replaced in 2001 with new decking and new structural support system. The existing concrete retaining walls were left in place, but no longer provide structural support for the bridge. Grant funds are being sought for a replacement structure that will also allow fish passage.

3. Non-Motorized Transportation

Non-motorized transportation is primarily classified as trails, whether they are for pedestrians, bicycles or equestrians. The term 'trail' can be classified within three different categories: road right-of-way trails, rustic trails or bike trails. Within the County, there are three agencies that develop and support trails: Public Works, Parks and the Land Bank. There are organized trail groups located on each of the three main islands: San Juan Trails, Orcas Pathways and Lopez Community Trails Network. Each group is active in identifying potential trail locations, coordinating with the appropriate agencies and volunteers and developing trail facilities.

A *Non-Motorized Transportation Plan* was developed by the County in 2005 (2005 Plan). By adopting this plan, the County Council formally expressed their commitment to supporting the development of non-motorized transportation. Since that time, the 2010 *Trails, Parks and Natural Areas Plan* was developed. This plan expands on the initial work in the 2005 Plan by providing an updated inventory of the existing trail system, as well as developing current goals and strategies to meet community trail needs based on an extensive public outreach process.

a. Inventory of Existing Facilities and Services

Table 13 tabulates the various types of existing county trails on the islands and Figure 10 shows the approximate location of the trails and bike pullouts.

Road Right-of-Way Trails: Road right-of-way trails are located within the public road right-of-way. Trail surfaces within urban growth areas are typically concrete; all others may be concrete, stabilized gravel or native material, depending on adjacent roadway traffic volumes. Trail widths vary from 4 to 5 feet and shall be ADA compliant when possible.

Rustic Trails: Rustic trails are soft-surface trails appropriate for pedestrians, equestrians, or off-road bicycle use that provide connections through or between neighborhoods or within natural areas or parks. Depending on use, location and underlying conditions, the surface material may be native soil, forest duff, wood chips or crushed rock and width ranges from 1-1/2 feet to 4 feet.

Bike Trails: A bike trail is a paved trail designated for preferential bicycle use and identified by signage and/or pavement marking. Bike trails are established along road corridors with current or anticipated bicycle demand and along corridors where it would be risky for bicyclists to ride in the travel lane. Bike trails are different than right-of-way or rustic trails in that their principal focus is on safe and efficient transportation. Typical bike trail users include bicycle commuters, fitness enthusiasts and competitive athletes;

their emphasis is on speed, which can create conflicts with recreation-type trails and their respective user groups.

Per the Washington State Department of Transportation (WSDOT) 2010 Design Manual, the minimum width for bike lanes (trails) is 4 feet when no curb is present, such as a rural road. When a curb or guardrail is present, then the minimum width is increased to 5 feet. Additional width is desired when vehicle operating speeds exceed 40 mph.

San Juan County's road design standards include shoulder widths of 4 feet. WSDOT considers 4 feet to be adequate for dual use as bike lanes. There are currently no separated road bike trails within the County.

Table 13. Pedestrian Trails Inventory

Facility Name	Classification	Island	Length (mi)
Argyle Rd Path	Right-of-way trail	San Juan	0.2
Cattle Point DNR 8	Right-of-way trail	San Juan	0.2
Golf Course Rd Trail (aka Minnie Mae Trail)	Right-of-way trail	San Juan	0.3
Lime Kiln Land Bank	Right-of-way trail	San Juan	1.6
Lime Kiln LB – Brinks Tr.	Right-of-way trail	San Juan	0.1
San Juan County Park	Right-of-way trail	San Juan	0.3
Deer Harbor Loop Trail	Right-of-way trail	Orcas	0.6
Eastsound Trails	Right-of-way trail	Orcas	0.7
Enchanted Forest Rd Trail	Right-of-way trail	Orcas	0.3
Mt. Baker	Right-of-way trail	Orcas	0.9
North Beach Rd Trail	Right-of-way trail	Orcas	1.0
Fisherman Bay Rd	Right-of-way trail	Lopez	0.5
Lopez Rd Trail	Right-of-way trail	Lopez	0.5
Village Rd Trail	Right-of-way trail	Lopez	0.04
Weeks Rd	Right-of-way trail	Lopez	0.3
		Subtotal	***7.54***
Cattle Pt Rd Rustic Trail	Rustic Trail	San Juan	1.3
Eagle Cove Trail	Rustic Trail	San Juan	0.1
Reuben Tarte Park	Rustic Trail	San Juan	0.1
Swale Trail	Rustic Trail	Orcas	0.2
Port Stanley Rd Trail	Rustic Trail	Lopez	0.25
		Subtotal	***1.95***
		Total Mileage	**9.49**

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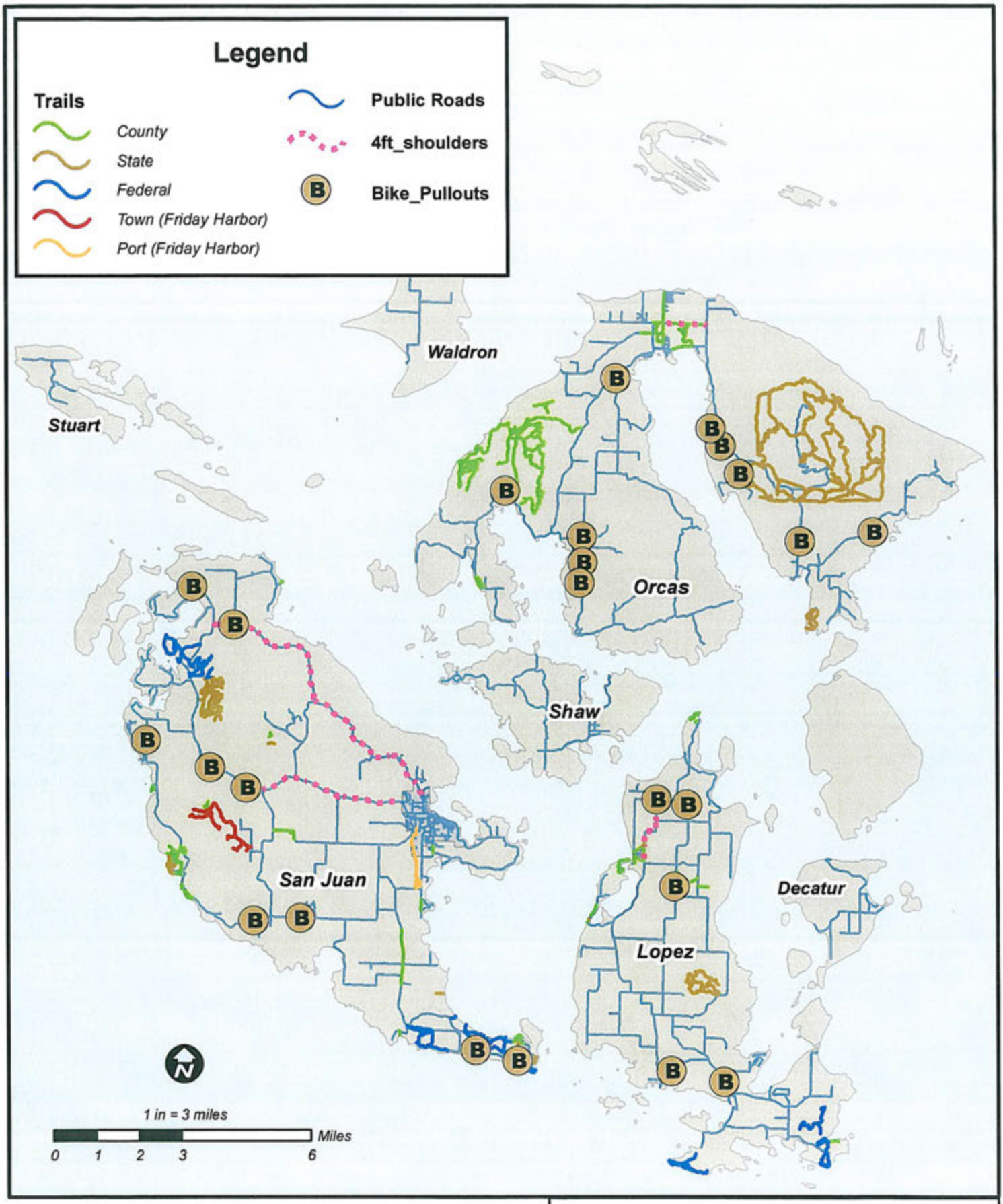

This map is a graphic representation derived from San Juan County's Geographic Information System. It is designed and intended for reference only, and is not guaranteed to survey accuracy. Information represented in this map is subject to change without notice.

Non-Motorized Transportation

San Juan County, Washington

Figure 10

Drawn By: TC

1/4/2013

b. **Long-Range Planning Needs**

Based on the extensive public outreach effort in 2010 during the development of the County's *Parks, Trails and Natural Areas Plan*, trails were determined to be a top priority on nearly all of the ferry-served islands. Each of the island trail groups has identified priority corridors for future trail development. Priority corridors travel along major thoroughfares, accommodating alternative modes of transportation, as well as between popular recreational areas such as on the west side of San Juan Island. The goal of many of these corridors is to promote non-motorized transportation, provide safer conditions for biking and walking, and improve connectivity between popular sites.

Results from the Plan established the following priorities for trails: 1) along the right-of-way based on road reconstruction projects, user traffic funding and local trail group priorities; 2) within parks and natural areas based on demand, site feasibility and level of existing access, 3) accommodate multiple user groups, as appropriate, and 4) facilitate connectivity within the trail network.

4. Human Services Transportation Plan

In 2010, a *Coordinated Human Services Transportation Plan* (HSTP) was completed for San Juan County. The purpose of the plan was to: (a) create a local assessment that identified the varied transportation services available for individuals with lower incomes, seniors and persons with disabilities; (b) identify gaps in accessing services and community, and (c) develop and recommend strategies to meet those needs.

In general, San Juan County contains a larger percentage of people aged 65 or over than in Washington State. However, a slightly less percentage of people with disabilities or in poverty reside in the islands based on 2000 Census and updates, and the State Office of Financial Management data.

Transportation can be challenging for individuals without access to a personal vehicle. Unique strategies are employed on each island to assist residents to getting to services on the island or on the mainland.

Most community activities are located in the Town of Friday Harbor, Lopez Village or Eastsound, while the majority of people needing access live in a widely scattered pattern across each of the islands. In addition, many residents must travel to the mainland for work, medical appointments and for access to some government program offices.

In developing the HSTP, input was sought from the public utilizing a number of different venues, including surveys, personal interviews and public workshops. The top priorities for unmet transportation needs among individuals with lower incomes, seniors and persons with disabilities were identified.

With the data collected, San Juan County was successful in securing three grants to begin meeting the primary three identified transportation needs:

1. An on-demand accessible taxi service with voucher program for eligible individuals,
2. Capital assistance to replace three aging Senior Services vans, and

3. Funding for a Mobility Manager to coordinate services for more efficient use of available public and private resources.

In 2012, a Mobility Manager was hired, the successful Transportation Voucher Program (TVP) was launched, and two out of three Senior Service vehicles were acquired and put into service. 2013 will see the remaining vehicle replaced and TVP closed out, having provided increased community access to over 135 San Juan County community members. In 2013, San Juan County applied for continued funding to continue the TVP, as well as study the role of public transportation in San Juan County's future.

D. Demand Management Transportation Options

The availability of other modes of transportation to provide services and provide management benefits is limited. Public transit is available on the mainland to transport people to the ferry in Anacortes. Otherwise on-island transportation options are primarily privately owned. Figure 11 shows the various routes of the public and private transportation routes within San Juan County.

1. Public Transit

Skagit Transit (SKAT)*:* SKAT Provides mainland-connecting service from the ferries through Route 410 that stops at the Anacortes ferry terminal. Accessible SKAT buses take San Juan County residents to March Point where they can transfer to the Tri-County Connector service going to the Skagit Transit Center (which hosts Greyhound Bus, Amtrak, or buses northbound to Bellingham) or south via Island Transit to Whidbey Island. Students attending one of the campuses of Skagit Valley College use SKAT, as do people who work in the Mt. Vernon or Burlington areas.

2. Private Transportation Services

a. **Airport Shuttle Service*:*** Shuttle bus service to SeaTac Airport is provided by one San Juan Island-based provider named Island Airporter. They provide scheduled ground service six days a week, offering both passenger and package service. San Juan County is also served by a private airport shuttle service located on the mainland. Bellair Airporter Shuttle meets the ferry at the Anacortes terminal and connects to Mt. Vernon, Bellingham, Seattle and SeaTac.

b. **Island Summer Shuttle Services*:*** San Juan Transit operates buses on a seasonal basis to transport tourists from the ferry terminal in Friday Harbor to service hubs and visitor attractions on San Juan Island. San Juan Transit offers fixed route service, stopping at locations that are of interest to visitors. It offers a limited number of local discount cards for commuters going to work through a punch card system. Several of the larger employers, such as Roche Harbor Resort, contract with San Juan Transit for their summer employees or guests. The buses generally operate between Memorial Day and Labor Day. San Juan Transit has a lift-equipped van.

