

Turner Fire District



Hazardous Commodity Flow Study

September 2007

A Statement of Thanks

A study like this Commodity Flow Study can only be completed with cooperation from the Fire District where it occurs. I would like to thank Chief Henson for allowing his staff the time to work with me during this process. With out their help this document could not have been completed.

I would especially like to thank Greg Stohl and Rebecca Singleterry for their help in answering questions and gathering data for this study. You and the other members of the Fire District that helped out are shinning examples and I commend you. Turner Fire District is a quality organization made up of quality people.

Thanks,

Don R. Fleck
Safety & Compliance

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STATEMENT OF PURPOSE

Safety and Compliance conducted this hazardous materials transportation commodity flow study in the Turner Fire District with the objective to identify shipments of hazardous materials that either originate or are destined to pass through the district. Transportation routes were studied to see exactly how these hazardous materials move through the district both in quantity and type.

By using the data collected in this study Turner Fire District can enhance emergency planning and training capabilities, continue to support safe emergency response and have reliable data to request funding to meet the challenge outlined in these pages. This Hazardous Materials Commodity Flow Study gives an accurate picture of the amount of hazardous materials that flows through and above the Turner Fire District by air, rail, pipeline, and over the roadways.

STUDY METHOD

Identify the transport methods (railroads, pipelines airports, waterways, and major highways) and survey the types, amounts and times transported.

Work with state and local agencies to use information already gathered in the following documents/locations:

Marion County Emergency Plan

Marion County Public Works Emergency Resource Directory

Oregon State Fire Marshal Annual Report

Oregon State Fire Marshal HSIS (Hazardous Survey Information System) Information

Oregon Department of Transportation documents

Williams Gas Pipeline Emergency Response Manual

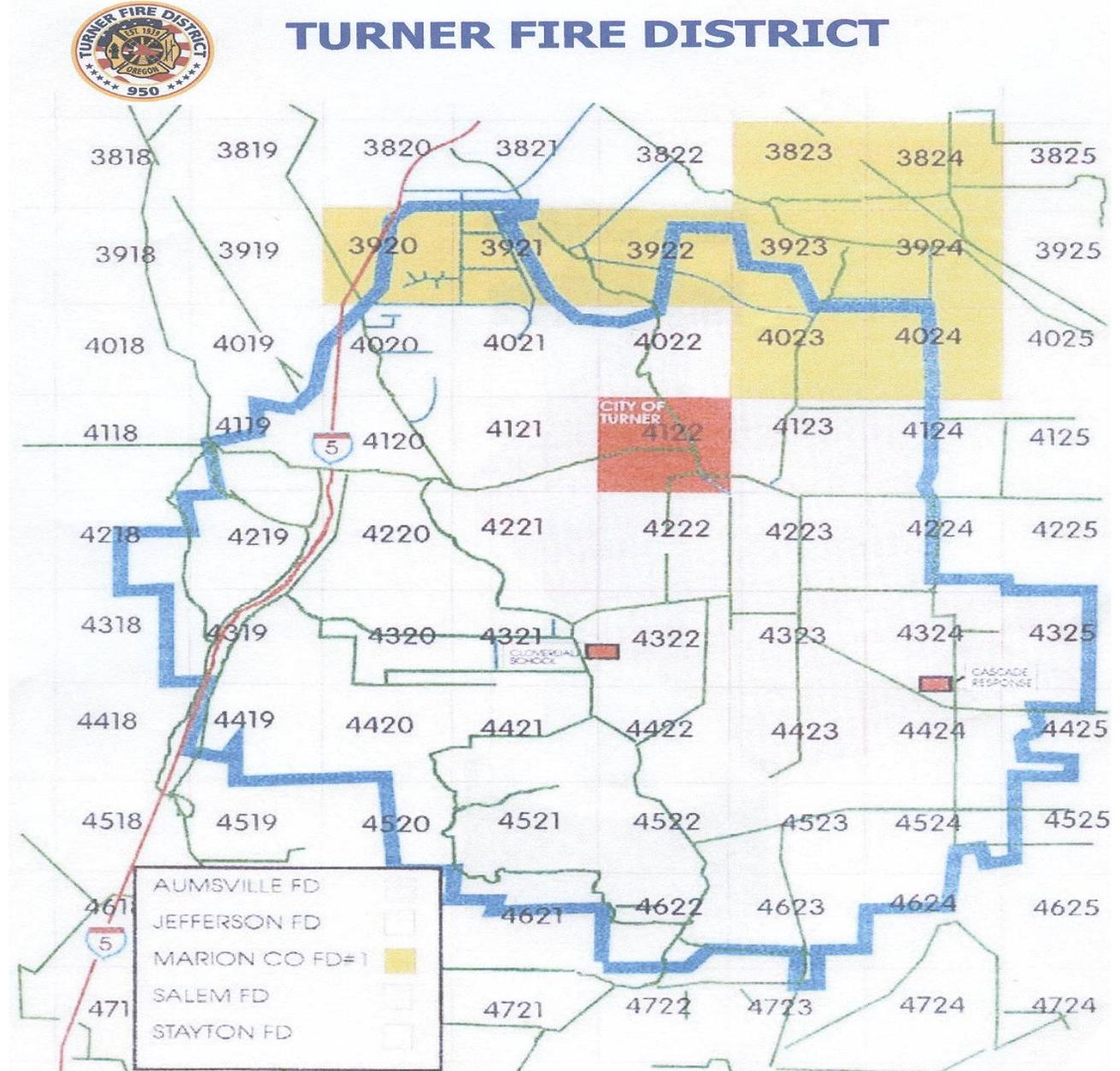
Web Site Information

Once the above information was gathered and reviewed we were able to determine high hazard areas and incident history. Our hope is the information contained in this flow study will assist not only Turner Fire District but many agencies in our county and state.

