

**CITY OF WEST LINN
PLANNING AND
DEVELOPMENT**

EXHIBIT PC-21

**APPLICANT'S ORIGINAL SUBMITTAL (MINUS
ITEMS RESUBMITTED LATER)**

FILE NO.: DR-08-01/VAR-08-01/WAP-08-01

REQUEST: CLASS II DESIGN REVIEW FOR NEW 70-UNIT HOTEL AT 2400-2450 WILLAMETTE FALLS DRIVE REQUIRING WATER RESOURCE AREA PERMIT DUE TO THE PRESENCE OF BERNERT CREEK AND WETLANDS ON SITE AND INCLUDING A CLASS II VARIANCE FOR THE DEVELOPMENT OF MORE THAN 5,000 SQUARE FEET OF WATER RESOURCE TRANSITION AREA ON A SITE PARTIALLY WITHIN THE WATER RESOURCE AREA AND A CLASS II VARIANCE TO REMOVE THE ONLY SIGNIFICANT TREE WITH DRIPLINE + 10 AREA ON THE PROPERTY

West Linn

DEVELOPMENT REVIEW APPLICATION

DR-08-01
WA-08-01
VA-08-01

TYPE OF REVIEW (Please check all boxes that apply):

- | | | | |
|-------------------------------------|--|-------------------------------------|--|
| <input type="checkbox"/> | Annexation | <input type="checkbox"/> | Non-Conforming Lots, Uses & Structures |
| <input type="checkbox"/> | Appeal and Review * | <input type="checkbox"/> | One-Year Extension * |
| <input type="checkbox"/> | Conditional Use | <input type="checkbox"/> | Planned Unit Development |
| <input checked="" type="checkbox"/> | Design Review | <input type="checkbox"/> | Pre-Application Meeting * |
| <input type="checkbox"/> | Basement Vacation | <input type="checkbox"/> | Quasi-Judicial Plan or Zone Change |
| <input type="checkbox"/> | Extraterritorial Ext. of Utilities | <input type="checkbox"/> | Sidewalk Use App * |
| <input type="checkbox"/> | Final Plat or Plan | <input type="checkbox"/> | Sign Review * |
| <input type="checkbox"/> | Flood Plain Construction | <input type="checkbox"/> | Street Vacation |
| <input type="checkbox"/> | Hillside Protection and Erosion Control | <input type="checkbox"/> | Subdivision |
| <input type="checkbox"/> | Historic District Review | <input type="checkbox"/> | Temporary Uses * |
| <input type="checkbox"/> | Legislative Plan or Change | <input type="checkbox"/> | Tualatin River Greenway |
| <input type="checkbox"/> | Home Occupation App (except Type II) * | <input checked="" type="checkbox"/> | Variance |
| <input type="checkbox"/> | Lot Line Adjustment * / ** | <input type="checkbox"/> | Wetland |
| <input type="checkbox"/> | Minor Partition (Preliminary Plat or Plan) | <input type="checkbox"/> | Willamette River Greenway |
| <input checked="" type="checkbox"/> | Natural Drainageway Protection | <input type="checkbox"/> | Other/Misc |

TOTAL FEES/DEPOSIT _____ * No CD required / ** Only one copy needed

OWNER'S	ADDRESS	CITY	ZIP	PHONE (res. & bus.)
VKNW, Inc.	12700 SE McLoughlin Blvd, Milwaukie, OR 97222			503.894.8866
Same as above				449-8165
APPLICANT'S	ADDRESS	CITY	ZIP	PHONE (res. & bus.)
Schott & Associates, Inc.	F.O. Box 589, Aurora, OR 97002			503.678.6007
CONSULTANT	ADDRESS	CITY	ZIP	PHONE
	2400 Willamette Falls Dr			

SITE LOCATION North side of Willamette Falls Drive
 Assessor's Map No.: 2 1E 35D & 21E35DD Tax Lot(s): 3400 & 3500 Parcels 1&4
 Total Land Area: 1.58 Acres

- All application fees are non-refundable (excluding deposit).
- The owner/applicant or the ir representative should be present at all public hearings.
- A denial or grant may be reversed on appeal. No permit will be in effect until the appeal period has expired.

4. **Three (3) complete hard-copy sets (single sided) of application materials must be submitted with this application. One (1) complete set of digital application materials must also be submitted on CD in PDF format.**

The undersigned property owner(s) hereby authorizes the filing of this application, and authorizes on site review by authorized staff. I hereby agree to comply with all code requirements applicable to my application.

SIGNATURE OF PROPERTY OWNER(S)
 X *[Signature]* Date 12-18-07
 SIGNATURE OF APPLICANT(S)
 X *[Signature]* Date 12-18-07

BY SIGNING THIS APPLICATION, THE CITY IS AUTHORIZED REASONABLE ACCESS TO THE PROPERTY. ACCEPTANCE OF THIS APPLICATION DOES NOT INFER A COMPLETE SUBMITTAL. COMPLETENESS WILL BE DETERMINED WITHIN 30 DAYS OF SUBMITTAL.

PLANNING AND BUILDING, 22500 SALAMO RD #1000, WEST LINN, OR 97068; PHONE: 656-4211 FAX: 656-4108

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CITY OF WEST LINN
 22500 Salamo Rd.
 West Linn, OR. 97068
 (503) 656-4211

PLANNING RECEIPT
Receipt: # 932365
Date : 01/14/2008
Project: #DR-08-01
 BY:

NAME : VK NORTHWEST INC.
 ADDRESS : 12700 SE MCLOUGHLIN BLVD.
 CITY/STATE/ZIP: MILWAUKIE, OR 97222
 PHONE # : 449-8165

SITE ADD. : 2400 WILLAMETTE FALLS DR.

TYPE I HOME OCCUPATIONS		HO	\$
PRE-APPLICATIONS	Level I (), Level II ()	DR	\$
HISTORIC REVIEW	Residential Major (), Minor (), New ()	DR	\$
	Commercial Major (), Minor (), New ()		
SIGN PERMIT	Face (), Temporary (), Permanent ()	DR	\$
SIDEWALK USE PERMIT		DR	\$
APPEALS	Plan. Dir. Dec. (), Subdivsion (),	DR	\$
	Plan Comm./City Coun. (), Nbhd ()		

CITY/METRO BUSINESS LICENSE		BL	\$
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The following items are paid by billing against the up-front deposit estimate.
 If the amount of time billed to your project exceeds the amount covered by the
 deposit, additional payment may be required.

DESIGN REVIEW	Class I (), Class II (X)	RD	\$	20000.00
VARIANCE	Class I (), Class II (X)	RD	\$	1800.00
SUBDIVISION	Standard (), Expedited ()	RD	\$	
ANNEXATION	"Does Not Include Election Cost"	RD	\$	
CONDITIONAL USE		RD	\$	
ZONE CHANGE		RD	\$	
MINOR PARTITION		RD	\$	
MISCELLANEOUS PLANNING		RD	\$	1850.00
Boundry Adjustments	()			
Modification to approval	()	Natural Drainageway	(X)	
Code Amendments	()	Street Vacations	()	
Comp. Plan Amendments	()	Easement Vacations	()	
Temporary Permit Admin.	()	Will. River Greenway	()	
Temporary Permit Council	()	Tualatin River Grwy.	()	
Flood Management	()	Street Name Change	()	
Inter-Gov. Agreements N/C	()	Code Interpretations	()	
Alter Non-Conforming Res.	()	Type II Home Occ.	()	
Alter Non-Conforming Comm.	()	Planned Unit Dev. PUD	()	
Measure 37 Claims	()			

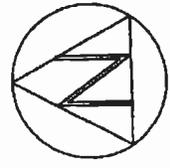
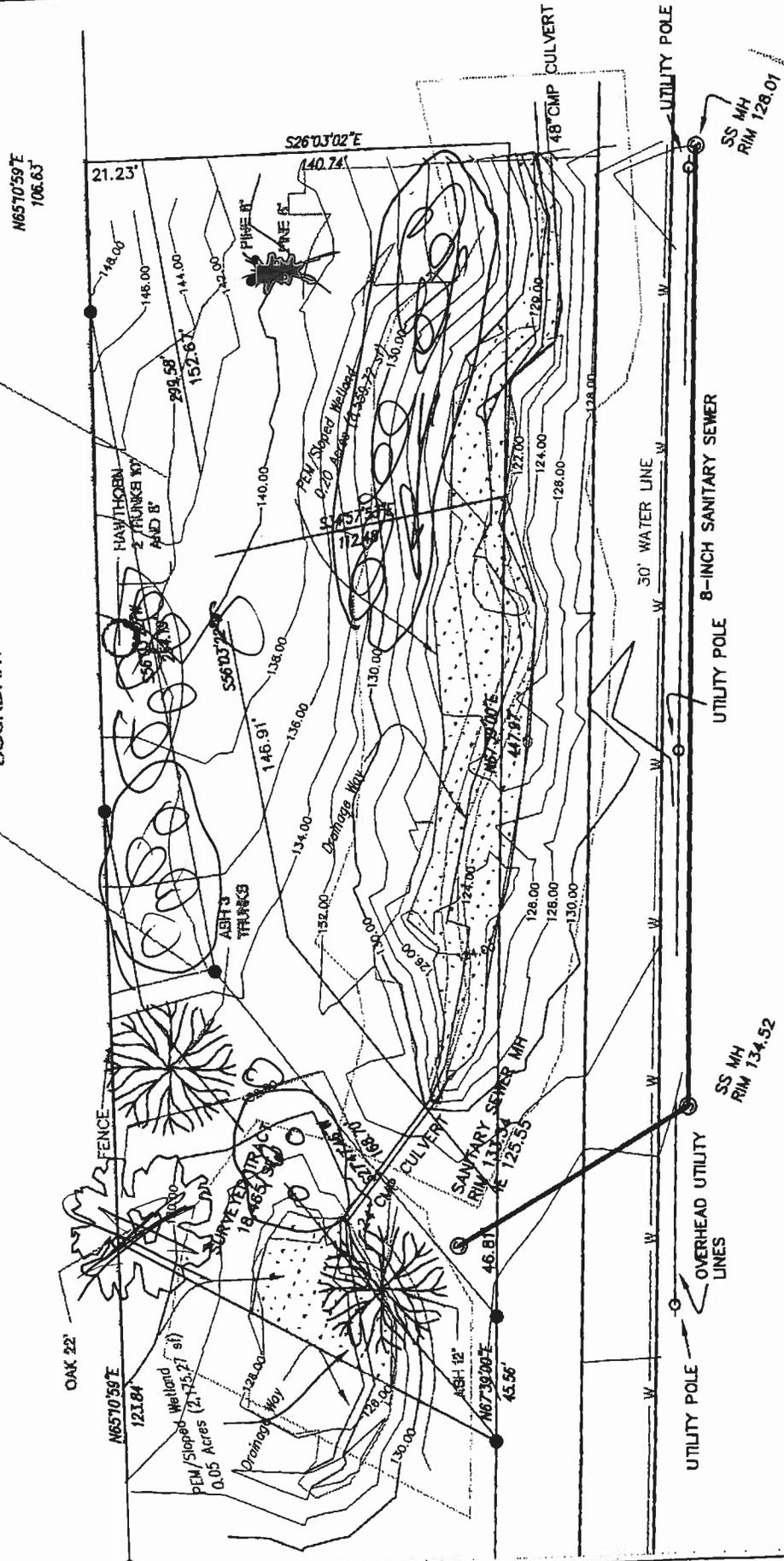
TOTAL REFUNDABLE DEPOSIT		RD	\$	23650.00
GENERAL MISCELLANEOUS Type:		PM	\$	

TOTAL	Check # 1028,1029	Credit Card ()	Cash ()	\$	23650.00
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2400 wfd.

TRANSITIONAL ZONE
BOUNDARY

TRANSITIONAL ZONE
BOUNDARY

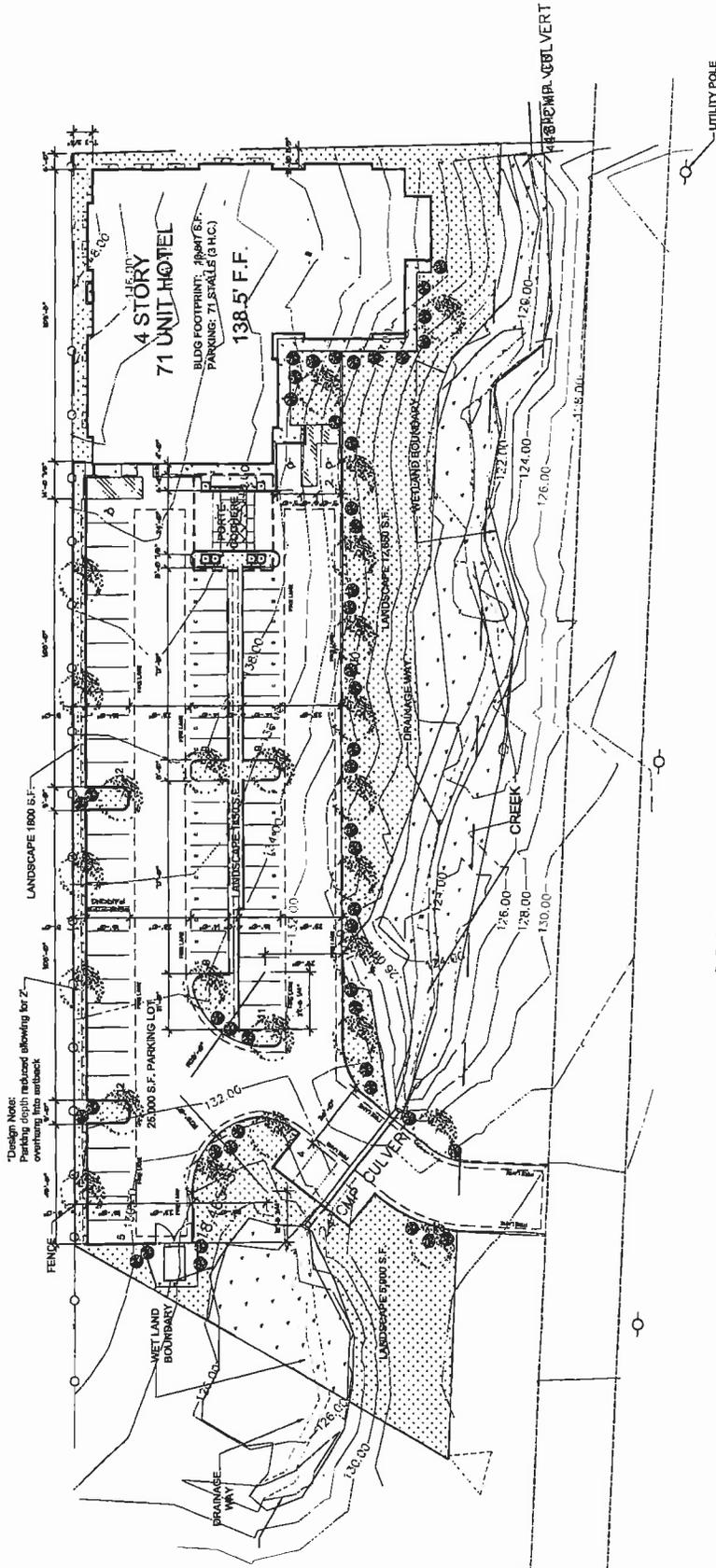


SCALE
 1" = 60'

Wetland map and survey provided by Burton Engineering (PLS).
 EXISTING CONDITION MAP - HOLIDAY INN EXPRESS
 WEST LINN, OREGON - PROJECT# 1920

A3

INTERSTATE 205



WILLAMETTE FALLS DRIVE

7TH STREET

*Design Note:
Parking depth reduced allowing for 2' overhang into setback

LANDSCAPE 1800 S.F.

25,000 S.F. PARKING LOT

WET LAND BOUNDARY

LANDSCAPE 2400 S.F.

LANDSCAPE 1400 S.F.

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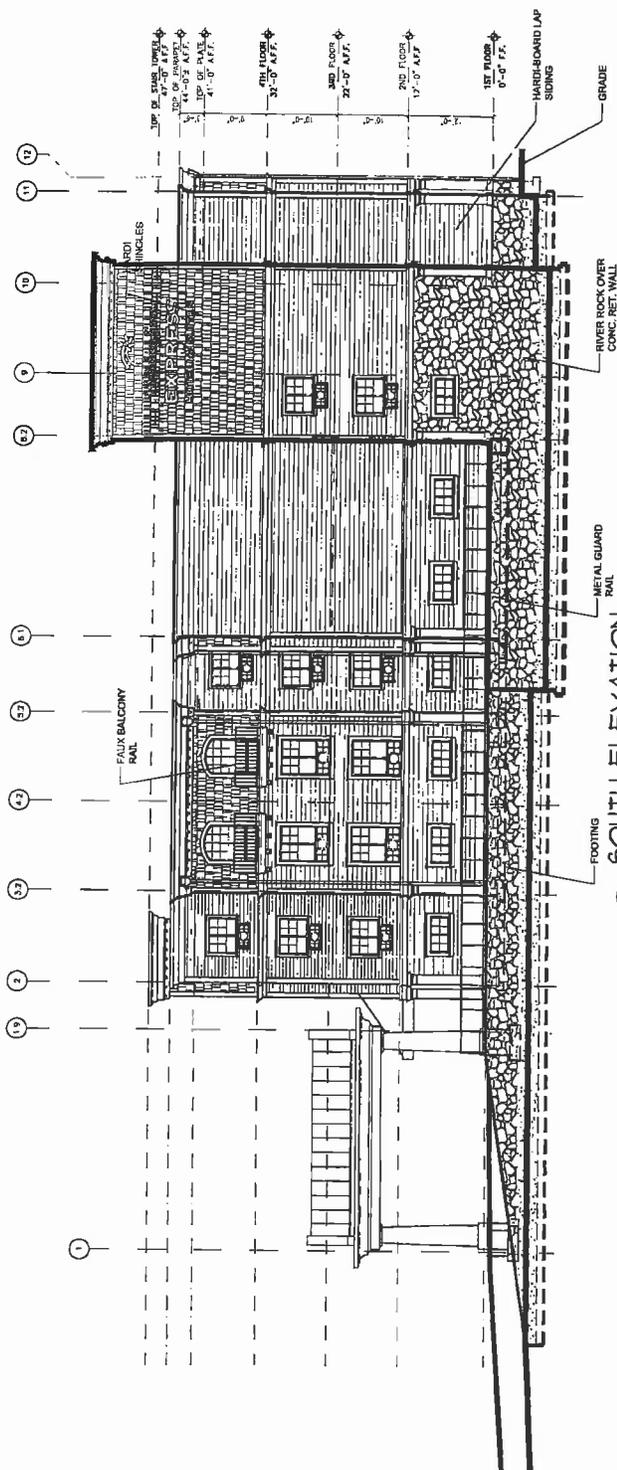
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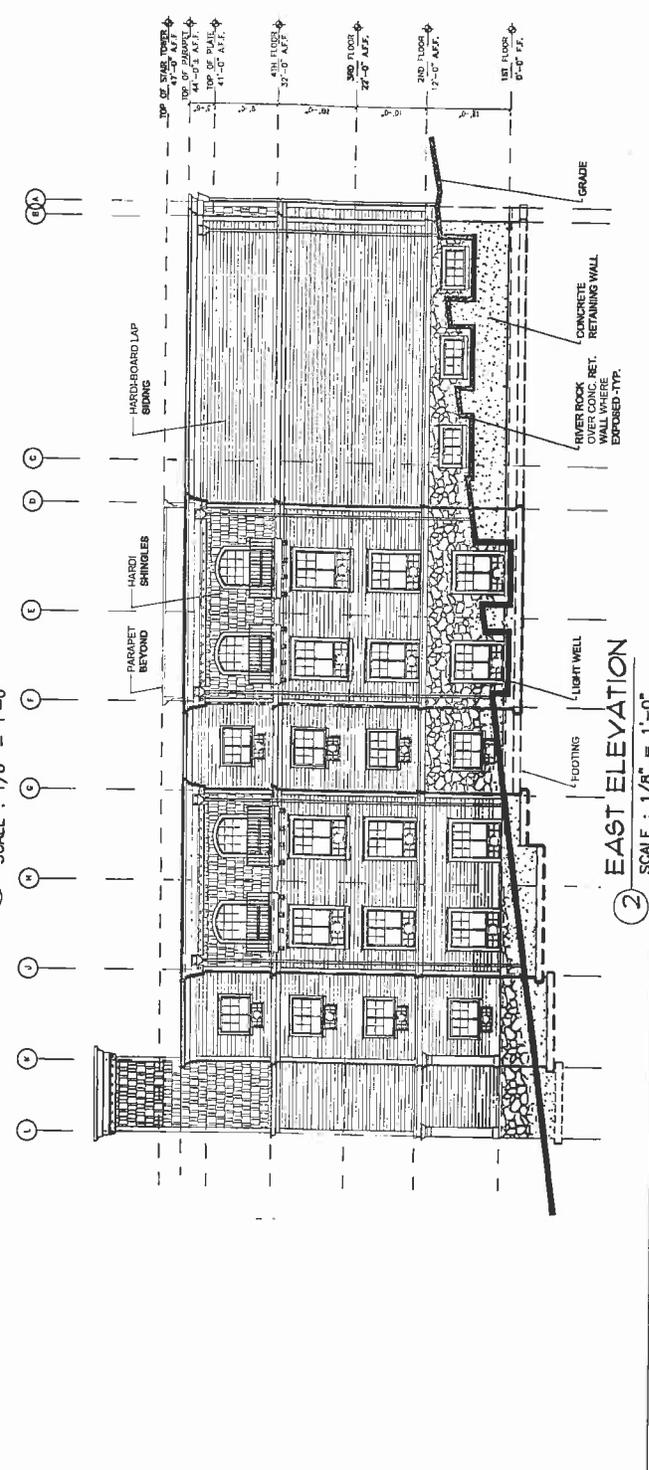
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No.	Date	Description
1	10/1/07	ISSUE FOR PERMIT

EXTERIOR ELEVATIONS



1 SOUTH ELEVATION
SCALE : 1/8" = 1'-0"



2 EAST ELEVATION
SCALE : 1/8" = 1'-0"



SCHOTT & ASSOCIATES
Ecologists & Wetlands Specialists

21018 NE Hwy 99E • P.O. Box 589 • Aurora, OR 97002 • (503) 678-6007 • FAX: (503) 678-6011

January 2, 2008

VKNW, Inc.
12700 SE McLoughlin Dr.
Milwaukie, OR 97222

Attn: Vic Patel

Re: Variance Application (Holiday Inn Express on Willamette Falls Drive, West Linn, OR)

Dear Mr. Patel:

We are writing this Variance Application for the proposed Holiday Inn Express to be located on Willamette Falls Drive in West Linn, OR. This application was initiated at your request, which was to be carried out by Schott & Associates, Inc., the authorized agent. A pre-application conference took place on March 14, 2007. This application includes the completed application form (See attached).

Included in this application is a narrative that addresses the approval criteria set forth in Section 75.060, which sustains the applicant's burden of proof. A site plan that meets Section 75.070 requirements has also been provided in the application packet (See Attached).

75.060 THE APPROVAL CRITERIA

The appropriate approval authority shall approve a variance request if all the following criteria are met and corresponding findings of fact prepared. The approval authority may impose appropriate conditions to ensure compliance with the criteria. The approval authority shall deny the variance if any of the criteria are not met.

- 1. Exceptional or extraordinary circumstances apply to the property which do not apply generally to other properties in the same zone or vicinity, and result from lot size or shape, legally existing prior to the date of this ordinance, topography, or other circumstances over which the applicant has no control.*

The size and topography of the subject property combined with the location of the onsite water features result in limited available building space. The subject property is an irregular shaped parcel that is long and narrow extending from southwest to northeast. A drainage way flows through the southeastern side of the site. Wetlands flank the channel of the drainage way on both sides extending from the ordinary high water mark of the channel to the toe of the slope that surrounds the drainage. The side slopes surrounding the water features were greater than

25%. All of these factors result in a building area that is too narrow to develop without impacting a significant portion of the transition zone.

The subject property is 1.58 acres in size and approximately 0.25 acres are covered by water features. An additional 1.16 acres is occupied by slopes greater than 25% and the transition zone. The remaining buildable area is approximately 0.17 acres. There is not enough square footage to build the proposed development without encroaching more than the allowed distance into the transition area.

2. *The variance is necessary for the preservation of a property right possessed by owners of other property in the same zone or vicinity.*

The two adjacent properties to the southwest and northeast have general zone similarities (Commercial). The offsite property located to the southeast is currently developed on the southeast portion of the site, and the water resources are situated behind the development adjacent the northwest property line. This site had the same lot size and configuration issues as the subject property except the water resources are located on the back portion of the lot rather than adjacent to Willamette Falls Drive. We do not have exact measurements of the distance between the resource and the edge of the existing development but it appears to be well within the regulatory limits of the transition area.

The property to the northeast is currently developed however the water resources are no longer present. The resource flows from the subject property into a hard pipe near the northeastern property boundary before extending beneath the neighboring property to the northeast. The owner of the property was allowed to fill the existing resource.

By granting this variance request, the property owners will be allowed similar rights as the neighbors to the southeast. The property owners do not wish to fill the resource, only to construct the proposed development by minimizing impacts and mitigating for the impacts offsite.

3. *The authorization of the variance will not be materially detrimental to the purposes and standards of this Code, will not be inconsistent with all other regulatory requirements, and will not conflict with the goals and policies of the West Linn Comprehensive Plan.*

The purposes and standards of the code have been followed. Impacts to the transition zone were unavoidable therefore the design of the proposed development was minimized to the greatest extent possible while still meeting the Holiday Inn Express franchise requirements. The impacts to the transition zone due to the proposed development were greater than what is allowed per Chapter 32 requirements therefore a variance request was required. Although the transition zone is proposed to be reduced, water quality functions will be improved with the proposed enhancement of the remaining onsite transition zone. The enhancement plan will provide native trees and shrubs that will create greater shading of the water resources, bank stabilization, sediment and pollution control, and organic material sources. Stream flow and

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water storage will not be adversely affected. Stormwater flow from the proposed development will be treated and detained. Mitigation for the proposed impacts will be provided in an offsite location.

Much of the site, especially within the transition zone, has been disturbed by fill activities and the removal of native species. The native plantings will replace existing non-native species such as Himalayan blackberry, English hawthorn, bull thistle, and European bittersweet.

The November 2006 Wetland Delineation report has been concurred with by the Oregon Department of State Lands (WD #06-0708). No other permits or concurrences are required from the State or Federal jurisdictions.

4. *The variance request is the minimum variance, which would alleviate the exceptional and extraordinary circumstances.*

Three alternative plans have been provided to illustrate the limited buildable space and the minimum requirements of the Holiday Inn franchise (See Water Resource Area Report). The three alternative plans include a “No Build Site Plan”, a “Reduced Impact Site Plan”, and the “Preferred Site Plan”. The minimum amount of rooms and parking stalls per Holiday Inn Express franchise requirements were met, which minimized impacts to the transition zone.

Although much of the transition zone will be impacted by development, the site development plan demonstrates how the applicant proposes to avoid the onsite drainage and associated wetlands. Additional adverse impacts to the water resource areas will be avoided by utilizing the existing road crossing for ingress/egress, erecting a multi-floor hotel to minimize sprawl, eliminating all but one building entrance, and reducing the number of parking spaces. By utilizing the existing road crossing for ingress and egress a second access point will not be needed. A second access point would impact the existing drainage/wetland area on the eastern side of the property, which would require a wetland removal/fill permit application.

5. *The exceptional and extraordinary circumstances do not arise from the violation of this ordinance.*

The exceptional and extraordinary circumstances arise from the size and configuration of the lot in relation to the water feature that flows across the southwestern portion of the lot, not from the violation of the City of West Linn ordinance. The subject property is a platted lot of record and appropriately zoned.

6. *The variance will not impose physical limitations on other properties or uses in the area, and will not impose physical limitations on future use of neighboring vacant or underdeveloped properties as authorized by the underlying zoning classification.*

The property to the northwest consists of the Interstate 205 right-of-way and Willamette Falls Drive borders the property to the southeast. The proposed development will not impose

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physical limitations on other properties or uses in the area, and will not impose physical limitations on future use of neighboring vacant or underdeveloped properties as authorized by the underlying zoning classification. As previously mentioned the neighboring properties to the southwest and northeast are existing developments that have intruded well into the transition zone and fully impacted the water resource area, respectively. The proposed variance request will only affect the onsite transition zone, which will be fully mitigated offsite (See Water Resource Area Report).

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AACOUSTICS
3924 S.W. CAMILLE TER.
PORTLAND, OR 97223-7043
TEL/FAK: 503-877-2890
elli@aacoustics.com

October 12, 2007

Brad Kaul, AIA
Steven P. Elkins Architects
11000 NE 33rd Place, Suite #101
Bellevue, WA 98004
P:425-827-3252
F:425-889-9174

Re: Acoustical Evaluation
Holiday Inn, West Linn Development

A Holiday Inn is to be constructed on a site bounded on the north by an I-205 ramp, and on the east and west by commercial buildings on Willamette Falls Drive. Residential housing is located approximately 300 feet to the south across Willamette Falls Drive. (see maps below).

The City of West Linn requires a noise study as per Community Development Code (CDC) Chapter 55. This report provides said study.

On September 26, 2007 at 11:10 AM, *A Acoustics* conducted sound data collection to establish existing ambient sound levels. The data collection site is located at the corner of 7th Street and Willamette Falls Drive West Linn Oregon 97068 and is indicated on MAP I below.

This report contains findings and analysis of the measured sound data together with analysis of expected acoustical impacts of the project including compliance with acoustical regulations 1) during the construction phase and 2) during normal operation after project completion.

Noise Regulations

This project is subject to two different City of West Linn regulations: 1) Development Code and 2) Municipal Code (see details below). The latter is more restrictive. It is recommended that design criteria comply with both standards. .