Orcas Island Shuttle provided seasonal service to destinations on Orcas Island until early in 2012. Beginning in the summer of 2012, San Juan Transit expanded service to include Orcas Island as a part of the Scenic Byway Shuttle Pilot Program for 2012/2013.

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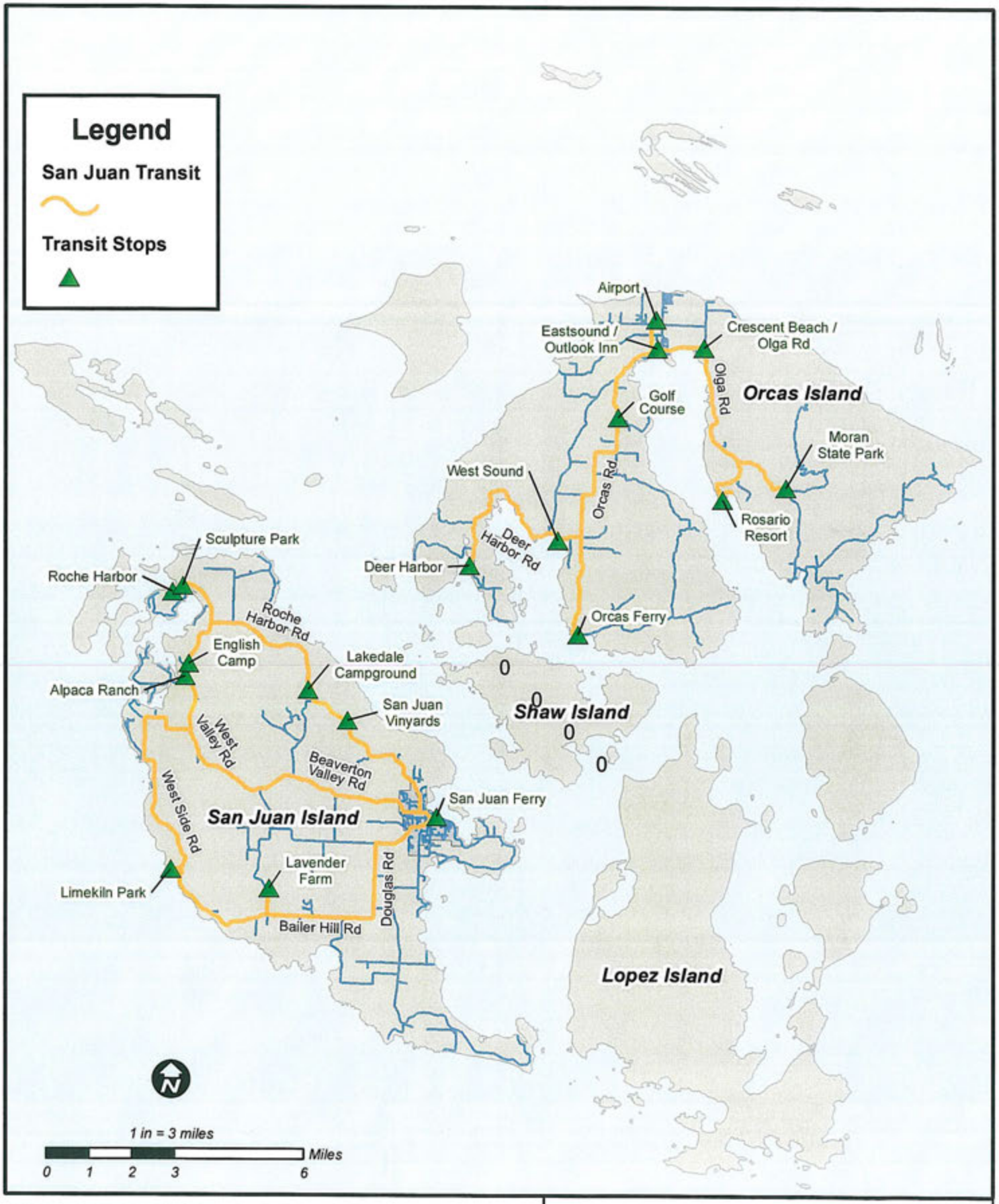

This map is a graphic representation derived from San Juan County's Geographic Information System. It is designed and intended for reference only, and is not guaranteed to survey accuracy. Information represented in this map is subject to change without notice.

Transit Services

San Juan County, Washington

Figure 11

Drawn By: TC

1/4/2013

c. **Taxi Services:** San Juan Island is the only island that has stable taxi services at present. Three out of the five licensed providers operate year round. On Orca and Lopez, taxi services have been tried sporadically but have not yet demonstrated the ability to survive long-term.

3. Other Transportation Options

a. **sjRIDESHARE***:* Islanders without cars often walk onto ferries hoping to find someone they know or a "friend of a friend" to get them to their off-island destinations. Electronic ridesharing is available to a limited extent through island-specific websites like lopezrocks.org and an Orcas-oriented Facebook site.

Along county roadways, there are a series of signs that designate ridesharing opportunities. sjRIDESHARE is the state's only sanctioned hitchhiking system and provides designated safe, accessible sites for potential riders to stand and wait for a ride. It also provides guidelines for both riders and drivers. sjRIDESHARE is in the process of developing a web-based bulletin board to connect those needing rides with those who are available to provide them.

b. **Senior Service Vans***:* The Senior Services Council is a non-profit corporation with a mission to assist seniors in remaining independent and in their own home as long as possible. They operate a fleet of vans for the primary purpose of transporting seniors and people living with disabilities to the group meals held at the senior centers on the three major islands. San Juan and Orcas program also offer periodic medical trips to the mainland and occasional social and mainland shopping outings.

E. Freight Mobility

The ability to move goods and services within the county, as well as back and forth from the mainland, is essential to the economic vitality of San Juan County. The county is unique among other areas in the state in that there are no roads that lead to San Juan County. The only way to get to and from the county is via air or water. This fact raises challenges in developing reliable methods for moving freight to and from the region.

As stated in the WSF Long-Range Plan, WSF is an essential part of the highway network in Western Washington and for communities on the San Juan Islands; WSF is the only link to the mainland for personal and commercial vehicles from ferry-served islands. Additionally, that commercial vehicle connection is essential; San Juan County communities depend on ferries as the primary means to transport goods – including basic supplies and local products – to and from the wider market.

Ferries are designed to allow "tall" vehicles, i.e. commercial trucks over 7'6" in height, to be loaded in the center of the boat. The available space is limited and during high demand periods, commercial vehicles may be delayed. WSF instituted a "preferred loading" program for commercial vehicles nearly 30 years ago. This program allowed qualifying businesses to reserve space on the ferries provided that the company met certain requirements as to frequency of travel and timely arrival at the ferry terminal. Each vehicle must travel on the

same ferry at the same time at least twice each week in order to apply for space under this program. This represented essentially the first "reservation" program and is only in effect on the San Juan Islands run. Companies not able to meet the requirements vie for available "tall" space on a first-come, first-served basis.

For those islands not served by WSF, local barges and ferries transport a limited number of people and goods between the islands. These facilities are discussed in more detail in Section I.B.5. Barges.

Another essential freight transport link is represented by the airports on the islands which provide critical support to the economic well-being of each community. The ferry-served islands have airports owned and operated by a public Port District. Other islands have airstrips and private landing strips that can be used to transport freight, as well as passengers. The airports on both San Juan and Orcas Islands are located close to the main town and village which facilitate the ability to move goods to the commercial centers. Air facilities in San Juan County provide critical mobility and connectivity for people and freight in the region.

F. Intergovernmental Coordination

To date, San Juan County has acted as its own Transportation Planning Organization with the Ports of Friday Harbor, Orcas and Lopez and the Town of Friday Harbor. Meetings on coordination of transportation issues are held on an infrequent basis, primarily when funding is available or there are common projects between entities. However, while San Juan County is geographically isolated, it is dependent on the facilities of adjacent jurisdictions to ensure effective transportation of freight and people to and from the county. Therefore, there have been discussions in the past with other counties as to the benefits of joining an existing Regional Transportation Planning Organization (RTPO) such as Skagit/Island or a Municipal Planning Organization (MPO), such as Whatcom County.

Common interests and goals with Skagit/Island RTPO primarily concern transit; the ability to coordinate transportation of the ferry in Anacortes with the Skagit Area Transit (SKAT) system to ensure that people are able to efficiently travel between Anacortes and the I-5 corridor. With the ferry schedule changing seasonally, coordination of transit schedules has been a challenge.

With the Whatcom MPO, past discussions on the viability of a passenger ferry, particularly now with the new medical facility in Friday Harbor, has been the focal point of discussions, with transit connections as an ancillary topic.

To date, there have been no formal discussions with either Skagit/Island RTPO or Whatcom MPO for a number of years. It has been acknowledged that participation in a formal setting would require additional time and resources and the tangible benefits of doing so have not been quantified.

San Juan County has been actively participating in regional informational and coordination meetings to assess the regional transportation issues and projects developing to better

position the county to respond in a cooperative manner with other agencies. The Northsound Connecting Communities Group (aka Farmhouse Gang) is a nonprofit group that gathers regional transportation providers and legislators together and facilitates discussions to foster support for regional projects. San Juan County attends the general meetings and has participated in subcommittees and presentations. San Juan County has also been regularly attending the quarterly MPO/RTPO/WSDOT Committee meetings. This attendance has allowed the county to remain current on funding opportunities and requirements, as well as stay informed on state transportation planning efforts.

II. TRANSPORTATION FINANCING (2012 – 2032)

Appendix 6 addresses transportation funding for transportation projects maintained, preserved, improved and constructed by San Juan County Public Works. Transportation funding sources and financing strategies and plans for transportation projects managed by the San Juan County Parks Department are included in the *2010 Parks, Trails and Natural Areas Plan* and the Capital Facilities Plan. The *2010 Coordinated Human Services Transportation Plan* addresses transit funding and financing.

A. County Transportation Improvement Expenditures

San Juan County has been in a period of diminishing financial resources for several years and if this trend continues revenues for major transportation-related capital projects will be limited. Future expenditures on transportation-related improvements within the county will depend on the availability of local funding and, to a greater extent, the availability of state and Federal grant revenues. Planned projects are primarily targeted at safety improvements with few projects that add new capacity. Table 14 provides a summary of estimated transportation expenditures by major program type expected to be made by the county during the 2013-2032 timeframe.

Table 14. Summary of Planned Transportation Expenditures – 2013 through 2032

Estimated Expenditures	2013 -2018 ($ Thousands)	2019-2032 ($ Thousands)	Total ($ Thousands)
Operations & Maintenance	21,807	54,418	76,225
Asset Preservation Activities	8,839	23,814	32,653
Safety Related Projects	9,440	19,258	28,698
Marine Access	913	1,863	2,776
Capacity Projects	30	61	91
Non-Motorized Projects	408	832	1,240
Other Projects	2,355	4,804	7,159
Sheriff Patrol	4,101	11,699	15,800
Total	47,893	116,749	164,642

1. **Operations and Maintenance**

   In 2010, under the direction of the County Administrator, the County Public Works Department prepared a strategic budget plan for fiscal years 2011 through 2016. The strategic budget plan identified significant reductions in maintenance and operations staffing resulting in a decrease in level of service for some non-essential maintenance and engineering activities. Reductions are driven by the projected gap between level or decreasing resources and increasing future costs. Despite planned reductions in maintenance services, this category is projected to remain the largest single category of local transportation spending over the twenty-year planning period.

2. **Asset Preservation Activities**

   Asset preservation activities are non-construction project investments in existing infrastructure that add useful life to the asset, but do not add additional capacity. The primary activities anticipated over the twenty year planning period are pavement reclamations, section rehabilitations, dock pile and float replacements, and the applications of thin overlays such as seal coats or chip seals.

3. **Safety Related Projects**

   Safety related transportation improvement capital construction projects will be designed and built to correct known or potential safety issues. Typical safety issues include: (1) poor road alignment; (2) narrow roadways without adequate shoulders for safe pedestrian travel; (3) roadside hazards; and (4) installation of guardrails and other spot improvements.

4. **Marine Access**

   Marine access projects will be designed and constructed to add new capacity to existing marine highway structures such as docks and ramps, and to correct existing deficiencies with the GMA requirement for concurrency.