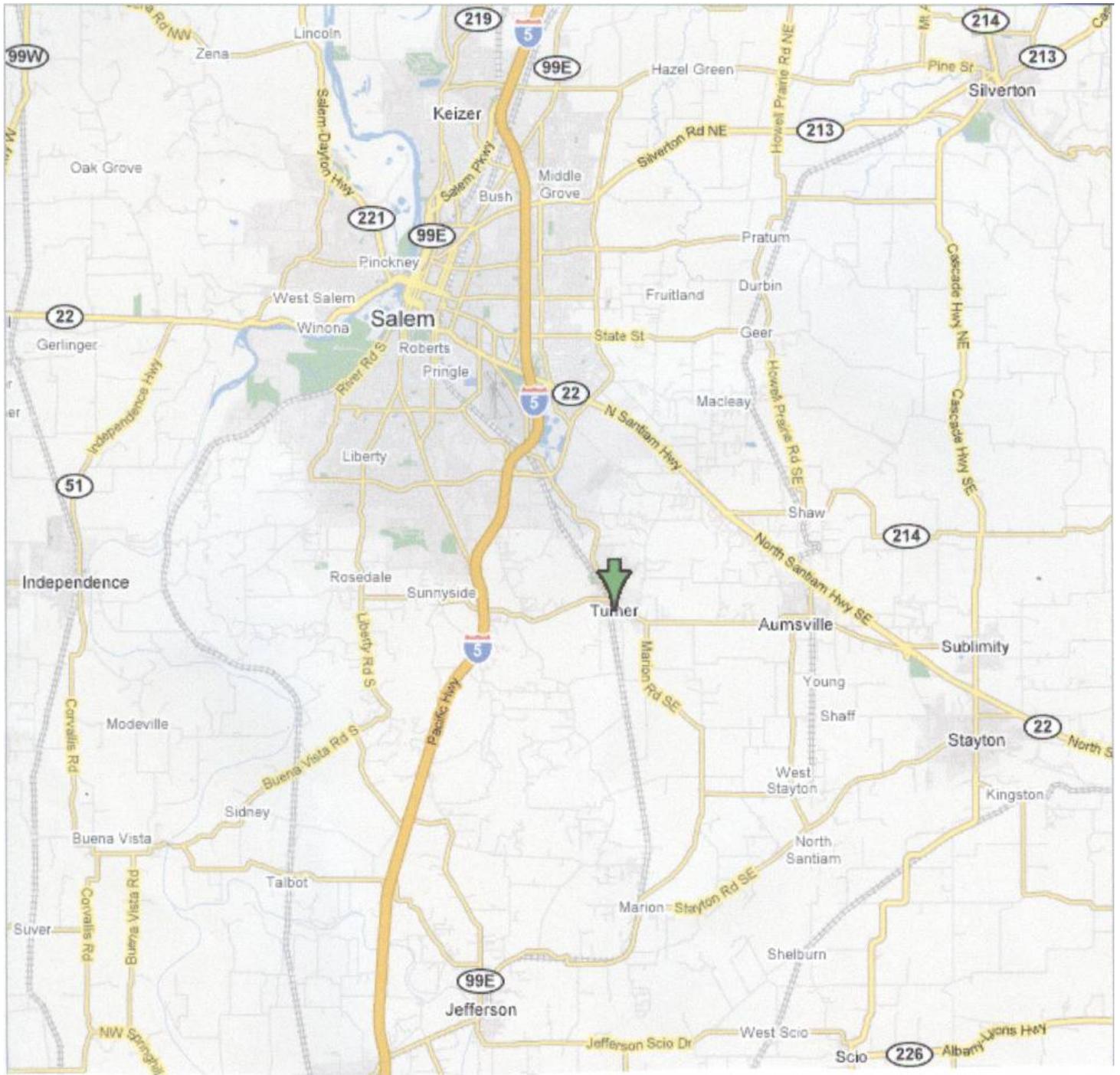
DISTRICT MAKEUP and STUDY AREA

The area of study for this commodity flow project was the Turner Fire District (see map below). The Turner Fire District is comprised of 50+ square miles. The City of Turner, with a population of 1570, is approximately in the center on the District. 50% of the jurisdiction's land use is for agriculture, wild land, open space, or undeveloped properties, 45% is used for residential purposes and 5% is used for commercial, industrial, or institutional purposes. The permanent resident population of Turner Fire District's Primary/First-Due Response Area totals 8000.

Turner Fire District is a combination department comprised of 50 members; 5 are on the Board, 11 are career and 34 are volunteers. The Fire District is located in Marion County and for the most part is east of Interstate 5 just south of the state's capital city, Salem.



Surrounding Area



Transportation Summary

Current Situation

Presently, Turner Fire District has very little data on hazardous materials in transit within the district. Turner Fire District is in need of this information as they plan for the future of an area that is growing rapidly. Without this vital Commodity Flow Study data the focus of planning and response activities including training will be inaccurate due to the lack of precise information. Accurate data will assist in emergency planning, station placement (keeping responders from being part of the problem as they respond to hazardous materials calls due to the station location), responder safety and response effectiveness.

Turner Fire District currently responds to hazardous material events like most other agencies in Marion County; Operation level first responders respond and size up the emergency using the NIMS (National Incident Management System) and call for help if needed. Turner Fire District currently uses Salem's Pollution Control for assistance and Hazmat 13 for additional State level help if needed. This could be something as simple as a phone call for advice to a full State level response with one to multiple hazardous material teams responding into the Fire District to assist in a major event (note: if Hazmat 13 is already committed to another emergency the State will send the next closest team).

Highway

Transportation through Turner Fire District comes in several forms. The most common mode of transport of hazardous materials or materials in general, not only locally but nationally, is by the system of roads. This study looked at those roads that run through the Fire District which include Delaney Rd., N 3rd St., Marion Rd., Mill Creek Rd., and others that will be in the road section of this study. Of note is the portion of Interstate-5 which for Turner Fire District spans from Kuebler Exit to the north and the Jefferson exit to the south. This Interstate is a main north-south route in the district which has heavy hazardous and non-hazardous commodity flow. (See maps in Study Area section; page 5). As the study was being conducted we were amazed at the amount of traffic that flows through Turner's Fire District. Above average vehicle traffic is a daily occurrence.

Rail

The rail system running through the Turner Fire District is a north-south system operated by Union Pacific (see maps in Railroad section; page 22). Also, two daily Amtrak trains run through the district along with Portland and Western Railroad who lease track time from Union Pacific Railroad. On

average 6-7 trains come through the Turner Fire District on a daily basis. Close to 20,000 train cars per year travel within mere feet of the current fire station. The railroad goes through the center of both the Turner Fire District and the City of Turner. Union Pacific does carry a wide range of hazardous materials including flammable liquids and flammable gas cars in the range of 20,000-30,000 gallons, chlorine, fertilizer and many other commonly transported materials.

Pipelines

The Williams Company manages the system that transports natural gas through a pipeline system that is located in the Turner Fire District. This line is the Camus to Eugene Line. This high pressure line is actually a line pair in the Turner Fire District. One line is 12 ¾ inches in outside diameter and the other line is a 20" outside diameter and is a looped line. Both lines run north and south side by side. These lines are located east of the City of Turner equidistance between the City of Aumsville and the City of Turner. Just to give you an idea of the run of the lines, it runs right next to Cascade High School and names one of its delivery stations Cascade High School Delivery Tap. Both lines are odorized with mercaptan to make it smell like rotten eggs. The Williams Company supplies an emergency response manual, response personnel and training when requested. We will include a map of the system in the pipeline section. As much as 500 million cubic feet of gas can go through this system on a given day. Flow varies greatly due to demand and maintenance. This line is regularly inspected and observed overhead by aircraft to watch for people working near this system as an added safety feature. If there is a problem in the system, contact The Williams Company. Emergency numbers and contacts will also be in the pipeline section.

The second pipeline of note in the Turner Fire District is the high pressure line that carries various types of hydrocarbon fuels. This pipeline is managed by Kinder/Morgan and has had an incident of major proportion in 1989 when the Kuebler Road project was in full swing. Of interest is we do not know what hydrocarbon fuel is moving through the line at any given time, without company assistance. And the amount of fuel is quite impressive at 1750 to 2400 barrels per hour or 73,500 to 100,800 gallons per hour of peak flow.

Water

Although waterways are not used in the Turner Fire District to transport hazardous materials, and thus will not be a part of this study, remember that these small waterways will add to the spread of a hazardous material spills in the District and will complicate emergency activities when working to contain a spill. A good example of this type of waterway would be Mill Creek. A good map of these waterways would be a valuable tool in hazardous material preplanning efforts.

Air

The City of Turner and Turner Fire District are not served by an airport but is a vital part of Salem Airport (McNary Field) flight path, and with the increase in regularly scheduled flights out of the Salem Airport the risk of a hazardous material incident coming out of the sky have increased. Salem's airport caters mainly to small aircraft with a fuel capacity of 100 gallons or less but with the military base adding aircraft and commercial flights by Delta Airlines, this is changing. For example the fuel carried on the Delta regional CRJ-200 jet is 2251 gallons and a UH-1 "huey" helicopter is 250-300 gallons.

Turner Fire District



HIGHWAY ANALYSIS

Highway Transportation Section

The following section is the first of 4 sections that will study the flow of materials through the Turner Fire District. These 4 sections are the “meat” of the commodity flow study.

Most materials that flow into and out of the Turner Fire District move on the highway system. More than 87% of hazardous materials use this system for transport nationally. In the Turner Fire District for the most part these materials move on Interstate 5 and move in and out of the District without even stopping or unloading, but the threat that they pose is great due to the amount. This Interstate has been and continues to be a “target” hazard. By “target” it is meant that the majority of the major hazardous materials emergencies in the past and future will probably involve this highway. The chemicals that will enter the Fire District will normally enter the City of Turner proper as they move toward there final destination.

We conducted studies that included both the local roadways and intersections on those roadways and Interstate 5. Just the sheer volume of traffic is amazing for a community of 1570 population and a Fire District that provides service to 8000 people. These figures that are presented here tell a story of a community and Fire District that is a main travel route for many vehicles, many carrying reportable quantities of hazardous materials and all carrying some amount of hazardous materials (fuel, antifreeze, oil, hydraulic oils, etc.).