Development Code

This project is subject to the City of West Linn Community Development Code section 55.100(D): "Privacy and noise", (<http://www.ci.west-linn.or.us/Services/Planning/CDC/CommDevCode/CDC-Ch.55.pdf>). This code includes tables on page 55-26 (ORD. 1442): allowable sound levels. These limits are shown in Table I below:

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Table I
West Linn Community Development Code Section 55.100(D)
Page 55-26 (ORD. 1442)
Allowable Sound Level Within 25 Feet of a Dwelling

Statistical Noise	7:00 a.m. to 7:00 p.m.	7:00 p.m. to 7:00 a.m.
L ₅₀	55 dBA	50 dBA
L ₁₀	60 dBA	55 dBA
L ₀₁	75 dBA	60 dBA
Impulse Sound	100 dB	80 dB

L₅₀, L₁₀, and L₀₁ are the sound levels in dBA, which are reached or exceeded 50%, 10% and 1% of the measurement time, respectively.

Municipal Code

City Municipal Code #5.487 "Sound Level and Noise" applies after completion of the project to the operation of the finished development. City Municipal Code #5.487 can be found at: <http://www.ci.west-linn.or.us/Information/CityDocuments/Municode/Ch05rev05-05.pdf>

The following Table II shows the maximum sound levels allowable at the property line.

Table II
Allowable Sound Level at Noise Sensitive Use Property Line

Statistical Noise	7:00 a.m. to 7:00 p.m.	7:00 p.m. to 7:00 a.m.
L ₅₀	55 dBA	45 dBA
L ₁₀	60 dBA	50 dBA
L ₀₁	70 dBA	55 dBA
Impulse Sound	95 dB	80 dB

Data collection

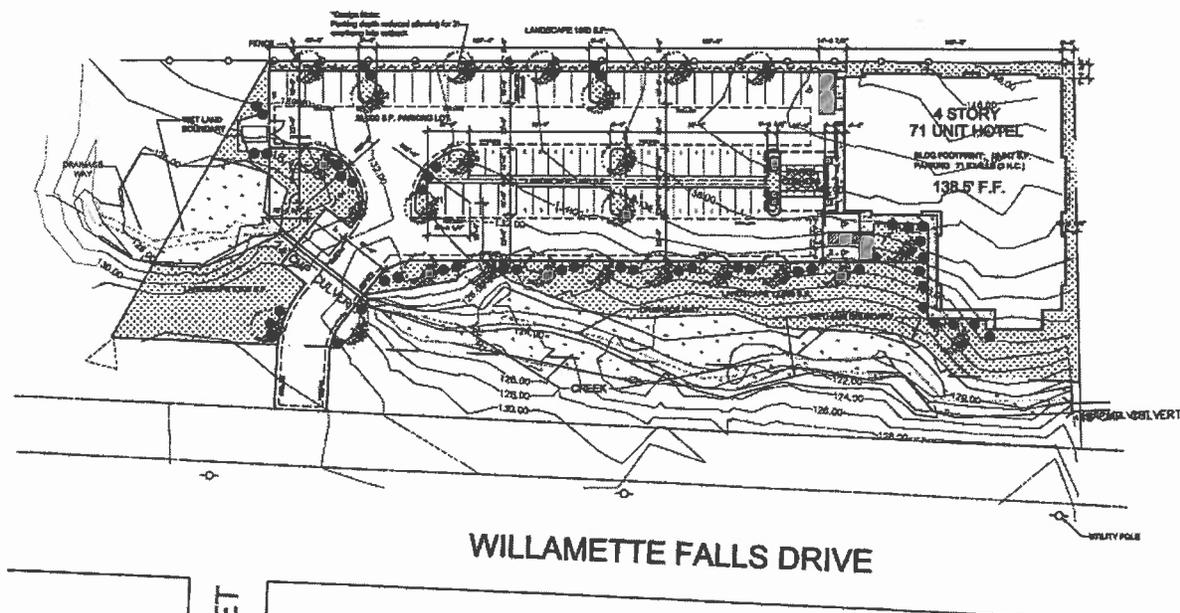
A precision sound pressure level meter (Type I) was placed at the recording location, at the corner of 7th and Willamette Falls Drive. (see Map I). Sound data together with a calibration signal were recorded on to an acoustical computer. Observations of ambient and other noise sources such as wind, traffic and other pertinent factors were noted during the data collection intervals. Data was computer time-stamped at one-second intervals.

Data collection occurred between 11:10 a.m. and 11:35 a.m. September 26, 2007. Skies were cloudy, air temperature 67⁰ F, and the loudest ambient sound was from vehicular traffic.

MAP I Aerial Photo with Sound Recording Location



MAP II Site Map of the Proposed Development INTERSTATE 205



Findings

Table III is a summary of the study results:

TABLE III

RECORDING NUMBER	ALLOWABLE NIGHTTIME SOUND LEVEL (TABLE II)			RECORDED AMBIENT SOUND LEVEL		
	L ₅₀	L ₁₀	L ₀₁	L ₅₀	L ₁₀	L ₀₁
1	50 dBA	55 dBA	60 dBA	59dBA	62 dBA	67dBA

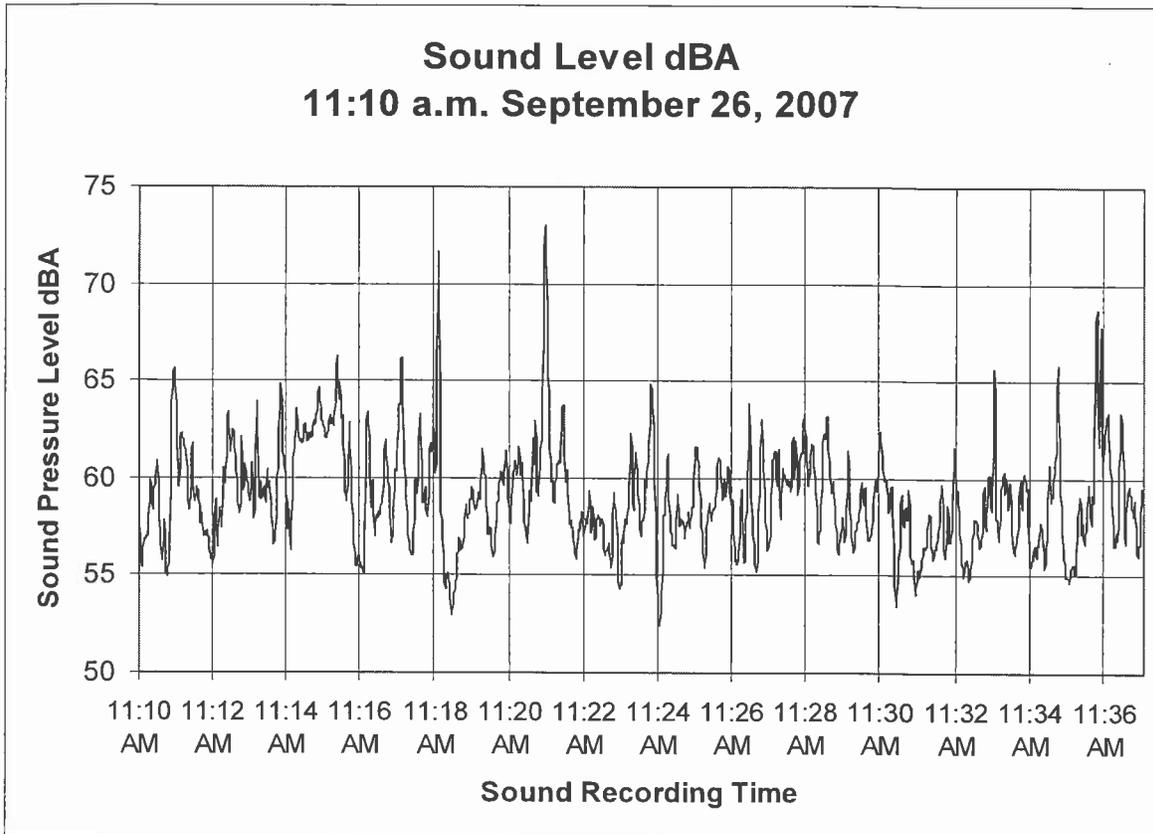
Table III shows that the existing L₅₀, L₁₀ and L₀₁ ambient sound levels at the collection station exceed sound level limitations for “noise sensitive use”.

The following graphs show sound level data using two graphical representations:

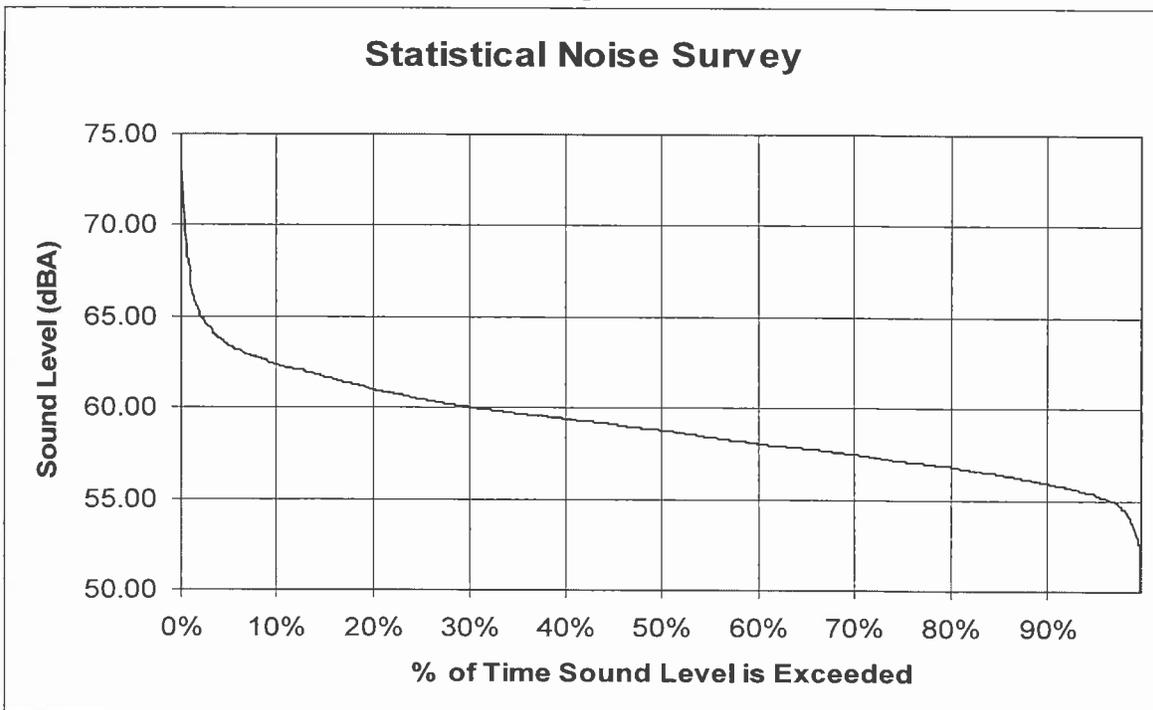
1. Graph 1 shows the sound level as recorded. The X-axis is time of the sound measurement and the Y-axis is sound level in dBA.
2. Graph 2 shows the same data with data points sorted according to sound level and plotted against the percentage of the time period during which each sound level occurred. The X-axis is the percent of the measurement time and the Y-axis is sound level in dBA. This representation of the sound data is necessary to calculate the L₅₀, L₁₀ and L₀₁ values. For example the L₅₀ value is the sound level, in dBA, which was reached or exceeded during 50% of the measurement time period.

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Graph 1
Sound Recording



Graph 2



A=15

“Noise Sensitive Use” Sites

After development there will be five “noise sensitive use” sites:

- 1) House at 2475 Willamette Falls Dr. West Linn, OR 97068
- 2) House at 2449 Willamette Falls Dr. West Linn, OR 97068
- 3) House at 2445 Willamette Falls Dr. West Linn, OR 97068
- 4) House at 2435 Willamette Falls Dr. West Linn, OR 97068
- 5) House at 1590 7th Street, West Linn, OR 97068

PREDICTED SOUND LEVELS

Sound sources associated with the new development may include:

- 1. Traffic pattern changes on Willamette Falls Dr
- 2. Parking lot sounds. Automobiles driving, idling. car doors closing
- 3. HVAC condenser
- 4. Garbage trucks
- 5. Delivery trucks
- 6. Construction activity (during construction only)
- 7. Maintenance activity
- 8. Tenant activity

Road Noise

The majority of traffic noise is from traffic on I-205, especially trucks. Trucks Jay brakes case the loudest sound of 65 dBA and above. It is assumed that traffic on Willamette Falls Drive. may increase near the hotel. However additional sound on Willamette Falls Drive would be well below the current ambient sound from I-205. Applicable sound regulations of the City of West Linn do not apply to control traffic noise from public roads.

Parking Lot

The maximum speed of cars parking is approximately 10 mph. Vehicular sound at this speed, including idling, occurs between 65 dBA to 60 dBA at a distance of ten feet from the car. Sound levels decrease with distance from the vehicle. Table IV shows expected sound levels of a car at different distances.

**Table IV
Expected Sound Level in dBA of an Idling or Parking Car**

DISTANCE FROM THE CAR IN FEET	10	30	50	70	80	100	120	200
SOUND LEVEL IN DBA	69-65	50-55	46-51	43-48	42-47	40-45	38-43	34-39

Car parking and idling sound may reach the house at House at 1590 7th Street at a level of 35 dBA; which would comply with applicable cited regulations for both daytime and nighttime standards. Sound from cars in the parking lot will be well below the existing ambient sound levels.

Impact Sound

Impact sound from car doors closing will reach the property line of the home at 1590 7th Street at only 50 dB. City code maximum for impact sound is 95 dB (peak meter response) for daytime and 80 dB for nighttime.

HVAC

Heating, ventilation and air-conditioning (HVAC) equipment is a source for outdoor sound emission. The hotel is designed with individual HVAC units for each room. Expected HVAC sound reaching the residential sites to the south would be 35 dBA. This level complies with the cited applicable regulations.

Garbage Collection

Garbage trucks generate short-term, high noise levels. Normal garbage collection sounds are expected to occur daytime and at intensity below the current level of ambient sound from 1-205. .

Shipping and Receiving

Delivery trucks serving the hotel include medium sized trucks, and UPS/FedEx type package cars. Sound these vehicles are expected to be consistent with the normal sound of parking lot usage.

It is recommended that delivery/shipping be scheduled during daytime hours similar to those exempt from sound limitation during the construction phase of the project (referenced below). The exemption is valid only during the construction phase, but this time period represents a generally accepted community standard during which sound levels are more acceptable.

Construction Period

New construction sound may include the following:

1. Removal of existing structures and waste material.
2. Grading
3. Material delivery
4. Construction tools, vehicles, and activities.

Much of construction sound comes from engines (mostly diesel) providing operating power and compressed air. Table V shows expected noise levels at a distance of 50 feet from construction equipment. Not all equipment listed in Table V will be used in the construction.

Sound from construction is specifically exempted from limitation by city code if such sound occurs Monday through Saturdays, 9:00 AM to 5:00 PM. It is recommended that construction sounds be scheduled to occur during the exempted time periods.

**Table V
Construction Equipment and the Expected Sound at 50 Feet**

		NOISE LEVEL (dBA) AT 50 FT					
		60	70	80	90	100	110
EQUIPMENT POWERED BY INTERNAL COMBUSTION ENGINES	EARTH MOVING	COMPACTERS (ROLLERS)		H			
		FRONT LOADERS		┌───┐			
		BACKHOES		┌───┐			
		TRACTORS		┌───┐			
		SCRAPERS, GRADERS		┌───┐			
		PAVERS			H		
		TRUCKS			┌───┐		
	MATERIALS HANDLING	CONCRETE MIXERS		┌───┐			
		CONCRETE PUMPS			H		
		CRANES (MOVABLE)		┌───┐			
		CRANES (DERRICK)			H		
	STATIONARY	PUMPS		H			
		GENERATORS		┌───┐			
		COMPRESSORS		┌───┐			
IMPACT EQUIPMENT	PNEUMATIC WRENCHES			┌───┐			
	JACK HAMMERS AND ROCK DRILLS			┌───┐			
	PILE DRIVERS (PEAKS)				┌───┐		
OTHER	VIBRATOR		┌───┐				
	SAWS		┌───┐				

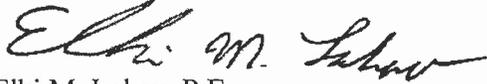
Note: Based on Limited Available Data Samples

CONCLUSION

Based upon the assumptions and implementation of the recommendations in this report, the sound impacts from this development will comply the applicable City of West Linn sound regulations.

If you have any question please call us at (503) 977-2690.

Sincerely,
A ACOUSTICS

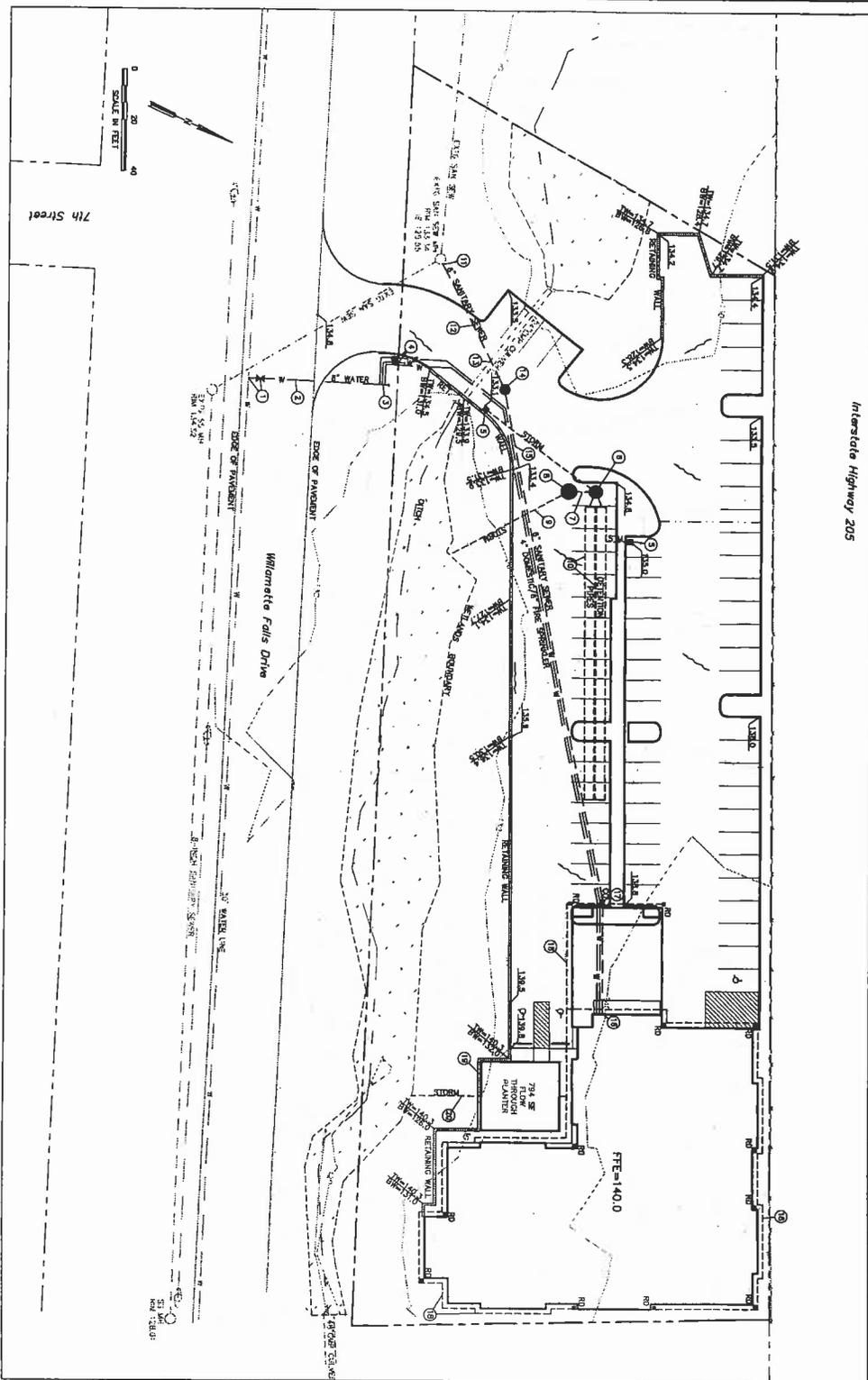


Elki M. Lahav, P.E.
Principal Acoustical Engineer



10/12/07

A-19



- CONSTRUCTION NOTES**
- 1) NOT TO SCALE AND INSTALL 1" GATE VALVE
 - 2) INSTALL 36"-Ø" METALIC IRON WATER
 - 3) INSTALL 36"-Ø" METALIC IRON WATER
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A-20



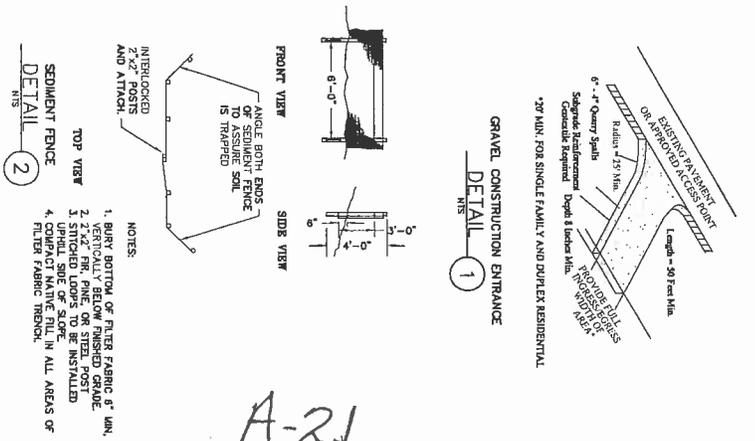
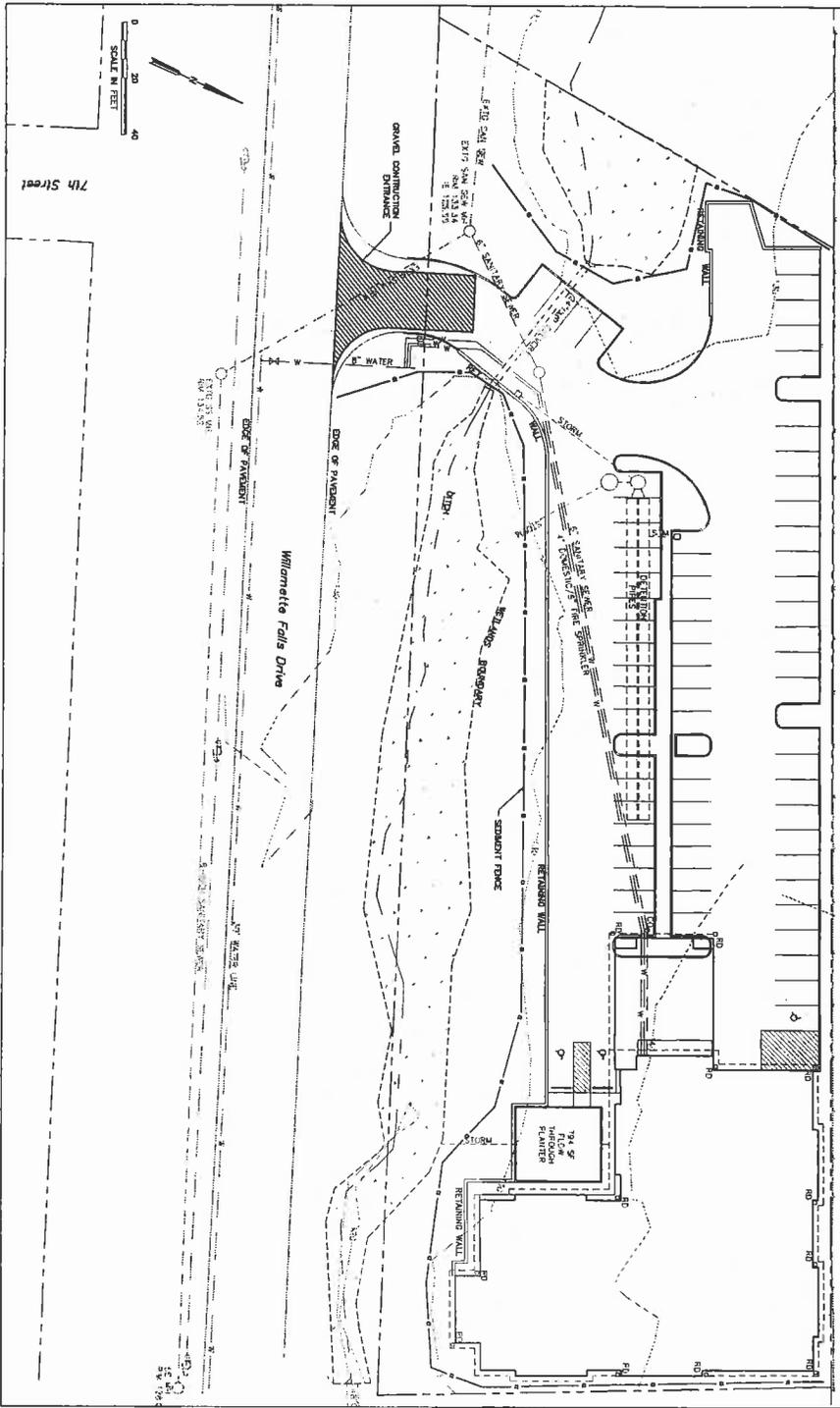
NO.	DATE	DESCRIPTION	BY	CHKD.
1	10/25/07	ISSUED FOR PERMIT	J.M.	J.M.
2				
3				
4				
5				
6				
7				
8				
9				
10				

T.R.T. ENGINEERING, INC.
 2500 S.E. MARKET STREET
 PORTLAND, OREGON 97214
 FAX (503) 252-7200

HOLIDAY INN EXPRESS
 2400/2450 WILLAMETTE FALLS DRIVE
 WEST Linn, OREGON 97148

GRADING AND UTILITY PLAN
 DRAWING NO. C-1
 PROJECT NO. 07-0001
 SHEET 01

WESTL SITE 10/25/07



- NOTES:**
1. RURY BOTTOM OF FILTER FABRIC 6" MIN.
 2. VERTICALLY BELOW FINISHED GRADE
 3. STITCHED LOOPS TO BE INSTALLED UPHILL SIDE OF SLOPE
 4. COMPACT NATIVE FILL IN ALL AREAS OF FIELD FABRIC MESHION.

A-21

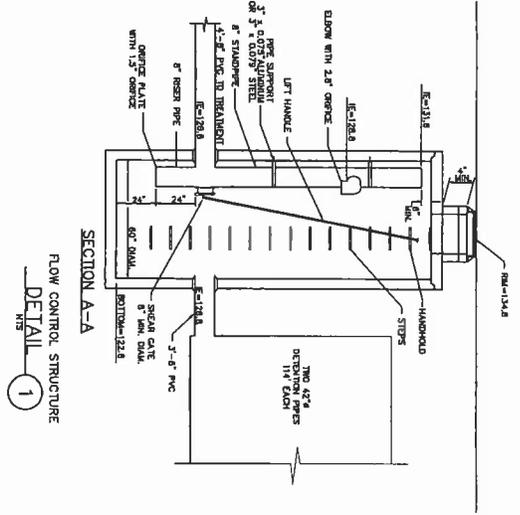
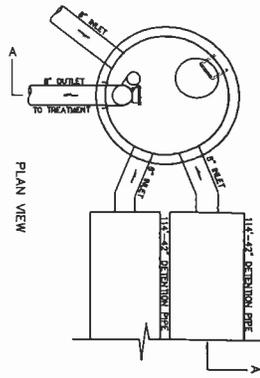


DATE	NO. OF SHEETS	TOTAL SHEETS
08/27/07	1	1

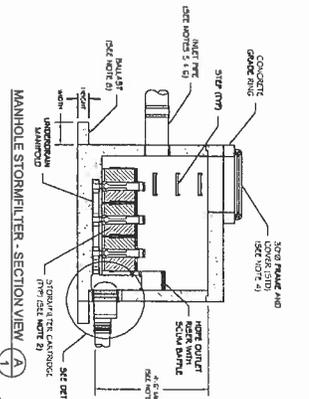
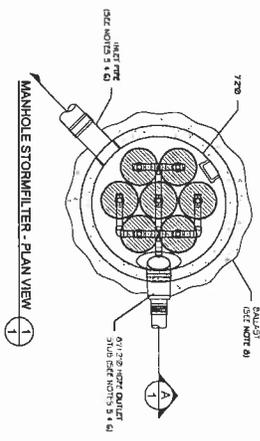
TRT ENGINEERING, INC.
 2400/2450 WILLAMETTE FALLS DRIVE
 WEST Linn, OREGON 97088
 PHONE (503) 333-7882
 FAX (503) 333-7883

HOLIDAY INN EXPRESS
 2400/2450 WILLAMETTE FALLS DRIVE
 WEST Linn, OREGON 97088
 EROSION CONTROL PLAN

REVISION NO.
 PROJECT NO.
 SHEET NO.



