Stillaguamish Tribe of Indians
Strategic Transportation Safety Plan

Stillaguamish Tribe of Indians
Arlington, WA 98223

Prepared with Assistance from:

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ACRONYMS

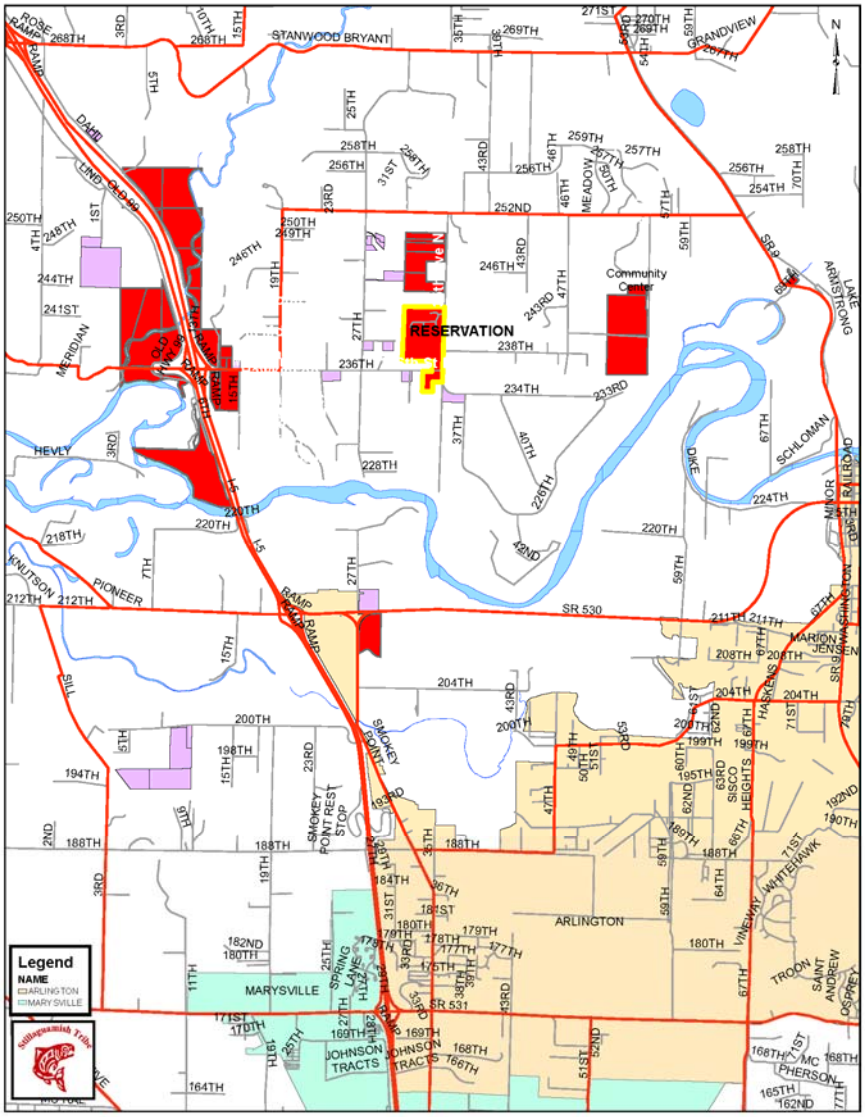
BIA	Bureau of Indian Affairs
HCM	Highway Capacity Manual
LOS	Level of Service
LRTP	The Long Range Transportation Plan
MEV	Million Entering Vehicles
MVM	Million Vehicle Miles
V/C	Volume to Capacity ratio
WSDOT	Washington State Department of Transportation

1. INTRODUCTION

The Stillaguamish Tribe of Indians is located in Snohomish County, Washington with the tribal headquarters in Arlington, Washington. An area map is shown below.