We have attached several documents to this section; the first is the tool we used to collect the traffic data. This tool was created by the Department of Transportation and establishes a standard classification type for each vehicle. Then, documents that present in graph form and shows location and type of vehicle traffic that was observed during this study or were gathered by the Oregon Department of Transportation. We will first look at Interstate 5 and what hazardous material moves up and down this major freeway system.



Date _____ Start Time _____ End Time _____

Intersection: _____ and _____

Traffic Flow Study

Truck-Reefer: a single or tandem axel refrigerated truck, might be hauling milk, produce, refrigerated goods, etc

Truck-Agricultural: A truck for farm use, may be hauling fertilizer, hay, seed, etc.

Truck-Hazmat: any truck of any size with a hazardous materials placard.
UPS/FedEx

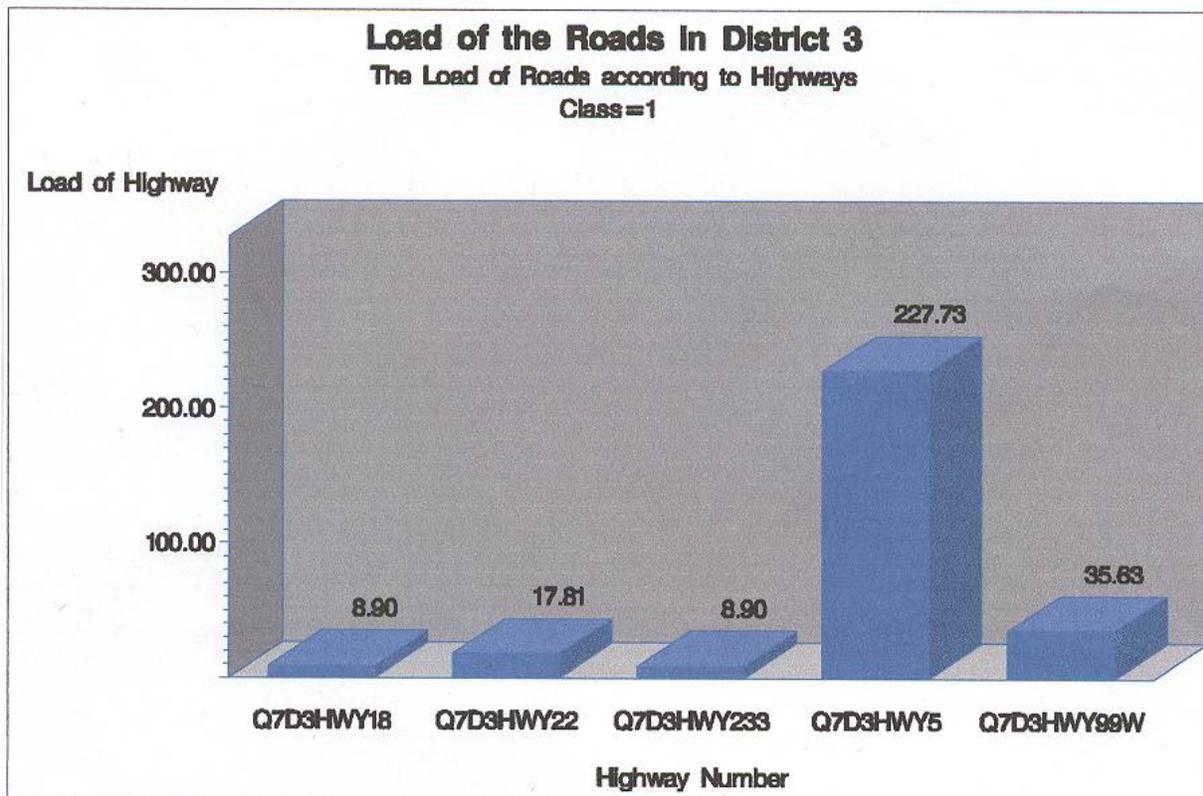
Truck-Other: any truck that does no fall in to any other categories, including commercial delivery

Ag Equipment: tractors, sprayers, etc

Other Vehicles: cars, pickups, motorcycles, etc.

I-5 Flow of Hazardous Materials By Hazard Class and Amount

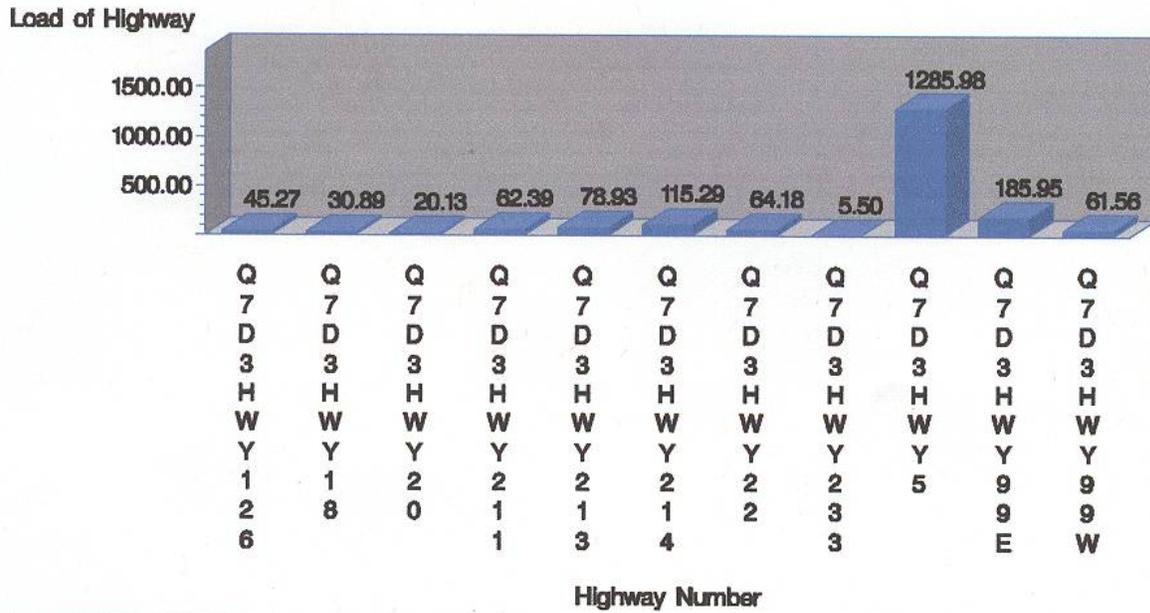
Below Data is from ODOT 2005 Commodity Flow Study
Note: District 3 includes Turner Fire District Response area.