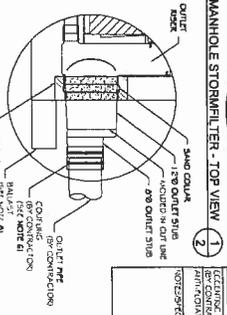
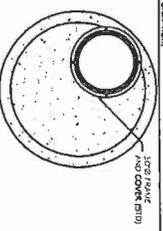
FLOW CONTROL STRUCTURE
DETAIL 1



CONTECH Stormwater Solutions
CONTECH
STORMWATER SOLUTIONS
PRECAST 72\"/>

GENERAL NOTES

- 1) CONSULT FOR CONTECH STORMWATER SOLUTIONS: INSTANT, OR 800-546-4627, SCHEDULED, AT 8771-50774616; E-MAIL: SALES@7243310.COM
- 2) THE COVER SHALL BE INSTALLED, UNLESS OTHERWISE SPECIFIED, WITH A MINIMUM WEIGHT OF 150 LBS. THE COVER SHALL BE INSTALLED TO BE SECURED TO THE STRUCTURE BY THE CONTRACTOR.
- 3) THE MANHOLE STRUCTURE SHALL BE CONSTRUCTED WITH 20\"/>



CONTECH Stormwater Solutions
CONTECH
STORMWATER SOLUTIONS
PRECAST 72\"/>

PRECAST MANHOLE STORMFILTER DATA

ITEM	DESCRIPTION	UNIT	QUANTITY
1	MANHOLE STORMFILTER	EA	1
2	MANHOLE STORMFILTER COVER	EA	1
3	MANHOLE STORMFILTER INLET PIPE	LN	1
4	MANHOLE STORMFILTER OUTLET PIPE	LN	1
5	MANHOLE STORMFILTER SAND	CU YD	1.0
6	MANHOLE STORMFILTER FILTER MEDIA	CU YD	5.0
7	MANHOLE STORMFILTER SAND	CU YD	1.0
8	MANHOLE STORMFILTER FILTER MEDIA	CU YD	5.0
9	MANHOLE STORMFILTER SAND	CU YD	1.0
10	MANHOLE STORMFILTER FILTER MEDIA	CU YD	5.0
11	MANHOLE STORMFILTER SAND	CU YD	1.0
12	MANHOLE STORMFILTER FILTER MEDIA	CU YD	5.0
13	MANHOLE STORMFILTER SAND	CU YD	1.0
14	MANHOLE STORMFILTER FILTER MEDIA	CU YD	5.0
15	MANHOLE STORMFILTER SAND	CU YD	1.0
16	MANHOLE STORMFILTER FILTER MEDIA	CU YD	5.0
17	MANHOLE STORMFILTER SAND	CU YD	1.0
18	MANHOLE STORMFILTER FILTER MEDIA	CU YD	5.0
19	MANHOLE STORMFILTER SAND	CU YD	1.0
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21	MANHOLE STORMFILTER SAND	CU YD	1.0
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23	MANHOLE STORMFILTER SAND	CU YD	1.0
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27	MANHOLE STORMFILTER SAND	CU YD	1.0
28	MANHOLE STORMFILTER FILTER MEDIA	CU YD	5.0
29	MANHOLE STORMFILTER SAND	CU YD	1.0
30	MANHOLE STORMFILTER FILTER MEDIA	CU YD	5.0



NO.	DATE	DESCRIPTION	BY	CHKD.
1	08/15/07	ISSUE FOR PERMIT	JL	TR
2	08/15/07	ISSUE FOR CONSTRUCTION	JL	TR
3	08/15/07	ISSUE FOR AS-BUILT	JL	TR

TRI ENGINEERING, INC.
2801 S.E. HANCOCK STREET
PORTLAND, OREGON 97144
TEL: (503) 253-7888

HOLIDAY INN EXPRESS
2400/2450 WILLAMETTE FALLS DRIVE
WEST Linn, OREGON 97068

DRAWING NO. C-3
PROJECT NO. 0808

WEST, DTI 10/25/07

A-22

**GEOTECHNICAL EVALUATION
PROPOSED HOLIDAY INN EXPRESS
2400 BLOCK WILLAMETTE FALLS DRIVE
WEST LINN, OREGON**

Prepared for:

**Vic Patel
12700 SE McLoughlin Blvd
Milwaukie, Oregon 97222**

**September 7, 2007
Project No. 291-001**

TERRA DOLCE CONSULTANTS, INC.

A-23

September 7, 2007
Project No. 291-001

Vic Patel
12700 SE McLoughlin Blvd
Milwaukie, Oregon 97222

**GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED HOLIDAY INN EXPRESS
2400 BLOCK WILLAMETTE FALLS DRIVE
MILWAUKIE, OREGON**

Dear Vic:

Terra Dolce Consultants, Inc. (TDC) is pleased to present this report summarizing the results of our geotechnical evaluation for the referenced project. The scope of our geotechnical evaluation included a site visit to evaluate the conditions at the site, engineering analyses, and preparation of this report. Our report was prepared in general accordance to our August 8, 2007 Proposal.

Site Description

The site is located just north of the Old Town district of West Linn, Oregon and is situated between Interstate 205 and SE Willamette Falls Drive (see Figure 1). The 1.57-acre site is currently undeveloped; however, the vacant road grade of Willamette Falls Drive extends along the northwest portion of the site.

The elevations of the property ranges from 148 feet above mean sea level (msl) in the northeast corner of the property to 126 feet msl in the southwest corner (see Figure 2). In the middle portion of the site, there is a steep fill slope. The fill creates a flat area in the northern portion of the site. The face of the fill slopes steeply towards a creek that flows in the southern portion of the site. Portions of the slope are steeper than a 2(H):1(V).

The drainage swale starts on the west side of the property and flows towards the southeast. In the west portion of the site, there is a shallow depression that holds water and had created a wetland.

Project Description

TDC understand that the site will be developed with a 4-story hotel and associated driveway and parking area. The proposed hotel footprint will be situated in the northeastern portion of the property, the parking area will be located along the northern half of the property, and the drainage way will be maintained along southern portion of the site.

Based on the Site Plan, prepared by Steven P Elkins Architecture, Inc., the finished floor elevation of the first floor is 138.5 feet msl. As a result, the site will be graded

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with a series of cuts and fill, and the foundation for the hotel will be designed as a retaining wall.

GEOLOGICAL SETTING

Review of geological reports indicates that the site is underlain with the Willamette Valley Silts overlying the Columbia River Basalts (Schlicker and Finlyason, 1979). The silt is typically 10 to 40 feet thick, fine-grained, with varying amounts of clay. The silt is mapped across the entire site, except in the northeast corner of the site.

GEOTECHNICAL FIELD INVESTIGATION

On August 22, 2007 TDC conducted a site visit to evaluate the surface and subsurface conditions of the site. TDC advanced six test pits up to 9 feet below the ground surface (bgs) (designated TP-1 through TP-6, Figure 2). TDC observed the following subsurface conditions.

Surface Conditions.

The site is located on the flanks of the southern hills within West Linn. The site is relatively flat from the entrance at the southwest corner of the property to the northeast corner. There is a steep slope, however, in the middle of the site that slope down to an unnamed creek, which flows into the Willamette River to the east.

The site apparently was the former alignment for Willamette Falls Drive. There is an old road bed, consisting of asphalt and baserock that runs along the northern property boundary. There is an undocumented fill that creates the flat area of the site.

This site is vegetated with a variety of trees, weeds, blackberries, and horse-tail rush. The vegetation covers the entire site.

Subsurface Conditions.

TDC observed the following subsurface conditions: Undocumented Fill, Topsoil, and Native Clayey Silt, and Weathered Columbia River Basalt.

Undocumented Fill. Undocumented Fill was present in the six test pits. The thickness of the undocumented fill was 2 feet thick in TP-1; 3 feet thick in TP-6; 5 feet thick in TP-4, and 7 feet thick in TP-2 and 3. The undocumented fill consisted of concrete, asphalt, wood debris, and large clasts of rock.

The undocumented fill is not appropriate for the foundation bearing surface, subgrade for the parking area, or backfill for the proposed retaining wall. The undocumented fill should be overexcavated and removed from the site. In areas where fill is required, structural fill should be used to replace the overexcavated undocumented fill.

Topsoil. The topsoil was up to 6 inches thick and was soft, dark brown. The topsoil is associated with the grass that covers the site. There was trace rounded gravel within the topsoil.

The topsoil should be stripped and stockpiled on the site for use as general landscaping fill. The topsoil should not be used as structural fill, subgrade, or bearing surfaces for the foundation.

Native Silt. The Silt was encountered at 5 to 7 feet bgs. The silt was brown to reddish brown, moist, firm, and non-plastic to low plastic.

The silt is appropriate as the bearing surface for the proposed foundations, structural fills, retaining walls, and parking areas.

Weathered Columbia River Basalt (Tcr). Weathered Columbia River Basalt was encountered in the northeastern corner of the site. The basalt broke into cobbles and had reddish brown clayey matrix surrounding it.

Groundwater. Groundwater was encountered at 9 feet bgs in TP-2. The groundwater slowly seeped into the test pit.

CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations presented in this report are based on the information provided by the property owners, the results of the field evaluation, and professional judgment. We have observed only a small portion of the pertinent soil and groundwater conditions. The recommendations presented in this report are based on the assumption that the soil and groundwater conditions do not deviate appreciably from the conditions encountered during our field investigation. If the proposed design changes or if variations or undesirable conditions are encountered during the site development, we should be consulted for further recommendations.

General Conclusions

In our opinion, the site is geotechnically suitable for the proposed hotel. This conclusion is based on the assumptions that the recommendations presented in this report will be followed and that if during construction site conditions change from what is presented in this report, then we will be consulted for updated recommendations.

Recommendations

Site Clearing and Stripping

TDC recommends that the area within 5 feet of the proposed building footprint, access road, and parking area be stripped of vegetation and topsoil to firm, non-yielding subgrade.

A large portion of the site is mantled with asphalt from the old road bed and undocumented fill. TDC recommends that the asphalt and undocumented fill be overexcavated and removed from the site. This material is not appropriate subgrade soil, structural fill, or retaining wall backfill.

When trees are removed, the rootball should be overexcavated to firm native soil and replaced with structural fill. Roots that are larger than 4 inches in diameter should be overexcavated and replaced with structural fill.

Site Earthwork

Because the onsite soils are moisture sensitive and easily disturbed, construction should occur during the dry season. If construction occurs during wet weather, construction traffic should avoid areas of exposed fine-grained soils. If wet weather or wet soil conditions are encountered, then the exposed areas should be protected with 12 inches of 3-inch-minus crushed rock underlain with woven geotextile, such as LINQ GTF 300 or equivalent. Should soils become disturbed, the soils should be removed to firm native subgrade and replaced with compacted $\frac{3}{4}$ -inch-minus gravel structural fill placed in accordance with the recommendations presented below.

Structural Fill

Once the site is stripped and the debris is removed to native ground, structural fill should be placed in areas that it is required. The structural fill should consist of clean, non-organic soils that are appropriate for the following weather conditions.

Dry Weather Fill. During dry weather, the structural fill can consist of fine-grained, non-plastic material, with no deleterious debris. The material should have a moisture contents no more than 3 percent higher than the optimum moisture content as determined by the standard Proctor (ASTM D-698). The structural fill should be compacted to 95 percent of a standard Proctor (ASTM D-698), in 8- to 10-inch lifts, and using a sheep-foot style compactor. The structural fill should be tested every 2 to 3 feet of thickness. The testing should be completed by a qualified Materials Testing Firm (i.e., ACS Testing).

Before the placement of the structural fill, the subgrade should be firm native soil with no soft area or undocumented fill. If subsurfaces are wet or soft, then TDC recommends that a smooth-bucket trackhoe be used for stripping and clearing. Any areas with soft, wet soils should be overexcavated and replaced with structural fill. In areas where groundwater is seeping out of the excavation, drainrock and drain pipes should be placed and connected a drainage system.

When fills are placed on existing slopes steeper than 5(H):1(V), the fills should be keyed into the existing hillside (see Figure 6). The keys should be at least two feet wider than the compaction equipment. Provisions for subsurface drains may be required in places where there are groundwater seeps or, springs, or wet conditions. These provisions should be made on a case-by-case measure.

Wet Weather Fill. During wet weather conditions, the structural fill should consist of $\frac{3}{4}$ -inch crushed rock containing less than 10 percent fines. The imported fill should be compacted to 95 percent of the maximum dry density as determined by a Modified Proctor (ASTM D1557). The material should be within 3 percent of the optimum water content. The structural fill should be tested every 2 to 3 feet of thickness. The testing should be completed by a qualified Materials Testing Firm (i.e., ACS Testing).

Where exposed during site grading and foundation construction, fine-grained native subgrade or fill soils may become sensitive to disturbance during wet-weather or wet-soil conditions. Such disturbance will structurally weaken the soil and render it

unsuitable for uses in foundation bearing, for subgrade of compacted structural fills, and for subgrades of asphalt.

If construction occurs during wet weather, construction traffic should be rounded to avoid areas of exposed fine-grained soils and should be protected by at least 18 inches of 3-inch-minus crushed rock underlain with woven geotextile, such as LINQ GTF 300 or equivalent. In addition, care should be taken to minimize disturbance of native silty soil, which may become "pumped" and weakened by repeated loading and vibratory compaction and wheeled equipment. Should soils become disturbed, the soils should be removed to firm native subgrade and replaced with compacted $\frac{3}{4}$ -inch-minus gravel structural fill placed in accordance with the above recommendations.

If subsurfaces are wet or soft, then TDC recommends that a smooth-bucket trackhoe be used for stripping and clearing. Any areas with soft, wet soils should be overexcavated and replaced with structural fill. In areas where groundwater is seeping out of the excavation, drainrock and drain pipes should be placed and connected a drainage system.

Excavation Cut Slope

Cut slopes in the native material have the ability to hold a temporary vertical cut as long as the soils remains dry and there is no groundwater seepage within the face of the cut. Permanent slopes within the native material should be no steeper than 2(H):1(V) and should have erosion control measures implemented as soon as possible.

In the northeastern corner of the site, field data indicates that there is shallow bedrock. The upper portion of the bedrock was rippable with a small backhoe. Depending on the depth of the weathered zone, the excavation may be in hard rock. The hard rock may require extra effort and money to excavate.

Preliminary Foundation Recommendations

TDC recommends an allowable bearing pressure of 2,000 pounds per square foot (psf) for dead loads. The allowable bearing pressure may be increased by one-third for transitory live loads, such as loads and seismic loading.

Subgrades for the shallow foundations should be firm and free of organics and deleterious debris as determined by the geotechnical engineer. Within the area of the existing fill, the foundation footings should extend through the fill and into native soils. The bottom of all spread footings should be founded on a minimum of 2-inch-thick compacted layer of $\frac{3}{4}$ -inch minus granular fill during wet weather conditions.

Lateral loads on the building foundations may be resisted using an allowable frictional coefficient of 0.35. In addition, passive resistance may be considered using an allowable equivalent fluid weight of 300 pound per cubic foot (pcf). For consideration of passive resistance, the upper 1 foot of embedment should be disregarded.

Total and differential settlements were calculated for the spread footings using an estimated structural load, allowable bearing pressures, and laboratory data. For the spread footing foundations, designed in accordance with the above recommendations, the estimated total static settlement will be less than 1 inch, with a differential settlement less than ½ inch.

Foundation Drainage

Because of the potential for seasonal high groundwater in the area, TDC recommends that foundation drains be used along the footings. The drains should consist of at least a 4-diameter perforated drainpipe surrounded by free-draining rock, with less than 2 percent fines content. The foundation drains should have at least a 2 percent grade to provide positive drainage.

Site Drainage

Downspouts from the roof gutters flow should not be tied into the foundation drains. The downspouts should be directed downhill from the site, with a minimum of 2 percent slope. Soil surrounding the foundation should be slope with a minimum of 5 percent away from the foundation.

Preliminary Slab-on-Grade Recommendations

The slab-on-grade floor should be designed for an allowable subgrade reaction modulus of approximately 150 pounds per cubic inch. The subgrade soils must be in a firm, non-yielding condition at the time of slab construction. Soft areas encountered during the preparation of the slab subgrade should be overexcavated and replaced with structural fill.

A capillary break consisting of at least 6 inches of clean gravel should be placed underneath the floor slab. The gravel should consist of ¼-inch to ¾-inch rock with no more than 2 percent passing the No. 200 sieve (washed analyses). Suitable material is PCC coarse aggregated specified in Section 02690.20 of the Oregon Department of Transportation "Standard Specification Highway Construction".

For wet weather conditions, care must be taken to reduce the potential of rainwater ponding on the slab-on-grade rock section. If the slab is to be covered with a moisture-sensitive flooring, and wet-weather conditions are anticipated, consideration should be given to use of a water retarding admixture added to the concrete or sealing of the finished slab. In addition, a 4-inch thick lift of ¼-inch to ¾-inch, open graded, angular drain rock placed below the capillary break, discussed above, may be substituted for vapor barrier if approved by the geotechnical engineer or project architect and used in conjunction with an approved water proofing admixture.

It is our experience that concrete slab-on-grade commonly exhibit shrinkage cracks despite the presence of steel reinforcing or fiber strands. This cracking can be reduced by using a low-slump concrete, properly designed and constructed joints and by properly curing the concrete.

2003 Oregon Specialty Structural Code Seismic Design Recommendations

The following seismic design recommendations should be incorporated into the design:

Table 1
Seismic Design Recommendations

Seismic Variables	Recommended Values
Site Classification:	D-1
Maximum Considered Spectral Accelerations: Short Period: $S_s =$ 1-sec Period Map Value: $S_1 =$.829g 0.294g
Residential Design Information: Residential Site Value: $2/3 \times F_a \times S_s$ $2/3 (1.17) (0.829) =$	0.65
Horizontal Acceleration 0.65/2.5	0.25

Unrestrained Wall Lateral Capacity

TDC recommends that retaining walls be used along the northern and eastern property lines. The Unrestrained walls are those that are allowed to rotate more than 0.001H (where H equals the retained height of the wall in feet) at the top of the wall. The following lateral loads should be applied:

Table 2
Unrestrained Wall Design Criteria
Allowable Active Equivalent Fluid Weight

Backfill Slope (Height):(Vertical)	FILLS Equivalent Fluid Weight (pcf)
Level	40
3(H):1(V)	55
2(H):1(V)	80

We recommend the following passive equivalent fluid weights for the walls:

Table 3
Passive Equivalent Fluid Weight

Backfill Slope (Height):(Vertical)	Equivalent Fluid Weight (pcf)
Level	300

The friction coefficient for the retaining wall footing should be 0.35.

Backslope Excavation

The backslope for the excavation can be vertical, as long as the excavation face is protected from precipitation and stormwater runoff. While the excavation is open, the face should be protected from precipitation with visqueen or other similar tarps. Stormwater runoff from the slope above the excavation should be diverted away from the face of the excavation to reduce the potential of sloughing of the face.

Compacted Granular Fill

Free draining granular fill should be used directly behind the retaining wall. The material should be free of deleterious material and man-made fill. Over compaction of the backfill behind the wall should be avoided. We recommend that heavy compactors and large pieces of equipment should not be operated within 5 feet of the wall. This will avoid surcharging the wall. Compaction within 5 feet of the wall should be done with a hand-compactator.

Retaining Wall Drainage

Drainage of retaining walls is paramount to the design loads. TDC recommends that a 4-inch-diameter smooth-walled, interior-perforated drainpipe be installed adjacent to the footing of the wall. The pipe should be surrounded with at least 6 inches of drain rock around it to assist in the drainage. There should be positive drainage on the drainpipe.

Access Road

The proposed paved access and parking area will cover at least 25,000 square feet. The subgrade for the paved area should be overexcavated to firm, non-yielding native soil. Areas of undocumented fill, soft wet soil, trees, should be overexcavated and brought up to grade 3-inch-minus crushed rock underlain with woven geotextile, such as LINQ GTF 300 or equivalent. On top of the structural fill, there should be at least 10 inches of ¾-inch-minus crushed gravel and topped with 4 inches of Class "C" Asphalt.

Document Review and Construction Monitoring

We recommend that TDC be retained to review final plans and specifications for both the access road and the proposed house. This review will allow us to examine the documents to determine whether the intent of our recommendations presented in this report was incorporated into the report.

We recommend that TDC be retained to provide monitoring during the earthwork and foundation construction activities. The purpose of our field monitoring services is to confirm that the site conditions are as anticipated and to provide field recommendations as required based on the conditions encountered.

TDC should observe the conditions of the:

- **Subgrade for Fills, Retaining Walls, Foundation, Roads**
- **Backfilling of Retaining Wall.**

We recommend that a Materials Testing Firm (i.e., ACS Testing) be hired directly by the owner to test the Structural Fill and the Asphalt.

LIMITATIONS

The recommendations presented in this report are based on the information provided to us, results of the field investigation, and professional judgment. We have observed only a small portion of the pertinent soil and groundwater conditions. The recommendations are based on the assumptions that the soil conditions do not deviate appreciably for those encountered during our field investigation.

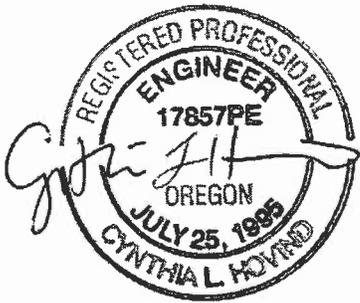
Geotechnical review is of paramount importance in engineering practice. The poor performance of many foundations has been attributed to inadequate construction review. On-site grading and earthwork should be observed and, where necessary, tested by a qualified engineering firm to verify the compliance with the recommendations contained in this report. Foundation excavation should also be observed to compare the generalized site conditions assumed in this report with those found on the site at the time of construction. If the plans for site development are changed, or if various or undesirable geotechnical conditions are encountered during construction, the geotechnical engineer should be consulted for further recommendations.

This report is issued with the understanding that it is the responsibility of the owner to ensure that the recommendations are incorporated in the plans and the necessary steps are taken to see that the constructor and subcontractors carry out such recommendations in the field. Geotechnical engineering is characterized by a certain degree of uncertainty. Professional judgments presented are based partly on our understanding of the proposed construction and partly on our general experience. Our engineering work and judgments rendered meet current professional standards; no other warranties, either expressed or implied are made. This report is subject to review and should not be relied upon after a period of 3 years.

It has been a pleasure providing you the geotechnical services for this project. If you have any questions, please call at 503.502.5114.

Sincerely,

Terra Dolce Consultants, Inc.



EXPIRES. 6-30-09

Cynthia L. Hovind, P.E., G.E.
Professional Geotechnical Engineer, OR-17857PE

Attachments:

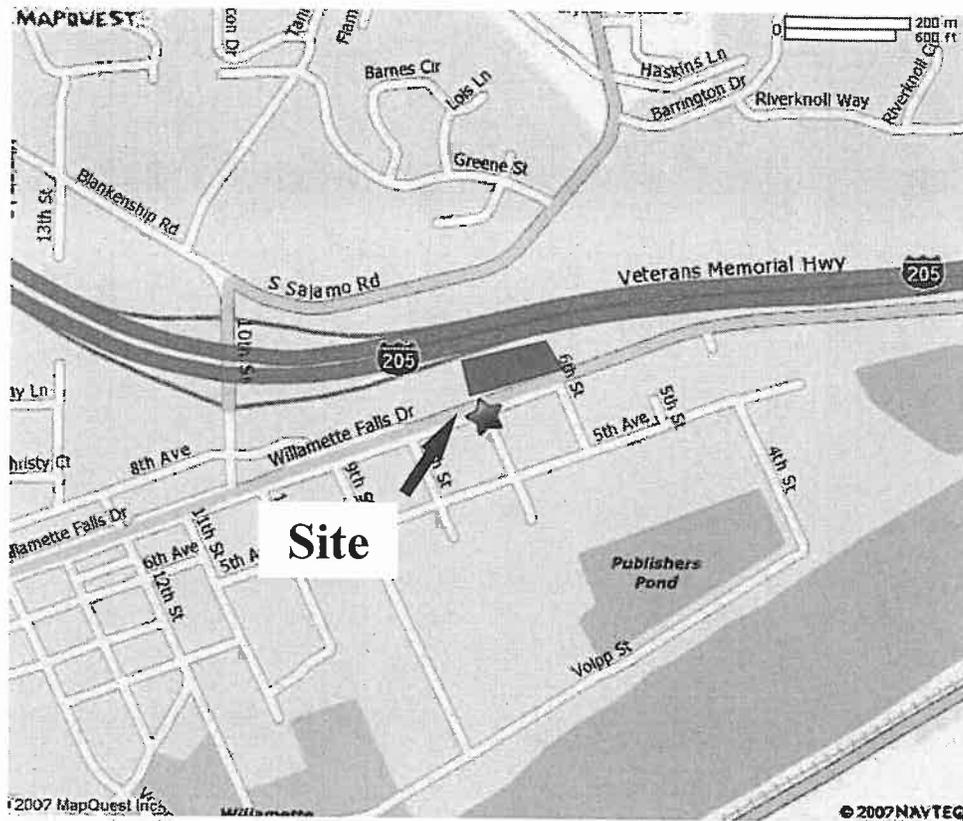
References

Figure 1 Vicinity Map
Figure 2 Site Map
Figure 3 Fill Key Detail

- (1) Addressee
- (1) John Person, Steven P Elkins Architect (email)
- (1) TRT Engineering (email)

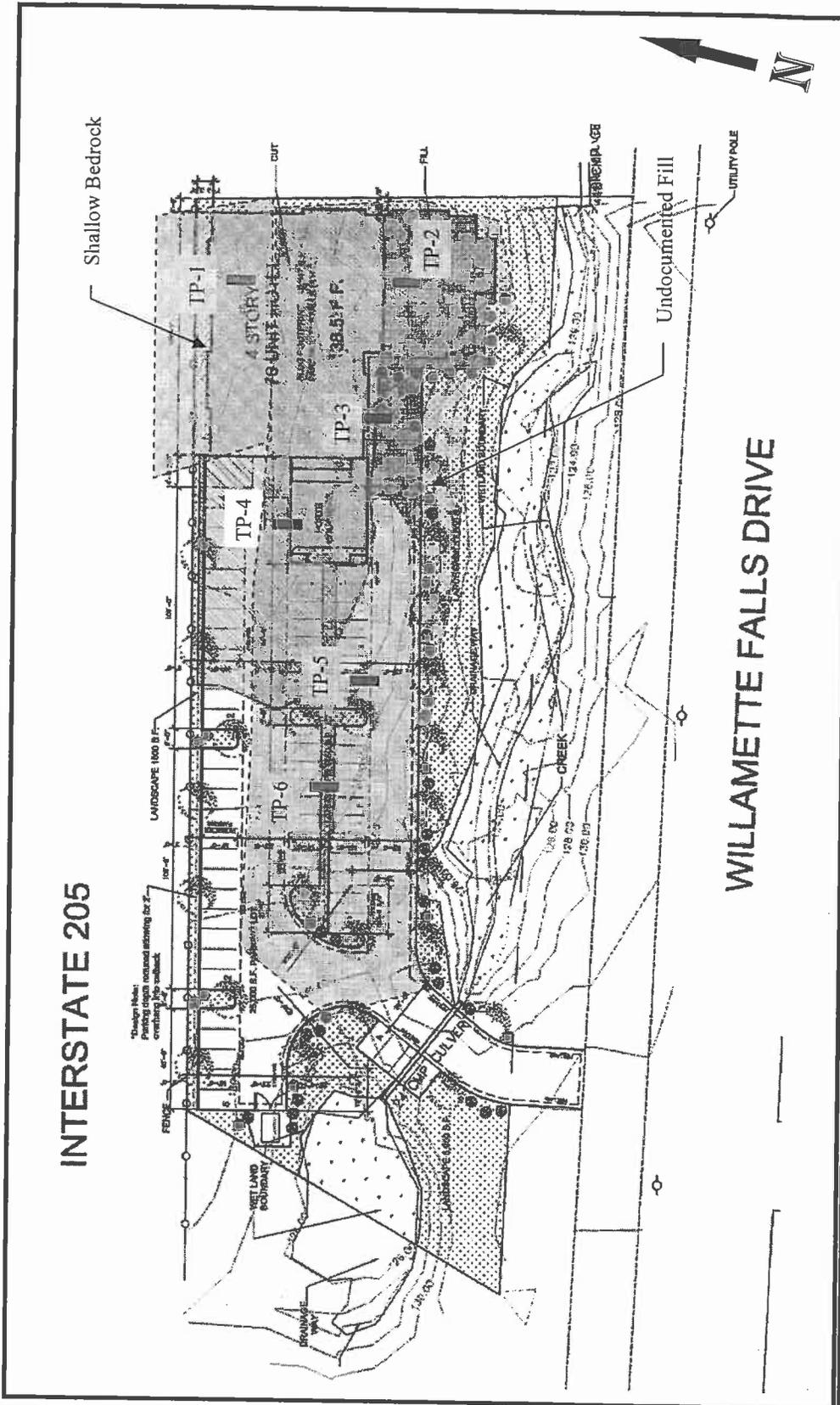
REFERENCES

Schlicker H. G., and C. T. Finlayson, 1979. *Geology and Geologic Hazards of Northwestern Clackamas County, Oregon. Geology Map of the Canby and Oregon City Quadrangles.* Bulletin 99. Department of Geology and Mineral Industries.