5. **Capacity projects**

   Capacity projects are investments in construction of new or substantially redesigned infrastructure that creates availability for more traffic. Evaluations are being conducted to determine if relief and/or capacity infrastructure is required during the planning period. Currently, traffic volumes are deemed to be acceptable on the county roads.

6. **Non-Motorized**

   The category "Non-Motorized" includes activities and projects funded by Public Works related to the safe and efficient movement of pedestrians and bicyclists. Funding opportunities will continue to be investigated to allow for the expansion of non-motorized activities and projects.

7. **Other Projects**

   This category represents a range of transportation improvements that are not safety related. Projects in this category include those that improve drainage and environmental conditions.

8. Sheriff Patrol

It is anticipated that a transfer of significant funding from the county road fund to the sheriff for traffic patrol will continue during the planning period.

Table 15 is the County's 6-Year Transportation Improvement Program (TIP) which presents a listing of the upcoming projects from planning through construction phases with identified funding sources. The County Council approves and adopts the 6-Year TIP each year.

B. County Transportation Revenues

The short to mid-range (2 to 6 year) revenue forecast calls for flat to declining revenue growth across most major sources of transportation funds. There are five primary traditional sources of revenue for the county road fund. Of these five sources only the local road levy is projected to show slight growth over the 6 year planning period. The revenue trends are summarized below:

- Local Property Tax Road Levy (RL) - Slight growth
- Motor Vehicle Fuel Excise Tax (MVFT) - Flat
- Capron Refund (CAPRON) - Flat to decreasing
- County Arterial Preservation Account (CAPP) - Flat
- State and Federal Grants - Flat to slight growth

Overall revenue growth from stable major sources of revenue for the county road fund is projected to be between 1.5% and 2.5% per year for the planning period 2013 – 2032.

1. County's Existing Sources of Transportation Revenue

San Juan County relies on a number of revenue sources (federal, state, and local) in order to design, build and operate transportation facilities and services within the unincorporated areas of the County. Descriptions of the primary revenue sources follow.

a. Property Taxes

The authority to levy property tax is codified in RCW 84.52.043 and the county road fund levy is specifically authorized in RCW 36.82.040. State law limits the annual allowable increase in the road levy to one percent. Property taxes are levied for many state and local purposes and are arranged in a complex hierarchy. The basic limits of the senior county levies are $1.80 per $1,000 assessed valuation for general government (current expense) and $2.25 per $1,000 assessed valuation for roads. The sum of the two senior county levies cannot exceed $4.05 per $1,000 assessed valuation.

The county council has traditionally increased the local road levy by one percent annually and revenue forecasts for this source are based on an annual one percent increase through the planning period 2013 – 2032.

RESOLUTION -2012 SIX YEAR TRANSPORTATION IMPROVEMENT PROGRAM (2013-2018)

Costs are in 2013 thousands of dollars. Projects shown in **BOLD** include outside (state & federal) funding. Shaded cells indicate proposed construction year for projects yet to recieve outside funding.

Item No.	LOC	PROJECT	6-Yr. Total	PROJECT SCHEDULE (in thousands of dollars) 13	14	15	16	17	18	grant funding	COMMENTS
		CHIPSEAL PROOGRAM		SJ	O	L	SJ	O	L		
1	SJ	**NPS Cattle Point Road Realignment (MP 7.4 - 8.5)**	$410	**$350**	$10	$50				**$212**	Need $7.2 million Federal Funding & 20% Outside Fund Match
										$69	**Pending** County REET fund 2013 allocation
2	O	**Orcas Road Improvements (MP 3.4 - 4.5)**	**$2,875**	**$450**	**$350**	**$1,788**	**$288**			**$2,588**	**Pending** $2,587,500 RATA Grant Application (90%)
3	SJ	San Juan Valley Road Reclamation (MP 0.08 - 0.5)	$250	$10	$25	$140	$75				
										$10	**Pending** County REET fund 2013 allocation
4	ALL	**Guardrail Safety Projects**	$355	**$355**						**$355**	Secured Rural Road Safety Grant Fed (100%)
5	ALL	**Sign Replacement Program**	$370	**$370**						**$370**	Secured Rural Road Safety Grant Fed (100%)
6	ALL	**Roadside Hazard Mitigation Program**	$220	**$220**						**$220**	Secured Rural Road Safety Grant Fed (100%)
7	O	West Beach Road Culvert Replacement (MP 1.21 - 1.25)	$350	$300	$50						
8	L	Odlin Float and Pile Replacement	$148				$148				
9	O	Obstruction Pass Float and Pile Replacement	$120	$120							
10	O	**Mount Baker Road Trail (MP 0.8-1.0)**	$233	**$233**						**$233**	Secured $88,000 fed + $145,000 STP funds
11	O	**Mount Baker Road Improvements (MP 0.0 - 1.1)**	$1,625	**$1,600**	$10	$5	$5	$5		**$1,900**	Secured $2,516,000 RATA (CRAB) + $500,000 STP funds
12	L	Mackaye Harbor Road Relocation at County Park (MP 1.7 - 1.9)	$230	$30	$200						
										$30	**Pending** County REET fund 2013 allocation
13	O	**Deer Harbor Bridge Replacement (BR No 2146A)**	$2,855	**$240**	**$375**	**$2,000**	**$240**			**$2,284**	**Pending** $2,855,000 WSDOT BRAC Grant Application (80%)
14	O	A Street Reconstruction	$210			$10	$200				
15	SJ	Rouleau Road Reconstruction	$180	$30	$30		$120				
										$30	**Pending** County REET fund 2013 allocation
16	O	Enchanted Forest Road Trail - East	$100				$10	$90			
17	L	Hunter Bay Dock, Float, Boat Ramp Replacement	$360		$45		$20	$295			
18	SJ	Griffin Bay Marine Access	$210		$10	$10	$40	$150			
19	O/SJ	San Juan Islands Scenic Byway: Byway Branding and Wayshowing	$10	$10						**$33**	SJIVB Secured $33,190 grant- $10,000 SJCPWD match, $13,300 other donations
20	SJ	Pear Point Road to Turn Point Road Connector	$30	$30							Need 90% Outside Funds for Design & Construction
										$10	**Pending** County REET fund 2013 allocation
21	O	**Prune Alley Complete Street**	$935	$285	**$650**					**$650**	**Pending** $650,400 WSDOT Pedestrian and Bicycle Program Grant App
22	SJ	Beaverton Valley Road Culvert Replacement (MP 4.2)	$110	$10	$100						
23		Douglas / Bailer Hill Roads Improvements (MP 3.15 - 5.95)						$100	$250		Use local funds for part and 90% Outside Funds for rest
24	ALL	GRAVEL ROAD CONVERSION	$320			$60	$160	$100	$100		
		Spruce St, Alder St, Hemlock St, Pinneo Rd, Eastman Rd		$140							
		Cape St Mary Rd, Cousins Rd			$150						
25	ALL	SHORE ACCESS	$75	$15	$15	$15	$15	$15	$15		
26	ALL	NON-MOTORIZED SAFETY IMPROVEMENTS	$75	$15	$15	$15	$15	$15	$15		
27	ALL	INTERSECTION GEOMETRY IMPROVEMENTS	$150	$30	$30	$30	$30	$30	$30		
		TOTAL FUNDS	$12,806	$4,843	$2,065	$4,123	$1,366	$800	$410		
		OUTSIDE FUNDS	$8,961	$4,036	$1,265	$3,209	$451	$0	$0		
		COUNTY ROAD FUNDS	$3,846	$807	$800	$914	$915	$800	$410		

San Juan County Public Works Department
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b. **Reimbursable Services**

San Juan County routinely provides transportation related services, such as engineering, and construction and maintenance projects to other agencies and local governments through the provisions of intergovernmental agreements. Typical clients for these services include the Town of Friday Harbor, Port Districts, Fire Districts, School Districts and County Parks. The county is reimbursed for these expenditures based on actual costs. This source of revenue is highly variable from year to year depending on the needs of the local agencies and the capacity of the county to provide needed services.

c. **Motor Vehicle Fuel Taxes (MVFT)**

The state motor vehicle fuel excise tax is collected as a tax per gallon of gasoline sold at the pump statewide and generates over 1.3 billion dollars annually. The current state "gas tax" is 37.5 cents per gallon. Counties receive a portion of the total tax based on a formula that uses population, road miles and road expenses among other factors to distribute the funds.

It should be noted that of the 37.5 cents per gallon, 14.5 cents is dedicated to capital construction projects. San Juan County receives none of the 14.5 cents because there are no state gas tax funded capital projects in the county.

Motor vehicle fuel tax revenues in San Juan County grew at a slow to moderate rate between 1980 and 2000. Since 2000, the rate of growth has slowed. Receipts from 2009 were less than 2008. This source of revenue will continue to be an important component of overall road fund revenues between 2011 and 2016, but the rate of growth is projected to remain flat.

Motor vehicle fuel tax currently accounts for about 12 percent of road fund annual revenue.

d. **State and Federal Grants**

State and federal grant funding has become an increasingly larger portion of the overall transportation improvement investment in the county. The most significant source of State transportation grants over the past 15 years has been the Rural Arterial Trust Account (RATA). The County Road Administration Board (CRAB) administers this competitive grant program for counties in Washington. San Juan County has been awarded over $4,000,000 in RATA funding over the past 10 years.

Federal grant funding has increased in recent years due to economic stimulus programs and road safety programs with increased support from the Federal Highway Administration (FHWA).

There is significant uncertainty regarding the level of funding that may be available for the long term. Conservative estimates have been used to project future revenue from these sources for the planning period.

e. **County Arterial Preservation Program**

Counties receive an annual distribution of funds through the County Road Administration Board (CRAB) through the county arterial preservation account (CAPA) for the preservation of local arterial and collector roadways. The source of the money is motor vehicle fuel tax and a distribution formula is used to allocate monies to the various counties. These funds can only be used on certain functional class roads and cannot be used on roads that are designated as local access roads. For San Juan County, which has no classified arterial roads, this means the money must be spent on major and minor collector routes.

This source of revenue accounts for a little less than 2% of annual road revenues. The CAPP revenues the county receives have been flat for the past 10 years or so. It is projected to remain flat or show slow growth during the planning period.

f. **CAPRON Refund**

The Capron refund is a special transfer payment to San Juan and Island Counties that pays the counties money from the motor vehicle fuel account in lieu of providing state highways and maintenance facilities. The CAPRON Act was originally made law in 1919 as a means to ensure equitable distribution of the State portion of Motor Vehicle Fuel Tax (MVFT) Revenues. Without the Capron Act, San Juan County would be the only county in the state to receive no local benefit from state investment in state and federal highways.

The most significant event with respect to the Capron Act was a legislative change in 2006 that significantly reduced Capron revenue to San Juan County. ESSB 6839, passed by the 2006 Washington Legislature, amends the Motor Vehicle Fuel Tax (MVFT) and License Fee refund to island counties authorized by RCW 46.68.80 (Capron Act). This amendment of the Capron Act transfers a portion of the San Juan County refund to the Washington State Ferries (WSF) operating account. ESSB 6839 resulted in the loss of significant existing and future CAPRON Act refund dollars by transferring all of the Nickel Account and all of the Transportation Partnership Account (TPA) revenues to the Washington State Ferries (WSF) Operating Account. Both the Nickel Account and the TPA revenues were to be used by the Washington State Department of Transportation (WSDOT) for a specific set of projects set forth by the state legislature in 2003 and 2005. The WSF operating account is not a specific project approved by the legislature. San Juan County is currently the only county in Washington receiving no direct benefit or local investment from the Nickel and TPA revenues. This change resulted in the loss of between one and two million dollars annually for San Juan County.

Capron refund revenues currently account for about 35% of annual road fund revenues. The projected trend for this source is flat or downward. Capron revenues have decreased every year between 2005 and 2010 and remained steady since then. The revenues fluctuate depending on levels of annual grant funding. The long range growth forecast for this important source of revenue is relatively flat.

g. **Real Estate Excise Taxes**

Real Estate Excise Taxes (REET) are collected on the sale of residential and commercial real property in Washington State. San Juan County collects both authorized one-quarter percent REET for a total of one-half percent REET for local capital projects. The 2013-2018 Six Year TIP contains pending REET fund allocations for enhancement projects.

h. **Developer Contributions**

This de-facto revenue source entails dedicated right-of-way and construction that proponents of development contribute to county road system improvements.

i. **Other Revenues**

The County receives other revenues in any given year that include private timber-harvest tax, federal forest-yield, inter-departmental service fees, interest income, and miscellaneous review fees.

The various sources of revenue described above make up the county road fund, from which funds are drawn for operations, maintenance, and capital programs as described under the prior section on county expenditures.