Load of the Roads in District 3

The Load of Roads according to Highways

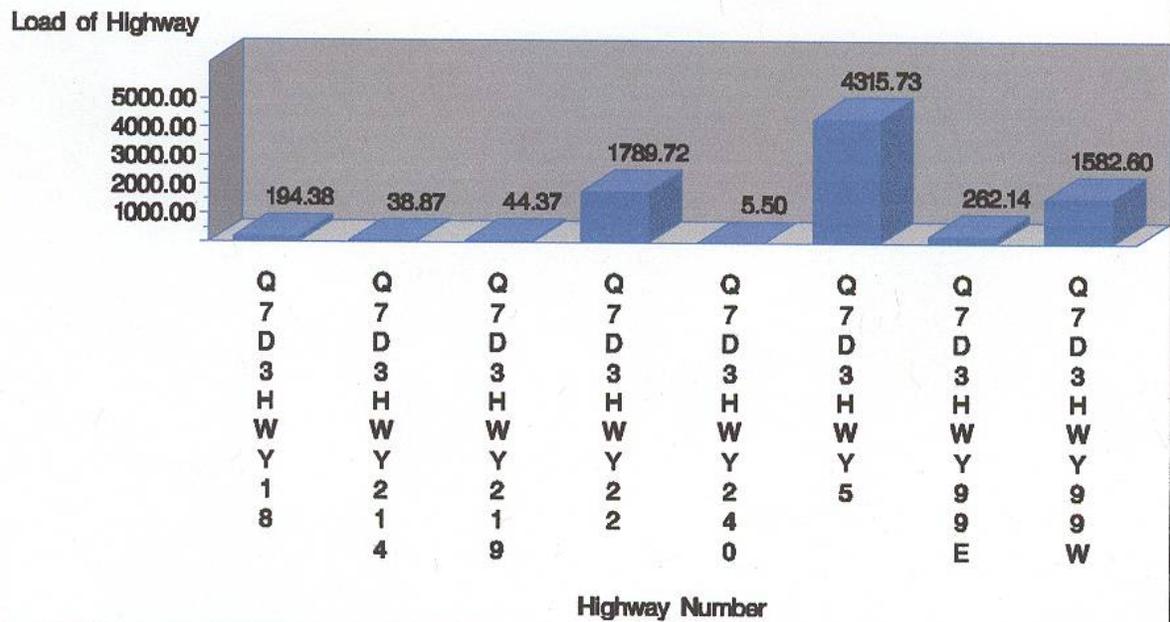
Class=2



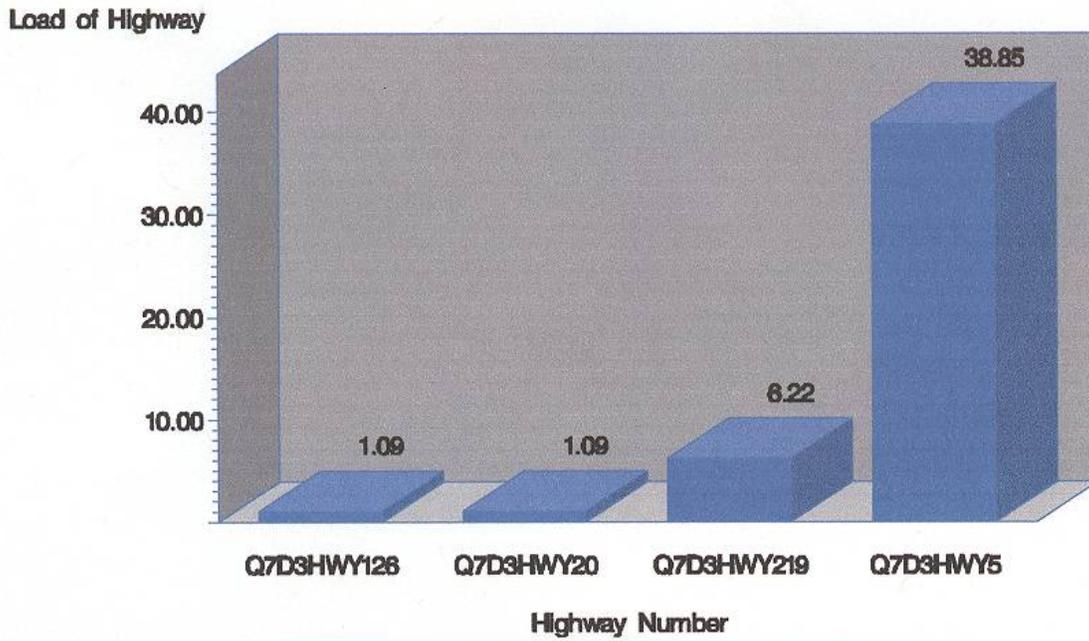
Load of the Roads in District 3

The Load of Roads according to Highways

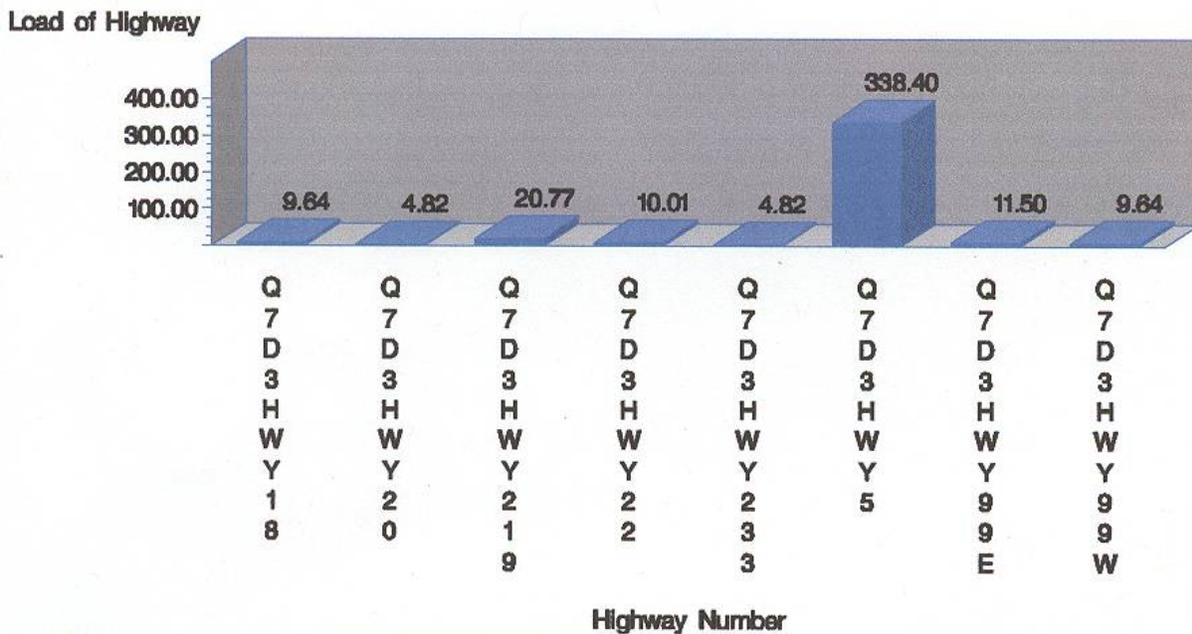
Class=3



Load of the Roads in District 3
 The Load of Roads according to Highways
 Class=4



Load of the Roads in District 3
 The Load of Roads according to Highways
 Class=5

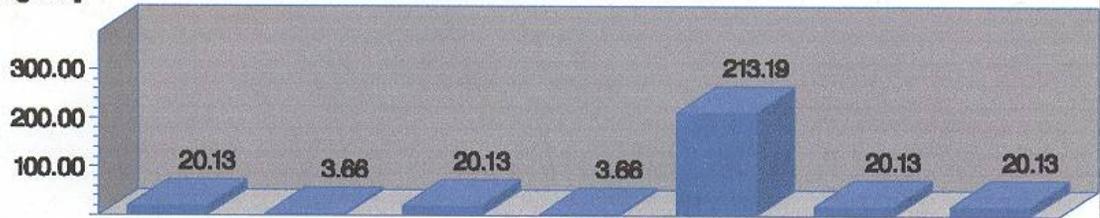


Load of the Roads in District 3

The Load of Roads according to Highways

Class=6

Load of Highway



Q	Q	Q	Q	Q	Q	Q
7	7	7	7	7	7	7
D	D	D	D	D	D	D
3	3	3	3	3	3	3
H	H	H	H	H	H	H
W	W	W	W	W	W	W
Y	Y	Y	Y	Y	Y	Y
1	2	2	2	5	9	9
8	0	1	2		9	9
		9			E	W