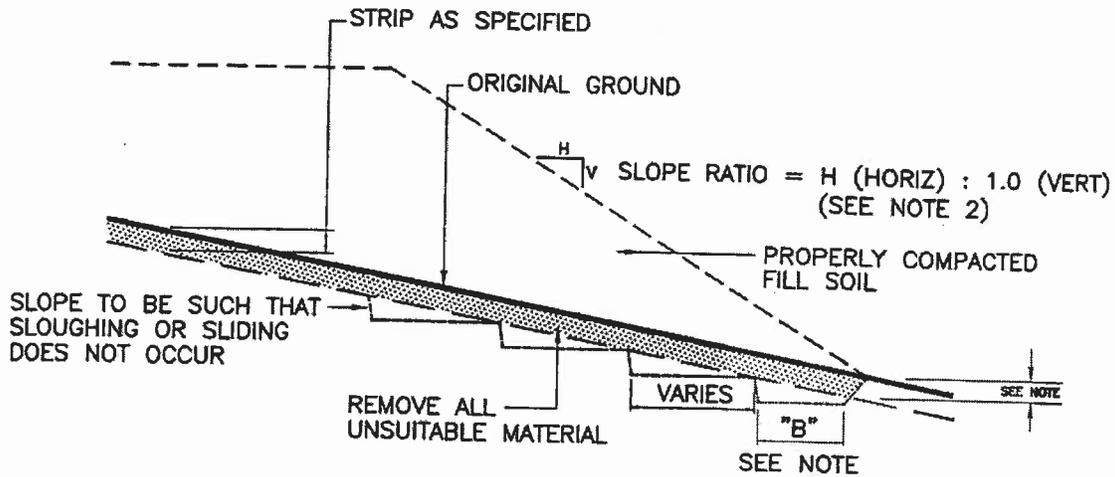
Terra Dolce Consultants, Inc. 485 Collins Crest Gladstone, Oregon 97027 Phone 503.502.5114 Fax 503.650.7925		Vic Patel Proposed Holiday Inn Express 2400 Block Willamette Falls Drive West Linn, Oregon	
Project No. 291-001	September 7, 2007	Vicinity Map	Figure 1

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<p>Terra Dolce Consultants, Inc. 485 Collins Crest Gladstone, Oregon 97027</p>	<p>Vic Patel Proposed Holiday Inn Express 2400 Block Willamette Falls Drive West Linn, Oregon</p>		
<p>Project No. 291-001</p>	<p>September 7, 2007</p>	<p>Site Plan</p>	<p>Figure 2</p>

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NOTES:

1. BENCHES ARE REQUIRED WHERE THE NATURAL SLOPES ARE STEEPER THAN 5:1 (HORIZONTAL TO VERTICAL), OR WHERE SPECIFIED BY THE SOILS ENGINEER. WHERE FILLS ARE TO BE PLACED ON EXISTING SURFACES HAVING SLOPES STEEPER THAN 3:1, INDIVIDUAL GEOTECHNICAL ANALYSES AND RECOMMENDATIONS ARE REQUIRED FOR DEVELOPMENT OF BENCHING DETAILS.
2. SLOPE RATIO SHOULD NOT BE STEEPER THAN 2:1 FOR SLOPE HEIGHTS TO 15 FEET. INDIVIDUAL GEOTECHNICAL ANALYSES AND RECOMMENDATIONS ARE REQUIRED FOR SLOPE HEIGHTS GREATER THAN 15 FEET.
3. THE MINIMUM WIDTH "B" OF KEY SHALL BE 2 FEET WIDER THAN THE COMPACTION EQUIPMENT, AND NOT LESS THAN 10 FEET.
4. THE OUTSIDE EDGE OF THE BOTTOM KEY SHALL BE AT LEAST 2 FEET BELOW TOPSOIL OR LOOSE SURFACE MATERIAL OR AS SPECIFIED BY THE SOILS ENGINEER.
5. PROVISIONS FOR SUBSURFACE DRAINS MAY BE REQUIRED (PARTICULARLY FOR FILLS PLACED IN RAVINES, OR WHERE WATER SEEPAGE, SPRINGS OR WET CONDITIONS ARE PRESENT), ON A CASE-BY-CASE BASIS.
6. IN AREAS OF NOTED SOIL CREEP, THE DEPTH OF THE BENCHES SHOULD BE BELOW THE DEPTH OF CREEP. TYPICALLY IN THE PORTLAND HILLS SILT, SOIL CREEP EXTENDS 3 TO 5 FEET BELOW THE GROUND SURFACE.

DRAWING NOT TO SCALE

Terra Dolce Consultants, Inc. 485 Collins Crest Gladstone, Oregon 97027 Phone 503.502.5114 Fax 503.650.7925		Vic Patel Proposed Holiday Inn Express 2400 Block Willamette Falls Drive West Linn, Oregon	
Project No. 291-001	September 7, 2007	Fill Key Detail	Figure 3

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TEST PIT LOGS

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TEST PIT TP-1

Project Holiday Inn Express

Project No: 291-001

Client: Vic Patel

Location: Willamette Falls Drive, West Linn, OR

Elevation:

Exc. Date: August 22, 2007

Exc. Depth: 4

Logged By: CLH

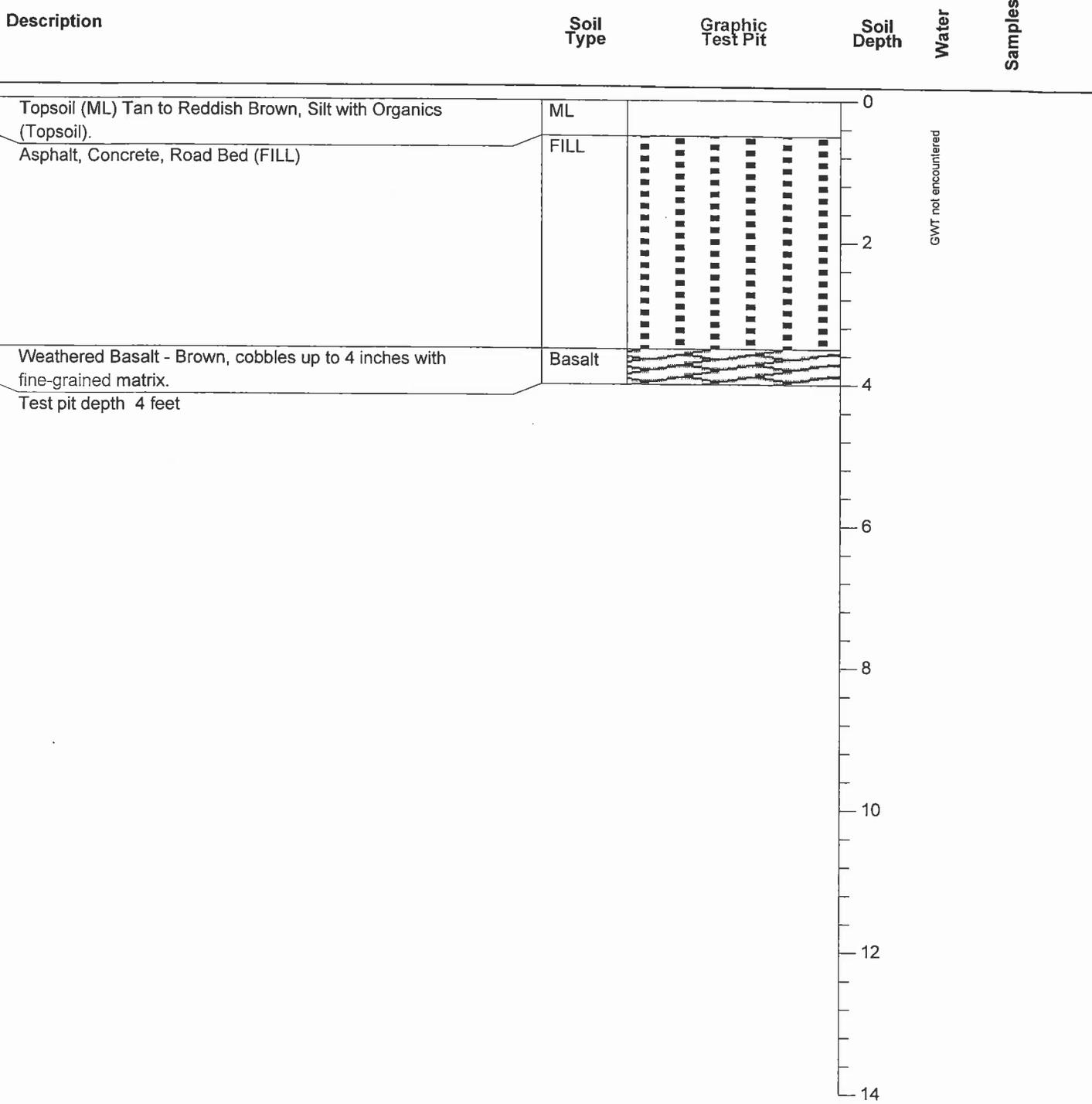
Plotted By: CLH

Water Level: NA

Date: 9/6/2007

File: C:\TDC\TDC Projects\291 Vic Patel\291-001 Holiday Inn Express\Logs\Holiday Inn Express Test Pit Logs.log

SuperLog CivilTech Software, USA www.civiltech.com



Test Pit

TEST PIT TP-2

Project Holiday Inn Express

Project No: 291-001

Client: Vic Patel

Location: Willamette Falls Drive, West Linn, OR

Elevation:

Exc. Date: August 22, 2007

Exc. Depth: 9

Logged By: CLH

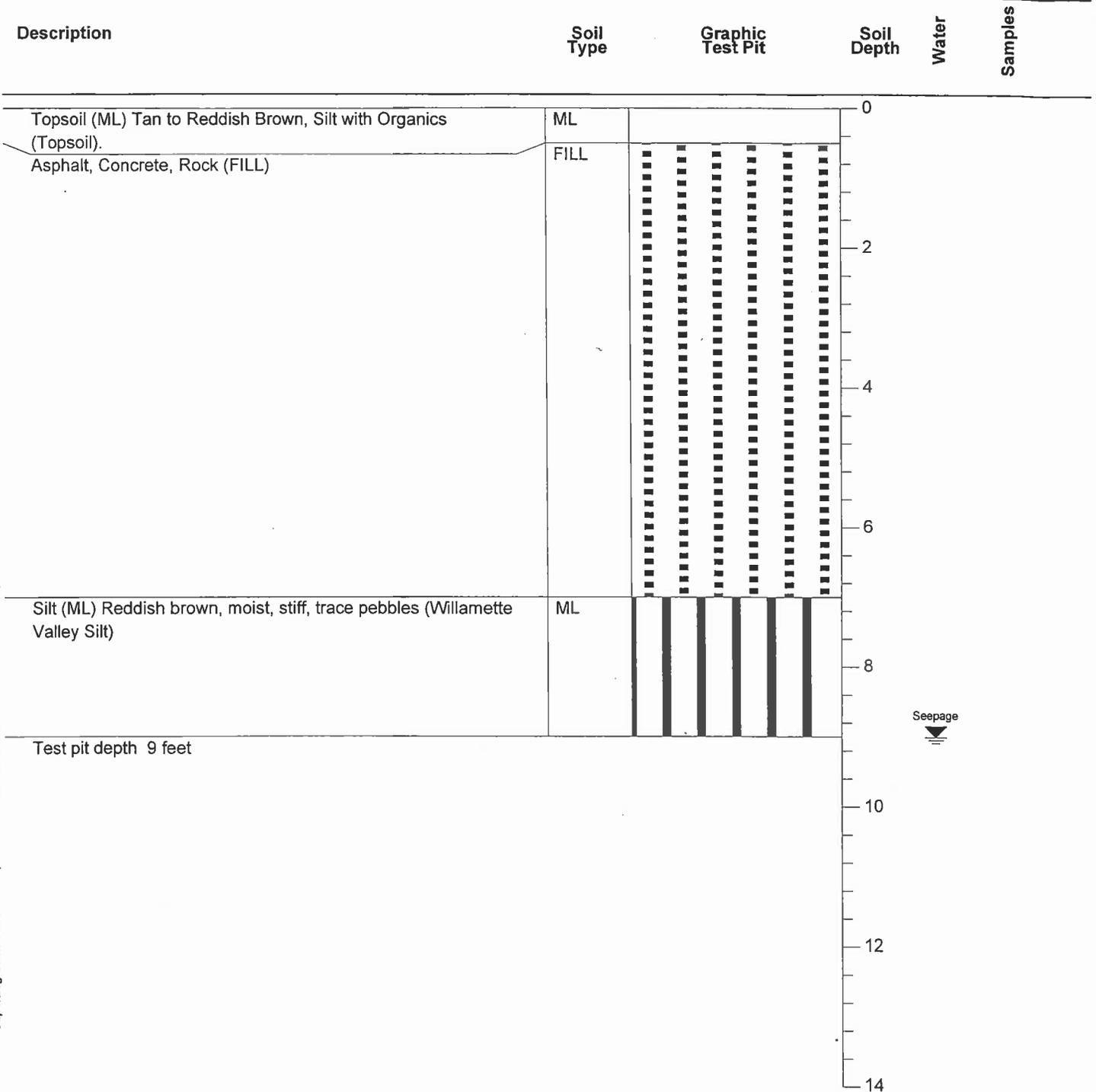
Plotted By: CLH

Water Level: NA

Date: 9/6/2007

File: C:\TDC\TDC Projects\291 Vic Patel\291-001 Holiday Inn Express\Logs\Holiday Inn Express Test Pit Logs.log

SuperLog Civil/Tech Software, USA www.civiltech.com



Test Pit

TEST PIT TP-3

Project Holiday Inn Express

Project No: 291-001

Client: Vic Patel

Location: Willamette Falls Drive, West Linn, OR

Elevation:

Exc. Date: August 22, 2007

Exc. Depth: 7

Logged By: CLH

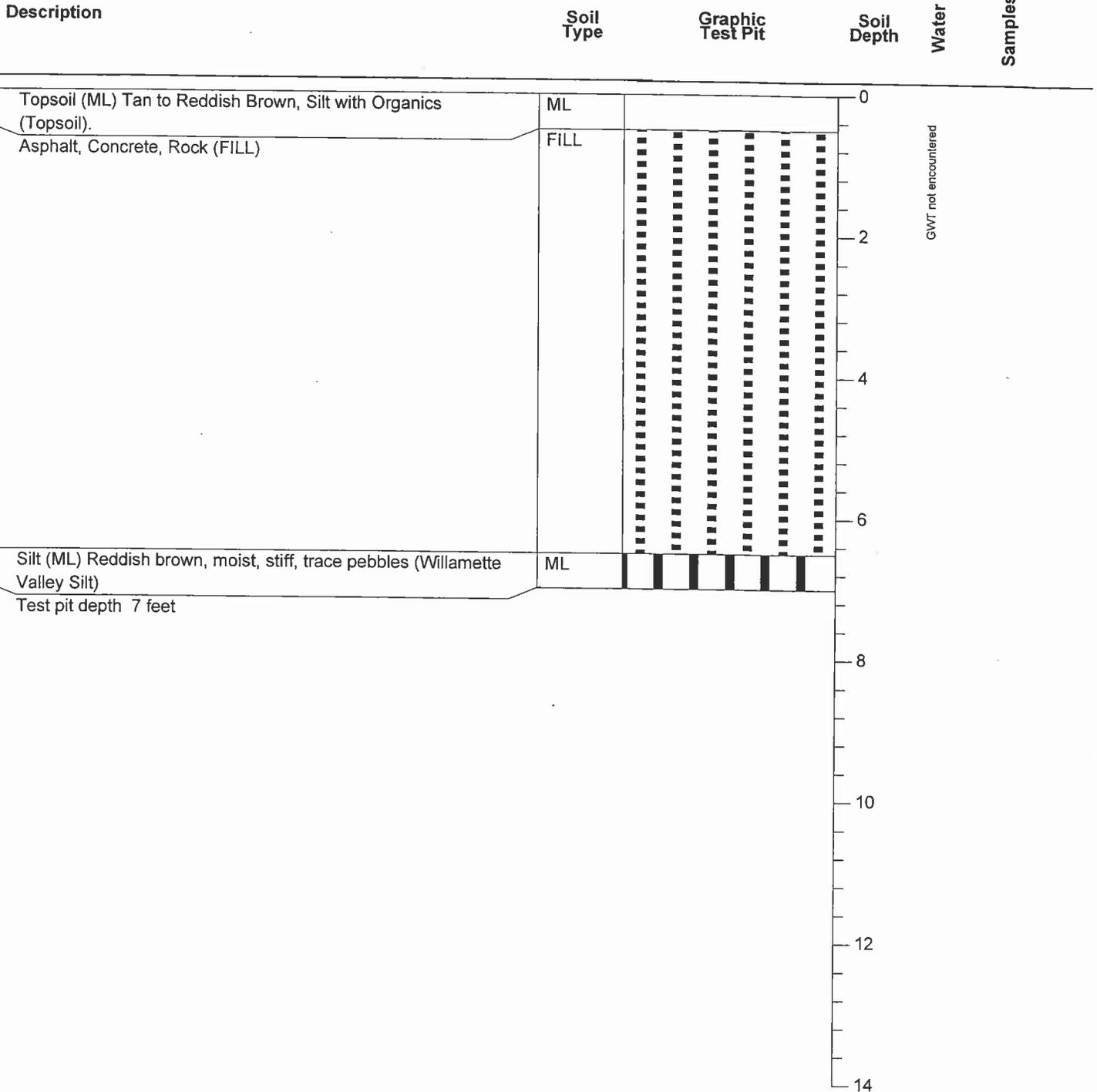
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Water Level: NA

Date: 9/6/2007

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SuperLog CivilTech Software, USA www.civiltech.com



Test Pit

Terra Dolce Consultants, Inc

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TEST PIT TP-4

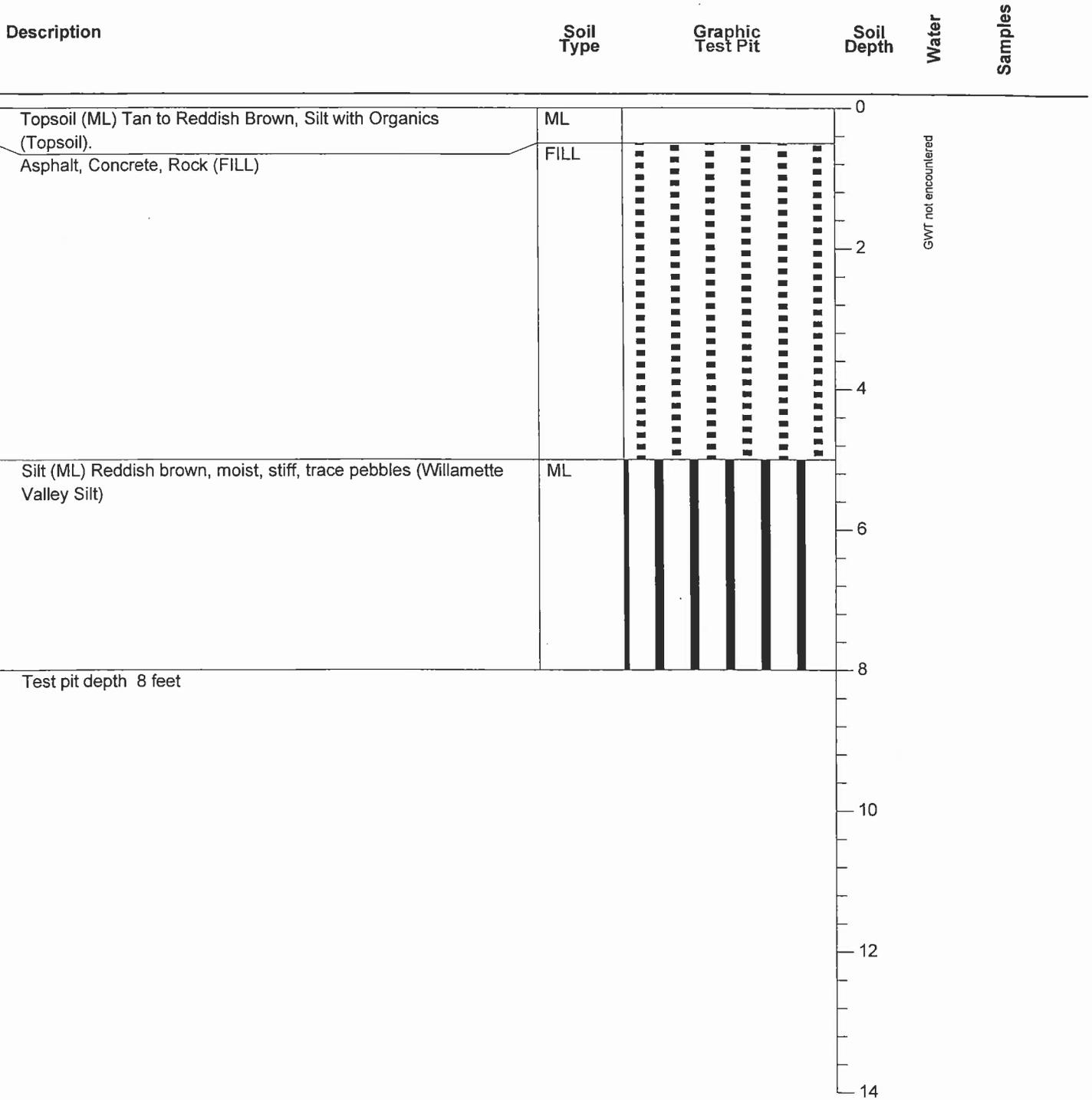
Project Holiday Inn Express
 Project No: 291-001
 Client: Vic Patel
 Location: Willamette Falls Drive, West Linn, OR
 Elevation:

Exc. Date: August 22, 2007
 Exc. Depth: 8
 Logged By: CLH
 Plotted By: CLH
 Water Level: NA

Date: 9/6/2007

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SuperLog CivilTech Software, USA www.civiltech.com



Test Pit

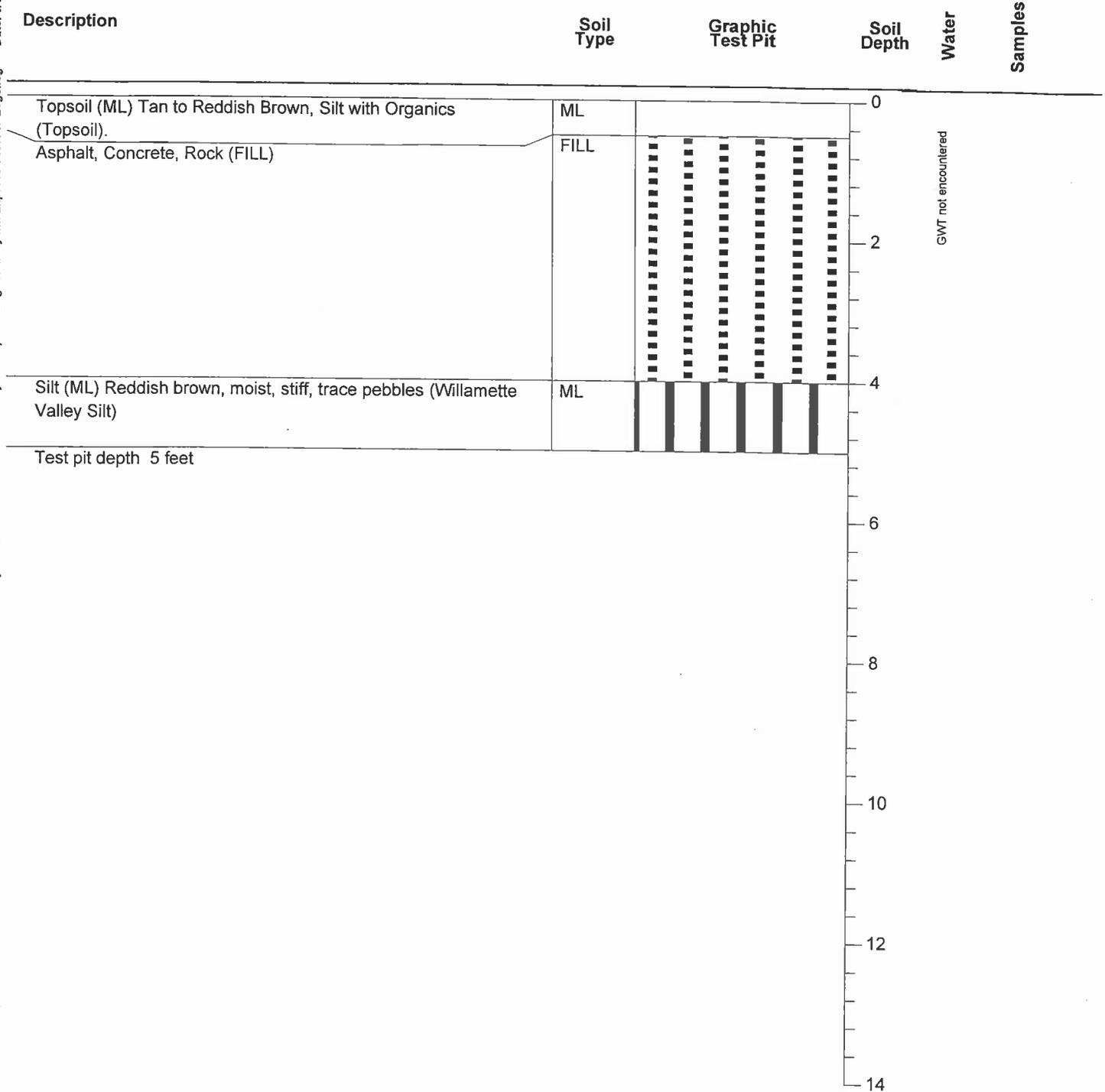
TEST PIT TP-5

Project Holiday Inn Express
 Project No: 291-001
 Client: Vic Patel
 Location: Willamette Falls Drive, West Linn, OR
 Elevation:

Exc. Date: August 22, 2007
 Exc. Depth: 5
 Logged By: CLH
 Plotted By: CLH
 Water Level: NA

Date: 9/6/2007

File: C:\TDCITDC Projects\291 Vic Patel\291-001 Holiday Inn Express\Logs\Holiday Inn Express Test Pit Logs.log



Test Pit

TEST PIT TP-6

Project Holiday Inn Express
 Project No: 291-001
 Client: Vic Patel
 Location: Willamette Falls Drive, West Linn, OR
 Elevation:

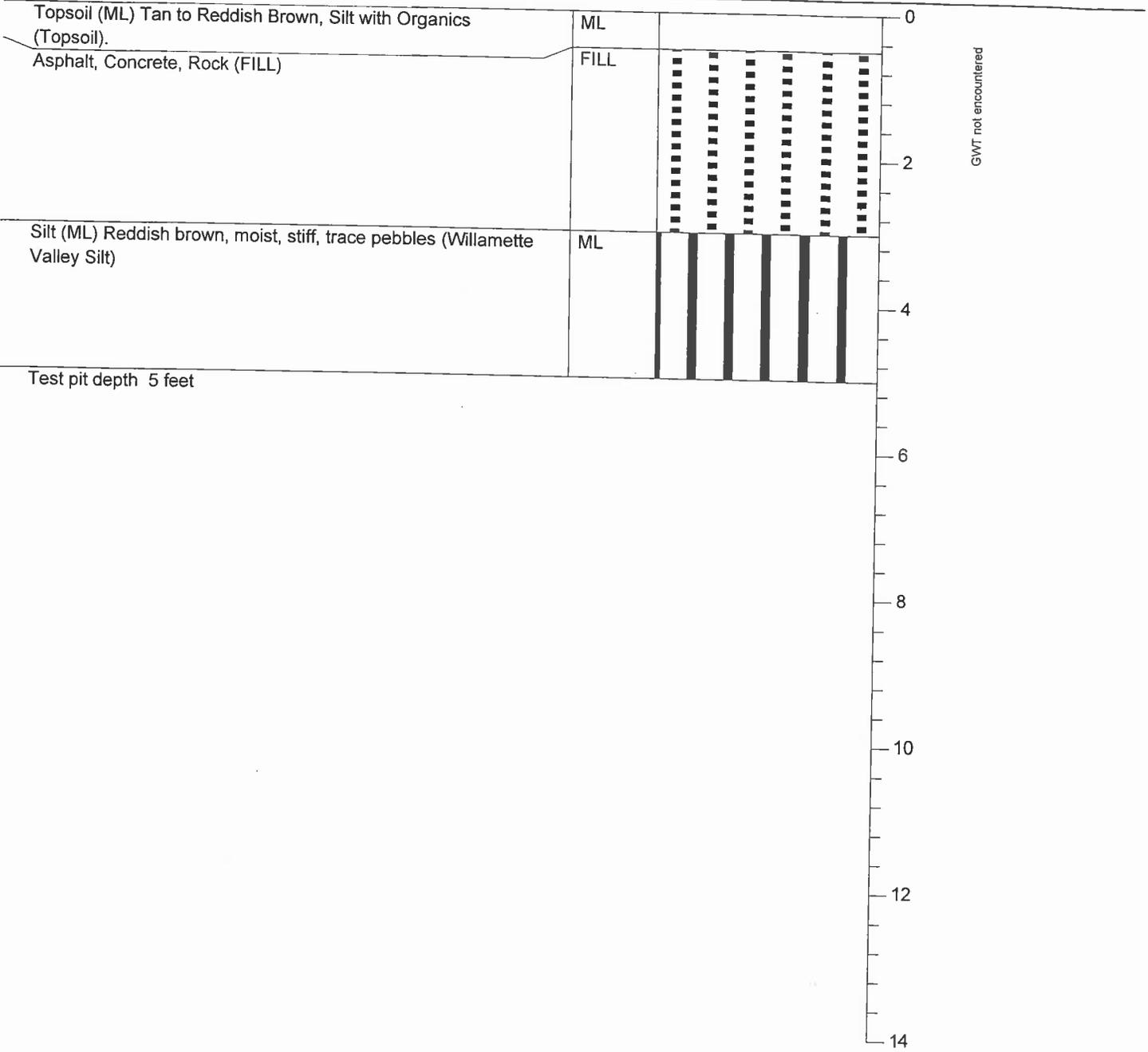
Exc. Date: August 22, 2007
 Exc. Depth: 5
 Logged By: CLH
 Plotted By: CLH
 Water Level: NA

Date: 9/6/2007

File: C:\TDC\TDC Projects\291 Vic Patel\291-001 Holiday Inn Express\Logs\Holiday Inn Express Test Pit Logs.log

SuperLog CivilTech Software, USA www.civiltech.com

Description	Soil Type	Graphic Test Pit	Soil Depth	Water	Samples
-------------	-----------	------------------	------------	-------	---------



Test Pit

Terra Dolce Consultants, Inc

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TRANSMITTAL

11000 NE 33rd Place, Suite 101
Bellevue, WA 98004-1459

425.827.3252 phone
425.889.9174 fax
e-mail: info@spe-architects.com

TO: **Schott & Associates, Inc.** DATE: 10/23/2007
 PO Box 589
 Aurora, OR 97002
 PROJECT: Holiday Inn Express
 LOCATION: West Linn, OR (#11718)
 FROM: SPE Architect

ATTN: Dale Gulliford, Jr.