The Stillaguamish Tribe of Indians utilize tribal roadways and roadways owned by WSDOT, Snohomish County, and the City of Arlington, City of Marysville and City of Stanwood as access to tribal facilities, culturally sensitive lands and to perform business. It is therefore important to understand the safety of these roadways and determine strategies and solutions to transportation safety issues along these roadways. This Strategic Transportation Safety Plan is intended to identify if current safety issues exist and provide documentation of strategic and specific solutions to these safety issues. This plan has been established based on input and assistance from various departments within the Stillaguamish Tribe of Indians and representatives from surrounding jurisdictions.

STILLAGUAMISH TRIBAL TRANSPORTATION SAFETY FOCUS AREA



2. MISSION STATEMENT

The goal of this Tribal Transportation Safety Plan is to evaluate and improve safety for all users of the transportation system in the Stillaguamish area. The focus area for this plan is the concentrated area of the Tribal operations and where Tribal members live.

3. PROCESS

The Stillaguamish Strategic Transportation Safety Plan was established through a series of stakeholder participation and collection of pertinent data from the Stillaguamish Tribe of Indians and surrounding jurisdictions. A summary of the stakeholder meetings is included below.

3.1 KICK-OFF/STAKEHOLDER MEETING #1

The kick-off meeting/stakeholder meeting #1 included representatives from the Stillaguamish Tribe of Indians and the consultant team assisting the Tribe. The members discussed additional stakeholders that should be invited to future meetings and reviewed relevant studies, including:

- the Snohomish County 2010 "Stillaguamish Traffic Study"
- The 236th Street NE and 35th Avenue NE Corridor Improvements Design Report that was in progress and expected to be completed (Summer 2014)
- The SCJ Alliance *236th/4th Ave Intersection Review Study (November 2013).*
- Abbreviated Road Safety Audit for Safety Improvements to the SR-9 and Harvey Creek Road Intersection Project
- Washington State Strategic Safety Plan "Target Zero"

Some initial collision data obtained from WSDOT was reviewed and additional sources of data were discussed. Additionally, there was a discussion of how the data should be utilized and preliminary ways to categorize/analyze the collision data.

3.2 INITIAL ANALYSIS TO TRIBAL STAFF

An initial summary of the review of the collision data was provided to tribal staff after the kick-off/stakeholder meeting #1. The initial summary included collision data collected from Snohomish County and WSDOT. The data was split into area-wide trends and rates and frequencies for intersections and segments. The data identified significant trends in collision types and causes. The data was compared to the average collision rate for the area, based on WSDOT's *2012 Annual Collision Summary*. Specific intersections and segments exceeding the area average collision rate, more than 5 collisions per year along non-tribal roadways or 5 collisions over the latest 5-year period on tribal roadways were identified as preliminary criteria for further analysis and presented in this final report.

3.3 STAKEHOLDER MEETING #2

A representative from the following groups was invited to Stakeholder Meeting #2:

- Tribal Police
- Local citizens
- Emergency services
- Snohomish County Department of Public Works
- Various Tribal departments

Although not all could attend, pertinent information was generated and discussed by all parties in subsequent communications. Those communications are reflected in this safety plan.

3.4 COMPLETION

Based on stakeholders input and the analysis of the collision data was finalized, recommendations to address the safety concerns were established. These recommendations were reviewed by Tribal staff and incorporated into this plan.

4. DATA REVIEW

Data from Snohomish County and WSDOT was obtained for the major roadways providing access to and utilized by the Stillaguamish Tribe of Indians. Data was obtained for the period from January 1, 2009 to June 1, 2014, a period of 5.5 years. The major roadways for which data was requested include:

- SR-9, 252nd Street NE to City of Arlington limits
- SR-530, Interstate-5 to SR-9
- 236th Street NE, 4th Avenue NE to 35th Avenue NE
- 35th Avenue NE, 236th Street NE to 252nd Street NE
- Smokey Point Boulevard, Bjorn Road to 35th Avenue NE and SR-530 to 204th Street NE
- 27th Avenue NE, 236th Street NE to 252nd Street NE

The data along these corridors was analyzed for overall trends and a detailed analysis was performed at specific key locations.