2. **County's Potential Sources of Transportation Revenue**

a. **Transportation Benefit Districts**

A Transportation Benefit District (TBD) is a special taxing district for transportation purposes created by cities and/or counties. It allows more than one jurisdiction to join together for the purpose of acquiring, constructing, improving, providing, and funding any city street, county road, or state highway improvement within the district. With voter approval, a TBD has the authority to levy property tax, implement a vehicle license fee and issue general obligation bonds.

b. **Transportation Impact Fees**

The County is authorized to collect impact mitigation fees based on daily vehicle trips generated by new residential and commercial developments. Fees generated from impact fees may be used to fund selected capacity improvements that are related to the impacts caused by the development. San Juan County has not adopted regulations to allow the implementation of impact fees on development.

c. **Public Transportation Benefit Areas**

RCW 36.75A allows for the creation of Public Transportation Benefit Areas (PTBA) for the express purpose of providing transit and special needs transportation services. Revenues collected under the authority of a PTBA may not be used for improvement or maintenance of public roads or highways.

d. **Local Improvement District**

Local Improvement Districts (LIDs) are special assessment districts. These districts are formed as a means of assisting benefitting properties in the financing of and payment for

needed capital improvements. LIDs are formed to permit the improvements to be financed and paid for over a period of time through assessments on the benefitting properties.

e. **Federal Programs**

FTA Urban Mass Transit (Sections 3 and 9): This program is intended for transit agencies from the federal government. Section 3 is for new rail projects, improvement of existing rail systems, and the rehabilitation of bus systems. Section 9 provides transit capital and operating assistance to urbanized areas.

FTA Urban Mass Transit (Section 16): This program is for private, nonprofit agencies from the federal government through the state. It provides capital assistance for transportation services to elderly persons and persons with disabilities.

FTA Urban Mass Transit (Section 18): Transit agencies, cities and counties in rural areas from the federal government through the state benefit from this program. It provides transit capital and operating assistance to non-urbanized areas.

Community Development/Development Block Grant (CDBG): Federal funds are made available to cities and counties for a variety of public facilities, as well as housing and economic development projects which benefit low to moderate income households.

***Land and Water Conservation Fund (LWCF)*:** This fund is available to cities, counties, and the state to provide funds for trail development. Projects must create or expand trail development.

f. **Public Works Trust Funds (PWTF)**

The PWTF is available to cities, counties, and special purpose districts from the state in the form of low interest loans for public work improvements. Agencies must be compliant with the Growth Management Act to apply for funds from this program.

3. Summary of Projected Revenues

Table 16 provides an estimate of revenues available for transportation infrastructure improvements for the planning period which are balanced against estimated expenditures for the same planning period. Some revenue sources, such as motor vehicle fuel tax, CAPRON, and real estate excise tax, are not certain for the long range period and may vary significantly from current long range estimates.

Table 16. Summary of Transportation Revenues – 2013 through 2032
(2011 Adjusted Dollars)

Revenue Category	Short-Range 2013–2018 ($ Thousands)	Long-Range 2019 – 2032 ($ Thousands)	Total ($ Thousands)
Road Property Tax	25,838	66,641	92,749
Diverted Road Property Tax	Shown in Expenditure Table 14 for Sheriff Dept.		
Reimbursable Services	170	420	590
Motor Vehicle Fuel Tax	5,290	12,320	17,610
Real Estate Excise Tax	149	Unknown	--
CAPRON	15,000	35,000	50,000
State/Federal Grants	3,701	Unknown	--
CAPP	630	1,470	2,100
Other Revenue	1,092	2,730	3,822
TOTAL REVENUE	**51,870**	**approx. 118,581**	**approx. 170,451**

4. Non-County Transportation Investments

a. Air Transportation

The Transportation Element does not include a Level of Service standard for air transportation facilities. However, the inventory does note that existing airport capacity should be sufficient to meet the projected air travel demand of the county. Air transportation facilities are provided by the port districts on San Juan, Orcas and Lopez islands. Approximately 2.31 percent of the local property tax dollar is collected by the port districts to support port operations. Most funding for airports is provided through the Federal Aviation Administration which apportions funds from the Aviation Trust Fund. Aviation trust funds are authorized to be spent through the Airport and Airway Improvement Safety and Capacity Expansion Act of 1987. The monies are allocated to airports on a priority basis.

b. Marine Transportation

With the repeal of the MVET, a major source of funding for the Washington State Ferries was lost. Now the principal source of operating revenue is from the fare-box. During the past ten years, the tariffs for travel throughout the ferry system have increased with the largest increases occurring in the San Juan Islands route. That higher percentage increase was the result of an equalization procedure that balanced the tariffs throughout the WSF system as a function of the length of the trip between ports, so that all tariffs are now proportionate. An indicator known as "fare-box recovery" now provides an approximation as to the degree that route revenues pay for the costs of service one each route. Fare-box recovery on the San Juan Islands route is estimated at 50%.

III. Public Outreach Process

A variety of techniques and resources were used to inform, consult and involve the community during the Transportation element update. Input was solicited form the general public stakeholder committees and organizations. Community comments have been obtained in writing and through interviews and public testimony. Public participation was early and continuous as many opportunities for community input were provided during different stages of product development.

In 2011, input from the community during development of the draft Transportation Element Update of the County's Comprehensive Plan was solicited in the following venues:

- Stakeholder development of text for the Inventory
- A series of County Council workshops
- Presentation to the Critical Needs Task Force – Transportation Group
- A booth at the Farmer's Market on each of the islands

In 2012, input for further updates to the Transportation Element was sought from the following organizations:

- County-wide Community Transportation Meeting
- WSF San Juan County Ferry Advisory Committee

In 2013, public outreach efforts and presentation of information intensified and the following organizations and venues were included:

- Workshops and hearings with the Planning Commission
- WSF San Juan County Ferry Advisory Committee
- San Juan Island Trails Group
- Town of Friday Harbor
- Economic Development Council
- Public Community Meetings on Lopez, Orcas and San Juan Islands
- County Council Briefings and Public Hearing

In addition, written and telephone comments were received prior to the issuance of the State Environmental Policy Act (SEPA) determination, documents were sent to the Washington Department of Commerce and the SEPA determination was publicized on the Washington State Department of Ecology's SEPA register (#201301568).

IV. References

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V. Attachments

A. Transportation Element Growth Rates

transpoGROUP
WHAT TRANSPORTATION CAN BE.

MEMORANDUM

Date:	June 16, 2011	**TG:**	11059.00
To:	Shannon Wilbur, San Juan County		
From:	Jon Pascal, Transpo Group Patrick Lynch, Transpo Group		
Subject:	Memo 1 of 3: San Juan County Transportation Element Growth Rates		

As requested, Transpo Group has reviewed available population and traffic count information to identify growth rates to be utilized in assessing the County's forecast transportation levels of service. The following memorandum summarizes the different data sources and information available and resulting growth rates.

Data Sources

Several data sources were reviewed to assist in identifying appropriate growth rates for San Juan County. The following data sources were identified:

- Washington State Office of Financial Management (OFM) 2010 Census data (by County and UGA).
- OFM April 1 Small Area Population Estimates, June 2010.
- OFM Growth Management Population Projection Tracking Report, July 2007.
- OFM Projections of the Total Resident Population for the Growth Management Act (Low and Medium).
- OFM Population Estimates & Projections, Research Brief No. 47, August 2007.
- OFM population age 65 and over as a percent of total county population - medium series: history 2000 and projections from 2010 to 2030.
- OFM County-to-County Worker Flow in Washington, 2000.
- San Juan County population and household forecasts by Island and UGA, SJC staff, April 2011.
- San Juan County AADT traffic counts, SJC staff, April 2011

Background

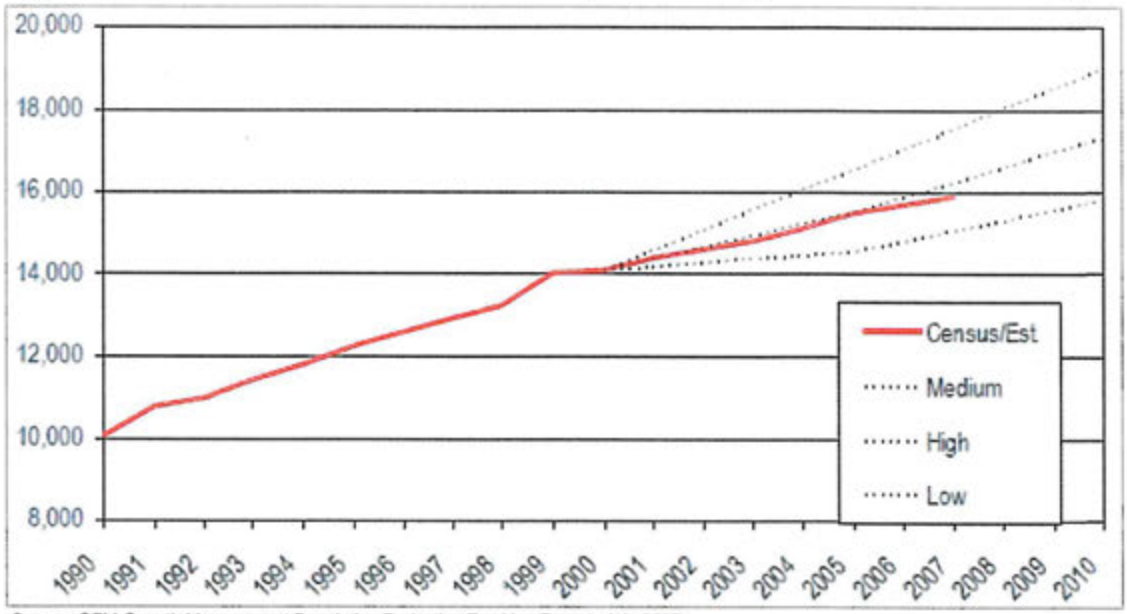
San Juan County staff initially provided existing population data by Island and Urban Growth Area (UGA) to Transpo in April 2011, however it differed somewhat from existing data obtained from the State Office of Financial Management (OFM). Subsequent conversations with County staff indicate the OFM data is likely more current than the data the County initially provided to Transpo.

The OFM data is based on existing 2010 State population data sets. OFM develops a Small Area Population estimate data set annually. For San Juan County (SJC), the data is summarized by Island and by UGA. This data is typically used to as the basis for 2010 population values for agencies throughout the state. In addition, the OFM data is separated into "estimated total housing units" and "estimated occupied housing units".

OFM Population Forecasts

In 2007, OFM produced county population forecasts for three growth scenarios (high, medium, and low) that extend out to 2030. Historical SJC population growth has been tracking with OFM's medium growth scenario, an average annual growth rate of approximately 2.0 percent per year. This data is summarized only at the county level and not available at the small area level. Figure 1 compares the OFM 2007 San Juan County population forecasts to historical population growth.

Figure 1. **OFM 2007 Historical and Forecast Population Comparison – San Juan County**



Source: OFM Growth Management Population Projection Tracking Report, July 2007

Updated San Juan County Growth Rates

SJC staff developed 2021 population forecasts for each Island and UGA. From these population forecasts, forecast growth rates were developed and applied to the OFM 2010 data to generate updated forecast population values. Historical and forecast growth rates and population by island and UGA are summarized in Table 1.