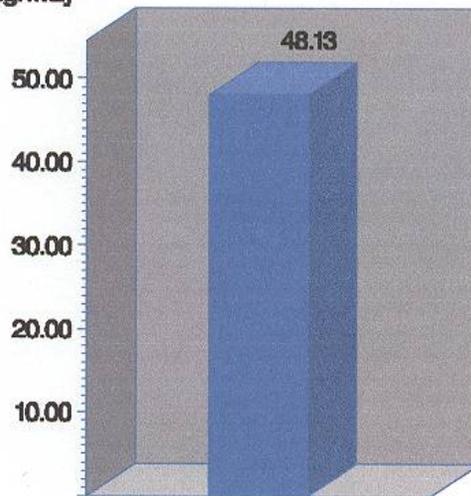
Highway Number

Load of the Roads in District 3

The Load of Roads according to Highways

Class=7

Load of Highway



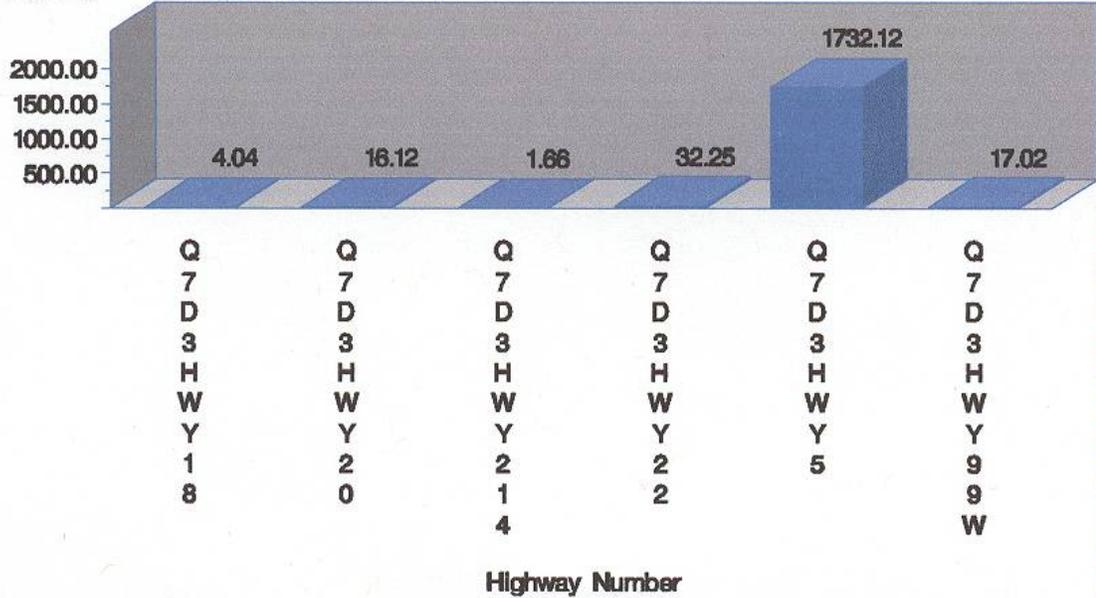
Q7D3HWY5

Highway Number

Load of the Roads in District 3

The Load of Roads according to Highways
Class=8

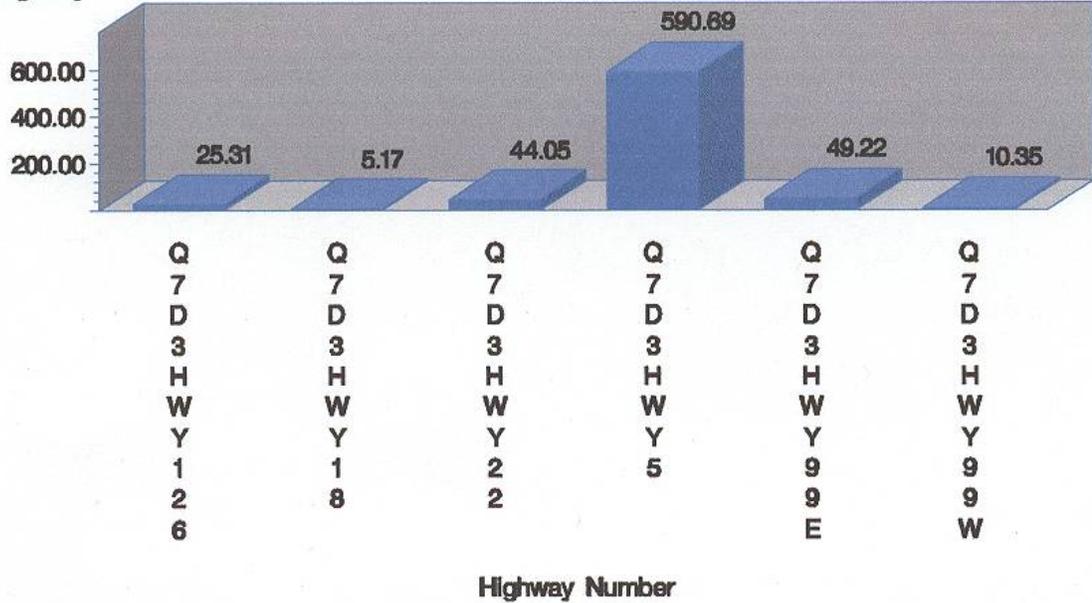
Load of Highway



Load of the Roads in District 3

The Load of Roads according to Highways
Class=9

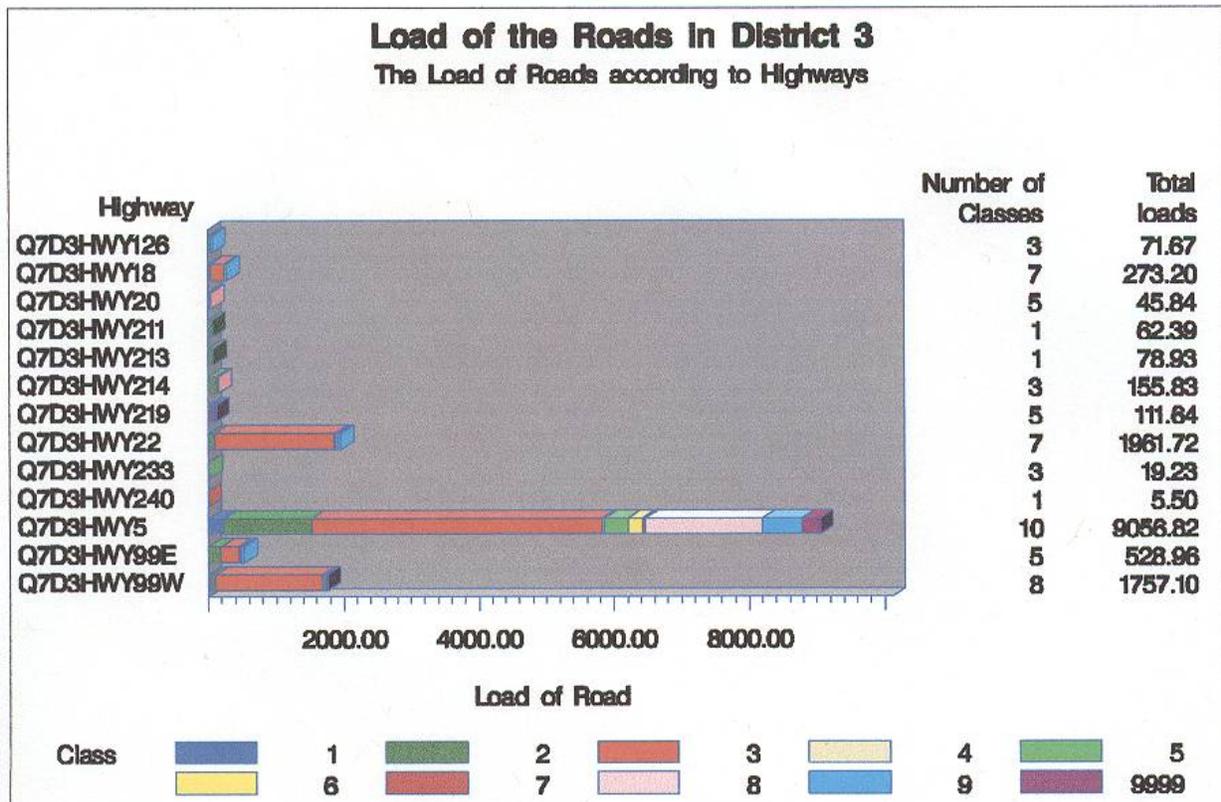
Load of Highway



I-5

As you can see with the above data, nearly 9,000 trucks with hazardous material traveled Interstate 5 during the study times that Oregon Department of Transportation used to conduct their most recent commodity flow study. These numbers are for District 3 which covers the section of Interstate 5 that Turner Fire District responds to. The bottom line is every hazard class moves through Turner Fire District on Interstate 5. The amounts shown in this study are only loads with placards and many transporters move amounts of hazardous materials that are below an amount to placard but could and would cause both a life and safety hazard in an emergency. Amounts up to 1000 pounds of hazardous materials can be carried without a placard. And remember that each semi truck can carry up to 500 gallons of fuel alone.