Data along the following corridors was also obtained

- SR-531 (172nd Street NE), Interstate-5 to SR-9
- Smokey Point Drive, 172nd Street NE to Smokey Point Boulevard

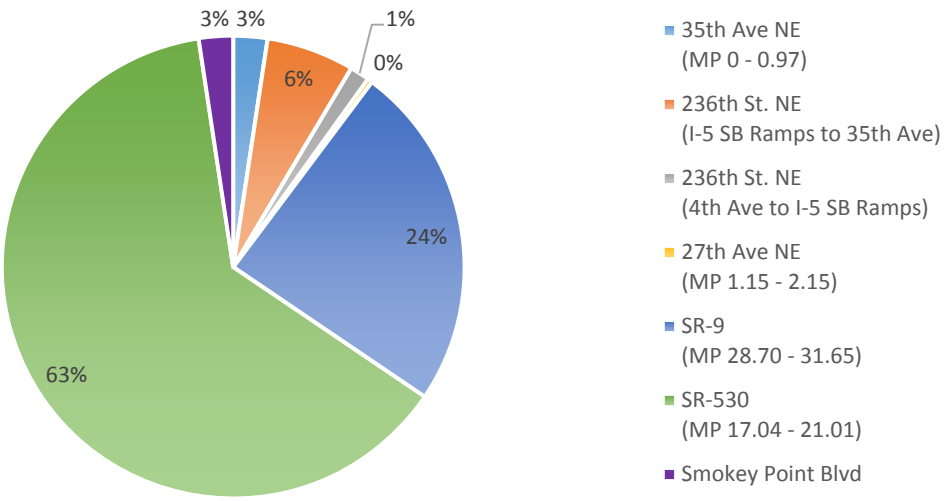
However, these roadways were not included in the area wide trends summarized below. These roadways were not included due to the high number of congestion related collisions that would have greatly overshadowed the collisions on roadways directly providing access to tribal facilities. The data is included in some sections, such as fatalities.

4.1 AREA WIDE TRENDS

The total collisions in the area were analyzed to determine where the highest frequency of collisions occurred, the different types of collisions and the contributing factors to those collisions.

The location of the reported collisions are summarized in Figure 1.

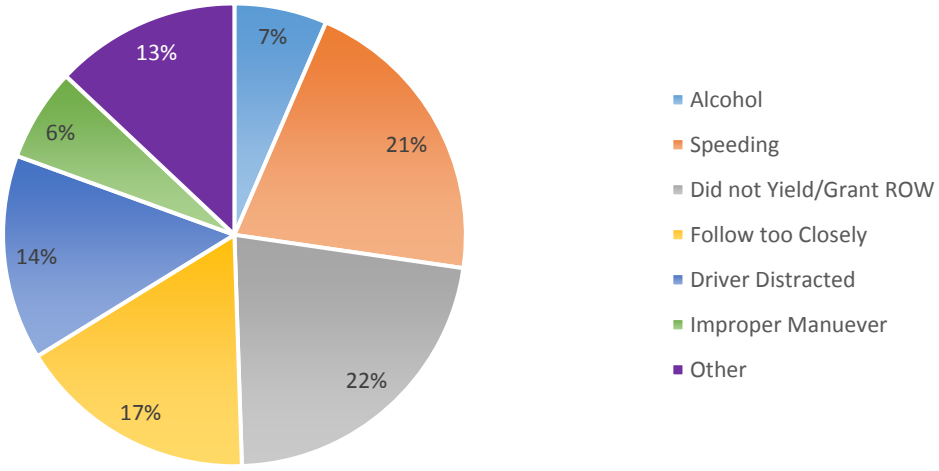
Figure 1: Location



The data shows that nearly 63% of the collisions analyzed (185 of 293) occurred along SR-530 and SR-530 and SR-9 accounted for 87% of the total collisions (256 of 293). It is not surprising that the majority of collisions occurred along SR-530 and SR-9 since these sections of roadway are the longest in the study area and carry the most trips in the study area, 4 to 5-times more than the next highest volume roadway (236th Street NE). There is only one collision along 27th Avenue NE (MP 1.15 – 2.15), which represents less than 1% of the total collisions

A summary of the contributing factors to the collisions in the area is included in Figure 2.