PHONE: (503) 678-6007

SUBJECT: Design Development Drawings

HEREWITH:	<input checked="" type="checkbox"/> PRINTS	<input type="checkbox"/> SAMPLES	<input type="checkbox"/> ATTACHED
	<input type="checkbox"/> ORIGINALS	<input type="checkbox"/> SUBMITTALS	<input type="checkbox"/> UNDER SEPARATE COVER
	<input checked="" type="checkbox"/> DISK	<input type="checkbox"/> OTHER	<input checked="" type="checkbox"/> DOCUMENTS
FOR YOUR:	<input type="checkbox"/> INFORMATION	<input type="checkbox"/> APPROVAL	<input type="checkbox"/> ESTIMATE
	<input checked="" type="checkbox"/> AS REQUESTED	<input type="checkbox"/> REVIEW/COMMENT	<input type="checkbox"/> CONSTRUCTION
	<input type="checkbox"/> USE	<input type="checkbox"/> RETURN AFTER LOAN	<input type="checkbox"/>

Copies:	Date:	Description:
3	Oct.17, 2007	Drawings, 24x36 set (3 sets, 3 sheets ea.; Site Plan, Exterior Elevations)
3	Oct.12, 2007	Acoustic Report
3	Sep. 7, 2007	Geotech Report
3	Oct. 22, 2007	Traffic Impact Study
3	Oct. 22, 2007	Traffic Impact Study - Appendix
1	1	CD containing electronic file of all documents

Hello Dale,

This package is for Submittal for Site Plan Review with the city. The only thing not included with this package that should be is the Civil Plan. We're waiting on that so I'm having Tim Turner send it to you hard copies directly and we'll just get copied via pdf. I've included (3) sets; (2) for the city and (1) for your records. Should you need anything else, please let us know.

Thank you,
John Person

By:

Copy:

A-45



SCHOTT & ASSOCIATES
Ecologists & Wetlands Specialists

21018 NE Hwy 99E • P.O. Box 589 • Aurora, OR 97002 • (503) 678-6007 • FAX: (503) 678-6011

**JURISDICTIONAL
WETLAND DETERMINATION
AND
DELINEATION
OF
WILLAMETTE FALLS DRIVE PROPERTY**

Prepared for:

VKNW, Inc., Attn: Manish Patel
12700 SE McLoughlin
Milwaukie, OR. 97222
(503) 504-5566

Prepared by:

Dale R. Gulliford, Jr.
&
Cari Cramer

Project #: 1920

November 2006

A-46

Site Data Sheet

Project Name: Willamette Falls Drive Property
Project Number: 1920
Date of Site Visit: October 9, 2006

Applicant: VKNW, Inc., Attn: Manish Patel (Owners of Lots 3400 & 3500)
Applicant's Address: 12700 SE McLoughlin., Milwaukie, OR. 97222
Owner(s): Larry Blunck (Owner of Parcels 1 & 4)
Owner(s) Address: 2330 Willamette Falls Drive
West Linn, Oregon 97068

State: Oregon
County: Clackamas
Site Location: SE1/4 SE1/4 Sec.35 T.2S R.1E
USGS Quadrangle: Canby
Latitude/Longitude: 45°20.460'N 122°39.108'W
Tax Map Information: 2 1E 35D & 2 1E35DD, TL#3400, 3500, Parcels 1 & 4

Watershed: Willamette River
Adjacent Waterbody: Bernert Creek
In the Floodplain?: no
Topography: Northeast to southwest facing slope

Site Zoning: Commercial
Proposed Use: Commercial
Present/Past Use: Commercial
Surrounding Usage: Commercial to southwest and northeast, residential to the southeast across Willamette Falls Drive.

Determination: 0.25 acres PEM/sloped wetland
Days Since Last Rain: 0
Mapping accuracy: Surveyed by Burton Engineering, a Professional Land Surveyor

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Schott & Associates

Ecologists and Wetland Specialists

21018 NE Hwy 99E, P.O. Box 589, Aurora, Oregon 97002 • (503) 678-6007 • Fax (503) 678-6011

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S&A#: 1920

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EXECUTIVE SUMMARY

The approximate 1.58-acre subject property is located northeast of Willamette Falls Drive in West Linn, Clackamas County, Oregon (SE ¼, SE ¼ of T2S, R1E, Sec. 35, Tax lots 3400, 3500, and Parcels 1 & 4). The irregular shaped subject property is situated between Willamette Falls drive to the southeast and the Interstate 205 right-away to the northwest. Commercial buildings are located to the northeast and southwest of the subject property. The vacant road grade of Willamette Falls Drive, which encompasses Parcel 1 and part of Parcel 4, is still visible and extends along the northwest boundaries of Tax Lots 3400 and 3500.

A drainage way flowed from northwest to southeast onto Parcel 1 where it flowed into an onsite pond on the eastern portion of the parcel. The pond overlapped onto Parcel 4 where stormwater flow was directed into a 24-inch culvert that extended beneath the abandoned road grade. The culvert emptied onto the southwestern corner of Lot 3400 where the drainage resumed its meander path. The drainage flowed through a depression that extended across Tax Lots 3400 and 3500. The depression was created as a result of the construction of the abandoned Willamette Falls Drive and the currently used Willamette Falls Drive. The property in these tax lots sloped down from the two road grades at 0-10% on old fill material into the small floodplain that flanks the drainage. The vegetation in the western two-thirds of Tax lots 3400 and 3500 consisted of grass and forb species. The vegetation in the eastern one-third consisted of shrubs, woody vine, and some deciduous tree species. The drainage way exited the property through a second culvert that extended offsite to the northeast beneath Willamette Falls Drive.

The depression on the east side of the road was an extension of the upstream section of Parcels 1 and 4. The flood plain in the depression in these two parcels was wider than the downstream sections. This is due to the two artificial constraints the road grades impose. There were sections of fill on both the north and south sides of this section as well. The vegetation in this portion of the subject property consisted of mature deciduous trees, non-native shrubs and woody vine species, ferns, and grasses.

The Local Wetland Inventory (LWI) for the City of West Linn indicates a drainage way flowing through two wetlands separated by an abandoned road on the subject property (BE-01 & BE-02). The Clackamas County Soil Survey indicated Woodburn silt loam on 3 to 8 percent slopes. The Woodburn series is not listed to be hydric. The topographic map indicates there to be an old road grade extending from southwest to northeast through the middle of the subject property, and a drainage flowing from northwest to southeast. The topographic map also show the drainage to flow through a well defined northwest to southeast situated swale.

Based on the vegetation, soils and hydrology data collected onsite, 0.25 acres (10,734.99 sf) of PEM/Sloped wetland were found onsite. The wetland boundaries were flagged. The flagging was surveyed by Burton Engineering, a Professional Land Surveyor (PLS).

INTRODUCTION

Site Description

The approximate 1.58-acre subject property is located northeast of Willamette Falls Drive in West Linn, Clackamas County, Oregon (SE ¼, SE 1/4 of T2S, R1E, Sec. 35, Tax lots 3400, 3500, and Parcels 1 & 4). The irregular shaped subject property is situated between Willamette Falls drive to the southeast and the Interstate 205 right-away to the northwest. Commercial buildings are located to the northeast and southwest of the subject property. The vacant road grade of Willamette Falls Drive, which encompasses Parcel 1 and part of Parcel 4, is still visible and extends along the northwest boundaries of Tax Lots 3400 and 3500.

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Project purpose

The applicants proposes to construct a Holiday Inn hotel on the subject property.

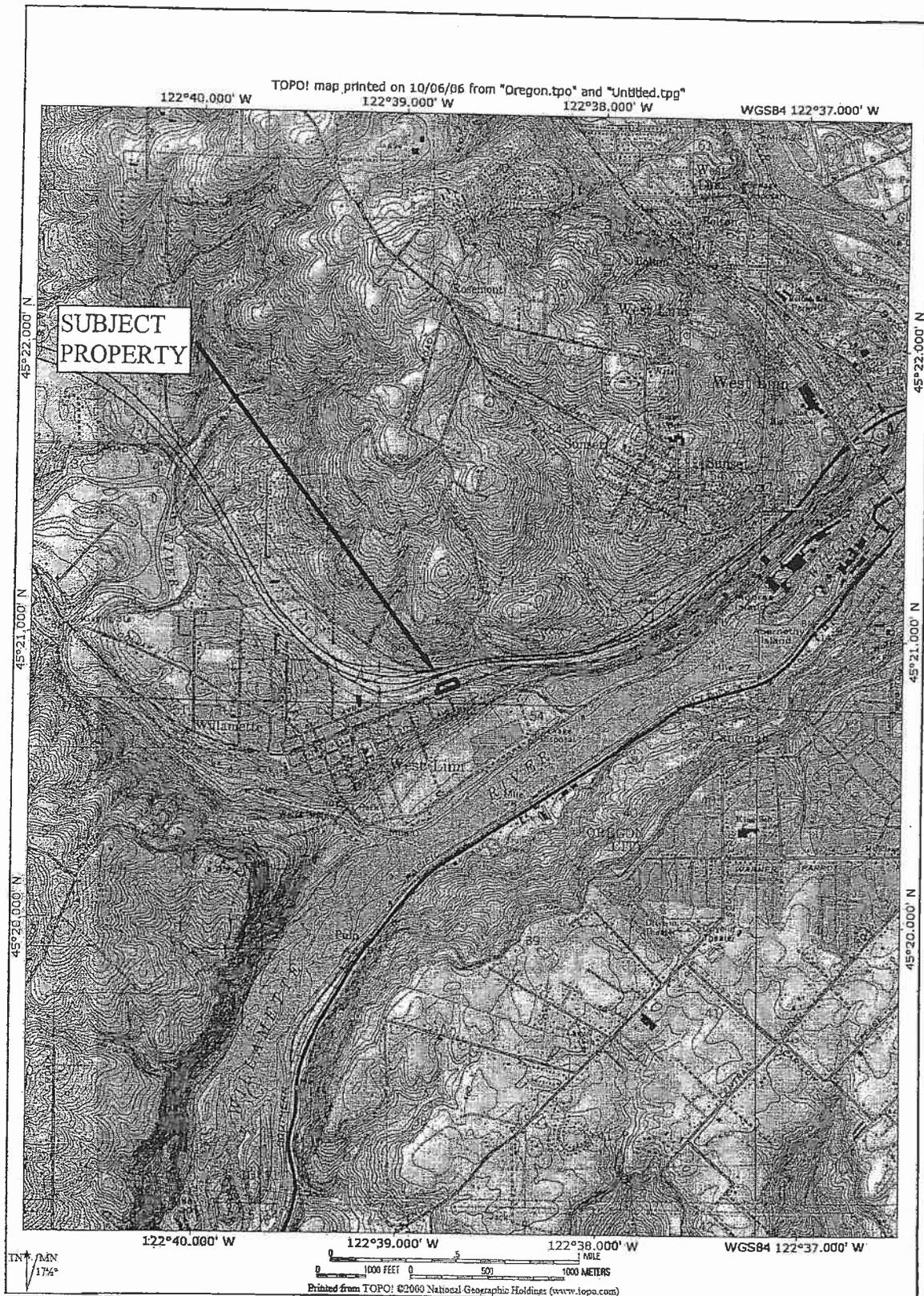


Figure 1: Topographic Map
 Holiday Inn Property – West Linn, OR

Schott & Associates
 P.O. Box 589
 Aurora, OR. 97002
 503.678.6007

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Wetland Definition and Authority

The U.S. Army Corps of Engineers (COE) regulates the discharge of dredged or fill materials into waters and adjacent wetlands of the United States under authority of Section 404 of the Clean Water Act (*Federal Register*, 1986). For purposes of the Section 404 permitting program, the COE and other federal agencies define wetlands as follows (*Federal Register*, 1980, 1982):

“Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.”

In Oregon, the Department of State Lands (DSL) regulates removal/fill permitting in wetlands under ORS 196.800 to 196.990, and OAR 141-85-005 to OAR 141-85-090, and uses the same definition.

Regulatory Context

In 1987, the COE published a manual (Corps of Engineers Wetlands Delineation Manual or 1987 manual), which describes methods for determining the extent of jurisdictional wetlands under Section 404 of the Clean Water Act (Environmental Laboratory, 1987). *The Federal Manual for Identifying and Delineating Jurisdictional Wetlands* was published two years later as a collaborative effort by the COE, U.S. Fish and Wildlife Service (USFWS), U.S. Environmental Protection Agency (EPA), and U.S. Soil Conservation Service (SCS), revised the 1987 manual (Federal Interagency Committee for Wetland Delineation, or 1989 manual).

Both the COE and DSL used the 1989 manual until 1992 when the 1992 Energy and Water Development Appropriation Act went into effect. The Act limited the COE (federal permitting agency) to using the 1987 manual for determining the extent of wetlands under federal jurisdiction. Oregon continued to use the 1989 manual until March 23, 1993, when the Director of DSL signed a policy statement requiring the agency to use the 1987 manual. The policy statement was the result of the EPA agreement to use the 1987 manual.

METHODS

The analysis of wetlands conducted on this site was based on published methods for implementing Section 404 of the Clean Water Act. The 1987 manual was used to satisfy the requirements of the COE on non-agricultural land. For agricultural land, the *Food Security Act Manual and the Interim Operating Procedures for Completing Wetland Delineation/Determinations on Agricultural Lands* (August 18, 1997) is used. Each manual requires three parameters to be examined: vegetation, soils, and hydrology. According to the 1987 manual, independent evidence of hydrophytic vegetation, hydric

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soils, and wetland hydrology must be present for an area to be declared a wetland. The analysis of wetlands on the project site was conducted by reviewing and analyzing existing site-specific literature and by field investigation. These two approaches are described below. DSL requires the use of only the 1987 manual. Where there are differences between COE and DSL jurisdictional wetlands, due to the differences cause by the two different methods, they are explained in the report.

Literature Review

The following sources were examined for indications that jurisdictional wetlands may exist on the project site (see **REFERENCES** for complete citations):

Hydric Soils of the United States, 1991 edition
Soil Survey of Clackamas County
Topography Map
National Wetland Inventory Map, Canby, Oregon
Local Wetland Inventory Map, West Linn, Oregon

These sources were reviewed for information about the vegetation, soils and hydrology of the site prior to field investigation.

Site-Specific Field Investigation

The Routine Onsite Determination Method (1987 manual, pp. 52-69) was used to determine the State of Oregon wetland boundaries. The Federal jurisdictional wetlands were delineated using the 1987 manual for non-agricultural lands, and the Food Security Manual agricultural lands. Areas of homogeneous vegetation were identified for sampling vegetation type, percent cover, hydrology, and soil characteristics. Sample plots were established to represent the different plant communities found at the site. Sample plots were located in areas identified during the site walk over which had the greatest potential to be wetlands. Thus, the sample plots were located in the areas most likely to meet the wetland criteria. If the sample plot met the three criteria an adjacent sample plot was established in the adjacent upland. For each sample plot, data on vegetation, hydrology, and soils were collected, recorded in the field and later transferred to data forms (Appendix).

The subject property is visible from Willamette Falls Drive. Access to both sides of the property can be made from the abandoned road grade. The wetland on the east side of the subject property was clearly defined in the bottomland of the drainage way. Paired test plots were made periodically to determine the wetland boundary near the toe of the slope. Two separate vegetated communities comprised the onsite water resource area including reed canary grass and Oregon ash. Upland areas to the north were investigated yielding a mixture of Himalayan blackberry and tall fescue. No test plots were made on the

southern wetland boundary. The road grade was very steep and the wetland boundary was well defined.

The west side of the road grade had similar characteristics as the east side. A drainage way flowing from west to east bisected a bottomland wetland into a culvert that emptied into the east side wetland area. The bottomland was covered by reed canary grass and Oregon ash trees, while the upland area was covered by Himalayan blackberry and tall fescue. Newly staked property corners were identified and wetland indicators found. Sample plots were paired to establish the wetland boundary, and the wetland was flagged. Other non-wetland areas were then investigated.

Vegetation

Plants growing in wetlands must be specifically adapted for life under saturated or anaerobic conditions and are commonly referred to as hydrophytic vegetation. The U.S.F.W.S. in cooperation with the National and Regional Interagency Review Panels publishes regional lists estimating the probability of plant species' occurrence in wetlands (e.g., Fish and Wildlife Service, 1988). Each species is given an *indicator status*, which represents the likelihood that it will be found in a wetland. Categories defined in Table 1 are obligate (OBL), facultative wetland (FACW), facultative (FAC), facultative upland (FACU), or upland (UPL). Plants with an indicator status of OBL, FACW, or FAC are considered adapted for life in saturated or anaerobic soil conditions.

The percent coverage of each plant species within the herb, shrub, and tree layers was estimated at each sample plot. Shrubs within a five-foot radius and trees within a 30-foot radius of the center of each plot were identified and recorded. Within the plot, all species were recorded in descending order of coverage, and dominant species were determined. The presence of wetland vegetation was determined according to the indicator status of the dominant species within each vegetative stratum. According to the manual, a sample plot is considered to have wetland vegetation if more than 50% of the number of dominant species present has an indicator status of OBL, FACW, and/or FAC. By 1987 standards, dominant species are chosen by selecting the three most dominant species from each of the four strata (herbs, saplings/shrubs, woody vines, trees). If only one or two strata are represented, then the five most dominant species from each stratum are selected.

TABLE 1: DEFINITIONS OF INDICATOR STATUS

Indicator Symbol	Definition
OBL	Obligate. Species that occur in wetlands under natural conditions with an estimated probability of greater than 99%
FACW	Facultative wetland. Species that usually occur in wetlands

TABLE 1: DEFINITIONS OF INDICATOR STATUS

Indicator Symbol	Definition
	(estimated probability 67 to 99%), but occasionally are found in non-wetlands.
FAC	Facultative. Species that are equally likely to occur in wetlands or non-wetlands (estimated probability 34 to 66%).
FACU	Facultative upland. Species that usually occur in non-wetlands (estimated probability 67 to 99%), but occasionally are found in wetlands.
UPL	Upland. Species that occur in non-wetlands under natural conditions with an estimated probability of greater than 99%
NI	No indicator. Species for which insufficient information was available to determine an indicator status.
Sources: Federal Interagency Committee for Wetland Delineation, 1989. Environmental Laboratory, 1987. Reed, 1988.	

Soils

Hydric soils, defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile, are one characteristic of wetlands (USDA Soil Conservation Service, 1987). A list of hydric soils of the United States was compiled by the Soil Conservation Service (SCS), in cooperation with the National Technical Committee for Hydric Soils (NTCHS). All soils are mapped in county soil surveys. However, the mapped boundaries of SCS soil types are not at a fine enough resolution for delineating boundaries of jurisdictional wetlands. Errors of omission can occur on SCS maps. Inclusions of upland (non-wetland) soil may exist in hydric soils and uplands may have inclusions of hydric soil. Therefore, field examination of soils is important for accurately delineating the extent of hydric soils. Hydric soils exhibit certain characteristics that can be observed in the field. Field indicators include: high organic content, accumulation of sulfidic material (rotten egg odor), greenish or bluish gray color (gley formation), iron and manganese concretions, spots or blotches of color (mottling), and/or dark soil colors (low soil chroma).

A soil auger, excavating down to a depth of at least 18 inches, was used to sample soil along the wetland boundary. Soil samples were checked for presence of sulfide gases; organic content was estimated visually and texturally; and soil colors were determined by using a Munsell soil color chart (Kollmorgen 1975). The Munsell soil color chart provides the standard for three attributes of color: hue, value, and chroma.

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According to the 1987 manual, hydric soils are required to be inundated or saturated for seven or more consecutive days during the growing season. Soil color is examined in the horizon immediately below the A-horizon, or within 10 inches of the surface, whichever is shallower.

Hydrology

Wetlands, by their very name, must have water. Jurisdictional wetlands are characterized as having permanent or periodic inundation, or soil saturation for five percent or more of the growing season. Saturation occurs when the capillary fringe is within the major portion of the root zone (usually within 12 inches of the surface). Areas meeting one of these criteria are considered to have wetland hydrology.

Ponding or soil saturation for five percent or more of the growing season during the growing season is direct evidence of wetland hydrology. Bare soil and dried algae are evidence that a site was previously inundated. Oxidized rhizospheres along live root channels also indicate soil saturation for five percent or more of the growing season. At each sample plot, wetland hydrology was assumed if positive indicators were present.

Wetland Determination

Presence or absence of wetlands was based on soil, vegetation, and hydrology data collected at sample plots. Following procedures outlined in the 1987 manual, sample plots with homogeneous vegetation were determined to be wetlands if wetland characteristics were present or judged to be normally present (barring human or unusual natural events) for all three parameters.

Difficulties in wetland determination can arise because of disturbance or in problem areas. Both human (e.g., clearing vegetation, agriculture, filling, and excavation) and natural (e.g., mudslides, fire, and beaver dams) events have potential for obliterating field indicators of the three wetland parameters. In disturbed sites, both field and offsite data may be used to determine the presence of a wetland. Offsite information such as historical records, aerial photographs, previous soil, and vegetation surveys may indicate the presence of a jurisdictional wetland.

Some sites are difficult to evaluate because field indicators may not be present throughout the year. Field indicators may vary because of changing environmental conditions that occur seasonally and not necessarily the result of human or natural disturbance.

According to the 1987 manual, all three parameters (hydric soils, hydrophytic vegetation, and wetland hydrology) must be present for an area to be determined as wetland.

Drumlins, seasonal wetlands, prairie potholes, and vegetated flats exemplify areas that are difficult to evaluate.

RESULTS

The Local Wetland Inventory (LWI) for the City of West Linn indicates a drainage way flowing through two wetlands separated by an abandoned road on the subject property (BE-01 & BE-02). The Clackamas County Soil Survey indicated Woodburn silt loam on 3 to 8 percent slopes. The Woodburn series is not listed to be hydric. The topographic map indicates there to be an old road grade extending from southwest to northeast through the middle of the subject property, and a drainage flowing from northwest to southeast. The topographic map also show the drainage to flow through a well defined northwest to southeast situated swale.

Weather

The weather on the day of the October 10, 2006 site visit was warm, sunny, and dry. The Portland ASOS weather station recorded a trace amount that day and 0.03 inches the day before. Total precipitation through the month of October was 39.75 inches. This is 107.2% of the water year average.

Vegetation

Much of the property was vegetated by grass and forbs however, there were small stands of mature trees and shrubs present in the wetland areas and woody vine species that covered portions of the upland area.

The wetlands were dominated by reed canary grass (*Phalaris arundinacea*) and Oregon ash (*Fraxinus latifolia*) however, other hydrophytic species were present such as tall fescue (*Festuca arundinacea*) teasel (*Dipsacus sylvestris*), willow (*Salix sp.*), common horsetail (*Equisetum arvense*), great mullein (*Verbascum thapsus*), black hawthorn (*Crataegus douglasii*), and velvet grass (*Holcus lanatus*).

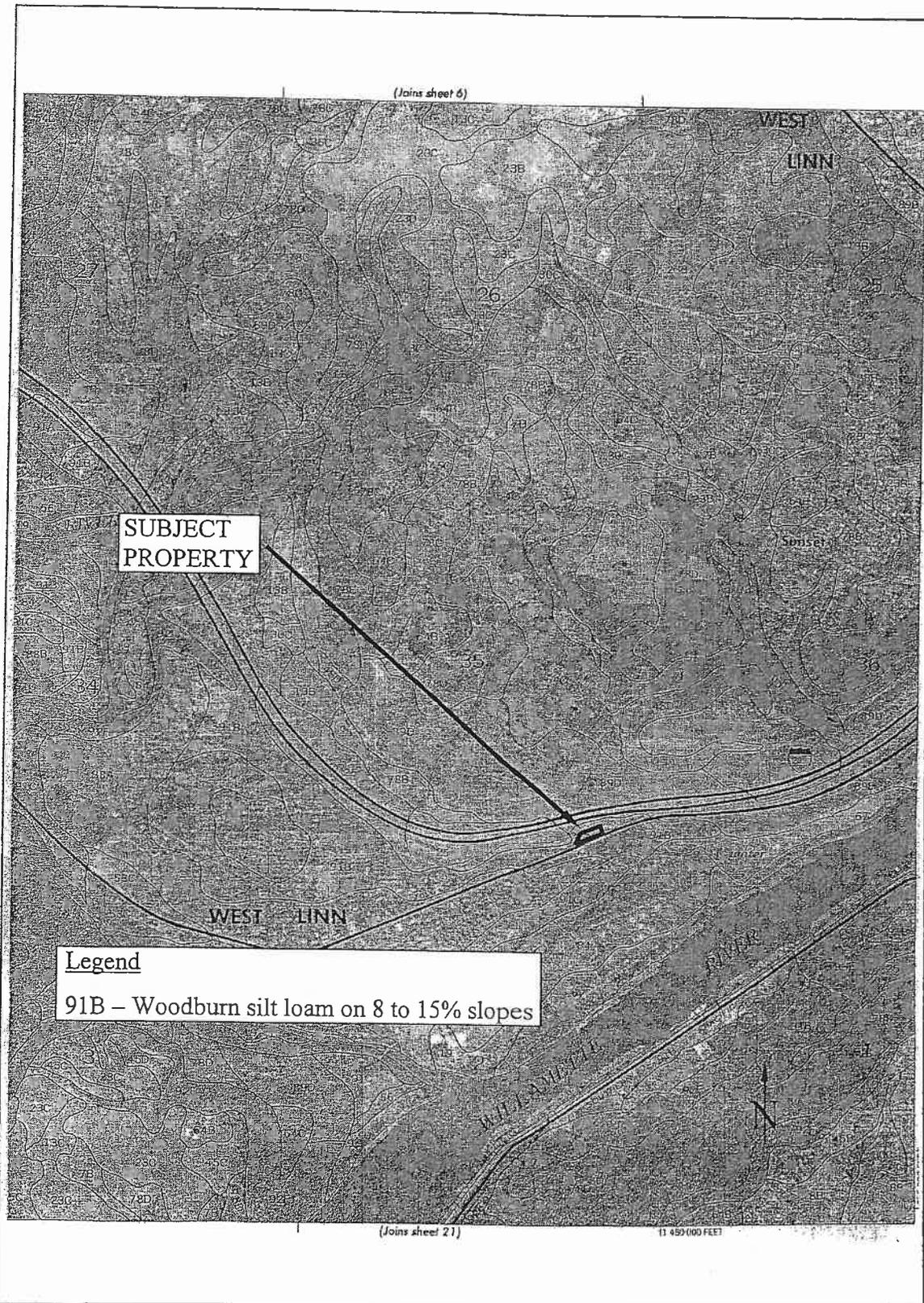
Plant species found in the upland areas included big-leaf maple (*Acer macrophyllum*), Himlayan blackberry (*Rubus discolor*), English hawthorn (*Crataegus monogyna*), hazelnut (*Corylus cornuta*), bull thistle (*Cirsium vulgare*), orchard grass (*Dactylis glomerata*), European bittersweet (*Solanum dulcamara*), and bracken fern (*Pteridium aquilinum*) were identified in the upland areas.

Soils

The Clackamas County Soil Survey indicated Woodburn silt loam on 3 to 8 percent slopes (Figure 2). The Woodburn series is not listed to be hydric.

The Woodburn series consists of moderately well drained soils that formed in old alluvium. It is classified as an Aquultic Argixeroll, which is a Mollisol with a xeric moisture regime, a relatively thin brown argillic horizon, with moderately shallow groundwater on a seasonal basis. The A horizon (to 11 inches) is very dark grayish-brown (10YR 3/2) silt loam with a subangular blocky structure. The top of the B horizon is dark brown (10YR 3/3) silt loam to 16 inches with a fine subangular blocky structure. The capability classification of this mapping unit is IIe. Aloha, Amity, Willamette, Helvetia, and Dayton soils are included in this mapping unit.

The soil samples observed in the field resembled the mapped soil series.



Hydrology

A west to east flowing drainage way extended through the middle of the subject property. The drainage way flows onto the subject property in a bottomland that contains wetlands on each side of the channel. The drainage flows into a small ponded area before entering a culvert that extends beneath the abandoned road grade of the old Willamette Falls Drive. The culvert empties into the drainage way on the east side of the road grade where it flows across the property and offsite to the east when it enters a second culvert. The bottomlands on the east side of the road grade also contained wetland areas. The wetlands receive hydrology from shallow ground water, shallow subsurface flow from the surrounding steep stream banks, and precipitation. The wetlands receive stormwater runoff from both the north and south facing stream banks that flank them.

Wetland determination

Based on the vegetation, soils and hydrology data collected onsite, 0.25 acres (10,734.99 sf) of PEM/Sloped wetland were found onsite. The wetland boundaries were flagged. The flagging was surveyed by Burton Engineering, a Professional Land Surveyor (PLS).

The onsite wetland is actually composed of two wetlands connected by the onsite culvert. The two wetland areas were historically part of the same bottomland wetland before the construction of the now defunct Willamette Falls Drive. Soils in the swale were hydric with a matrix of 10YR3/2 with mottles of 10YR 4/6, 5YR 4/6, and 2.5YR 3/6. The vegetation in the wetlands was dominated by reed canary grass and Oregon ash (Plots 1, 3, 5, A, C, and E). The upland plots included were dominated by Himalayan blackberry and tall fescue with non-hydric soils (Plots 2, 4, 6, B, D, and F). Changes in topography between the wetland and upland plots were very clear due to the sharp change in topography between the flat bottom of the swales and the steeply sloping banks. Hydrology within the wetland ranged from surface saturation to saturation at 8 inches below the surface. There were no indications of hydrology being present outside the wetland boundary.

Bernert Creek cuts through the onsite wetlands in a west to east direction. It is a perennial stream that originates in the hills to the north of West Linn and southwest of Salamo Road. The headwaters begin in a steep convergent slope that extend to the southwest forming a stream channel until it reaches the toe of the slope and extends beneath Blankenship Road. The stream continues to the southwest where it is culverted beneath I-205 and outfalls east of 13th Street and north of 8th Avenue. The drainage way then flows to east beneath 10th Street before continuing east to the subject property. The riparian area along the creek has been disturbed over the years and consists of deciduous trees, a shrub layer, and grass/forb ground cover. The grass and forbs are generally an

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invasive species commonly found in disturbed areas. Much of the property north of Willamette Falls Drive has been developed along this stretch of the stream.