Table 1. San Juan County Existing and Forecast Population

Island	2000 to 2010 AAGR[1]	Population Growth	2010 Total Population	2010 to 2021 AAGR[1]	Population Growth	2021 Total Population
Blakely Island	2.8%	18	74	1.9%	17	90
Brown Island	-0.6%	0	12	1.6%	2	15
Center Island	5.8%	37	86	1.9%	20	106
Crane Island	1.0%	2	22	2.0%	5	27
Decatur Island	6.7%	64	135	1.9%	31	167
Henry Island	8.2%	24	44	1.7%	9	53
Johns Island	0.5%	0	5	1.7%	1	6
Lopez Island	0.8%	173	2,211	1.9%	509	2,720
O'Neal Island	0.0%	1	1	1.7%	0	2
Orcas Island	0.9%	322	3,928	1.3%	600	4,527
San Juan Island	1.2%	611	5,424	1.4%	896	6,320
Shaw Island	0.1%	2	237	1.9%	54	291
Spieden Island	0.0%	0	0	0.0%	0	0
Stuart Island	3.9%	22	69	1.9%	16	85
Waldron Island	0.9%	10	114	1.9%	26	140
Lopez - UGA	2.2%	33	172	6.1%	158	330
Eastsound - UGA	2.4%	229	1,078	3.9%	564	1,642
Friday Harbor UGA	0.8%	168	2,157	3.7%	1,060	3,217
County	**1.2%**	**7,016**	**15,769**	**2.1%**	**3,969**	**19,738**

Source: OFM 2010 Census data; OFM Small Area Forecasting Program, 2010; Transpo Group 2011
Note: San Juan, Orcas, and Lopez Islands population data reflect non-UGA areas
1. AAGR = Average Annual Growth Rate

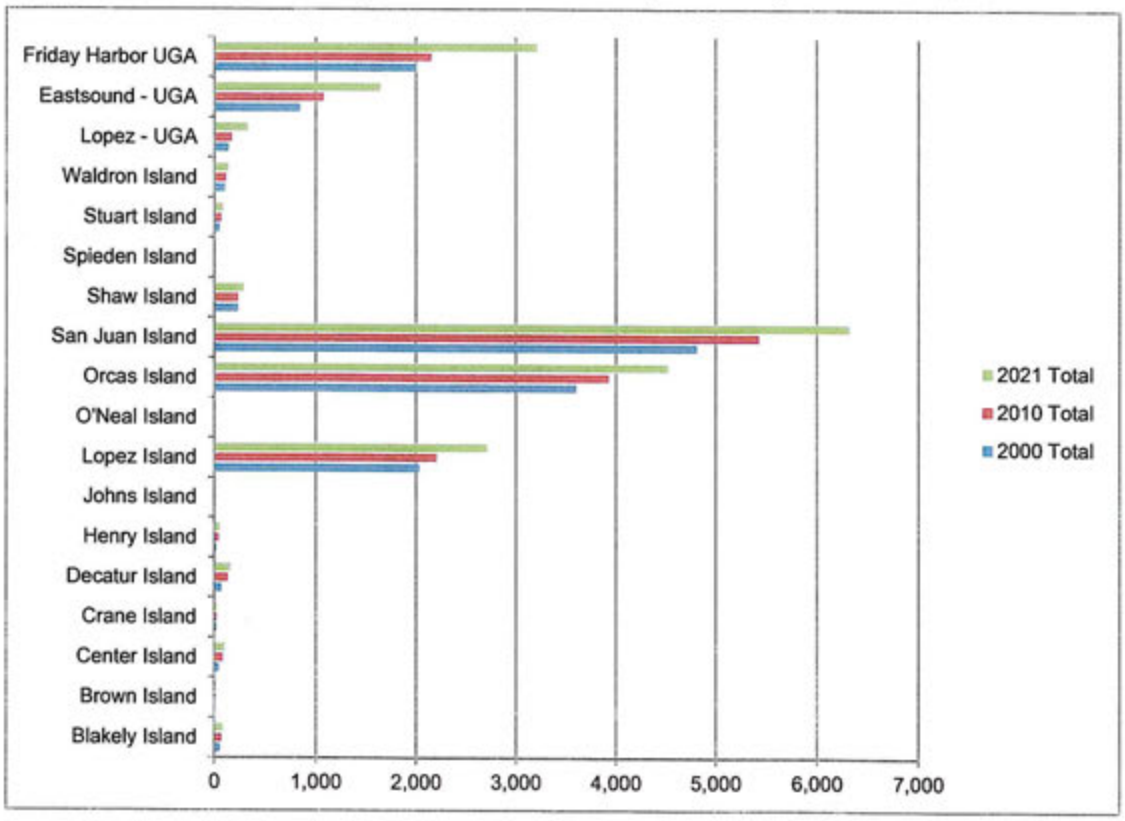
As shown in Table 1, the County as a whole is forecasted to experience a higher growth rate in the future as compared to the historical growth rate, although some individual islands are expected to experience a decrease in the growth rate. Overall, the forecast average annual growth rate for the County is 2.1 percent as compared to the historical growth rate of 1.2 percent. The County's 2.1 percent forecast average annual growth rate is consistent with OFM's medium forecast growth rate of 2.0 percent shown in Figure 1.

Comparison of Historical and Forecast Population Growth

Historical and Forecast County Population

Figure 2 shows San Juan County total population by Island and UGA for 2000, 2010, and 2021 time periods. Approximately 95 percent of the population has historically resided on San Juan, Orcas, and Lopez Islands. This population allocation is anticipated to remain consistent into the future.

Figure 2. **Historical, Existing, and Forecast Total Population by Island and UGA**



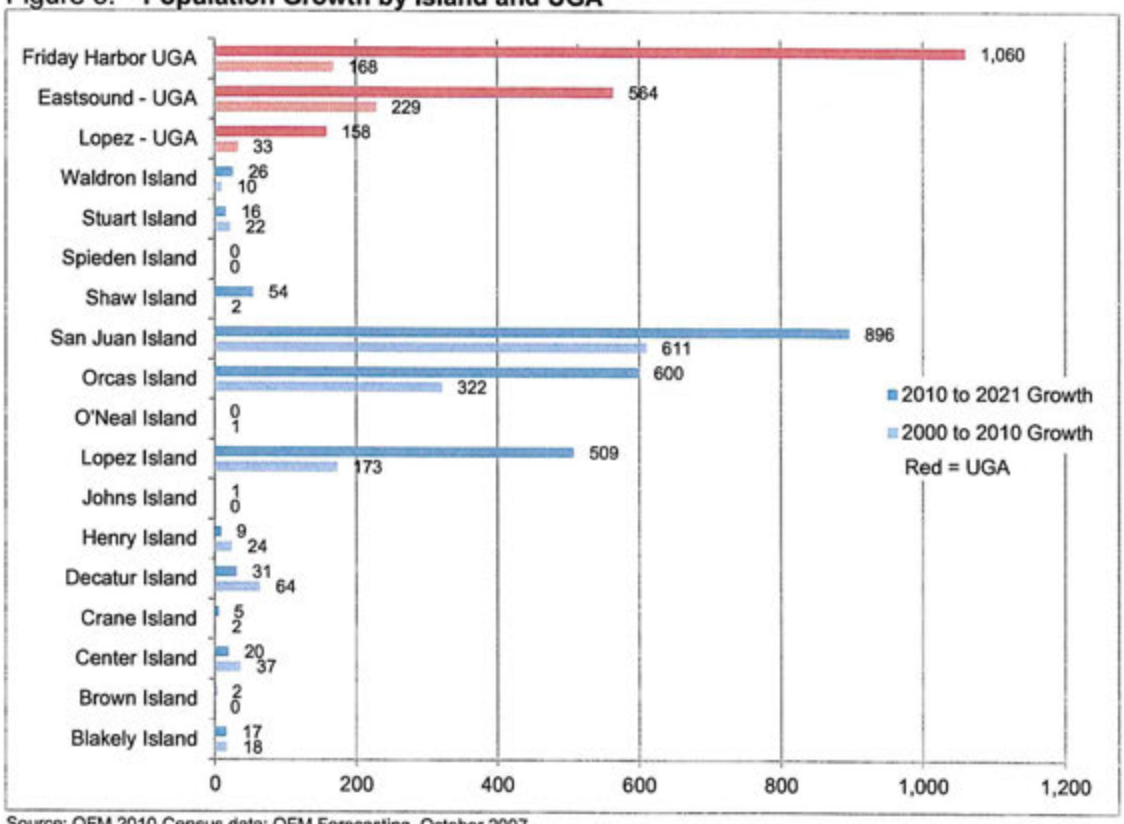
Source: OFM 2010 Census data; OFM Small Area Forecasting Program, 2010; Transpo Group, 2011
Note: San Juan, Orcas, and Lopez Islands population data reflect non-UGA areas

County Population Growth

Figure 3 shows historical and forecast population growth by Island and UGA. From the years 2000 to 2010, over 90 percent of the growth was located on San Juan, Orcas, and Lopez Islands. Of the growth on those three islands, 20 percent occurred within the UGAs. Over two-thirds of that growth occurred in Friday Harbor.

Forecast growth is expected to be more focused in the UGAs. From the years 2010 to 2021, the percent of growth located on the three islands is expected to increase to 95 percent. Of that growth, 26 percent is expected to occur within the UGAs, a 6 percent increase as compared to historical growth. Of the growth occurring in the UGAs, approximately two-thirds is expected to be located in Friday Harbor, consistent with historical growth allocation.

Figure 3. **Population Growth by Island and UGA**



Source: OFM 2010 Census data; OFM Forecasting, October 2007
Note: San Juan, Orcas, and Lopez Islands population data reflect non-UGA areas

Table 2 shows the historical (2000 to 2010) population change in San Juan County and Urban Growth Areas (UGAs) within the County.

Table 2. San Juan County Population by UGA and Unincorporated Areas

Area	Total Population	% of Total	Total Population	% of Total	% Growth	AAGR	Change % of Total
	2000		2010				
Total in UGAs	2,977	21.2%	3,407	21.6%	14.4%	1.4%	-0.4%
Total in Unincorporated/Non UGAs	11,077	78.8%	12,362	78.4%	11.6%	1.1%	0.4%
Total County	14,054	100.0%	15,769	100.0%	12.2%	1.2%	
	2010		2021				
Total in UGAs	3,407	21.6%	5,189	26.3%	52.3%	3.9%	4.7%
Total in Unincorporated/Non UGAs	12,362	78.4%	14,549	73.7%	17.7%	1.5%	-4.7%
Total County	15,769	100.0%	19,739	100.0%	25.2%	2.1%	

Source: OFM 2010 Census data; OFM Small Area Forecasting Program, 2010; Transpo Group 2011

As shown in Table 2, the distribution of population within the County did not change substantially between 2000 and 2010, with more than three-fourths of the people located in unincorporated areas in 2000 and 2010. Over the next 11 years, the share of population is expected to increase in the UGAs, from 21.6 percent to 26.3 percent, an increase of 4.7 percent.

Household Size

Household size in San Juan County has changed significantly over the past few decades. Table 3 shows the average household size for San Juan County, other neighboring counties, and the State. Between 1980 and 2010, the average persons per household (PPH) in San Juan County has steadily declined.

Table 3. Change in Household Size (# persons/household)

County	1980	1990	2000	2010
San Juan County	2.29	2.25	2.16	2.05
Island County	2.67	2.61	2.52	2.35
Skagit County	2.57	2.55	2.60	2.53
Whatcom County	2.59	2.53	2.51	2.43
Washington State	2.61	2.61	2.53	2.51

Source: OFM 2010 Census data; OFM Research Brief No. 47, August 2007

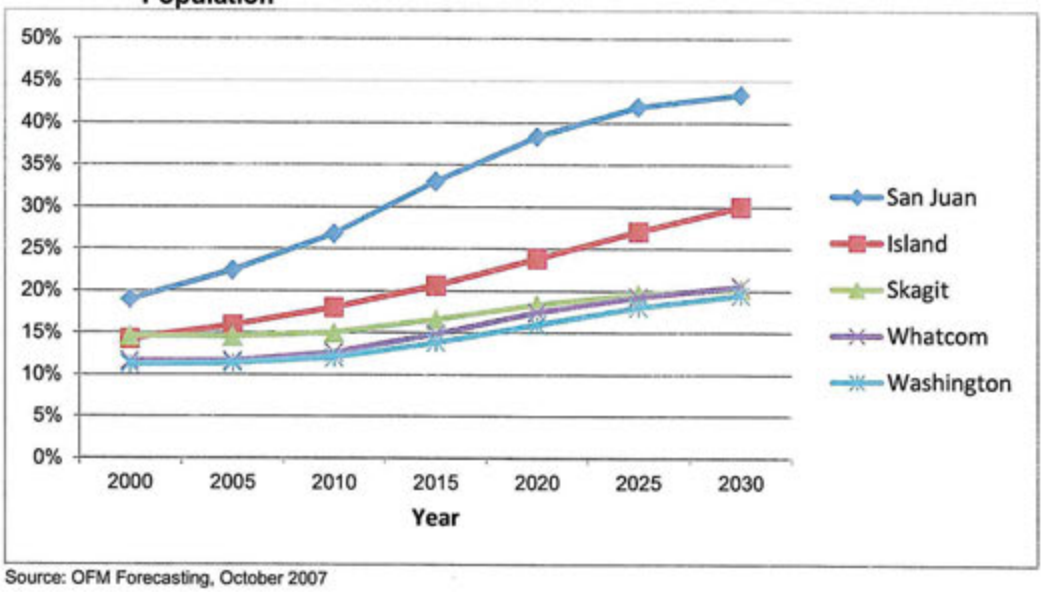
Comparing San Juan County to neighboring counties and the State as whole shows considerable variation in PPH over time. Generally speaking, counties that are experiencing decreases in PPH are generally consistent with growing retirement age populations while counties experiencing increasing PPH are generally attributed to growth in Hispanic populations.

To forecast 2021 households in San Juan County, an average person per household rate of 2.05 was applied to convert forecast population into forecast occupied housing units.

Percent of County Total Population Age 65 and Over

The total population in San Juan County that is 65 and older is continuing to increase over time, which corresponds to the declining size of households. . Figure 4 shows the percent of population age 65 and over for San Juan County, other neighboring counties, and the State.