Figure 2: Contributing Factors

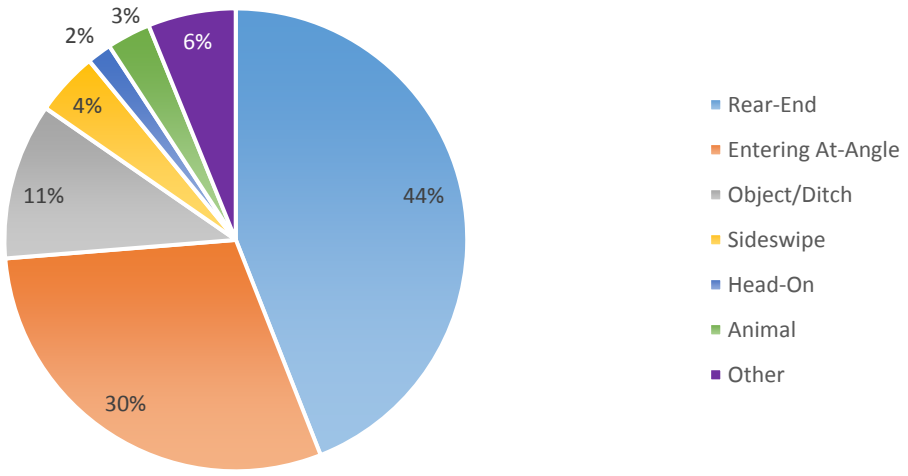


The main contributing factor is vehicles not yielding/granting right-of-way, accounting for just over 22% of the vehicles. Vehicles speeding (just under 21%) and following too closely (just under 17%) were the next two highest contributing factors.

There were 19 total collisions with alcohol as a contributing factor, accounting for 6.5% of the total collisions. There were 5 collisions that occurred on Snohomish County roadways, 236th Street NE and 35th Avenue NE, and 14 collisions occurred on SR-9 and SR-530. The percentage of alcohol related collisions in the study area, 6.5%, is lower than the statewide average of 10.1% and the Snohomish County average of 7.9%.

The type of collision is summarized in Figure 3: Collision Type.

Figure 3: Collision Type



The predominant collision is a rear-end collision, accounting for nearly 44% of the collisions. Rear-end collisions are typically associated with signalized intersections. The next highest collision is entering at-angle collisions, accounting for nearly 30% of the collisions. These are typically associated with driveways and two-way stop-controlled intersections due to left-turns into traffic. Based on the typical intersection configuration present in the area, signalized and two-way stop-controlled intersections, it is to be anticipated that rear-end and entering at-angle collisions would be the predominant collision types, accounting for nearly 75% of the total collisions.

4.1.1 FATALITIES

In the study area there were two collisions that caused a total of 4 fatalities. One collision occurred at the intersection of SR-9 at Schloman Road and included 2 fatalities. This collision occurred due to one vehicle crossing over the centerline and causing a head-on collision. Another collision occurred at the intersection of SR-530 at 44th Drive NE and included 1 fatality. This collision was due to a vehicle hitting a fixed object. Both of these collisions included a driver being under the influence of alcohol. The fourth fatality was a motorcyclist on SR-531 east of SR-9 who lost control and landed in the river, later dying in the hospital.

4.2 SITE SPECIFIC TRENDS

The collision data along WSDOT roadways, primarily SR-9 and SR-530, were evaluated to determine specific locations that had collision frequencies of more than 5 collision per year. Collision data along roadways providing direct access to the Stillaguamish Tribe of Indians, primarily 236th Street NE, 35th Avenue NE and Smokey Point Boulevard, were evaluated to determine specific locations that had more than 5 collisions during the study period.