Interstate 5 has been and will continue to be a location that will generate the hazardous materials calls that make the newspaper due to there size and complexity.



The table above shows you how much more hazardous materials travel Interstate 5 then the other roads in the area.

ROADS IN THE FIRE DISTRICT

This was the most interesting part of this study. Although the amount in percent of hazardous materials vs. “other” vehicles was 1% or less, the amount of traffic throughout the District is very heavy. Just the trucks coming out of River Bend Sand and Gravel run 200 loaded trips a day or 400 round trips. Delaney Road traffic counts were consistent in the 250 per hour range and as high as 700+ per hour.

The following Roads and intersections within the Turner Fire District were part of this study:

Location	Date	Time	Traffic Count	Hazmat	Class
Delaney & Lavender	8/21/07	30 min 10:00	125	2	3
Delaney & Teral Ct	8/28/07	90 min 16:00	362	4	3
3 rd & Ash	8/28/07	120 min 07:00	480	4	3&8
Delaney & Teral Ct	8/29/07	165 min 09:00	440	11	3
Duckflat @ Tracks	8/29/07	120 min 16:00	73	0	na
Delaney & Teral Ct	9/02/07	90 min 07:00	218	0	na
3 rd & Ash	9/05/07	120 min 07:00	341	0	na
Duckflat @ Tracks	9/06/07	120 min 07:00	170	0	na
75 th @ Mill Creek	9/06/07	120 min 16:30	242	0	na
3 rd & Chicago	9/07/07	120 min 15:00	1023	6	3
Enchanted & Delaney	9/08/07	60 min 13:00	629	6	3
3 rd & Chicago	9/08/07	60 min 15:00	224	1	3
Marion @ CHS	9/08/07	60 min 12:00	144	0	na
Enchanted & Delaney	9/10/07	120 min 14:00	1443	4	3 & 4
3 rd & Chicago	9/11/07	120 min 07:00	723	2	3
Turner @ pick-a-part	9/11/07	120 min 12:30	615	3	3
Marion @ CHS	9/11/07	60 min 15:40	273	1	3
Turner @ pick-a-part	9/12/07	165 min 16:15	277	2	3
75 th @ Mill Creek	9/12/07	30 min 08:30	42	0	na
Marion @ CHS	9/12/07	90 min 07:00	514	0	na
Enchanted & Delaney	9/12/07	90 min 13:00	784	6	2 & 3
Cloverdale & Enchanted	9/13/07	30 min 12:00	38	1	9
Parish Gap & Hennies	9/13/07	120 min 06:40	382	0	na
Delaney & Squirrel	9/15/07	120 min 12:40	1192	0	na
Darley & Marion Rd	9/17/07	30 min 14:05	74	1	3

Marion @ CHS	9/17/07	75 min	14:45	394	0	na
Pearson & Summit Loop	9/17/07	30 min	13:00	39	0	na
Duckflat & Hunsacker	9/17/07	30 min	13:40	9	0	na
Enchanted & Delaney	9/17/07	120 min	10:40	723	12	2 & 3
Parish Gap & Hennies	9/18/07	180 min	14:35	460	2	9
3 rd & Delaney	9/18/07	120 min	13:40	488	8	3 & 9
Mill Cr & Marion Rd	9/18/07	120 min	07:10	565	6	2 & 3
Hennies & Wipper Rd	9/18/07	30 min	14:30	57	0	na
Combest @ Ogle	9/19/07	120 min	13:15	237	3	3
Val View @ 2 nd	9/19/07	60 min	15:35	158	0	na
Witzel @ Marion Rd	9/20/07	120 min	13:00	696	2	9

The above traffic data collected in the Turner Fire District indicates that motor vehicle accidents will significantly increase the risk of hazardous materials events in Turner Fire District due to the amount of traffic at all surveyed times. It could be a car into a train at Duckflat Rd. that causes a derailment or a school bus into a fuel truck (note the amount of class 3 materials moving through the District). Traffic in and around the City of Turner also moves at a fast pace. The people I had out in the field conducting this survey indicated fast drivers that always “had somewhere to go”.

Transportation through Turner Fire District comes in several forms. The most common mode of transport of hazardous materials or materials in general, not only locally but nationally, is by the system of roads. This study looked at those roads that run through the Fire District which include Delaney Rd., N 3rd St., Marion Rd., Mill Creek Rd., and others that are listed in the table above. As this study was conducted all of my staff were amazed at the amount of traffic that flows through Turner’s Fire District. Above average vehicle traffic is a daily occurrence.

Turner Fire District



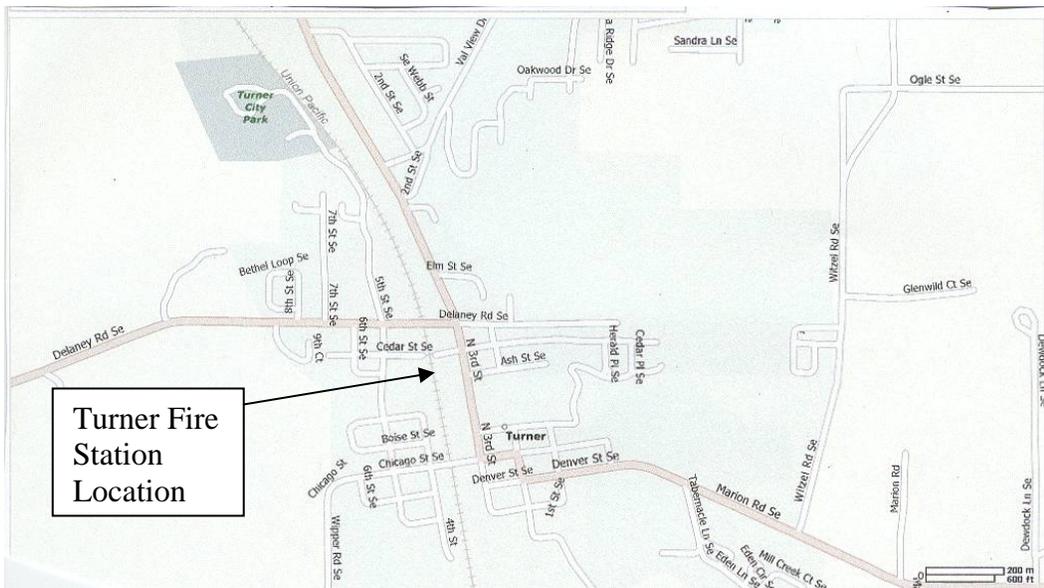
Railroad Analysis

Railroad Transportation Section

The rail system running through the Turner Fire District is a north-south system operated by Union Pacific (see maps below).



Map #1
UNION PACIFIC WESTERN U.S.



Map #2
Route
of
Rails
in
Turner

TRAINS

The significant issue with commodity flow over the rail system in the Turner Fire District is the proximity of the rail track to the fire station. Map # 2 above shows the relative distance and location of the fire station to the rail line.

Trains were witnessed during this flow study to run through the Turner Fire District as noted in the table below (average times):

Time	Type	Time	Type	Time	Type
6:00 AM	Freight	4:00 PM	Freight	6:15 PM	Freight
10:20 AM	Amtrak	6:00 PM	Amtrak	10:00 PM	Freight

With a one month study of the rail lines in the district, we calculated the following numbers: From the data collected we were able to estimate that Union Pacific moves 20,000 to 30,000 cars through Turner each year. Of those cars we estimate that 8%-10% are placarded loads (carrying more than 1001 lbs in most cases). So in any given year Union Pacific moves somewhere in excess of 1600-2000 cars of hazardous materials through the Turner Fire District. Also, Portland and Western Railroad leases the same tracks and adds an estimated additional 300 hazardous material cars to the system. The document below is a 2002 Oregon Department of Transportation survey of not only the number of hazardous material cars moved by Portland and Western in a year, but the actual chemical:

INTERCHANGED WITH UNION PACIFIC RAILROAD COMMODITY	CARLOADS
AMMONIA, ANHYDROUS	3
AMMONIUM NITRATE	28
BISULPHITES	35
COMBUSTIBLE LIQUID, NOS	2
ELEVATED TEMPERATURE	2
HYDROCHLORIC ACID	36
HYDROFLUORIC ACID	3
LIQUIFIED PETROLEUM GAS	70
METHYL ACETYLENE	2
PETROLEUM DISTILLATES	1
PETROLEUM GASES	27
PHOSPHORIC ACID	11
POTASSIUM HYDROCHLORIDE	7
PROPANE	5
SULPHURIC ACID	39

Turner Fire District



PIPELINE ANALYSIS

Pipeline Transportation Section (Williams)

We will begin this section with an example of the contact information sheet that is in the binder that the Williams Pipeline Company provides to each fire district. Williams updates this information every year. This is the most current contact information. The next page is a map of the actual pipeline in Marion County.