Figure 4. **San Juan County Population Age 65 and Over as a Percent of Total County Population**



Source: OFM Forecasting, October 2007

As shown in Figure 4, San Juan County's current percent of population 65 and older is greater than its neighboring counties at 27 percent of total population in 2010. This percentage is expected to increase to approximately 38 percent in 2020 and to 43 percent by 2030. A greater percentage of total population 65 and over is significant in that many of these people are retired and not commuting to work during the weekday. It will also result in a higher reliance on transit and special needs transportation.

Annual Average Daily Traffic Volume Growth

Historical traffic counts were reviewed and growth rates calculated for County Major and Minor Collector roadways. Table 4 summarizes historical (1993 to present) average annual growth rates by Island and roadway functional classification.

Table 4. San Juan County AADT[1] Average Annual Growth Rates

Island	Major Collector	Minor Collector	All Collectors
San Juan	0.0%	1.1%	0.6%
Orcas	1.2%	1.2%	1.2%
Lopez	-1.0%	-0.4%	-0.8%
Shaw	-	-0.7%	-0.7%
Countywide	-0.1%	0.6%	0.2%

Source: San Juan County AADT, April 2011
1. Average Annual Daily Traffic

As shown in Table 4, historical growth on County Collector roadways has been very low and in some cases a negative growth rate has been observed. The negative growth rates and overall lower rates of traffic growth compared to population growth are likely due to a few factors:

- **Traffic Data Availability** - The number of AADT counts available by Island and by functional classification varied by area. In addition, the year of the last count collected also varied by location. A high variation of the most current count year and location of the count could have resulted in inconsistent data to compare against.
- **Seasonal adjustment factor** – A seasonal factor is applied to the average daily traffic count to develop a seasonally adjusted average daily traffic count. This factor varies by month and is applied based on when the counts are collected. Applying the factor across all corridors, may result in inconsistent data to compare against.
- **Trip generation** – Although the County population continues to grow as a whole, the percentage of population 65 and older continues to increase as well. This demographic tends to drive less and may result in less vehicles on the road.
- **Ferry service/tourist influence** – San Juan County traffic is highly dependent and influenced by ferry on and off-loading traffic. The frequency of ferry service and number of ferry riders has declined over the most recent four years, also likely impacting vehicle traffic on the Islands.

The traffic count data is somewhat limited by the number and location of counts by Island and roadway functional class. This combined with the County's unique trip generation characteristics, seasonal variations, and ferry service influences are significant factors that are reflected in the historical traffic growth rates.

Resulting Growth Rates

The resulting growth rates are utilized in assessing forecast levels of service for County collector roads. In addition, population and household forecasts are used to assess levels of service for the County dock and ferry parking components.

County staff provided direction and feedback on the following proposed traffic growth rate options.

Traffic Growth Rate Options

The following growth rate options were considered for developing forecast transportation levels of service.

OPTION 1: **Forecast Population Growth Rates** – Utilize forecast County population rates by Island or groups of islands as shown in Table 2.

OPTION 2: **Historical County Collector Roadway Growth Rates** – Utilize County Collector roadway growth rates as shown in Table 4.

OPTION 3: **Blended Growth Rates** – Based on the relative historical change in traffic volumes to population growth, a forecast traffic growth rate is calculated by Island.

HTG = Historical traffic growth (by Island)
HPG = Historical population growth (by Island)
FPG = Forecast population growth (by Island)

$$\text{Traffic Growth Rate} = \frac{HTG}{HPG} \times FPG$$

Final Growth Rates

A blended growth rate was used because it is reflective of both the County's population and traffic growth. Table 5 shows the resulting forecast traffic growth rates by Island using the blended growth rate method.

Table 5. San Juan County Forecast AADT Blended Growth Rates

Island	HTG[1]	HPG	FPG	Blended Growth Rate
San Juan Island	0.6%	1.1%	2.1%	1.1%
Orcas Island	1.2%	1.2%	1.9%	1.9%
Lopez Island	0.1%	0.9%	2.3%	0.3%
Shaw Island	0.1%	0.1%	1.9%	1.9%
Countywide	0.2%	1.2%	2.1%	0.4%

Source: Transpo Group 2011

1. Historical traffic growth rate of 0.1% is the default value for Lopez and Shaw Islands to account for negative historical traffic growth rate.

B. Transportation Level of Service Analysis and Recommendations

Level of Service: General Overview

The Growth Management Act requires that San Juan County regionally coordinate establishment of Level of Service (LOS) standards for locally owned arterial roads (aka county collector roads) and public transit routes (none in San Juan islands). As extension of County roads, San Juan County also establishes LOS for County docks which are considered extensions of the County road system.

The Washington State Department of Transportation Ferries division (WSF) establishes LOS standards for state-owned ferry route facilities and services that are considered highways of statewide significance. These LOS standards help the state to gauge the performance of the state transportation system and monitor performance, analyze proposed improvement strategies and facilitate coordination between local planned improvements and the state's ten-year investment program. After local consultant, LOS standards for the Washington State ferry service were established in the 2009 Washington State Ferries Long-Range Strategic Plan by WSDOT. These standards are based on projected ferry use to the year 2030. LOS standards for ferry related docks and parking have yet to be developed by WSF.

Concurrency

Transportation concurrency is required by the GMA pursuant to RCW 36.70A.070. Concurrency means that public transportation facilities or management strategies necessary to ensure that transportation facilities and services are available to serve a development in accordance with established LOS standards when a development is ready for occupancy or use. Concurrency requirements also apply to transportation facilities and services of statewide significance. WSF has determined that the Anacortes-Friday Harbor ferry route is not designated as a highway of statewide significance.

Concurrency requirements are established for county collectors and docks in San Juan County Code 18.60.200.

transpoGROUP
WHAT TRANSPORTATION CAN BE.

MEMORANDUM

Date:	June 16, 2011	**TG:**	11059.00
To:	Shannon Wilbur, San Juan County		
From:	Jon Pascal, Transpo Group Patrick Lynch, Transpo Group		
Subject:	Memo 2 of 3: San Juan County Transportation Level of Service Analysis		

This memorandum documents the transportation facility data provided by the County and the level of service analysis performed by Transpo. Based on the population and traffic growth rates summarized in *Memo 1 of 3: San Juan County Transportation Element Growth Rates*, level of service was calculated for the following transportation systems:

- County collector roadways
- County docks
- Ferry parking

The following level of service analysis results for each of the transportation systems differs somewhat from the previous level of service results summarized in the current Comprehensive Plan – Appendix 6, December 2002. This is due in part to a variety of factors, including updated data and forecasts, as well as, updated transportation system facility inventories and plans. The current Comprehensive Plan has a base year of 1993 and forecast year of 2014. The current effort updates the facilities inventory and level of service analysis to a 2010 base year and a 2021 forecast year.

County Collector Roadways

Updated County Collector Roadway Level of Service Standards

The roadway level of service (LOS) thresholds identified in San Juan County's *Transportation Element* were updated based on the planning modules of the HCS+ (Highway Capacity Software) program, which is based mainly on the Highway Capacity Manual (HCM 2000).

The same parameters used to develop the roadway LOS thresholds in the current *Transportation Element* were used to develop an updated daily roadway capacity. The *Highway Capacity Manual* defines LOS F as one hundred percent of roadway capacity. Based on this value, the remaining LOS thresholds were scaled by applying a relative percent of total capacity consistent with the County's current LOS standard. The existing and updated LOS thresholds for all LOS values are shown below in Table 1.

Table 1. County Collector Roadways AADT[5] Level of Service Standards

Terrain	LOS A/B	LOS C	LOS D[2]	LOS E	LOS F
Previous Standards (HCM 1994)					
Rolling[3]	< 1,372	1,372 -2,801	2,802 -4,399	4,400 -11,730	> 11,730
Level[4]	< 2,476	2,476 -4,343	4,344 -7,657	7,658 -17,370	> 17,370
Proposed Standards (HCM 2000)[1]					
Rolling[3]	< 1,360	1,360 -2,790	2,790 -4,380	4,380 -11,670	> 11,670
Level[4]	< 2,000	2,000 -3,500	3,500 -6,170	6,170 -14,000	> 14,000

Source: San Juan County Comprehensive Plan; Transpo Group 2011

1. The roadway capacity used to establish the LOS F threshold assumed the following: 10-foot travel lanes, no shoulders, 60/40 directional split, 10-percent trucks, 4-percent recreational vehicles, K-factor of 0.10 to convert peak hour capacity to a daily volume capacity.
2. Level of Service (LOS) D is San Juan County's adopted LOS standard for County collector roadways per County Code 18.60.200.
3. Rolling Terrain - A combination of horizontal and vertical alignments causing heavy vehicles to reduce their speed substantially below that of passenger cars but not to operate at crawl speeds for a significant amount of time.
4. Level Terrain - A combination of horizontal and vertical alignments that permits heavy vehicles to maintain approximately the same speed as passenger cars; this generally includes short grades of no more than 1 to 2 percent.
5. AADT – Two-way annual average daily traffic volumes.

As shown in Table 1 the updated LOS volume thresholds for roadways with rolling terrain are generally consistent with the existing thresholds. For County roadways with level terrain, the volume thresholds have been reduced by approximately 20 percent as compared to the existing volume threshold due to changes in the HCM 2000 methodology.

County Roadway Level of Service

Existing and forecast average daily roadway volumes and level of service were calculated for County collector roadways. San Juan County staff provided average annual daily traffic (AADT) counts. For counts that were collected in years prior to 2010, a historical traffic growth (HTG) rate for County collector roadways by Island was applied to grow the counts to a common 2010 year. The 2021 forecasted volumes were developed by applying the forecast blended growth rates by Island to the 2010 volumes as described in Memo 1 of 3.

Tables 2, 3, and 4 summarize the 2010 and 2021 AADT volumes and the resulting roadway level of service for San Juan, Orcas, Lopez, and Shaw Islands respectively.

Table 2. San Juan Island - County Collector Roads Level of Service

					2010		2021	
	County Road #	Mile Post	Road Name	Terrain[2,3]	AADT[4]	LOS[1]	AADT[4]	LOS[1]
Major Collectors	7	0.46	Argyle Road	Rolling	2,177	A/B/C	2,455	A/B/C
	18	0.65	Mullis Road	Level	2,623	A/B/C	2,958	A/B/C
	18	0.75	Cattle Point Road	Level	3,242	A/B/C	3,656	D
	3	0.83	Roche Harbor Road	Level	3,931	D	4,433	D
	7	0.92	Argyle Road	Flat	1,380	A/B/C	1,556	A/B/C
	1	1.00	San Juan Valley Road	Level	2,706	A/B/C	3,052	A/B/C
	2	1.05	Beaverton Valley Road	Rolling	1,641	A/B/C	1,850	A/B/C
	18	1.95	Cattle Point Road	Level	2,478	A/B/C	2,795	A/B/C
	18	2.61	Cattle Point Road	Rolling	1,874	A/B/C	2,114	A/B/C
	2	3.52	Beaverton Valley Road	Rolling	1,233	A/B/C	1,391	A/B/C
	18	3.87	Cattle Point Road	Rolling	1,133	A/B/C	1,278	A/B/C
	2	4.75	West Valley Road	Rolling	1,456	A/B/C	1,643	A/B/C
	18	5.22	Cattle Point Road	Rolling	922	A/B/C	1,040	A/B/C
	18	5.75	Cattle Point Road	Rolling	680	A/B/C	767	A/B/C
	18	6.82	Cattle Point Road	Rolling	584	A/B/C	659	A/B/C
	2	6.91	West Valley Road	Rolling	796	A/B/C	898	A/B/C
	2	9.60	West Valley Road	Rolling	812	A/B/C	916	A/B/C
	2	9.72	Roche Harbor Road	Level	1,096	A/B/C	1,236	A/B/C
	2	10.82	Roche Harbor Road	Rolling	986	A/B/C	1,112	A/B/C
Minor Collectors	1	2.15	Douglas Road	Rolling	1,513	A/B/C	1,706	A/B/C
	3	2.15	Roche Harbor Road	Rolling	2,767	A/B/C	3,121	D
	1	3.52	Bailer Hill Road	Rolling	1,080	A/B/C	1,218	A/B/C
	3	5.00	Roche Harbor Road	Rolling	1,880	A/B/C	2,121	A/B/C
	1	6.23	Bailer Hill Road	Rolling	767	A/B/C	865	A/B/C
	3	6.53	Roche Harbor Road	Rolling	2,034	A/B/C	2,294	A/B/C
	3	7.63	Roche Harbor Road	Level	1,676	A/B/C	1,890	A/B/C
	1	14.67	Mitchell Bay Road	Rolling	803	A/B/C	905	A/B/C

Source: San Juan County; Transpo Group 2011

1. Level of Service (LOS) D is San Juan County's adopted LOS standard for County collector roadways per County Code 18.60.200.
2. Rolling Terrain - A combination of horizontal and vertical alignments causing heavy vehicles to reduce their speed substantially below that of passenger cars but not to operate at crawl speeds for a significant amount of time.
3. Level Terrain - A combination of horizontal and vertical alignments that permits heavy vehicles to maintain approximately the same speed as passenger cars; this generally includes short grades of no more than 1 to 2 percent.
4. AADT – Two-way annual average daily traffic volumes.