Figure 4 shows the detailed location and predominant type of collisions along the 236th Street influence area and Figure 5 shows the detailed location and predominant type of collisions along the Smokey Point Triangle influence area.

4.2.1 WSDOT LOCATIONS

There were two WSDOT locations that had a collision frequency of 5 or more collisions per year. The locations are:

- SR-9 at Division Street – 6.7 collisions per year
- SR-530, Smokey Point Boulevard to 59th Avenue NE – 7.5 collisions per year
- SR.531, Interstate-5 to SR-9 - over 400 collision during the study period

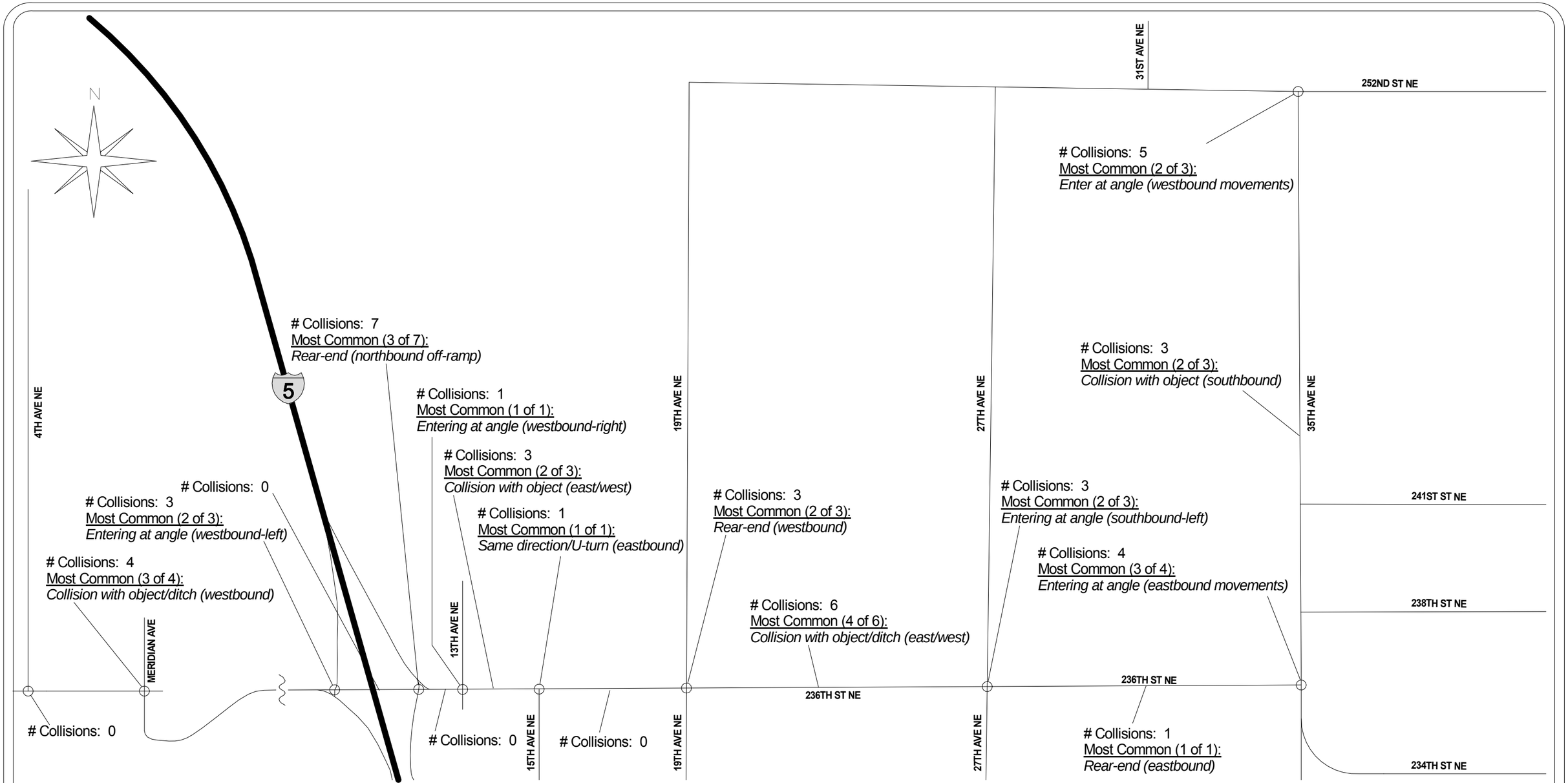
Based on the high total collision s along the corridor this data was not included the main data for the summary of collisions closer to the tribal center The vast majority were rear end congestion type related collisions. There were 8 pedestrian accidents majority at driveways/intersections along the corridor where the vehicle failed to yield to pedestrians.