Revised May 22, 2007

KEY PERSONNEL



Williams Northwest Pipeline
Eugene District

EUGENE DISTRICT OPERATING OFFICE

89861 Game Farm Road
Eugene, Oregon 97408

PHONE NUMBERS

(541) 342-4434
(541) 344-3675 FAX

24 HOUR EMERGENCY NUMBERS

Gas Control (800) 972-7733
Salt Lake City, UT (801) 328-8252
(Call Collect) (801) 584-6949 or (800) 453-3810 x 6574

TELEPHONE NUMBERS OF THE EUGENE DISTRICT KEY PERSONNEL

Mike Haberkorn	Home	(541) 895-0981
District Manager	Cellular	(541) 953-0660

Larry Ferguson (Salem/Portland/Oregon City)	Home	(503) 749-1104
North District Leader	Pager	(541) 710-0650
Sr. Operations Technician	Cellular	(541) 912-0617

Jim Larrabee (Salem/Portland/Oregon City)	Home	(541) 726-0855
Operations Technician	Pager	(541) 814-0120
	Cellular	(541) 912-1366

Paul Andersen (Albany//Eugene/Creswell)	Home	(541) 926-8547
Central District Leader	Pager	(541) 710-0658
Sr. Operations Technician	Cellular	(541) 913-0591

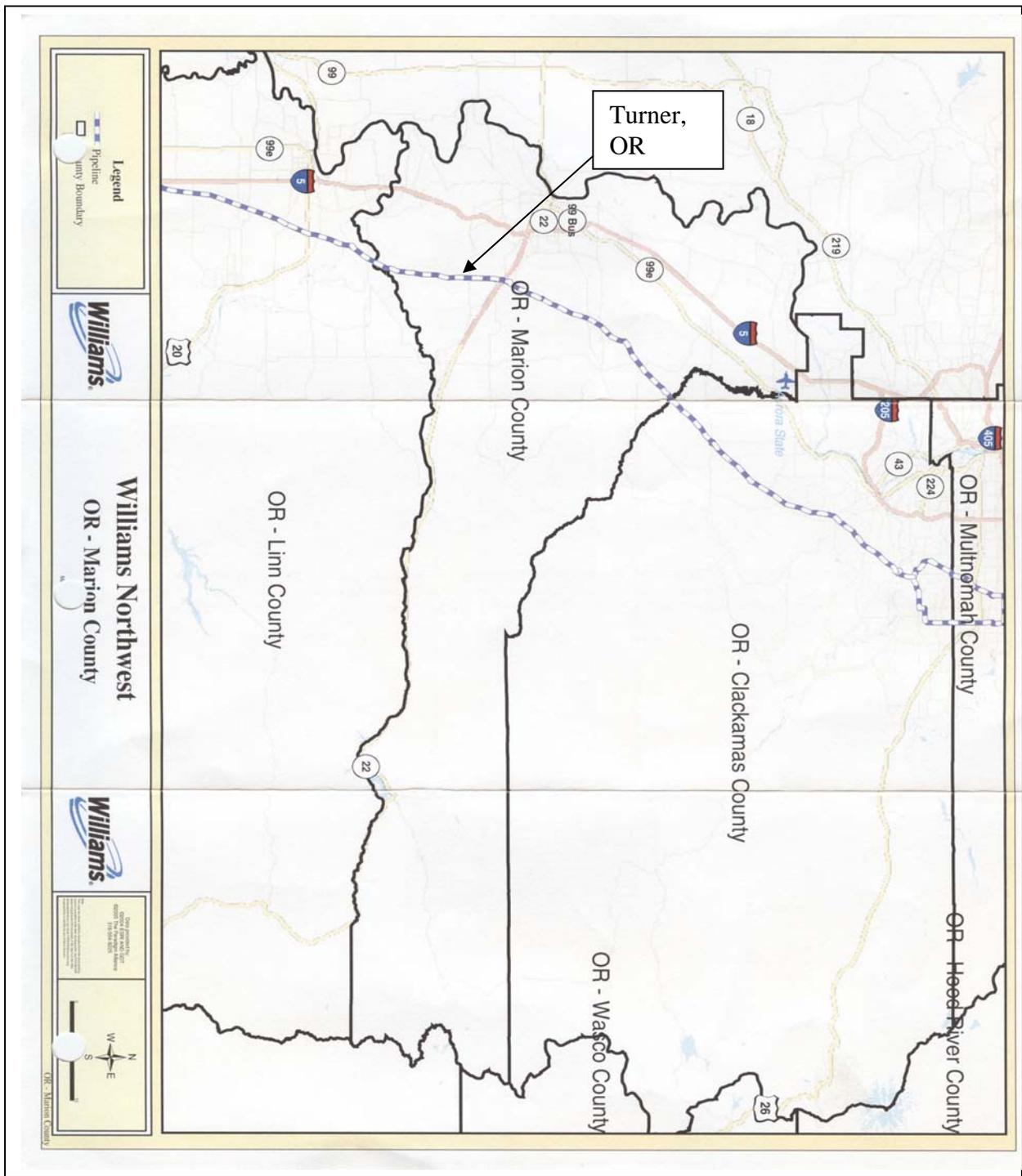
Larry West (Albany/Eugene/Creswell)	Home	(541) 726-4344
Operations Technician	Pager	(541) 710-0649
	Cellular	(541) 912-9079

Larry Davis (Roseburg/Klamath Falls)	Home	(541) 680-9841
Operations Technician	Pager	(541) 814-0125
	Cellular	(541) 912-7928

PUBLIC INFORMATION AND MEDIA INQUIRIES

Michele Swaner, Communications Specialist, Sr.	Office	801-584-7048
	Cellular	801-580-9590
	Home	801-532-2204

PJ Secrist, Communications Specialist	Office	801-584-6968
	Cellular	801-647-1212
	Home	801-359-4320



Williams Pipeline

Marion County

WILLIAMS NATURAL GAS PIPELINE

Many hazardous material 1st responder agencies forget about pipelines that carry fuel or gas due to the fact that they are underground and are usually well maintained. Part of this study was to try to locate emergencies that have occurred in the Turner Fire District associated with the Williams Pipeline system. The only emergency events that were documented in the Turner Fire District were minor and did not go beyond local response. This is amazing in that Oregon alone has over 15,000 miles of pipeline. I am familiar with other local agencies that have responded to valve failures and were only needed for standby due to the isolated locations of the valve stations. In both incidents that I was present, Williams Company personnel took the lead as fire personnel protected exposures.

The Williams Company manages the system that transports natural gas through a pipeline system that is located in the Turner Fire District. The average pressure in the system is 200 pounds per square inch (psi) and the sound is unmistakable if it goes to atmosphere. This line is the Camus to Eugene Line (see map above). This high pressure line is actually a line pair in the Turner Fire District. One line is 12 ¾ inches in outside diameter and the other line is a 20" outside diameter and is a looped line. Both lines run north and south side by side. These lines are located east of the City of Turner equidistance between the City of Aumsville and the City of Turner. Just to give you an idea of the run of the lines, it runs right next to Cascade High School and names one of its delivery stations Cascade High School Delivery Tap. Both lines are odorized with mercaptan to make it smell like rotten eggs. The Williams Company supplies an emergency response manual, response personnel and training when requested. As much as 500 million cubic feet of gas can go through this system on a given day. Flow varies greatly due to demand and maintenance. This line is regularly inspected and observed overhead by aircraft to watch for people working near this system as an added safety feature. If there is a problem in the system, contact the Williams Company. Emergency numbers and contacts are listed above and in the Turner Fire District copy of the Williams Company safety manual.