As shown in Table 2, all San Juan Island collector roadways meet the County's standard of LOS D or better. Only one roadway segment operates at LOS D in 2010 and three segments in 2021.

Table 3. Orcas Island - County Collector Roads Level of Service

					2010		2021	
	County Road #	Mile Post	Road Name	Terrain[2,3]	AADT[4]	LOS[1]	AADT[4]	LOS[1]
Major Collectors	57	0.03	Terrill Beach Road	Rolling	1,200	A/B/C	1,476	A/B/C
	52	0.08	Lovers Lane	Rolling	2,045	A/B/C	2,515	A/B/C
	58	0.10	Mount Baker Road	Level	1,476	A/B/C	1,815	A/B/C
	52	0.46	Lovers Lane	Rolling	1,929	A/B/C	2,373	A/B/C
	57	0.68	Terrill Beach Road	Level	616	A/B/C	758	A/B/C
	4	0.75	Orcas Road	Rolling	1,865	A/B/C	2,294	A/B/C
	58	0.79	Mount Baker Road	Rolling	1,535	A/B/C	1,888	A/B/C
	58	1.17	Mount Baker Road	Rolling	2,268	A/B/C	2,790	A/B/C
	4	3.92	Orcas Road	Level	1,884	A/B/C	2,317	A/B/C
	4	6.93	Orcas Road	Rolling	2,602	A/B/C	3,201	D
	4	7.00	Orcas Road	Level	3,710	D	4,563	D
	4	9.45	Olga Road	Rolling	2,294	A/B/C	2,822	D
	4	11.50	Olga Road	Rolling	2,038	A/B/C	2,507	A/B/C
Minor Collectors	45	0.10	Deer Harbor Road	Rolling	972	A/B/C	1,196	A/B/C
	63	0.10	Point Lawrence Road	Rolling	951	A/B/C	1,170	A/B/C
	51	0.16	Crow Valley Road	Rolling	731	A/B/C	899	A/B/C
	63	0.56	Point Lawrence Road	Rolling	526	A/B/C	647	A/B/C
	45	1.00	Deer Harbor Road	Rolling	1,040	A/B/C	1,279	A/B/C
	51	1.90	Crow Valley Road	Rolling	956	A/B/C	1,176	A/B/C
	63	3.31	Point Lawrence Road	Rolling	246	A/B/C	302	A/B/C
	51	3.59	Crow Valley Road	Rolling	1,442	A/B/C	1,774	A/B/C
	45	3.80	Deer Harbor Road	Rolling	931	A/B/C	1,145	A/B/C
	45	4.36	Deer Harbor Road	Rolling	871	A/B/C	1,071	A/B/C
	4	14.36	Olga Road	Rolling	1,107	A/B/C	1,362	A/B/C
	4	15.94	Olga Road	Rolling	247	A/B/C	304	A/B/C

Source: San Juan County; Transpo Group 2011

1. Level of Service (LOS) D is San Juan County's adopted LOS standard for County collector roadways per County Code 18.60.200.
2. Rolling Terrain - A combination of horizontal and vertical alignments causing heavy vehicles to reduce their speed substantially below that of passenger cars but not to operate at crawl speeds for a significant amount of time.
3. Level Terrain - A combination of horizontal and vertical alignments that permits heavy vehicles to maintain approximately the same speed as passenger cars; this generally includes short grades of no more than 1 to 2 percent.
4. AADT – Two-way annual average daily traffic volumes.

As shown in Table 3, all Orcas Island collector roadways meet the County's standard of LOS D or better. Only one roadway segment operates at LOS D in 2010 and three segments in 2021.

Table 4. Lopez and Shaw Islands - County Collector Roads Level of Service

	County Road #	Mile Post	Road Name	Terrain[2,3]	2010 AADT[4]	2010 LOS[1]	2021 AADT[4]	2021 LOS[1]
Major Collectors	108	0.10	Dill Road	Level	638	A/B/C	660	A/B/C
	114	0.10	Mud Bay Road	Level	1,139	A/B/C	1,177	A/B/C
	5	0.16	Ferry Road	Level	630	A/B/C	651	A/B/C
	103	0.40	Fisherman Bay Road	Level	687	A/B/C	710	A/B/C
	114	0.55	Mud Bay Road	Rolling	902	A/B/C	932	A/B/C
	103	1.75	Fisherman Bay Road	Level	1,108	A/B/C	1,145	A/B/C
	5	1.98	Ferry Road	Level	1,104	A/B/C	1,141	A/B/C
	103	2.26	Fisherman Bay Road	Level	1,681	A/B/C	1,737	A/B/C
	114	2.30	Mud Bay Road	Level	853	A/B/C	881	A/B/C
	103	3.00	Fisherman Bay Road	Level	2,175	A/B/C	2,248	A/B/C
	103	3.76	Fisherman Bay Road	Level	1,293	A/B/C	1,337	A/B/C
	103	4.00	Fisherman Bay Road	Rolling	1,300	A/B/C	1,344	A/B/C
	5	6.17	Center Road	Level	1,653	A/B/C	1,708	A/B/C
	5	7.12	Center Road	Rolling	1,321	A/B/C	1,365	A/B/C
Minor Collectors	5	2.24	Center Road	Level	445	A/B/C	460	A/B/C
	114	2.94	Mud Bay Road	Level	506	A/B/C	522	A/B/C
	5	3.30	Center Road	Level	514	A/B/C	531	A/B/C
	5	4.85	Center Road	Level	1,083	A/B/C	1,119	A/B/C
	5	8.10	Richardson Road	Level	268	A/B/C	277	A/B/C
	5	9.20	Richardson Road	Rolling	257	A/B/C	266	A/B/C
	Shaw Island							
	96	1.00	Blind Bay Road	Rolling	281	A/B/C	346	A/B/C
	96	2.21	Blind Bay Road	Rolling	186	A/B/C	210	A/B/C

Source: San Juan County; Transpo Group 2011

1. Level of Service (LOS) D is San Juan County's adopted LOS standard for County collector roadways per County Code 18.60.200.
2. Rolling Terrain - A combination of horizontal and vertical alignments causing heavy vehicles to reduce their speed substantially below that of passenger cars but not to operate at crawl speeds for a significant amount of time.
3. Level Terrain - A combination of horizontal and vertical alignments that permits heavy vehicles to maintain approximately the same speed as passenger cars; this generally includes short grades of no more than 1 to 2 percent.
4. AADT – Two-way annual average daily traffic volumes.

As shown in Table 4, all Lopez and Shaw Island collector roadways meet the County's standard of LOS D or better in both 2010 and 2021. However 2 of 74 roadway segments (Roche Harbor Road on San Juan Island and Orcas Road on Orcas Island) are currently operating at LOS D. In 2021, 6 of 74 roadway segments (2 segments of Roche Harbor Road and 1 segment of Cattle

Point Road on San Juan Island, 2 segments of Orcas Road and 1 segment Olga Road on Orcas Island) are forecast to operate at LOS D.

Overall this is consistent to the previous County collector roadway LOS analysis in the adopted Comprehensive Plan which shows all 74 roadway segments operating at or above the County's LOS D standard. The previous analysis shows 1 of the 74 roadway segments (Horseshoe Highway) operating at LOS D in 1993 and 3 of 74 of the roadway segments (2 segments of Horseshoe Highway and 1 segment of Roche Harbor Road) operating at LOS D in 2014.

County Dock Level of Service

As discussed in the San Juan County's Comprehensive Plan, level of service for County docks is based on the lineal feet of useable dock space per occupied housing unit within the designated service area. For Type-3 docks, the service area is the entire County and is estimated in hundreds of dwelling units.

There are three County dock types:

Type 1 – County docks located on ferry-served islands which provide primary access for non-ferry served islands.

Type 2 – County docks located on non-ferry served islands with County roads.

Type 3 – County docks that provide recreational uses or access between ferry-served islands.

The adopted San Juan County dock LOS thresholds are shown in Table 5, as per County Code 18.60.200.

Table 5. County Dock Level of Service Standards

Facility	LOS A	LOS B	LOS C[2]	LOS D[3]	LOS E	LOS F[4]
County Docks[1]	>3.0	1.2 – 2.9	0.6 – 1.19	0.4 – 0.59	0.1 – 0.39	<0.09

Source: San Juan County Comprehensive Plan
1. Estimated useable lineal feet of dock space per occupied housing unit.
2. Level of Service (LOS) C is San Juan County's adopted LOS standard for Type 1 County docks.
3. Level of Service (LOS) D is San Juan County's adopted LOS standard for Type 2 County docks.
4. For islands and locations where no County dock currently exists, LOS F is the adopted standard.

Table 6 summarizes the County's dock service areas and dock lineal feet.

Table 6. County Dock Service Areas

	Service Area	Dock Location	Dock Capacity[5]
		Type 1[1]	
1	Center Decatur Frost Trump	Hunter Bay	65' dock, 120' float
2	Blakely Obstruction	Obstruction Pass	107' dock, 80' float
3	Waldron Wasp	Deer Harbor	120' float
4	Stuart Henry Pearl Johns Cactus O'Neal Spieden	Roche Harbor	120' float
		Type 2[2]	
5	Stuart	Prevost	256' dock, 120' float
6	Waldron	Cowlitz	184' dock, 64' float
7	Decatur[3]	-	-
		Type 3[3,4]	
8	San Juan	-	-
9	Orcas	Eastsound Westsound Orcas Landing	112' dock, 80' float 140' dock, 145' float 408' float
10	Lopez	Odlin MacKaye Harbor	48' dock 70' float, 120' float
11	Shaw	-	-

Source: San Juan County; Transpo Group 2011

1. Type 1 – County docks located on ferry-served islands which provide primary access for non-ferry served islands.
2. Type 2 – County docks located on non-ferry served islands with County roads.
3. Type 3 – County docks that provide recreational uses or access between ferry-served islands.
4. There is no concurrency requirement for Type 3 County docks.
5. Dock Capacity = Estimated useable lineal feet of dock space.

Table 7 summarizes the existing and forecast residential dwelling units, dock capacity, and resulting level of service for each service area.

Table 7. County Dock Level of Service

		2010				2021			
		Demand[6]	Dock Capacity[5]	Ratio	LOS	Demand[6]	Dock Capacity[5]	Ratio	LOS
	Type 1[1]								
1	Center Decatur Frost Trump	129	185	1.43	B	133	185	1.39	B
2	Blakely Obstruction	40	187	4.68	A	44	187	4.25	A
3	Waldron Wasp	69	120	1.74	B	69	120	1.74	B
4	Stuart Henry Pearl Johns Cactus O'Neal Spieden	62	120	1.94	B	71	120	1.69	B
	Type 2[2]								
5	Stuart	35	376	10.74	A	41	376	9.17	A
6	Waldron	69	248	3.59	A	69	248	3.59	A
7	Decatur[3]	67	0	0	F	81	0	0	F
	Type 3[4]								
8	San Juan[3]	76	0	0	F	96	0	0	F
9	Orcas	76	885	11.64	A	96	885	9.22	A
10	Lopez	76	238	3.13	A	96	238	2.48	B
11	Shaw[3]	76	0	0	F	96	0	0	F

Source: San Juan County; Transpo Group 2011
1. Level of Service (LOS) C is San Juan County's adopted LOS standard for Type 1 County docks.
2. Level of Service (LOS) D is San Juan County's adopted LOS standard for Type 2 County docks.
3. For islands and locations where no County dock currently exists, LOS F is the adopted standard.
4. There is no concurrency requirement for Type 3 County docks.
5. Dock Capacity = Estimated useable lineal feet of dock space.
6. Demand = Number of occupied housing units.

As shown in Table 7, all 11 San Juan County service areas meet the adopted County dock standards in both 2010 and 2021. Overall this is an improved level of service as compared to the previous County dock LOS analysis in the adopted Comprehensive Plan which shows 2 of 11 service areas (1 and 2) not meeting standards in 1992 and 5 of 11 service areas (1, 2, 3, 5, and 6) not meeting standards in 2012. This is due in part to differences in number of occupied housing units and estimated useable lineal feet of dock per service area. The updated analysis shows fewer occupied housing units and more useable lineal feet of dock per service area.

Ferry Parking Level of Service

The adopted San Juan County ferry parking LOS thresholds are shown in Table 8.