The collision rate at each location is summarized in Table 1.

Table 1: WSDOT Location Collision Rates

Location	Length	Total Collisions	Years	Frequency	Daily Trips	Collision Rate
SR-9 at Division Street	---	37	5.5	6.7	13,000	1.42 per MEV
SR-530, Smokey Pt. Blvd to 59th Ave. NE	1.88 mi.	41	5.5	7.5	14,000	0.78 per MVM

The collision rates at these two locations were compared to the average collision rates for the area published in the WSDOT *2012 Annual Collision Summary*, the latest report from WSDOT summarizing collision data for the area. The average collision rate for Snohomish County is 2.09 collisions per MEV/MVM. Both of these locations are below the average Snohomish County collision rate and would therefore not be typically identified as having significant collision histories.



GIBSON TRAFFIC CONSULTANTS

TRAFFIC IMPACT STUDY
GTC #14-084

STILLAGUAMISH TRANSPORTATION SAFETY PLAN
236TH ST NE CORRIDOR

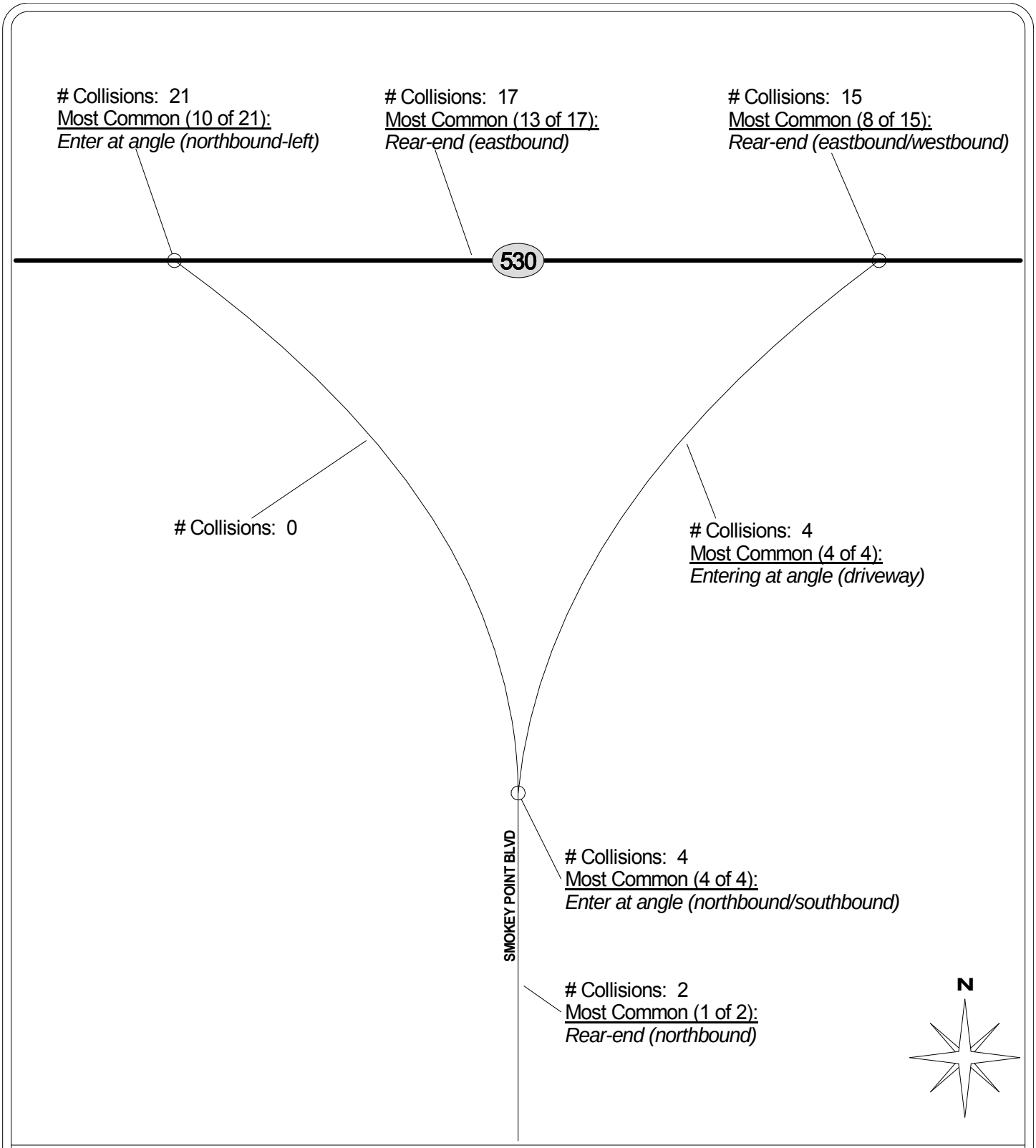
SNOHOMISH COUNTY

LEGEND

○ Collisions within 100 feet of intersection

— Collisions within segment between intersections

FIGURE 4
2009-2014 COLLISIONS
(2009, 2014 partial data)



GIBSON TRAFFIC CONSULTANTS

TRAFFIC IMPACT STUDY
GTC #14-084

STILLAGUAMISH TRANSPORTATION SAFETY PLAN
SMOKEY POINT TRIANGLE