LIQUID PIPELINE

This liquid fuel pipeline carries fuel under high pressure. I will give the specifics of this pipeline later in this document, but first I would like to discuss a local emergency that took place in December of 1989. While crews were working on the Kuebler Blvd interchange at Interstate 5 a piece of heavy equipment came in contact with the high pressure liquid fuel line in Mill Creek. A hole about the size of a golf ball was punched into the line. The leak that ensued was pouring unleaded gasoline into Mill Creek at a high rate due to the high pressure. 911 was called and a hazardous materials response was initiated. Due to the fact that the leak was outside and was mistaken for a liquid petroleum gas or natural gas leak, only one Salem Engine was dispatched. Once the first in officer realized what he had subsequent alarms were struck.

This gasoline leak event lasted several days. The pipeline company was notified within the first hour, but before the pipeline company could shutdown the flow, over 33,000 gallons of unleaded fuel was in Mill Creek and heading for downtown Salem. Crews did the best they could to head the liquid off, but luck and good weather was more of a factor. The air temperature was in the 50's which reduced vapor production and the creek was flowing slowly.

This same Kinder/Morgan pipeline is located in the Turner Fire District. It runs north and south between Interstate 5 and the City of Turner. Just to give you a reference point, this line crosses Delaney Rd just east of Interstate 5. This liquid fuel line is a high pressure line that carries various types of hydrocarbon fuels (kerosene, gasoline, Jet fuel, etc). This pipeline is managed by the Kinder/Morgan Company. There is no way to tell what hydrocarbon fuel is moving through the line at any given time, without company assistance. And the amount of fuel is quite impressive; 1750 to 2400 barrels per hour or 73,500 to 100,800 gallons per hour of peak flow.



Delaney
Rd. Valve
Station

Kinder/Morgan contact information:



CONTROL CENTERS

T. J. (Tom) McLane, Manager – Control Centers

Office: (714) 560-4834
Pager: (714) 219-6879

Tom is responsible for daily activities related to the KMEP Control Centers located in Houston and Orange.

R. (Robyn) Lopez, Control Center Supervisor - Orange

Office: (714) 560-4843
Pager: (714) 201-1817

Robyn supervises the Line Controllers who operate the Orange Control Center 24 hours each day.

ORANGE CONTROL CENTER

In case of emergency, you may contact the Control Center if you need to reach Products Movement personnel.

EMERGENCY NUMBERS: (213) 624-9461 –or– (213) 624-9462

The Control Center is manned 24 hours. Four Pipeline Controllers are on duty at all times.
The areas of responsibility are as follows:

North Console: (714) 560-4840

The North Console handles the North Line, the Stockton Line, the Fresno Line and the Bakersfield Line.

West Console: (714) 560-4845

The West Console handles the West Lines and the San Diego Line.

East Console: (714) 560-4850

The East Console handles the East Line, the San Jose Line, the Brisbane Line and the Oregon Line.

Calnev Console: (714) 560-4855

The Calnev Console handles the both the 8" and 14" lines from Colton to Las Vegas.

Turner Fire District



AIR TRANSPORT ANALYSIS

AIR

Air traffic historically has not been a big hazardous materials problem for Turner Fire District, but we are not only looking at actual events in this study, but potential. Turner Fire District has moderate potential for a hazardous materials event by air. Daily scheduled commercial flights will continue to increase in number as the Delta connector flights are full and successful. FedEx continues to fly into its Salem hub on a twice daily basis and carries many types of hazardous materials. The military air base on the east side of McNary Field also will add to the challenge as it relates to potential hazardous materials event. Each military aircraft not only carries many gallons of fuel, most of these aircraft are made of exotic metals that will react and burn in abnormal ways.

As we know, Turner Fire District is not served by an airport but is a vital part of Salem Airport (McNary Field) flight path, and with the increase in regularly scheduled flights out of the Salem Airport, with the helicopter flight school flying 5 helicopters with students at the controls, the risk of a hazardous material incident coming out of the sky have increased. Salem's airport caters mainly to small aircraft with a fuel capacity of 100 gallons or less but with the military base adding aircraft and commercial flights by Delta Airlines, this is changing. For example the fuel carried on the Delta regional CRJ-200 jet is 2251 gallons and a UH-1 "huey" helicopter is 250-300 gallons.

As you can see the hazardous materials challenge is flying overhead and is increasing in amount as the Salem Airport continues to see success.



Conclusion

It was interesting how much hazardous materials move through the Turner Fire District. Normally you would expect that the roadways would carry the majority of the threat as it relates to the movement of chemicals. The national trend is 87% of hazardous materials are moved via roadways, and yes, Interstate 5 does offer some interesting challenges due to the 9,000 to 11,000 placarded loads that move through the fire district on an annual basis, but in the Turner Fire District the hazardous materials risk is the train, pipelines, highways and air in that order according to the data in this study.

The train that passes within mere feet of the fire station moves 20,000-30,000 cars of material past the station every year, and of those 1600-2000 cars are hazardous materials. Chlorine, fuels of all kinds, propane, fertilizers, methanol and the list goes on and on.

The pipelines systems that move hydrocarbon fuel (Kinder/Morgan) and natural gas (Williams Company) through the District surround the community and cut through the east and west sides of the District. The Williams natural gas pipeline is located on the east side of the District and travels north and south right next to Cascade High School; in fact they have a "tap" right on the soccer field at the school. These systems are safe, well maintained and monitored. The problem usually is people digging them up and penetrating the pipe, and with the growth in the area, that possibility is greater than ever. This system moves somewhere in the neighborhood of 500 million cubic feet of gas on a good day.

The liquid high pressure fuel line runs on the opposite side of the District, it also runs north and south. This pipe system is located about a ½ mile from Interstate 5 and crosses Delaney Rd just before the Interstate 5 junction. This system has a history in that it was penetrated in 1989 by a piece of heavy equipment working on Kuebler Blvd. just north of the Turner Fire District. This incident released 33,000 gallons of unleaded fuel into Mill Creek. This system is high pressure and moves between 73,500-100,800 gallons per hour at peak flow. The issue to responders once they know they have a leak is product identification and quick shut down. There is no way of knowing what hydrocarbon liquid is in the line without contacting the Kinder/Morgan Company.

The highway system also has a great deal of activity. The Interstate on the west side of the District carries by far the most hazardous materials of any of the Turner Fire District roadways. Our survey and the Oregon Department of Transportation information indicate that 9,000 trucks pass through the Fire District on Interstate 5 every year. Most of these shipments are Class 2, 3 and 8 which means a minimum of 1001 pounds of hazardous materials. And remember that shipments of less than 1000 pounds of most common hazardous materials (class 2, 3 and 8) do not need a placard by law. A significant issue related to the roadways in the Turner Fire District is the amount of traffic that flows, not only on the freeway, but on all the paved roads in the District. As we have seen from the data gathered in the highway section from 250 to 700+ vehicles move on any given main road (Delaney, 3rd, Turner etc.) every hour. Remember that every vehicle carries hazardous materials and we have seen an increase nationally of fires associated with car accidents. This can be illustrated by the death of a Marion County Deputy just a few months ago when his patrol car caught fire after being struck by another car.

And lastly, because air travel is normally a safe means of transport we do not expect to be involved in an air emergency in a normal career, but because of the increase in air traffic, especially commercial flights with Delta Airlines, the risk is increasing every year. Most aircraft carry 10's to 1000's of gallons of fuel and the exotic metals can be a test of personnel and the tools we normally carry with us. The challenge from the air also is increased because Turner Fire District is the flight path for Salem Airport, the new helicopter school that flies 5 helicopters everyday, the military air base in Salem has expanded its mission and upgraded both fixed wing and rotary aircraft and air traffic in general is increasing.

My hope is that this document is not set on a shelf to draw dust, but will be used to locate fire stations, apply for grants and most importantly be used to improve the safety at Turner Fire District.