Table 8. Ferry Parking Level of Service Standards

Facility	LOS A	LOS B	LOS C[2]	LOS D[3]	LOS E	LOS F[4]
Ferry Parking[1]	>6	6	5	3	2	<2

Source: San Juan County Comprehensive Plan
1. Ferry parking places per 100 residents (population).
2. LOS C is San Juan County's adopted LOS standard for ferry parking facilities, per County Code 18.60.200.

The adopted level of service standard is at least five parking spaces per 100 population. Table 9 summarizes the existing and forecast population, ferry parking supply, and resulting level of service for each island.

Table 9. Ferry Parking Level of Service

	2010				2021			
Ferry Terminal Location	Population	Parking Supply	Ratio[1]	LOS[2]	Population	Parking Supply	Ratio[1]	LOS[2]
San Juan	7,581	57	0.75	F	9,537	57	0.60	F
Orcas	5,006	56	1.12	F	6,169	56	0.91	F
Lopez	2,383	79	3.32	D	3,050	79	2.59	D
Shaw	237	25	10.55	A	291	25	8.59	A

Source: San Juan County; Transpo Group 2011
1. Ferry parking places per 100 population.
2. Level of Service (LOS) C is San Juan County's adopted LOS standard for ferry parking facilities.

As shown in Table 9, three of the ferry terminal locations do not meet the adopted ferry parking standards in both 2010 and 2021. Overall this is a lower level of service as compared to the previous ferry parking LOS analysis in the adopted Comprehensive Plan which shows 2 of 4 ferry terminals (San Juan and Orcas Islands) not meeting standards in 1993 and in 2012. This is due in part to differences in population and number of parking spaces with both the existing and forecast conditions. Generally, the updated analysis shows higher population and lower parking supply values.

Table 10 shows the additional parking spaces needed in 2010 and 2021 for each ferry terminal location not currently meeting the LOS C standard.

Table 10. Additional Ferry Parking Needed

	2010				2021			
Ferry Terminal Location	Population	Parking Supply	LOS C Standard	Additional Needed	Population	Parking Supply	LOS C Standard	Additional Needed
San Juan	7,581	57	379	322	9,537	57	477	420
Orcas	5,006	56	251	195	6,169	56	309	253
Lopez	2,383	79	120	41	3,050	79	153	74

Source: San Juan County; Transpo Group 2011
1. LOS C is San Juan County's adopted LOS standard for ferry parking facilities.

As shown in Table 10, almost 750 additional parking spaces will be needed countywide by 2021 to meet the adopted LOS C standard.

transpoGROUP
WHAT TRANSPORTATION CAN BE.

MEMORANDUM

Date:	June 16, 2011	**TG:**	11059.00
To:	Shannon Wilbur, San Juan County		
From:	Jon Pascal, Transpo Group Patrick Lynch, Transpo Group		
Subject:	Memo 3 of 3: Potential Transportation Level of Service Refinement Recommendations		

Our scope of services included identifying potential options for refining the County's level of service (LOS) methodologies. Currently, all current LOS standards are listed in the County Code 18.60.200. The following provides an assessment of the current adopted standards and potential options for refinements to the level of service methodologies. *Memo 2 of 3: San Juan County Transportation Level of Service Analysis* summarizes the LOS data and analysis.

In general, level of service can be defined as a qualitative measure describing the operating conditions for a given transportation facility. Before determining a methodology for assessing the quality of service, it is important to identify and define overall objectives for the program. The following summarizes a few broad objectives the County could consider for revising the level of service standards.

- Meet all GMA requirements;
- Support the goals and policies of the Comprehensive Plan;
- Assist in the process of prioritization of transportation investments;
- Implement needed transportation improvements caused by new development;
- Reflect on the differences between islands and facility types;
- Consider the needs of alternative modes (non-motorized and transit);
- Be based on accepted standards and methodologies;
- Balance staff resources and data needs with anticipated benefits.

County Collector Roadway Level of Service

As described in *Memo 2 of 3: San Juan County Transportation Level of Service Analysis*, the County collector roadway LOS standards were updated from methodologies based on the HCM 1994 (*Highway Capacity Manuel*) to methodologies based on the HCM 2000.

Earlier this year the HCM 2010 was released and with it, additional revisions to the roadway capacity methodologies. These parameters for calculating roadway capacity have changed from a blend of general roadway characteristics and traffic operations described in the HCM 1994 and 2000, to a purely traffic operations focus in the HCM 2010, primarily based on travel speeds.

The HCM 2010 does not directly account for roadway characteristics such as pavement condition, the presence of shoulders, bicycles, or left-turn lanes as used in the adopted or updated County methodologies. The County's roadway issues are more related to roadway characteristics and less to actual roadway capacity. Changing the County's level of service standards to be consistent with the HCM 2010 would likely result in very few roadway segments failing to meet reasonable standards (i.e. LOS C).

Potential methodologies

1. Use the HCM 2000 for the basis of the LOS methodology to be more reflective of County roadway capacity characteristics.
2. Incorporate a separate methodology based on roadway design standards that would also account for bicycles and pedestrians.
3. Focus on a maintenance/preservation based methodology.
4. Measure the percent complete of County collector roadways meeting the County's adopted roadway standards.

County Dock Level of Service

The current adopted methodology uses a simple ratio of lineal feet of County dock to occupied dwelling units by service area. This method is simple and straightforward with minimal data needs; however it may not provide an effective assessment of the quality of service experienced by users of the County dock system. A study of County dock utilization would be helpful in better understanding the utilization characteristics of the County dock system. This information would then provide a basis for tailoring a LOS methodology that is in better alignment with the experienced quality of service.

Transpo conducted a limited national search of similar island communities to compare other potential dock system level of service methodologies. Our search focused on the state of Florida for two reasons; 1) similar to Washington State, it also has a state concurrency law; and 2), it has similar island communities. However, after conducting the research and contacting several agencies, no similar dock system concurrency program was identified. One reason for this is that many of the docks located in Florida are privately owned. From the brief search for comparable dock system LOS methodologies, it appears that San Juan County is unique in this regard.

Potential methodologies/options

1. Complete a dock system utilization study that could identify some of the following factors to use in refining the current methodology:
    a. Inventory of useable dock space and utilization;
    b. Utilization peak periods (month and time of day)
    c. Percent of public dock versus private dock;
    d. Percent of users that are non-residents;
2. Incorporate a visitor/tourism component into the level of service methodology to account for the peak seasonal demand. This information may come out of the dock utilization study.
3. Incorporate a component into the level of service methodology to account for private docks. Islands with more private dock space may not need additional public dock space.

Ferry Parking Level of Service

The current adopted methodology uses a simple ratio of parking supply to population by island. Similar to the County dock methodology, this system is simple and straightforward with minimal data needs. As a system performance measure, the methodology is adequate as a proxy measure

for ferry parking quality of service. The County may consider including a factor to account for households without a car. This information is included as part of the census data.

Potential methodologies

1. Incorporate a visitor/tourism component into the methodology to account for the peak seasonal demand.
2. Use number of occupied households instead of population.
3. Incorporate a factor for percent of households without a car.

Ferry System Level of Service

The existing ferry LOS methodology for San Juan County is based on the percent of sailings overloaded for a month. August has a less stringent threshold than March (difference of 10 percent). The adopted level of service is LOS C, which corresponds to 25 to 34 percent overload in August and 15 to 24 percent in March. The existing year percent of sailings overloaded in the adopted Comprehensive Plan was estimated by interpolation of August and March demand and overload data from 1992 to 1994, along with estimated future vehicle demand. Table 1 illustrates the 2006 to 2013 estimated ferry system LOS based on the percent of boats departing Anacortes overloaded during the peak and off-peak seasons.

Table 1. Peak Overload Estimates and Projections

Year	Demand	Capacity	Demand/ Capacity	Departures	Projected Overloads	% Overloads	Projected LOS
August (Peak)							
2006	49,733	70,060	70.99	496	137	28	C
2007	51,015	70,060	72.82	496	141	28	C
2008	52,327	70,060	74.69	496	146	29	C
2009	53,679	70,060	76.62	496	150	30	C
2010	55,060	70,060	78.59	496	155	31	C
2011	56,481	70,060	80.62	496	159	32	C
2012	57,937	70,060	82.70	496	164	33	C
2013	59,430	70,060	84.83	496	169	34	C
March (Off-Peak)							
2006	36,013	50,840	70.84	341	137	40	E
2007	36,941	50,840	72.66	341	141	41	E
2008	37,892	50,840	74.53	341	146	43	E
2009	38,870	50,840	76.46	341	150	44	E
2010	39,871	50,840	78.42	341	154	45	E
2011	40,899	50,840	80.45	341	159	47	E
2012	41,954	50,840	82.52	341	164	48	E
2013	43,035	50,840	84.65	341	168	49	E

Source: San Juan County Comprehensive Plan, Transportation Element Appendix 6 - Table 4, December 2002

As shown in Table 2, the adopted Comprehensive Plan (2002) estimated that LOS would be met for the peak season, but exceed the standard for the off-peak season.

The State Legislature adopted an updated ferry LOS methodology for WSF in 2009 as part of the new WSF Long-Range Plan (LRP). The LRP measures the percent of sailings full during a specific month. Percent sailings full is measured in the westbound PM peak direction for the months of January, May and August. Two performance thresholds were identified; Level 1, which indicates when demand management and peak spreading strategies should be implemented, and Level 2, which indicates when additional capacity may be needed. Table 2 shows the LOS standards for both Level 1 and Level 2, as well as the 2006 and forecast 2030 percent sailings full for the Anacortes – San Juan Islands route.

Table 2. WSF Level of Service Standards and Estimated Percent Sailings Full

Anacortes – San Juan Islands Route	January	May	August
Level 1 Standards	25%	30%	35%
Level 2 Standards	65%	65%	75%
2006 Westbound Weekly Average	10%	31%	36%
2030 Westbound Weekly Average	24%	48%	45%

Source: WSDOT Ferry Division Final Long-Range Plan, Exhibits 15 & 16, June 2009

As shown in Table 2, the Anacortes – San Juan Islands route is currently exceeding Level 1 standards in May and August, but is well below the Level 2 standards. The forecasted 2030 percent sailings full for the Anacortes – San Juan Islands route will also remain well below Level 2 standards, indicating that no additional ferry capacity is needed in the next 20 years.

Based on discussions with County staff, it appears that the LOS methodologies adopted by both WSF and the County do not effectively measure all aspects of ferry service that are relevant to the experienced quality of service for San Juan County residents and visitors. Below is a summary of some issues.

- **Few Sailings:** Both methodologies do not describe quality of service when sailings are several hours apart or ferries that sail only a few times a day. The rationale behind percent sailings full is that peak spreading or other behavior changes to spread demand are possible. With such few sailings and the non-commute nature of trips, this is not the case for San Juan County. Missing a sailing could make a trip impossible or strand a vehicle.
- **Reliability:** The reliability of travel and time efficiency is very important for island residents and visitors. The percent sailings full and percent of sailings overloaded methodologies are not sensitive to reliability and actions to improve reliability of the ferry service.
- **Scheduling:** The low frequency of ferry service makes the timing of sailings especially important. Timing of sailings could make trips to the mainland for non-discretionary or discretionary tasks easy or hard. This measure is not captured in either methodology.
- **Peak Periods:** Summer and weekday recreational demand significantly increases ferry system demand. The peaking of demand during these time periods makes it important to separate these time periods from other time periods with more uniform and consistent demand. This is partially measured by both methodologies.
- **Ferry Capacity:** Ferry capacity for each island is reserved independently. This is done to ensure that inter island travel has adequate capacity but creates situations in which physical ferry capacity is not fully utilized despite demand. Both methodologies do not address this issue adequately.

Potential next steps

Before suggesting potential ferry service methodologies, our recommendation is for the County to evaluate those ferry service measures that are important to residents and visitors. More time and effort is needed to evaluate and identify potential ferry LOS methodologies that would be useful and beneficial to the County. It appears that the current methodologies based on percent sailings full and percent of sailings overloaded are perhaps good measures of overall asset utilization on high frequency ferry routes, however they appear to be poor measures of the quality of service experienced by San Juan County residents and visitors. Performance measures should be based on the County's vision for the ferry system, and be used to assist in implementing that vision as the County continues to grow. To complicate these matters, the County does not govern the ferry system, making it difficult to use LOS standards to assist in implementing changes to how WSF

operates or utilizes the ferry system. In preparation for the next Transportation Element update, it is recommended that the County evaluate ferry performance measures and how any measure would be utilized by the County. The process should include broad public input, along with the involvement of WSF staff.

Comprehensive Plan Transportation Policy Revisions

Based on the information provided in all three memos, we recommend revisions to some of the transportation policy language in the County's Comprehensive Plan related to level of service standards. The specific policy language will need to be coordinated with County staff to insure consistency throughout the Comprehensive Plan and other policy documents.