SNOHOMISH COUNTY

LEGEND

○ Collisions within 100 feet of intersection

— Collisions within segment between intersections

FIGURE 5

2009-2014 COLLISIONS
(2009 partial data)

4.2.2 TRIBAL LOCATIONS

There were five tribal locations that had a collision frequency of 1 or more collisions per year. The locations were:

- 35th Avenue NE – 236th Street NE to 252nd Street NE
- Smokey Point Boulevard
- 236th Street NE at I-5 NB Ramps
- 236th Street NE at 35th Avenue NE
- 236th Street NE – 19th Avenue NE to 27th Avenue NE

The collisions at each location are summarized in Table 2.

Table 2: Tribal Location Collision Rates

Location	Length	Total Collisions	Years	Frequency	Daily Trips	Collision Rate
35th Ave. NE – 236th St. NE to 252nd St. NE	1.0 mi	8	5.5	1.3	4,060	0.98 per MVM
Smokey Point Blvd triangle	1.0 mi	6	5.5	1.1	3,925	0.76 per MVM
236th St. NE at I-5 NB Ramps	---	7	5.5	1.3	8,775	0.40 per MEV
236th St. NE at 35th Ave. NE	---	7	5.5	1.3	5,430	0.64 per MEV
236th St. NE – 19th Ave. NE to 27th Ave. NE	0.5 mi	12	5.5	1.1	5,800	2.06 per MVM

The only location that had a collision rate higher than 1.00 MEV/MVM is along 236th Street NE from 19th Avenue NE to 27th Avenue NE. This location had a collision rate of 2.06 per MEV. The average collision rate is 2.09 per MEV/MVM.