This report documents the investigation, best professional judgment and the conclusions of the investigator. It is correct and complete to the best of my knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been reviewed and approved in writing by the Oregon Department of State lands in accordance with OAR 141-090-0005 through 141-090-0055.

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TABLE 2: SUMMARY OF VEGETATION, HYDROLOGY, AND SOILS

Plot #	Vegetation	Soils	Hydrology	Determination
1	Hydrophytic	Hydric	Wetland	Wetland
2	Non-hydrophytic	Hydric	Upland	Upland
3	Hydrophytic	Hydric	Wetland	Wetland
4	Non-hydrophytic	Non-hydric	Upland	Upland
5	Hydrophytic	Hydric	Wetland	Wetland
6	Non-hydrophytic	Hydric	Upland	Upland
A	Hydrophytic	Hydric	Wetland	Wetland
B	Hydrophytic	Non-hydric	Upland	Upland
C	Hydrophytic	Hydric	Wetland	Wetland
D	Hydrophytic	Non-hydric	Upland	Upland
E	Hydrophytic	Hydric	Wetland	Wetland
F	Hydrophytic	Non-hydric	Upland	Upland

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APPENDIX A: DATA FORMS

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DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Clackamas	Date: 10/9/06	City: West Linn	File #:1920
Project/Contact: Willamette Falls Drive/Schott & Associates		Det. By: DG & CC	
Plant Community: grasses		Plot #:1	
Plot Location: north wetland boundary inside			
Recent Weather: Sunny, dry and warm			
Do normal environmental conditions exist? Y <input checked="" type="checkbox"/> N <input type="checkbox"/> If no, explain:			
Has Vegetation <input type="checkbox"/> Soil <input type="checkbox"/>		Hydrology <input type="checkbox"/> been significantly disturbed?	
Explain: no significant disturbance			

VEGETATION

Tree Stratum				Herb Stratum			
Total Plot Cover:30%		15 = 50%	6 = 20%	Total Plot Cover:100%		50 = 50%	20 = 20%
Status/Raw % Cover				Status/Raw % Cover			
1. <i>Fraxinus latifolia</i> *		FACW/30%		1. <i>Phalaris arundinacea</i> *		FACW/100%	
2.				2.			
3.				3.			
4.				4.			
5.				5.			
Sapling/Shrub Stratum							
Total Plot Cover:		= 50%	= 20%	Status/Raw % Cover		7.	
1.				8.			
2.				9.			
3.				10.			
4.				11.			
5.				12.			

Hydrophytic Vegetation Indicators:

> 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):100%

Other hydrophytic vegetation indicators:

Criteria Met? Yes No Comments:

SOILS

Map Unit Name: Woodburn Series

Drainage Class: Moderately well drained soil

On Hydric Soil List? Yes No

Has Hydric Inclusions? Yes No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-3"	10YR 3/2	none	none	silt loam
3-12"	10YR 3/2	10YR 4/6	none	silt loam

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol
<input type="checkbox"/> Histic Epipedon
<input type="checkbox"/> Sulfidic Odor
<input type="checkbox"/> Reducing Conditions (tests positive)
<input type="checkbox"/> Gleyed or low chroma colors
<input checked="" type="checkbox"/> Redox features within 10" (e.g., concentrations) | <input type="checkbox"/> Concretions/Nodules (w/in 3", > 2mm)
<input type="checkbox"/> High organic content in surface (in Sandy Soils)
<input type="checkbox"/> Organic streaking (in Sandy Soils)
<input type="checkbox"/> Organic pan (in Sandy Soils)
<input type="checkbox"/> Listed on Hydric Soils List (and soil profile matches)
<input type="checkbox"/> Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
<input type="checkbox"/> Supplemental indicator (e.g., NRCS field indicator) |
|--|---|

Criteria Met? Yes No

HYDROLOGY

Recorded Data:

Recorded Data Available Aerial Photos Stream Gauge Other No Recorded Data Available

Field Data

Depth of inundation: none

Depth to Saturation:6"

Depth to Free Water:none

Primary Hydrology Indicators:

- Inundated
- Saturated in upper 12 inches
- Water Marks
- Drift Lines
- Sediment Deposits

Secondary Hydrology Indicators (2 or more required):

- Oxidized Root Channels (upper 12")
- Water-stained leaves
- Local Soil Survey Data
- FAC – Neutral Test
- Other:

Criteria Met? Yes No

Comments:

DETERMINATION

WETLAND? YES NO Comments: wetland criteria was met

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DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Clackamas	Date: 10/9/06	City: West Linn	File #:1920
Project/Contact: Willamette Falls Drive/ Schott & Associates		Det. By: DG & CC	
Plant Community: grasses		Plot #:2	
Plot Location: paired with plot 1			
Recent Weather: sunny, dry and warm			
Do normal environmental conditions exist? Y <input checked="" type="checkbox"/> N <input type="checkbox"/> If no, explain:			
Has Vegetation <input type="checkbox"/>		Soil <input type="checkbox"/> Hydrology <input type="checkbox"/> been significantly disturbed?	
Explain: no significant disturbance			

VEGETATION

Tree Stratum			Herb Stratum		
Total Plot Cover:	= 50%	= 20%	Total Plot Cover:60%	30 = 50%	12 = 20%
Status/Raw % Cover			Status/Raw % Cover		
1.			1. <i>Phalaris arundinacea</i>		FACW/10%
2.			2. <i>Holcus lanatus</i> *		FAC/20%
3.			3. <i>Pteridium aquilinum</i>		FACU/10%
4.			4. <i>Festuca arundinacea</i> *		FAC-/ 20%
5.			5.		
Sapling/Shrub Stratum			6.		
Total Plot Cover:60%	30= 50%	12= 20%	Status/Raw % Cover	7.	
1. <i>Rubus discolor</i> *			FACU/ 40%	8.	
2. <i>Crataegus monogyna</i> *			FACU+/ 20%	9.	
3.				10.	
4.				11.	
5.				12.	

Hydrophytic Vegetation Indicators:

> 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):50%
Other hydrophytic vegetation indicators:

Criteria Met? Yes No Comments:

SOILS

Map Unit Name: Woodburn series Drainage Class: moderately well drained
On Hydric Soil List? Yes No Has Hydric Inclusions? Yes No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-16"	10YR 3/2	10YR 4/6 (minimal)	none	silty loam

Hydric Soil Indicators:

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Reducing Conditions (tests positive)
- Gleyed or low chroma colors
- Redox features within 10" (e.g., concentrations)
- Concretions/Nodules (w/in 3", > 2mm)
- High organic content in surface (in Sandy Soils)
- Organic streaking (in Sandy Soils)
- Organic pan (in Sandy Soils)
- Listed on Hydric Soils List (and soil profile matches)
- Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
- Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? Yes No

HYDROLOGY

Recorded Data:

Recorded Data Available Aerial Photos Stream Gauge Other No Recorded Data Available

Field Data

Depth of inundation: none Depth to Saturation:none Depth to Free Water:none

Primary Hydrology Indicators:

- Inundated
- Saturated in upper 12 inches
- Water Marks
- Drift Lines
- Sediment Deposits

Secondary Hydrology Indicators (2 or more required):

- Oxidized Root Channels (upper 12")
- Water-stained leaves
- Local Soil Survey Data
- FAC – Neutral Test
- Other:

Criteria Met? Yes No

Comments:

DETERMINATION

WETLAND? YES NO Comments: Wetland vegetation and hydrology were not met

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DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Clackamas	Date: 10/9/06	City: West Linn	File #: 1920
Project/Contact: Willamette Falls Drive/ Schott & Associates		Det. By: DG & CC	
Plant Community: grasses		Plot #: 3	
Plot Location: east wetland boundary inside			
Recent Weather: sunny, dry and warm			
Do normal environmental conditions exist? Y <input checked="" type="checkbox"/> N <input type="checkbox"/> If no, explain:			
Has Vegetation <input type="checkbox"/>		Soil <input type="checkbox"/> Hydrology <input type="checkbox"/> been significantly disturbed?	
Explain: no significant changes			

VEGETATION

Tree Stratum			Herb Stratum		
Total Plot Cover: 60%	30 = 50%	12 = 20%	Total Plot Cover: 100%	50 = 50%	20 = 20%
Status/Raw % Cover			Status/Raw % Cover		
1. <i>Fraxinus latifolia</i>	60%		1. <i>Phalaris arundinacea</i>	FACW/100%	
2.			2.		
3.			3.		
4.			4.		
5.			5.		
Sapling/Shrub Stratum			6.		
Total Plot Cover:	= 50%	= 20%	Status/Raw % Cover	7.	
1.			8.		
2.			9.		
3.			10.		
4.			11.		
5.			12.		

Hydrophytic Vegetation Indicators:

> 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-): 100%

Other hydrophytic vegetation indicators:

Criteria Met? Yes No Comments:

SOILS

Map Unit Name: Woodburn Series Drainage Class: moderately well drained

On Hydric Soil List? Yes No Has Hydric Inclusions? Yes No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-16"	10YR 3/2	5YR 4/6 many	none	silty loam

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol
<input type="checkbox"/> Histic Epipedon
<input type="checkbox"/> Sulfidic Odor
<input type="checkbox"/> Reducing Conditions (tests positive)
<input type="checkbox"/> Gleyed or low chroma colors
<input checked="" type="checkbox"/> Redox features within 10" (e.g., concentrations) | <input type="checkbox"/> Concretions/Nodules (w/in 3", > 2mm)
<input type="checkbox"/> High organic content in surface (in Sandy Soils)
<input type="checkbox"/> Organic streaking (in Sandy Soils)
<input type="checkbox"/> Organic pan (in Sandy Soils)
<input type="checkbox"/> Listed on Hydric Soils List (and soil profile matches)
<input type="checkbox"/> Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
<input type="checkbox"/> Supplemental indicator (e.g., NRCS field indicator) |
|--|---|

Criteria Met? Yes No

HYDROLOGY

Recorded Data:

Recorded Data Available Aerial Photos Stream Gauge Other No Recorded Data Available

Field Data

Depth of inundation: none Depth to Saturation: surface Depth to Free Water: 10"

Primary Hydrology Indicators:

- Inundated
- Saturated in upper 12 inches
- Water Marks
- Drift Lines
- Sediment Deposits

Criteria Met? Yes No

Secondary Hydrology Indicators (2 or more required):

- Oxidized Root Channels (upper 12")
- Water-stained leaves
- Local Soil Survey Data
- FAC – Neutral Test
- Other:

Comments:

DETERMINATION

WETLAND? YES NO Comments: wetland criteria was met

A-69

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Clackamas	Date: 10/9/06	City: West Linn	File #: 1920
Project/Contact: Willamette Falls Drive/ Schott & Associates		Det. By: DG & CC	
Plant Community: grasses		Plot #: 4	
Plot Location: paired with 3			
Recent Weather: warm, dry and sunny			
Do normal environmental conditions exist? Y <input checked="" type="checkbox"/> N <input type="checkbox"/> If no, explain:			
Has Vegetation <input type="checkbox"/> Soil <input type="checkbox"/>		Hydrology <input type="checkbox"/> been significantly disturbed?	
Explain: no significant disturbance			

VEGETATION

Tree Stratum			Herb Stratum		
Total Plot Cover: 60%	30% = 50%	12% = 20%	Total Plot Cover: 40%	20 = 50%	8 = 20%
Status/Raw % Cover			Status/Raw % Cover		
1. <i>Fraxinus latifolia</i> *	FACW/ 60%		1. <i>Phalaris arundinacea</i> *	FACW/40%	
2.			2.		
3.			3.		
4.			4.		
5.			5.		
Sapling/Shrub Stratum					
Total Plot Cover: 90%	45 = 50%	18 = 20%	Status/Raw % Cover		
1. <i>Crataegus monogyna</i> *	FACU+/30%		7.		
2. <i>Rubus discolor</i> *	FACU/ 60%		8.		
3.			9.		
4.			10.		
5.			11.		
			12.		

Hydrophytic Vegetation Indicators:

> 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-): 50%

Other hydrophytic vegetation indicators:

Criteria Met? Yes No Comments:

SOILS

Map Unit Name: Woodburn Series

Drainage Class: moderately well drained

On Hydric Soil List? Yes No

Has Hydric Inclusions? Yes No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-16"	10YR 3/2	none	none	silty loam

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol
<input type="checkbox"/> Histic Epipedon
<input type="checkbox"/> Sulfidic Odor
<input type="checkbox"/> Reducing Conditions (tests positive)
<input type="checkbox"/> Gleyed or low chroma colors
<input type="checkbox"/> Redox features within 10" (e.g., concentrations) | <input type="checkbox"/> Concretions/Nodules (w/in 3", > 2mm)
<input type="checkbox"/> High organic content in surface (in Sandy Soils)
<input type="checkbox"/> Organic streaking (in Sandy Soils)
<input type="checkbox"/> Organic pan (in Sandy Soils)
<input type="checkbox"/> Listed on Hydric Soils List (and soil profile matches)
<input type="checkbox"/> Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
<input type="checkbox"/> Supplemental indicator (e.g., NRCS field indicator) |
|---|---|

Criteria Met? Yes No

HYDROLOGY

Recorded Data:

Recorded Data Available Aerial Photos Stream Gauge Other No Recorded Data Available

Field Data

Depth of inundation: none

Depth to Saturation: none

Depth to Free Water: none

Primary Hydrology Indicators:

Secondary Hydrology Indicators (2 or more required):

- Inundated
- Saturated in upper 12 inches
- Water Marks
- Drift Lines
- Sediment Deposits

- Oxidized Root Channels (upper 12")
- Water-stained leaves
- Local Soil Survey Data
- FAC – Neutral Test
- Other:

Criteria Met? Yes No

Comments:

DETERMINATION

WETLAND? YES NO Comments: no wetland criteria was met

A-70

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Clackamas	Date: 10/9/06	City: West Linn	File #:1920
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Project/Contact: Willamette Falls Drive/ Schott & Associates Det. By: DG & CC
 Plant Community: grasses Plot #:5

Plot Location: south wet land boundary
 Recent Weather: warm, sunny and dry

Do normal environmental conditions exist? Y N If no, explain:
 Has Vegetation Soil Hydrology been significantly disturbed?
 Explain: no significant disturbance

VEGETATION

Tree Stratum				Herb Stratum			
Total Plot Cover:40%		20 = 50%		8 = 20%		Total Plot Cover:100%	
				50 = 50%		20 = 20%	
Status/Raw % Cover				Status/Raw % Cover			
1. <i>Fraxinus latifolia</i>		FACW/40%		1. <i>Phalaris arundinacea</i>		FACW/100%	
2.				2.			
3.				3.			
4.				4.			
5.				5.			
Sapling/Shrub Stratum				6.			
Total Plot Cover:		= 50%		= 20%		Status/Raw % Cover	
1.				7.			
2.				8.			
3.				9.			
4.				10.			
5.				11.			
				12.			

Hydrophytic Vegetation Indicators:

> 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):100%

Other hydrophytic vegetation indicators:

Criteria Met? Yes No Comments:

SOILS

Map Unit Name: Woodburn Series Drainage Class: Moderately well drained
 On Hydric Soil List? Yes No Has Hydric Inclusions? Yes No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-16"	10YR 3/2	2.5YR 3/6 many	none	silty loam

Hydric Soil Indicators:

- | | |
|--|--|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions/Nodules (w/in 3", > 2mm) |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High organic content in surface (in Sandy Soils) |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic streaking (in Sandy Soils) |
| <input type="checkbox"/> Reducing Conditions (tests positive) | <input type="checkbox"/> Organic pan (in Sandy Soils) |
| <input type="checkbox"/> Gleyed or low chroma colors | <input type="checkbox"/> Listed on Hydric Soils List (and soil profile matches) |
| <input checked="" type="checkbox"/> Redox features within 10" (e.g., concentrations) | <input type="checkbox"/> Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration) |
| | <input type="checkbox"/> Supplemental indicator (e.g., NRCS field indicator) |

Criteria Met? Yes No

HYDROLOGY

Recorded Data:

Recorded Data Available Aerial Photos Stream Gauge Other No Recorded Data Available

Field Data

Depth of inundation: none Depth to Saturation:8" Depth to Free Water:none

Primary Hydrology Indicators:

- Inundated
- Saturated in upper 12 inches
- Water Marks
- Drift Lines
- Sediment Deposits

Secondary Hydrology Indicators (2 or more required):

- Oxidized Root Channels (upper 12")
- Water-stained leaves
- Local Soil Survey Data
- FAC – Neutral Test
- Other:

Criteria Met? Yes No

Comments:

DETERMINATION

WETLAND? YES NO Comments: wetland criteria has been met

A-71

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Clackamas	Date: 10/9/06	City: West Linn	File #:1920
Project/Contact: Willamette Falls Drive/ Schott & Associates		Det. By: DG & CC	
Plant Community: grasses		Plot #:6	
Plot Location: paired with 5			
Recent Weather: dry, sunny and warm			
Do normal environmental conditions exist? Y <input checked="" type="checkbox"/> N <input type="checkbox"/> If no, explain:			
Has Vegetation <input type="checkbox"/> Soil <input type="checkbox"/> Hydrology <input type="checkbox"/> been significantly disturbed?			
Explain: no significant disturbance			

VEGETATION

Tree Stratum			Herb Stratum		
Total Plot Cover:50%	25 = 50%	10 = 20%	Total Plot Cover:50%	25 = 50%	10 = 20%
Status/Raw % Cover			Status/Raw % Cover		
1. <i>Fraxinus latifolia</i> *	FACW/ 30%		1. <i>Phalaris arundinacea</i> *	FACW/50%	
2. <i>Acer macrophyllum</i> *	FACU/ 20%		2.		
3.			3.		
4.			4.		
5.			5.		
Sapling/Shrub Stratum			6.		
Total Plot Cover:50%	25= 50%	10= 20%	Status/Raw % Cover	7.	
1. <i>Rubus discolor</i> *	FACU/ 50%		8.		
2.			9.		
3.			10.		
4.			11.		
5.			12.		

Hydrophytic Vegetation Indicators:

> 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):50%

Other hydrophytic vegetation indicators:

Criteria Met? Yes No Comments:

SOILS

Map Unit Name: Woodburn Series Drainage Class: Moderately well drained

On Hydric Soil List? Yes No Has Hydric Inclusions? Yes No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-16"	10YR 3/2	10YR 4/6 (very few)	none	silty loam

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol
<input type="checkbox"/> Histic Epipedon
<input type="checkbox"/> Sulfidic Odor
<input type="checkbox"/> Reducing Conditions (tests positive)
<input type="checkbox"/> Gleyed or low chroma colors
<input checked="" type="checkbox"/> Redox features within 10" (e.g., concentrations) | <input type="checkbox"/> Concretions/Nodules (w/in 3", > 2mm)
<input type="checkbox"/> High organic content in surface (in Sandy Soils)
<input type="checkbox"/> Organic streaking (in Sandy Soils)
<input type="checkbox"/> Organic pan (in Sandy Soils)
<input type="checkbox"/> Listed on Hydric Soils List (and soil profile matches)
<input type="checkbox"/> Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
<input type="checkbox"/> Supplemental indicator (e.g., NRCS field indicator) |
|--|---|

Criteria Met? Yes No

HYDROLOGY

Recorded Data:

Recorded Data Available Aerial Photos Stream Gauge Other No Recorded Data Available

Field Data

Depth of inundation: none

Depth to Saturation:none

Depth to Free Water:none

Primary Hydrology Indicators:

Secondary Hydrology Indicators (2 or more required):

- | | |
|---|---|
| <input type="checkbox"/> Inundated
<input type="checkbox"/> Saturated in upper 12 inches
<input type="checkbox"/> Water Marks
<input type="checkbox"/> Drift Lines
<input type="checkbox"/> Sediment Deposits | <input type="checkbox"/> Oxidized Root Channels (upper 12")
<input type="checkbox"/> Water-stained leaves
<input type="checkbox"/> Local Soil Survey Data
<input type="checkbox"/> FAC – Neutral Test
<input type="checkbox"/> Other: |
|---|---|

Criteria Met? Yes No

Comments: on slight slope

DETERMINATION

WETLAND? YES NO Comments: wetland vegetation and hydrology were not met

A-72

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Clackamas	Date: 10/9/06	City: West Linn	File #:1920
Project/Contact: Willamette Falls Drive/Schott & Associates		Det. By: DG & CC	
Plant Community: grasses		Plot #:A	
Plot Location: North boundary, east of road grade			
Recent Weather: Sunny, dry and warm			
Do normal environmental conditions exist? Y <input checked="" type="checkbox"/> N <input type="checkbox"/> If no, explain:			
Has Vegetation <input type="checkbox"/> Soil <input type="checkbox"/> Hydrology <input type="checkbox"/> been significantly disturbed?			
Explain: no significant disturbance			

VEGETATION

Tree Stratum			Herb Stratum		
Total Plot Cover:	= 50%	= 20%	Total Plot Cover:100%	50 = 50%	20 = 20%
Status/Raw % Cover			Status/Raw % Cover		
1.			1. <i>Phalaris arundinacea*</i>		FACW/100%
2.			2.		
3.			3.		
4.			4.		
5.			5.		
Sapling/Shrub Stratum			6.		
Total Plot Cover:	= 50%	= 20%	Status/Raw % Cover	7.	
1.			8.		
2.			9.		
3.			10.		
4.			11.		
5.			12.		

Hydrophytic Vegetation Indicators:

> 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):100%

Other hydrophytic vegetation indicators:

Criteria Met? Yes No Comments:

SOILS

Map Unit Name: Woodburn Series

Drainage Class: Moderately well drained soil

On Hydric Soil List? Yes No

Has Hydric Inclusions? Yes No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-4"	10YR 3/2	none	none	silt loam
4-18"	10YR 3/2	10YR 4/4	none	silt loam

Hydric Soil Indicators:

- | | |
|--|--|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions/Nodules (w/in 3", > 2mm) |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High organic content in surface (in Sandy Soils) |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic streaking (in Sandy Soils) |
| <input type="checkbox"/> Reducing Conditions (tests positive) | <input type="checkbox"/> Organic pan (in Sandy Soils) |
| <input type="checkbox"/> Gleyed or low chroma colors | <input type="checkbox"/> Listed on Hydric Soils List (and soil profile matches) |
| <input checked="" type="checkbox"/> Redox features within 10" (e.g., concentrations) | <input type="checkbox"/> Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration) |
| | <input type="checkbox"/> Supplemental indicator (e.g., NRCS field indicator) |

Criteria Met? Yes No

HYDROLOGY

Recorded Data:

Recorded Data Available Aerial Photos Stream Gauge Other No Recorded Data Available

Field Data

Depth of inundation: none

Depth to Saturation:3"

Depth to Free Water:5"

Primary Hydrology Indicators:

Secondary Hydrology Indicators (2 or more required):

- | | |
|--|---|
| <input type="checkbox"/> Inundated | <input type="checkbox"/> Oxidized Root Channels (upper 12") |
| <input checked="" type="checkbox"/> Saturated in upper 12 inches | <input type="checkbox"/> Water-stained leaves |
| <input type="checkbox"/> Water Marks | <input type="checkbox"/> Local Soil Survey Data |
| <input type="checkbox"/> Drift Lines | <input type="checkbox"/> FAC – Neutral Test |
| <input type="checkbox"/> Sediment Deposits | <input type="checkbox"/> Other: |

Criteria Met? Yes No

Comments:

DETERMINATION

WETLAND? YES NO Comments: wetland criteria was met

A-73

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Clackamas	Date: 10/9/06	City: West Linn	File #:1920
Project/Contact: Willamette Falls Drive/ Schott & Associates		Det. By: DG & CC	
Plant Community: grasses		Plot #:B	
Plot Location: paired with plot A			
Recent Weather: sunny, dry and warm			
Do normal environmental conditions exist? Y <input checked="" type="checkbox"/> N <input type="checkbox"/> If no, explain:			
Has Vegetation <input type="checkbox"/> Soil <input type="checkbox"/>		Hydrology <input type="checkbox"/> been significantly disturbed?	
Explain: no significant disturbance			

VEGETATION

Tree Stratum			Herb Stratum		
Total Plot Cover:	= 50%	= 20%	Total Plot Cover:90%	45 = 50%	18 = 20%
Status/Raw % Cover			Status/Raw % Cover		
1.			1. <i>Phalaris arundinacea</i>		FACW/90%
2.			2.		
3.			3.		
4.			4.		
5.			5.		
Sapling/Shrub Stratum			6.		
Total Plot Cover:20	10= 50%	4= 20%	Status/Raw % Cover	7.	
1. <i>Rubus discolor</i> *			FACU/ 20%	8.	
2.				9.	
3.				10.	
4.				11.	
5.				12.	

Hydrophytic Vegetation Indicators:

> 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):50%

Other hydrophytic vegetation indicators:

Criteria Met? Yes No Comments: BPJ

SOILS

Map Unit Name: Woodburn series Drainage Class: moderately well drained
 On Hydric Soil List? Yes No Has Hydric Inclusions? Yes No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-18"	10YR 3/2	none	none	silty loam

Hydric Soil Indicators:

- | | |
|---|--|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions/Nodules (w/in 3", > 2mm) |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High organic content in surface (in Sandy Soils) |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic streaking (in Sandy Soils) |
| <input type="checkbox"/> Reducing Conditions (tests positive) | <input type="checkbox"/> Organic pan (in Sandy Soils) |
| <input type="checkbox"/> Gleyed or low chroma colors | <input type="checkbox"/> Listed on Hydric Soils List (and soil profile matches) |
| <input type="checkbox"/> Redox features within 10" (e.g., concentrations) | <input type="checkbox"/> Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration) |
| | <input type="checkbox"/> Supplemental indicator (e.g., NRCS field indicator) |

Criteria Met? Yes No

HYDROLOGY

Recorded Data:

Recorded Data Available Aerial Photos Stream Gauge Other No Recorded Data Available

Field Data

Depth of inundation: none Depth to Saturation: none Depth to Free Water: none

Primary Hydrology Indicators:

- Inundated
- Saturated in upper 12 inches
- Water Marks
- Drift Lines
- Sediment Deposits

Criteria Met? Yes No

Secondary Hydrology Indicators (2 or more required):

- Oxidized Root Channels (upper 12")
- Water-stained leaves
- Local Soil Survey Data
- FAC – Neutral Test
- Other:

Comments:

DETERMINATION

WETLAND? YES NO Comments: Wetland soil and hydrology were not met. Plot taken on side of steep bank.

A-74

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Clackamas	Date: 10/9/06	City: West Linn	File #:1920
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Project/Contact: Willamette Falls Drive/ Schott & Associates Det. By: DG & CC
 Plant Community: grasses Plot #:C

Plot Location: north wetland boundary, east side of road grade

Recent Weather: sunny, dry and warm

Do normal environmental conditions exist? Y N If no, explain:
 Has Vegetation Soil Hydrology been significantly disturbed?
 Explain: no significant changes

VEGETATION

Tree Stratum				Herb Stratum			
Total Plot Cover:35		17.5 = 50%	7 = 20%	Total Plot Cover:50		25 = 50%	10 = 20%
Status/Raw % Cover				Status/Raw % Cover			
1. <i>Fraxinus latifolia</i> *				1. <i>Phalaris arundinacea</i> *			
2.				2. <i>Solanum dulcamara</i> *			
3.				3.			
4.				4.			
5.				5.			
Sapling/Shrub Stratum				6.			
Total Plot Cover:		= 50%	= 20%	Status/Raw % Cover		7.	
1.				8.			
2.				9.			
3.				10.			
4.				11.			
5.				12.			

Hydrophytic Vegetation Indicators:

> 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):66.7%

Other hydrophytic vegetation indicators:

Criteria Met? Yes No Comments:

SOILS

Map Unit Name: Woodburn Series Drainage Class: moderately well drained
 On Hydric Soil List? Yes No Has Hydric Inclusions? Yes No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-6"	10YR 3/2	10YR 4/6	none	silty loam
6-18	10YR 3/2	10YR 4/6	none	silt loam

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol
<input type="checkbox"/> Histic Epipedon
<input type="checkbox"/> Sulfidic Odor
<input type="checkbox"/> Reducing Conditions (tests positive)
<input type="checkbox"/> Gleyed or low chroma colors
<input checked="" type="checkbox"/> Redox features within 10" (e.g., concentrations) | <input type="checkbox"/> Concretions/Nodules (w/in 3", > 2mm)
<input type="checkbox"/> High organic content in surface (in Sandy Soils)
<input type="checkbox"/> Organic streaking (in Sandy Soils)
<input type="checkbox"/> Organic pan (in Sandy Soils)
<input type="checkbox"/> Listed on Hydric Soils List (and soil profile matches)
<input type="checkbox"/> Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
<input type="checkbox"/> Supplemental indicator (e.g., NRCS field indicator) |
|--|---|

Criteria Met? Yes No

HYDROLOGY

Recorded Data:
 Recorded Data Available Aerial Photos Stream Gauge Other No Recorded Data Available

Field Data

Depth of inundation: none Depth to Saturation:5 Depth to Free Water:8

Primary Hydrology Indicators:

- Inundated
- Saturated in upper 12 inches
- Water Marks
- Drift Lines
- Sediment Deposits

Criteria Met? Yes No

Secondary Hydrology Indicators (2 or more required):

- Oxidized Root Channels (upper 12")
- Water-stained leaves
- Local Soil Survey Data
- FAC – Neutral Test
- Other:

Comments:

DETERMINATION

WETLAND? YES NO Comments: wetland criteria was met

A-75

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Clackamas	Date: 10/9/06	City: West Linn	File #:1920
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Project/Contact: Willamette Falls Drive/ Schott & Associates Det. By: DG & CC
 Plant Community: grasses Plot #:D

Plot Location: paired with C
 Recent Weather: warm, dry and sunny

Do normal environmental conditions exist? Y N If no, explain:
 Has Vegetation Soil Hydrology been significantly disturbed?
 Explain: no significant disturbance

VEGETATION

Tree Stratum			Herb Stratum		
Total Plot Cover:40	20 = 50%	8 = 20%	Total Plot Cover:55%	27.5 = 50%	11 = 20%
Status/Raw % Cover			Status/Raw % Cover		
1. <i>Fraxinus latifolia</i> *	FACW/ 40%		1. <i>Phalaris arundinacea</i> *	FACW/40%	
2.			2. <i>Solanum dulcamara</i> *	FAC+/15	
3.			3.		
4.			4.		
5.			5.		
Sapling/Shrub Stratum			6.		
Total Plot Cover:20	10 = 50%	4 = 20%	Status/Raw % Cover	7.	
1.				8.	
2. <i>Rubus discolor</i> *	FACU/ 20%			9.	
3.				10.	
4.				11.	
5.				12.	