Additionally, data was requested for Smokey Point Drive in the vicinity of the existing tribal administration building. However, since this is a private road, neither WSDOT nor City of Arlington keep a record of collisions along this roadway except where it connects with SR-531 and Smokey Point Boulevard. There were 3 collisions along Smokey Point Drive at both of these intersections over the study period, which is less than one per year.

5. RESULTS

The data shows the highest accident locations on the local tribal influence roads are

- 236th Street NE, 19th Avenue NE to 27th Avenue NE
- SR-9 at Division Street
- SR-530, Smokey Point Boulevard to 59th Avenue NE
- 236th Street NE at the Interstate-5 ramps

There are no other specific high accident locations present in the roadways serving the Stillaguamish Tribe of Indians but there are many roads not built to current standards. None of the WSDOT roads are to WSDOT standards. The collisions are predominantly rear-end and entering at-angle collisions occurring on WSDOT roadways. There are several improvement projects in the study area that will increase the number of lanes and improve access. These improvements could help reduce the presence of some of these collisions. However, it should be noted that the existing narrow roadways without shoulders tend to keep speeds in line with posted speeds. Improved shoulder clearance lane width and sight distances may need traffic calming measures to keep existing speeds.

The data showed that the number of collisions related to alcohol is below the state average. This is encouraging, especially since the number of alcohol related collisions is typically higher on tribal roadways.

Based on prior studies, the specific location improvements for safety related collision history are:

- 236th Street NE at 4th Avenue NE – realignment and sight distance improvement
- 252nd Street NE at 35th Avenue NE – left-turn channelization and sight distance improvement
- 236th Street NE, 19th Avenue NE to 27th Avenue NE - Widening of shoulders, improved sight distance and left-turn channelization
- 236th Street NE at Interstate-5 Northbound Ramps – capacity improvement for northbound vehicles

The general policy that the collision data shows are all consistent with Washington States Target Zero 2013:

- Education - Give drivers the information to make good choices, such as not driving while impaired, wearing a seatbelt, and avoiding distractions while in their vehicles.
- Enforcement - Use data-driven analysis to help law-enforcement officers pinpoint locations with a high number of fatal and serious-injury collisions related to driver behaviors, such as speeding and impairment.
- Engineering - Design roads and roadsides using practical, near term solutions to reduce collisions, or severity of collisions if they do occur

The detailed data shows:

Education

Data Results – High number of rear ends and following too closely.

Proposed Policy

- Young driver education and additional warning signs to increase understanding of separation needed.
- Develop a plan to work with local businesses such as the casino and gas station to have information on variable message signs to get out the message.
- Work with schools and local jurisdictions to get out the message about vehicle separation.

Engineering

Data Results – High number of lane departure/hit fixed object along 236th Street corridor particularly between 19th Avenue and 27th Avenue.

Proposed Policy

- Install wider shoulders and improve clear zones and sight distance along 236th Street east of I-5 to 35th Avenue to meet Snohomish County collector arterial road standards.
- Conduct a roadway sign inventory and replace signs as needed to meet new MUTCD requirements.
- Coordinate with Snohomish County and WSDOT over their inventory maintenance schedule.

Data Results – High number of rear-end and enter at-angle collisions (appear to be congestion related with high turning volumes) at the Island Crossing triangle, I-5 ramps at 236th Street and 252nd Street at 35th Avenue.

Proposed Policy

- Support capacity improvements, such as roundabouts and channelization, at the Island Crossing triangle intersections and at the 252nd Street NE at 35th Avenue intersection that improve capacity and safety.
- Realign the intersection of 4th Avenue at 236th Street to improve sight distance to meet Snohomish County standards

Enforcement

Data Result

Concern by stakeholders that as roads are improved to standards (greater sight distance, shoulders clear zones, etc.), speeds will increase.

Proposed Policy

- Coordinate with local law enforcement and engineering staff for the monitoring of speeds at newly improved roadways.
- Prioritize and develop a policy for traffic calming implementation either at design stage or post construction.