Hydrophytic Vegetation Indicators:
 > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):75%
 Other hydrophytic vegetation indicators:
 Criteria Met? Yes No Comments:

SOILS

Map Unit Name: Woodburn Series Drainage Class: moderately well drained
 On Hydric Soil List? Yes No Has Hydric Inclusions? Yes No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-13	10YR 3/2	none	none	silty loam
13-18	10YR 3/2	10YR 4/6	none	silty loam

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions/Nodules (w/in 3", > 2mm)
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High organic content in surface (in Sandy Soils)
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic streaking (in Sandy Soils)
<input type="checkbox"/> Reducing Conditions (tests positive)	<input type="checkbox"/> Organic pan (in Sandy Soils)
<input type="checkbox"/> Gleyed or low chroma colors	<input type="checkbox"/> Listed on Hydric Soils List (and soil profile matches)
<input type="checkbox"/> Redox features within 10" (e.g., concentrations)	<input type="checkbox"/> Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
	<input type="checkbox"/> Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? Yes No

HYDROLOGY

Recorded Data:
 Recorded Data Available Aerial Photos Stream Gauge Other No Recorded Data Available

Field Data
 Depth of inundation: none Depth to Saturation: none Depth to Free Water: none

Primary Hydrology Indicators:
 Inundated
 Saturated in upper 12 inches
 Water Marks
 Drift Lines
 Sediment Deposits

Secondary Hydrology Indicators (2 or more required):
 Oxidized Root Channels (upper 12")
 Water-stained leaves
 Local Soil Survey Data
 FAC – Neutral Test
 Other:

Criteria Met? Yes No Comments:

DETERMINATION

WETLAND? YES NO Comments: soil and hydrology criteria was met

A-76

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Clackamas Date: 10/9/06 City: West Linn File #:1920

Project/Contact: Willamette Falls Drive/ Schott & Associates Det. By: DG & CC
 Plant Community: grasses Plot #:E

Plot Location: east side of the property, north side of wetland

Recent Weather: warm, sunny and dry

Do normal environmental conditions exist? Y N If no, explain:
 Has Vegetation Soil Hydrology been significantly disturbed?
 Explain: no significant disturbance

VEGETATION

Tree Stratum			Herb Stratum		
Total Plot Cover:55	27.5 = 50%	11 = 20%	Total Plot Cover:15	7.5 = 50%	3 = 20%
Status/Raw % Cover			Status/Raw % Cover		
1. <i>Fraxinus latifolia</i> *	FACW/55		1. <i>Phalaris arundinacea</i> *	FACW/15	
2.			2.		
3.			3.		
4.			4.		
5.			5.		
Sapling/Shrub Stratum			6.		
Total Plot Cover:15	7.5 = 50%	3 = 20%	Status/Raw % Cover	7.	
1. <i>Rubus discolor</i> *	FACU/15		8.		
2.			9.		
3.			10.		
4.			11.		
5.			12.		

Hydrophytic Vegetation Indicators:

> 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):66.7

Other hydrophytic vegetation indicators:

Criteria Met? Yes No Comments:

SOILS

Map Unit Name: Woodburn Series Drainage Class: Moderately well drained
 On Hydric Soil List? Yes No Has Hydric Inclusions? Yes No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-5	10YR 3/2		none	silty loam
5-18	10YR 3/2	10YR 3/6	none	silty loam

Hydric Soil Indicators:

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Reducing Conditions (tests positive)
- Gleyed or low chroma colors
- Redox features within 10" (e.g., concentrations)
- Concretions/Nodules (w/in 3", > 2mm)
- High organic content in surface (in Sandy Soils)
- Organic streaking (in Sandy Soils)
- Organic pan (in Sandy Soils)
- Listed on Hydric Soils List (and soil profile matches)
- Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
- Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? Yes No

HYDROLOGY

Recorded Data:
 Recorded Data Available Aerial Photos Stream Gauge Other No Recorded Data Available

Field Data

Depth of inundation: none Depth to Saturation:13" Depth to Free Water:16

Primary Hydrology Indicators:

- Inundated
- Saturated in upper 12 inches
- Water Marks
- Drift Lines
- Sediment Deposits

Secondary Hydrology Indicators (2 or more required):

- Oxidized Root Channels (upper 12")
- Water-stained leaves
- Local Soil Survey Data
- FAC – Neutral Test
- Other:

Criteria Met? Yes No

Comments: Hydrology criteria met. Late season delineation.

DETERMINATION

WETLAND? YES NO Comments: wetland criteria has been met

A-77

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Clackamas	Date: 10/9/06	City: West Linn	File #:1920
Project/Contact: Willamette Falls Drive/ Schott & Associates		Det. By: DG & CC	
Plant Community: grasses		Plot #:F	
Plot Location: paired with E			
Recent Weather: dry, sunny and warm			
Do normal environmental conditions exist? Y <input checked="" type="checkbox"/> N <input type="checkbox"/> If no, explain:			
Has Vegetation <input type="checkbox"/> Soil <input type="checkbox"/> Hydrology <input type="checkbox"/> been significantly disturbed?			
Explain: no significant disturbance			

VEGETATION

Tree Stratum			Herb Stratum		
Total Plot Cover:45	22.5 = 50%	9 = 20%	Total Plot Cover:10	5 = 50%	2 = 20%
Status/Raw % Cover			Status/Raw % Cover		
1. <i>Fraxinus latifolia</i> *	FACW/ 45%		1. <i>Phalaris arundinacea</i> *	FACW/10%	
2.			2.		
3.			3.		
4.			4.		
5.			5.		
Sapling/Shrub Stratum					
Total Plot Cover:50%	25= 50%	10= 20%	Status/Raw % Cover	7.	
1. <i>Rubus discolor</i> *	FACU/ 30%		8.		
2.			9.		
3.			10.		
4.			11.		
5.			12.		

Hydrophytic Vegetation Indicators:

> 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):66.7

Other hydrophytic vegetation indicators:

Criteria Met? Yes No Comments:

SOILS

Map Unit Name: Woodburn Series Drainage Class: Moderately well drained
 On Hydric Soil List? Yes No Has Hydric Inclusions? Yes No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-12"	10YR 3/2	10YR 4/6	none	silty loam

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol
<input type="checkbox"/> Histic Epipedon
<input type="checkbox"/> Sulfidic Odor
<input type="checkbox"/> Reducing Conditions (tests positive)
<input type="checkbox"/> Gleyed or low chroma colors
<input type="checkbox"/> Redox features within 10" (e.g., concentrations) | <input type="checkbox"/> Concretions/Nodules (w/in 3", > 2mm)
<input type="checkbox"/> High organic content in surface (in Sandy Soils)
<input type="checkbox"/> Organic streaking (in Sandy Soils)
<input type="checkbox"/> Organic pan (in Sandy Soils)
<input type="checkbox"/> Listed on Hydric Soils List (and soil profile matches)
<input type="checkbox"/> Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
<input type="checkbox"/> Supplemental indicator (e.g., NRCS field indicator) |
|---|---|

Criteria Met? Yes No

HYDROLOGY

Recorded Data:

Recorded Data Available Aerial Photos Stream Gauge Other No Recorded Data Available

Field Data

Depth of inundation: none Depth to Saturation: none Depth to Free Water: none

Primary Hydrology Indicators:

- Inundated
- Saturated in upper 12 inches
- Water Marks
- Drift Lines
- Sediment Deposits

Secondary Hydrology Indicators (2 or more required):

- Oxidized Root Channels (upper 12")
- Water-stained leaves
- Local Soil Survey Data
- FAC – Neutral Test
- Other:

Criteria Met? Yes No

Comments: on slight slope

DETERMINATION

WETLAND? YES NO Comments: wetland soil and hydrology were not met

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APPENDIX C: LOCAL WETLAND INVENTORY MAPS

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APPENDIX B: PLANTS FOUND ON SITE

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>INDICATOR STATUS</u>
<i>Cirsium vulgare</i>	Bull thistle	FACU
<i>Dactylis glomerata</i>	Orchard grass	FACU
<i>Dipsacus sylvestris</i>	Teasel	FAC
<i>Equisetum arvense</i>	Common horsetail	FAC
<i>Festuca arundinacea</i>	Tall fescue	FAC-
<i>Holcus lanatus</i>	Common velvet grass	FAC
<i>Phalaris arundinacea</i>	Reed canary grass	FACW
<i>Pteridium aquilinum</i>	Bracken fern	FACU
<i>Solanum dulcamara</i>	European bittersweet	FAC+
<i>Verbascum thapsus</i>	Great mullein	NOL
<i>Corylus cornuta</i>	Beaked hazelnut	FACU
<i>Crataegus douglasii</i>	Black hawthorn	FAC
<i>Crataegus monogyna</i>	English hawthorn	FACU+
<i>Rubus discolor</i>	Himalayan blackberry	FACU
<i>Acer macrophyllum</i>	Big-leaf maple	FACU
<i>Fraxinus latifolia</i>	Oregon ash	FACW
<i>Salix sp.</i>	Willow	Varies

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LWI Map – Project # 1920

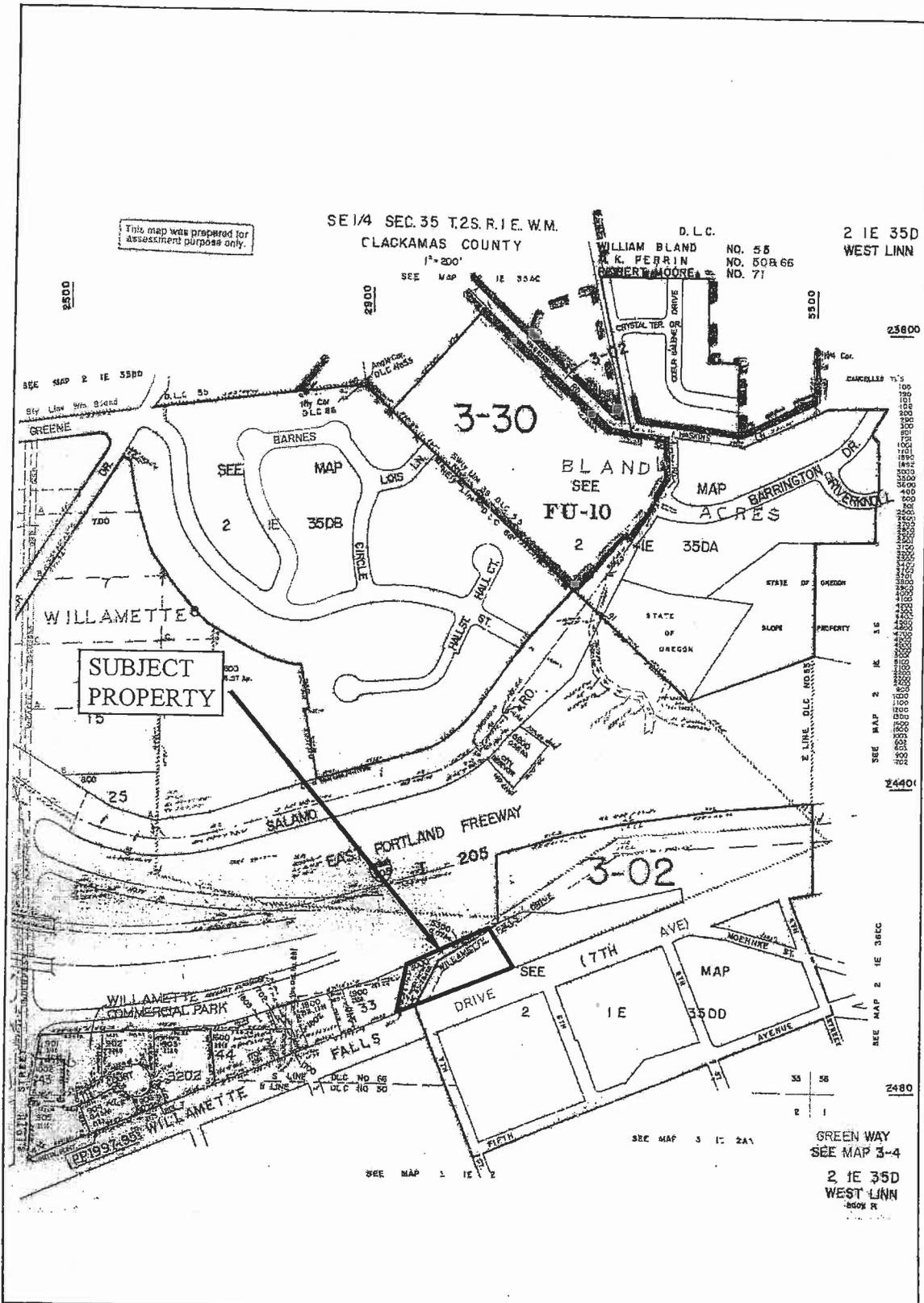
Holiday Inn Property – West Linn, OR

Schott & Associates
 P.O. Box 589
 Aurora, OR. 97002
 503.678.6007

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APPENDIX D: TAX MAPS

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This map was prepared for assessment purposes only.

SE 1/4 SEC. 35 T.2S. R.1E. W.M.
CLACKAMAS COUNTY

D.L.C.

2 1E 35D
WEST LINN

WILLIAM BLAND NO. 55
K. K. PERRIN NO. 50 & 66
ROBERT MOORE NO. 71

2500

2900

3500

23800

SEE MAP 2 1E 35BD

SEE MAP 1E 35AC

SEE MAP 2 1E 35CC

700

SUBJECT PROPERTY

15

25

3-30

BLAND
SEE
FU-10
2 1E 35DA

ACRES

3-02

17TH AVE

DRIVE

1E 35DD

WILLAMETTE COMMERCIAL PARK

FALLS

DEC NO 66
D.L.C. 116 50

SEE MAP 3 1E 2A1

GREEN WAY
SEE MAP 3-4

2 1E 35D
WEST LINN

SEE MAP 1 1E 2

SEE MAP 2 1E 35CC

24401

2480

Tax Map 2 1E 35D
Holiday Inn Property - West Linn, OR

Schott & Associates
P.O. Box 589
Aurora, OR. 97002
503.678.6007

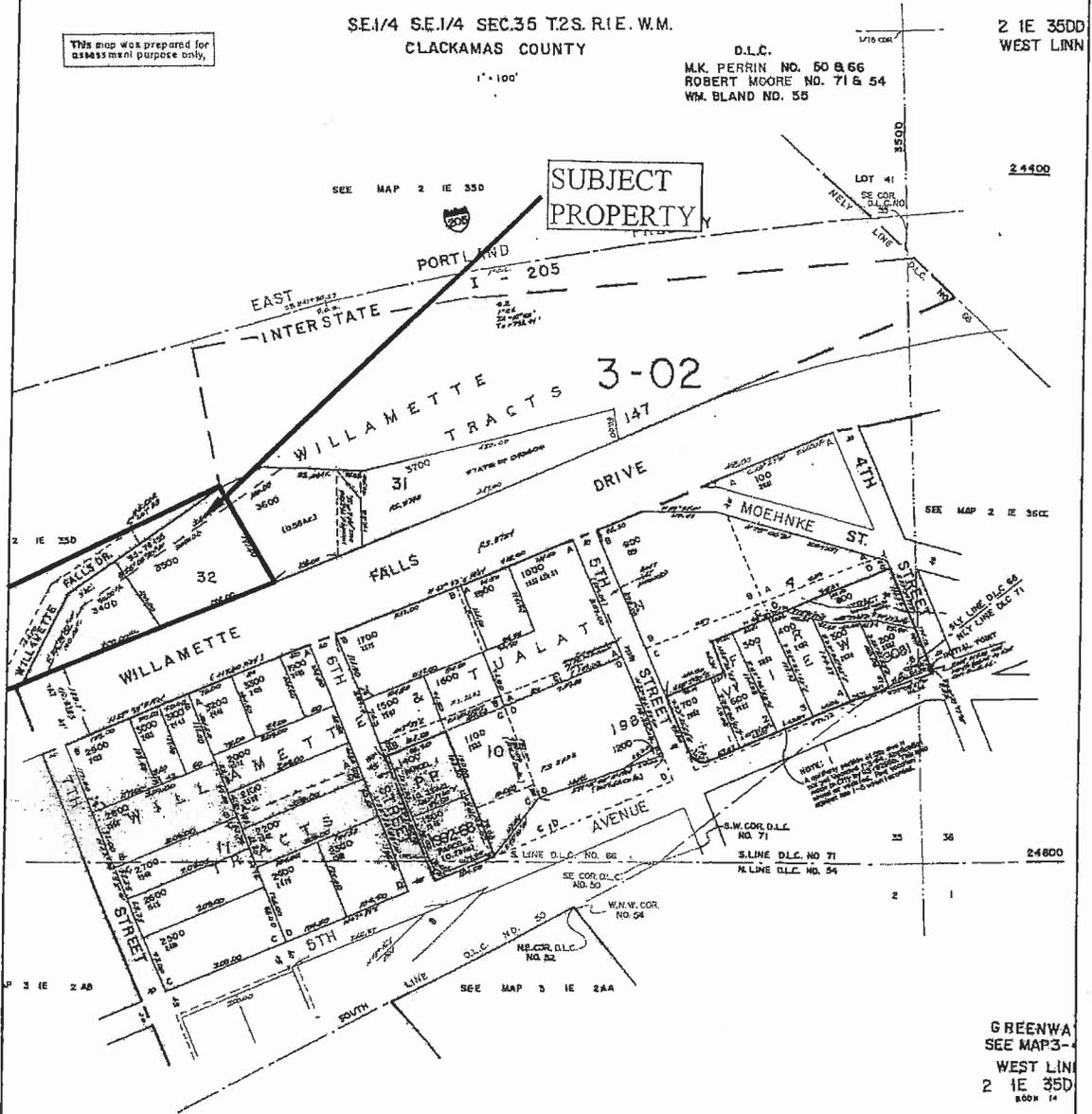
This map was prepared for assessment purpose only.

SE 1/4 SE 1/4 SEC. 35 T. 2 S. R. 1 E. W. M.
CLACKAMAS COUNTY

D.L.C.
M.K. PERRIN NO. 50 & 56
ROBERT MOORE NO. 71 & 54
WM. BLAND NO. 55

2 1E 35DD
WEST LINN

SUBJECT
PROPERTY



Tax Map 2 1E 35DD
Holiday Inn Property - West Linn, OR

Schott & Associates
P.O. Box 589
Aurora, OR. 97002
503.678.6007

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HOLIDAY INN EXPRESS

Traffic Impact Study

WEST LINN, OREGON

PREPARED BY
LANCASTER ENGINEERING

OCTOBER 2007

A85



HOLIDAY INN EXPRESS

Traffic Impact Study

West Linn, Oregon



EXPIRES: 12/31/07

10/22/07

Prepared By
Mike Ard, P.E.

Geoffrey A. Judd, P.E.

October, 2007

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EXECUTIVE SUMMARY

1. A Holiday Inn Express is proposed for development in West Linn, Oregon. The site is located between Interstate 205 and Willamette Falls Drive, east of 7th Street. The site will have a direct driveway access to Willamette Falls Drive.
2. The site is expected to generate approximately 39 trips during the morning peak hour, 41 trips during the evening peak hour and 572 daily trips.
3. The intersection of Willamette Falls Drive at 10th Street currently operates at level of service D during the morning peak hour and level of service F during the evening peak hour. This intersection will degrade to level of service F during the morning peak hour and remain at level of service F during the evening peak hour under the background traffic conditions. With the addition of the site trips, this intersection will also operate at level of service F during the morning and evening peak hours.
4. An analysis of the intersection of Willamette Falls Drive at 10th Street with a traffic signal in place was conducted. With a traffic signal in place at this intersection, it is forecast to operate at level of service D during the weekday morning peak hour and level of service C during the weekday evening peak hour under all of the scenarios evaluated.
5. The intersection of Willamette Falls Drive at the proposed site access will operate at level of service B during the morning and evening peak hours.
6. The traffic signal warrant analysis conducted for the intersection of Willamette Falls Drive at 10th Street shows that a signal is currently warranted. Accordingly, a traffic signal is recommended to be installed at this location. The proposed development will increase the traffic volumes at this intersection by approximately two-percent.
7. No additional transportation mitigations are anticipated to be needed for the proposed development.

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INTRODUCTION

A property in West Linn, Oregon, located on the north side of Willamette Falls Drive east of 10th Street, is proposed for development as a Holiday Inn Express. The site will have a direct driveway access onto Willamette Falls Drive.

The purpose of this study is to assess the traffic impact of the proposed development on the nearby street system and to recommend any required mitigative measures. The analysis will include level of service calculations and an evaluation of traffic signal warrants for the 10th Street at Willamette Falls Drive intersection.

Detailed information on traffic counts, trip generation calculations, and level of service calculations is included in the appendix to this report.

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LOCATION DESCRIPTION

The project site is located between Interstate 205 and Willamette Falls Drive, east of 7th Street. The site is currently vacant and located adjacent to existing residential and commercial properties. Access to the site will be via a single driveway on Willamette Falls Drive.

The City of West Linn requires analysis of the intersection of 10th Street at Willamette Falls Drive. A vicinity map showing the existing lane configurations at the study intersections is shown on the following page.

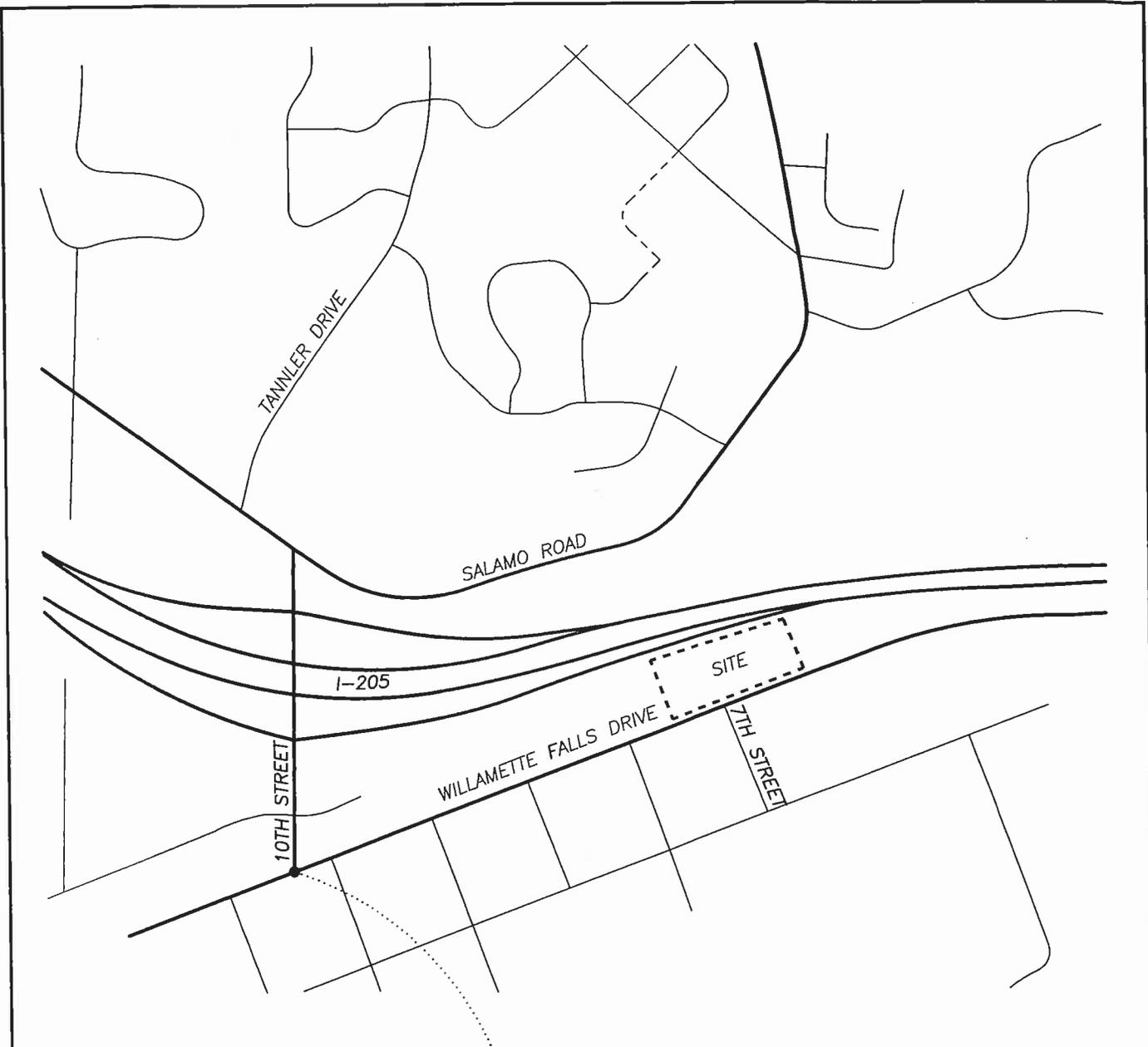
Willamette Falls Drive is under the jurisdiction of the City of West Linn and is classified as a Minor Arterial Street. It is generally a two-lane road near the site with a posted speed of 45 mph in the vicinity of the proposed development. To the west of 10th Street, there are curbs and sidewalks on both sides of the roadway. To the east of 10th Street, there are striped shoulders along both sides of the roadway.

10th Street is under the jurisdiction of City of West Linn and is classified as a Minor Arterial Street. It is generally a three-lane facility in the study area with no posted speed. North of Interstate 205, 10th Street widens to a four-lane cross-section. There are curbs and sidewalks along the west side of the roadway. Along the east side of the roadway, there are curbs and sidewalks only between Willamette Falls Drive and 8th Street.

The intersection of 10th Street at Willamette Falls Drive is a three-legged intersection that is controlled by STOP signs on all approaches. The eastbound and southbound approaches have separate lanes for each turning movement, while the westbound approach has a single, shared lane.

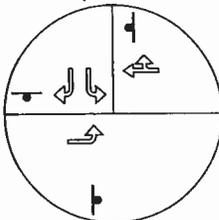
Tri-Met route #154- *Willamette* operates along Willamette Falls Drive near the site. This service operates between West Linn and Oregon City on weekdays only. The hours of operation are generally from 6:00 a.m. to 6:30 p.m. with headways of approximately 30-minutes throughout the day. There are eastbound and westbound bus stops located at the intersection of 6th Street and Willamette Falls Drive.

Manual turning movement counts were made at the study intersection during July, 2007 from 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m. The peak hours typically occur from about 7:45 to 8:45 a.m. and from about 5:00 to 6:00 p.m. The volumes for the morning and evening peak hours are shown in the traffic flow diagram on page seven.

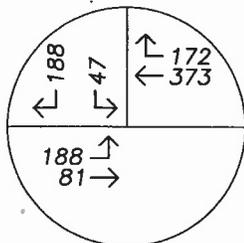


LEGEND

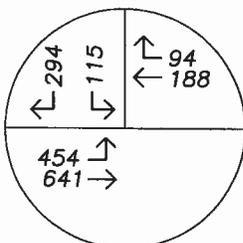
- Site Boundary
- Planned Street
- Study Area Intersection
- ⊥ STOP Sign



VICINITY MAP
Existing Intersection Configurations
& Traffic Control Devices



AM PEAK HOUR



PM PEAK HOUR



No Scale

Le

TRAFFIC VOLUMES
Existing Conditions
AM & PM Peak Hours

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TRIP GENERATION

To estimate the number of trips that will be generated by the proposed development, trip rates from *TRIP GENERATION*, Seventh Edition, published by the Institute of Transportation Engineers (ITE), were used. The trip rates used were for land-use code 310, *Hotel*. The trip generation rates are based on the number of rooms for the proposed development. The current site plan shows 70 rooms for the proposed hotel.

The trip generation calculations indicate that there will be a total of 39 trips generated by the proposed development during the morning peak hour. Of these, 24 will be entering and 15 will be exiting the site. During the evening peak hour, there are a total of 41 trips expected, with 22 entering and 19 exiting the site. A total of 572 weekday trips are expected, with half entering and half exiting.

Because this development is typically an origin or destination for trips, no reduction was taken for pass-by trips. No transit trip reduction was taken.

A summary of the trip generation calculations for the proposed development is shown in the following table. Detailed trip generation calculations are included in the appendix to this report.

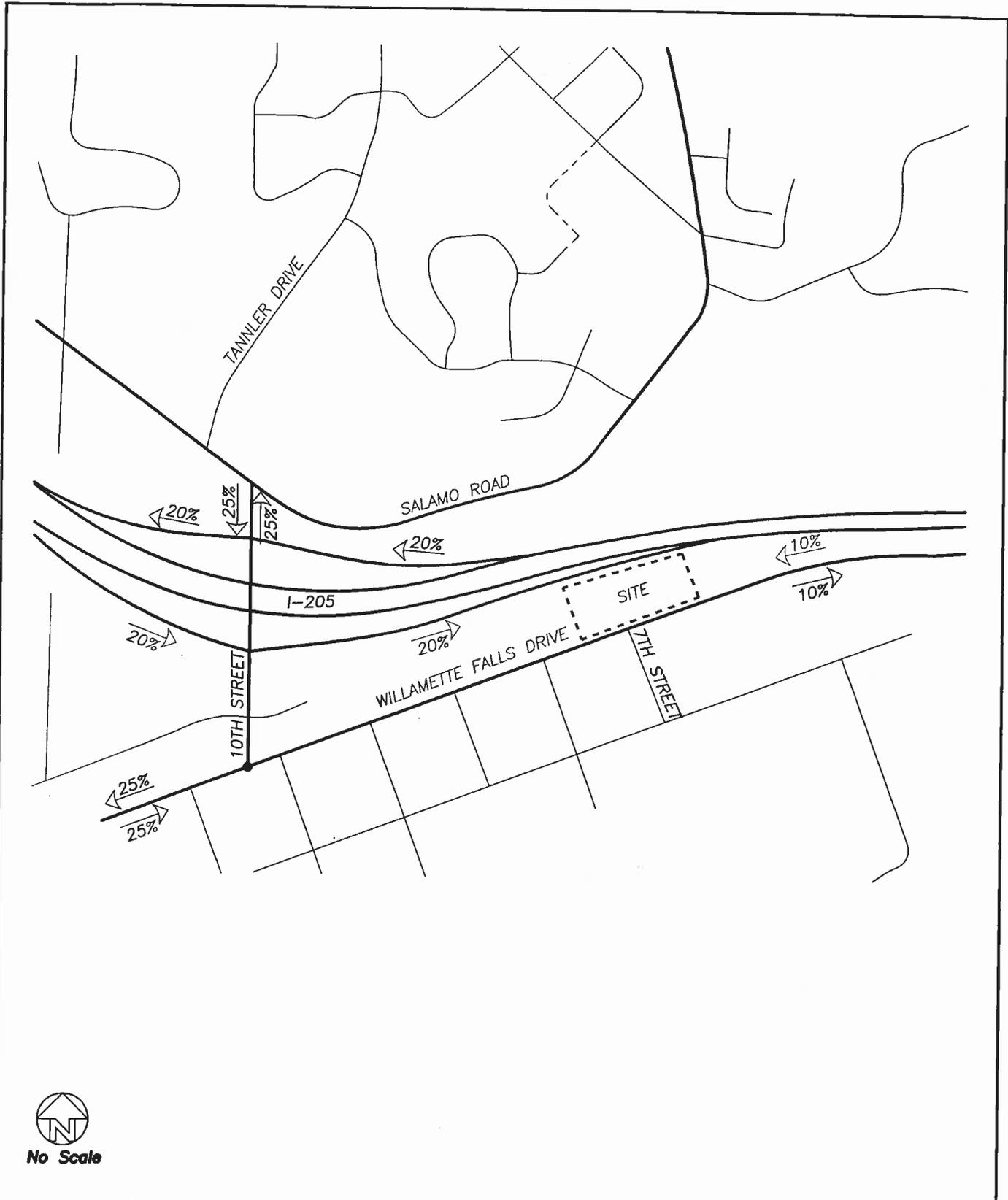
TRIP GENERATION SUMMARY			
	<u>Entering Trips</u>	<u>Exiting Trips</u>	<u>Total Trips</u>
<i>70 room Hotel</i>			
AM Peak Hour	24	15	39
PM Peak Hour	22	19	41
Weekday	286	286	572



TRIP DISTRIBUTION

The directional distribution of the site trips from the proposed development was estimated based on the existing traffic patterns in the study area and the location of surrounding commercial and residential areas where local service and employee trips may originate. The location of major transportation facilities was also considered in the trip distribution.

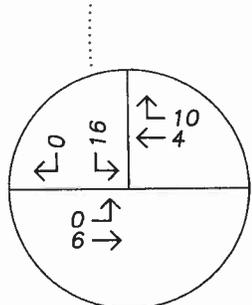
The traffic flow diagram on page 10 shows the distribution of the site trips from the proposed development. The traffic flow diagram on page 11 shows the assignment of the site trips to the roadway network during the morning and evening peak hours.



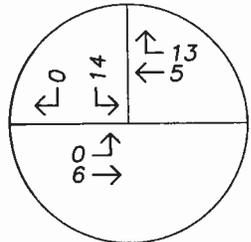
No Scale

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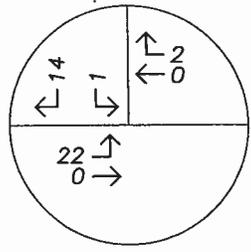
SITE TRIP DISTRIBUTION
 Inbound & Outbound Percentages
 AM & PM Peak Hours



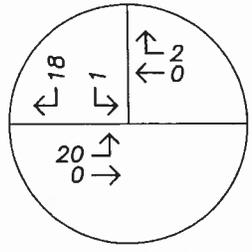
AM PEAK HOUR



PM PEAK HOUR



AM PEAK HOUR



PM PEAK HOUR



Le

SITE TRIP DISTRIBUTION
Inbound & Outbound Percentages
AM & PM Peak Hours



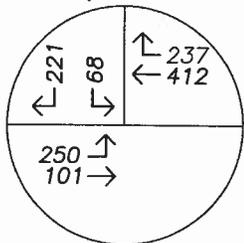
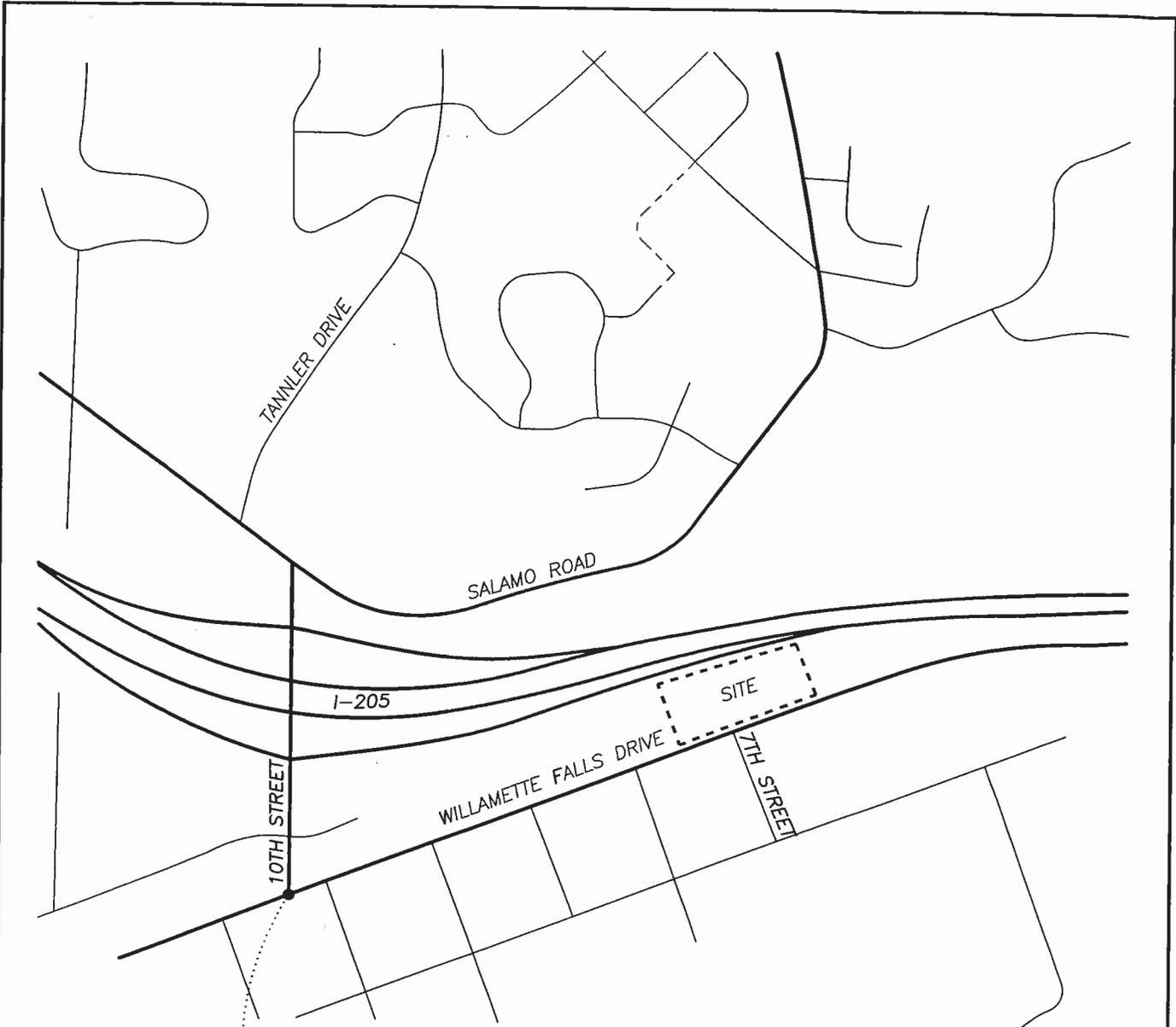
OPERATIONAL ANALYSIS

Background Traffic

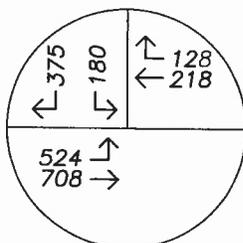
Since traffic counts at the study intersections represent existing conditions, a background growth rate of three percent per year for two years was added to the counts at these intersections to approximate background conditions. The City of West Linn uses this growth rate for short-term development.

There are several developments in the vicinity of the project site that have been approved, but not yet constructed. These in-process developments include Willamette Cove, Tamarisk, Tannler West, Douglas Park (Haskins), River Falls Place, and the Willamette Marketplace Redevelopment.

The background traffic volumes comprise the existing traffic volumes with the growth rate applied and in-process traffic volumes added. A traffic flow diagram showing the background traffic volumes during the morning and evening peak hours is given on page 13. A traffic flow diagram showing the background traffic with the site trips added is given on page 14.



AM PEAK HOUR



PM PEAK HOUR

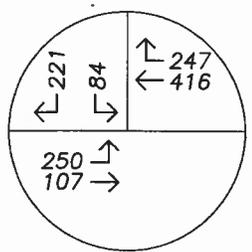


No Scale

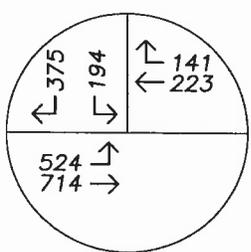


TRAFFIC VOLUMES
 2009 Background Traffic
 AM & PM Peak Hours

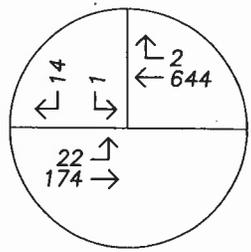
A-98



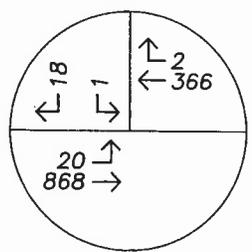
AM PEAK HOUR



PM PEAK HOUR



AM PEAK HOUR



PM PEAK HOUR



TRAFFIC VOLUMES
 2009 Background + Site Trips
 AM & PM Peak Hours



Capacity Analysis

To determine the level of service at the study intersections, a capacity analysis was conducted. The study intersections were analyzed using the signalized and unsignalized intersection analysis method in the *2000 HIGHWAY CAPACITY MANUAL (HCM2000)*, published by the Transportation Research Board. The level of service can range from A, which indicates very little or no delay, to level F, which indicates a high degree of congestion and delay.

The analysis was made for the existing, background, and background plus site conditions during the weekday morning and evening peak hours. The study intersections are under the jurisdiction of the City of West Linn and therefore must operate at level of service D or better.

The intersection of 10th Street at Willamette Falls Drive currently operates at level of service D during the morning peak hour and level of service F during the evening peak hour. Under year 2009 traffic conditions, the level of service degrades to F during the morning and evening peak hours either with or without the addition of site traffic from the proposed development. If a traffic signal is installed at this location, it is projected that the intersection will operate at level of service D during the weekday morning peak hour and level of service C during the weekday evening peak hour.

The intersection of Willamette Falls Drive at the site access is forecast to operate at level of service B during the morning and evening peak hours upon completion of the proposed development.

The results of the capacity analysis, along with the Levels of Service (LOS) and delay are shown in the following table. Tables showing the relationships between delay and level of service are included in the appendix to this report.



LEVEL OF SERVICE SUMMARY

	AM Peak Hour			PM Peak Hour		
	<u>LOS</u>	<u>Delay</u>	<u>V/C</u>	<u>LOS</u>	<u>Delay</u>	<u>V/C</u>
<i>10th Street/Willamette Falls Drive</i>						
Existing Conditions	D	28	N/A	F	57	N/A
2009 Background Conditions	F	56	N/A	F	106	N/A
2009 Background + Site Trips	F	62	N/A	F	110	N/A
<i>10th Street/Willamette Falls Drive¹</i>						
Existing Conditions	C	23	0.76	C	20	0.78
2009 Background Conditions	D	36	0.90	C	32	0.91
2009 Background + Site Trips	D	38	0.91	C	33	0.93
<i>Willamette Falls Drive/Site Access</i>						
2009 Background + Site Trips	B	14	0.04	B	11	0.03

¹ With a traffic signal installed

LOS = Level of Service

Delay = Average Delay per Vehicle in Seconds

V/C = Volume-to-Capacity ratio

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~~16~~



SAFETY ANALYSIS

Sight Distance

Required intersection sight distance was calculated from the equations given in *A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS*, published in 2001 by the American Association of State Highway and Transportation Officials (AASHTO). The measurements are based on an eye height of 3.5 feet and an object height of 3.5 feet above the road, with the driver's eye 15 feet behind the edge of the near side travel lane. Based upon the posted speed of 45 mph, the intersection sight distance required is 500 feet in each direction.

The intersection sight distance was measured from the proposed access driveway for the site. The sight distance was measured to be greater than 650 feet in either direction. Therefore, no mitigations are required.

Traffic Signal Warrants

The intersection of 10th Street at Willamette Falls Drive was analyzed for traffic signal warrants under all scenarios. Two of the traffic signal warrants from the *2000 Manual on Uniform Control Devices (MUTCD)*, published by the U.S. Department of Transportation, Federal Highway Administration, were evaluated at the intersection under the existing, background, and background plus site trips conditions. The two warrants evaluated are the *Minimum Vehicular Volume Warrant*, Warrant 1, and the *Peak Hour Warrant*, Warrant 3. The results of the traffic signal warrant analysis are shown in the following table.

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-11-



TRAFFIC SIGNAL WARRANT EVALUATIONS		
✓ = warrant is met		
	Warrant 1	Warrant 3
<i>10th Street at Willamette Falls Drive</i>		
Existing Conditions	✓	✓
Background Conditions	✓	✓
Background + Site Trips Conditions	✓	✓

As shown in the traffic signal warrants evaluation, both of the warrants were met under all of the scenarios evaluated. The City of West Linn has been collecting funds for the installation of a traffic signal at this location. Based upon the results of the traffic signal warrant analysis, a traffic signal can be installed.

Since this traffic signal is warranted currently, the proposed development should contribute a proportional share to the costs of this improvement. The proposed development contributes approximately 380 daily trips through this intersection. This represents approximately 2.0-percent of the existing traffic volumes and approximately 1.8-percent of the future traffic volumes.

Crash History

A review of the previous five years of crash data at the study intersections was performed. The crash data was obtained from the Oregon Department of Transportation (ODOT) Crash Analysis and Reporting Unit. The crash data and existing traffic counts were used to determine the crash rate for the study intersection. The crash rate is the number of crashes per million entering vehicles at the intersection. Typically, crash rates greater than 1.0 require additional investigation to determine if a safety deficiency exists at the intersection.

The intersection of 10th Street at Willamette Falls Drive had one crash reported in the previous five years of data. There is no pattern identifiable to the crash at this location. The crash rate for this intersection was computed to be 0.03 crashes per million entering vehicles.

A review of the study intersections and roadways revealed no apparent safety deficiencies. Therefore, no safety-related mitigations are recommended for the proposed development.



Queuing Analysis

An analysis of the queuing at the study intersections was conducted for all of the scenarios during the evening peak hour conditions. The 95th percentile queues were evaluated. This means that 95-percent of the time, the queue length will be less than or equal to the reported length.

The queue length for the all-way stop-controlled intersection was calculated using a queuing model (M/G2/1). This model uses the capacity of the approaches and the volumes to determine the queuing for the approaches.

The queue length for the signalized intersection was calculated from the Poisson distribution of the traffic volumes for each of the lane groups at the intersection. The 95th percentile of the distribution is used to estimate queue length for the traffic movements.

The queue lengths for the driveway access were based upon the ITE Journal article "Estimation of Maximum Queue Lengths at Unsignalized Intersections," from the November 2001 issue. John T. Gard prepared this methodology for the estimation of queue lengths at two-way stop-controlled intersections.

The existing configuration at the intersection of Willamette Falls Drive at 10th Street is an all-way stop-controlled intersection. There are plans to signalize this intersection in the future. Therefore, both the all-way stop-controlled and the signalized queuing methodologies were analyzed. The intersection of Willamette Falls Drive at the proposed site access will be stop-controlled.

The queue worksheets for all of the analysis scenarios, showing the queue length for each approach at the study intersections, are included in the appendix to this report. The following table shows the projected 95th percentile queue lengths for the critical southbound intersection approach on 10th Street upon completion of the proposed development.

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QUEUING ANALYSIS

	<u>Storage</u>	<u>AM Peak Hour Queue</u>	<u>PM Peak Hour Queue</u>
<i>Willamette Falls Drive/10th Street</i>			
Southbound Left-turn lane	75	25	50
Southbound Right-turn lane	205	50	125
<i>Willamette Falls Drive/10th Street¹</i>			
Southbound Left-turn lane	75	75	125
Southbound Right-turn lane	205	150	175

¹ With traffic signal in place

As shown in the table above, the estimated queue lengths for all of the critical study intersections can be accommodated by the existing storage lengths as an all-way stop-controlled intersection. With the installation of the traffic signal, there will be some spill-back for the southbound left-turn lane. This movement is restricted by the proximity of the intersection of 8th Avenue at 10th Street. Mitigations to reduce this queue would likely involve adjustments to the traffic signal timing to reduce this queue. It is recommended that the intersection have a detailed study to determine the optimal signal timing for the intersection.

Access Spacing

The proposed development will take access via a single driveway on Willamette Falls Drive near the western property boundary opposite 7th Street. The nearest existing accesses to the proposed site access are located approximately 400 to the east and west.

Bicycle and Pedestrian Facilities

There are striped shoulders along both sides of the roadway along the site frontage. With the proposed development, some frontage improvements will be required to meet the current design standard for this roadway. This will likely involve curbs, sidewalks, and bicycle lanes. As properties to the east and west redevelop, additional facilities will be constructed to provide pedestrian and bicycle connectivity.



Conclusions

The intersection of Willamette Falls Drive at 10th Street currently operates at level of service D during the morning peak hour and level of service F during the evening peak hour. Under year 2009 traffic conditions, the intersection will degrade to level of service F during the morning peak hour and remain at level of service F during the evening peak hour. With the addition of site trips from the proposed development, the intersection will also operate at level of service F during the morning and evening peak hours.

The City of West Linn has been collecting funds for the installation of a traffic signal at this location. Based upon the traffic signal warrant analysis, this intersection currently meets traffic signal warrants. A traffic signal should be installed at this intersection. With a traffic signal in place, the intersection is projected to operate at level of service D during the weekday morning peak hour and level of service C during the weekday evening peak hour either with or without site trips from the proposed development.

The intersection of Willamette Falls Drive at the site access driveway is projected to operate acceptably upon completion of the proposed development.

No additional mitigations are recommended in association with the proposed development.



APPENDIX

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LEVEL OF SERVICE

Level of service is used to describe the quality of traffic flow. Levels of service A to C are considered good, and rural roads are usually designed for level of service C. Urban streets and signalized intersections are typically designed for level of service D. Level of service E is considered to be the limit of acceptable delay. For unsignalized intersections, level of service E is generally considered acceptable. Here is a more complete description of levels of service:

Level of service A: Very low delay at intersections, with all traffic signal cycles clearing and no vehicles waiting through more than one signal cycle. On highways, low volume and high speeds, with speeds not restricted by other vehicles.

Level of service B: Operating speeds beginning to be affected by other traffic; short traffic delays at intersections. Higher average intersection delay than for level of service A resulting from more vehicles stopping.

Level of service C: Operating speeds and maneuverability closely controlled by other traffic; higher delays at intersections than for level of service B due to a significant number of vehicles stopping. Not all signal cycles clear the waiting vehicles. This is the recommended design standard for rural highways.

Level of service D: Tolerable operating speeds; long traffic delays occur at intersections. The influence of congestion is noticeable. At traffic signals many vehicles stop, and the proportion of vehicles not stopping declines. The number of signal cycle failures, for which vehicles must wait through more than one signal cycle, are noticeable. This is typically the design level for urban signalized intersections.

Level of service E: Restricted speeds, very long traffic delays at traffic signals, and traffic volumes near capacity. Flow is unstable so that any interruption, no matter how minor, will cause queues to form and service to deteriorate to level of service F. Traffic signal cycle failures are frequent occurrences. For unsignalized intersections, level of service E or better is generally considered acceptable.

Level of service F: Extreme delays, resulting in long queues which may interfere with other traffic movements. There may be stoppages of long duration, and speeds may drop to zero. There may be frequent signal cycle failures. Level of service F will typically result when vehicle arrival rates are greater than capacity. It is considered unacceptable by most drivers.



*LEVEL OF SERVICE CRITERIA
FOR SIGNALIZED INTERSECTIONS*

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (Seconds)
A	< 10
B	10-20
C	20-35
D	35-55
E	55-80
F	> 80

*LEVEL OF SERVICE CRITERIA
FOR UNSIGNALIZED INTERSECTIONS*

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (Seconds)
A	< 10
B	10-15
C	15-25
D	25-35
E	35-50
F	> 50



Intersection Turning Movement Summary Report

Location WILLAMETTE FALLS DRIVE AT 10TH STREET

Date 7/24/2007

Day of Week Tuesday

Time Begin 16:00

Reviewed By: DE

Time Period	Eastbound			Westbound			Northbound			Southbound			Totals
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
16:00 - 16:15	0	95	74	29	47	0	0	0	0	59	0	34	338
16:15 - 16:30	1	95	82	22	56	0	0	0	0	55	0	44	355
16:30 - 16:45	0	125	108	25	37	0	0	0	0	63	0	35	393
16:45 - 17:00	0	104	115	18	36	0	0	0	0	83	0	31	387
17:00 - 17:15	0	137	124	22	48	0	0	0	0	83	0	24	438
17:15 - 17:30	0	160	110	28	50	0	0	0	0	56	0	22	426
17:30 - 17:45	0	161	120	22	39	0	0	0	0	75	0	40	457
17:45 - 18:00	0	183	100	22	51	0	0	0	0	80	0	29	465
Movement Totals	1	1060	833	188	364	0	0	0	0	554	0	259	3259
Enter Totals	1894			552			0			813			
Exit Totals	1319			918			1021			1			

Two-Hour Totals

Light Trucks	0	6	5	7	5	0	0	0	0	2	0	4	29
Medium Trucks	0	1	0	0	1	0	0	0	0	1	0	0	3
Heavy Trucks	0	0	0	0	0	0	0	0	0	1	0	0	1
% Trucks	0.0%	0.7%	0.6%	3.7%	1.6%	NA	NA	NA	NA	0.7%	NA	1.5%	1.0%
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	0	0	0	2	0	0	0	0	0	0	0	2

	South 0	West 9	East 0	North 1	10
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Peak Hour Information

Peak Hour 17:00 18:00

	Eastbound			Westbound			Northbound			Southbound			Totals
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Movement Total	0	641	454	94	188	0	0	0	0	294	0	115	1786
Peak Hour Factor	NA	0.88	0.92	0.84	0.92	NA	NA	NA	NA	0.89	NA	0.72	0.96

Enter Totals	1095			282			0			409			
Peak Hour Factor	0.97			0.90			NA			0.89			

Exit Totals	756			482			548			0			
Peak Hour Factor	0.89			0.92			0.94			NA			

Light Trucks	0	3	4	5	3	0	0	0	0	1	0	2	18
Medium Trucks	0	1	0	0	1	0	0	0	0	0	0	0	2
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	NA	0.6%	0.9%	5.3%	2.1%	NA	NA	NA	NA	0.3%	NA	1.7%	1.1%
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	0	0	0	2	0	0	0	0	0	0	0	2

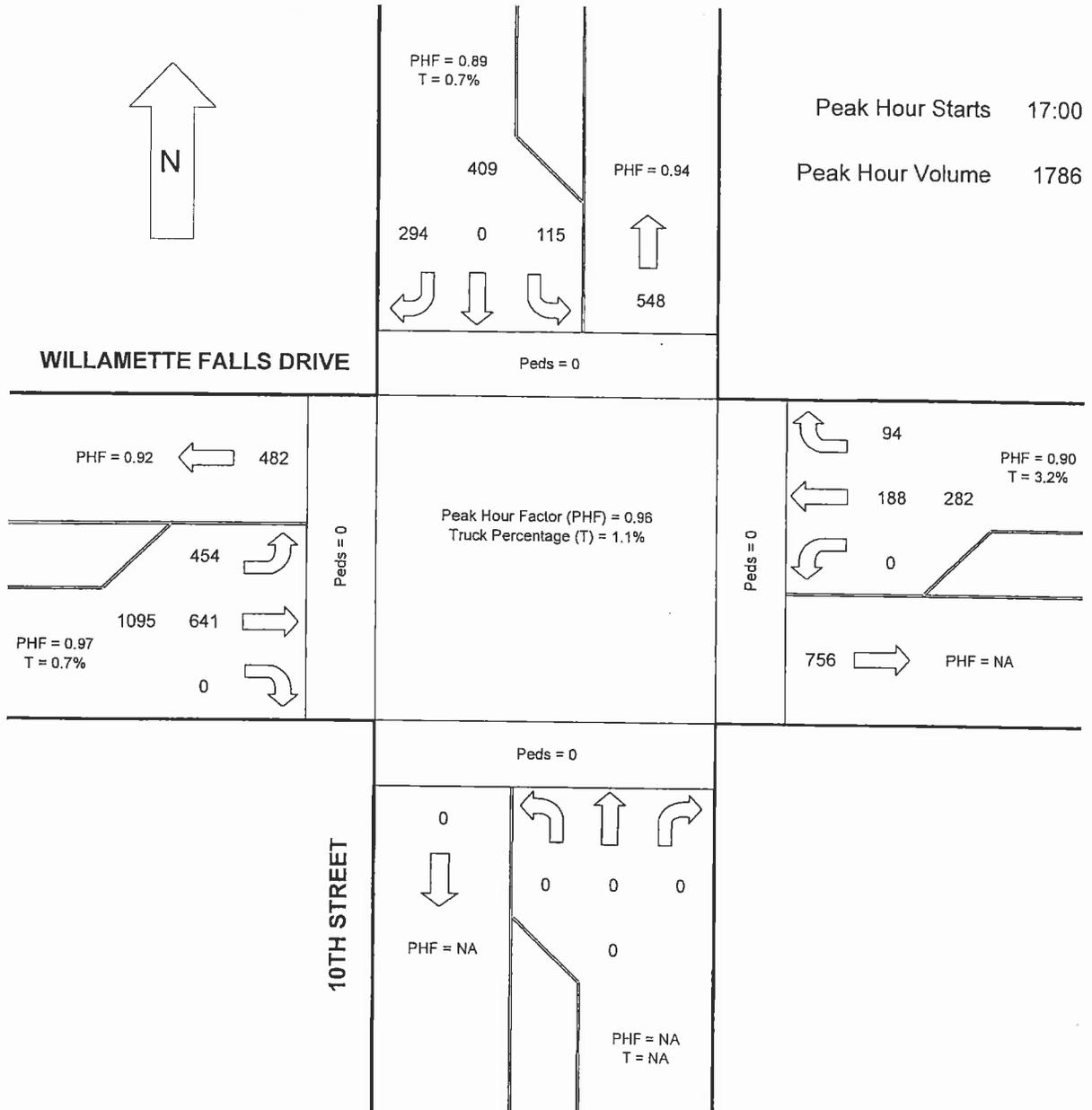
	South 0	West 0	East 0	North 0	0
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Intersection Turning Movement Peak Hour Diagram

Location WILLAMETTE FALLS DRIVE AT 10TH STREET
Date 7/24/2007
Day of Week Tuesday
Time Begin 16:00
Reviewed By: DE





Intersection Turning Movement Summary Report

Location WILLAMETTE FALLS DRIVE AT 10TH STREET

Date 7/24/2007

Day of Week Tuesday

Time Begin 7:00

Reviewed By: DE

Time Period	Eastbound			Westbound			Northbound			Southbound			Totals
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 - 7:15	0	16	36	9	52	0	0	0	0	49	0	3	165
7:15 - 7:30	0	14	47	48	84	0	0	0	0	57	0	8	258
7:30 - 7:45	0	17	51	34	105	0	0	0	0	43	0	7	257
7:45 - 8:00	0	16	44	39	108	0	0	0	0	54	0	12	273
8:00 - 8:15	0	19	52	35	65	0	0	0	0	43	0	10	224
8:15 - 8:30	0	23	39	44	101	0	0	0	0	40	0	10	257
8:30 - 8:45	0	23	53	54	99	0	0	0	0	51	0	15	295
8:45 - 9:00	0	33	65	33	59	0	0	0	0	56	0	12	258
Movement Totals	0	161	387	296	673	0	0	0	0	393	0	77	1987
Enter Totals	548			969			0			470			
Exit Totals	238			1066			683			0			

Two-Hour Totals

Light Trucks	0	5	12	12	13	0	0	0	0	11	0	4	57
Medium Trucks	0	0	4	2	5	0	0	0	0	3	0	0	14
Heavy Trucks	0	0	1	0	3	0	0	0	0	0	0	0	4
% Trucks	NA	3.1%	4.4%	4.7%	3.1%	NA	NA	NA	NA	3.6%	NA	5.2%	3.8%
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	2	0	1	2	0	0	0	0	0	0	0	5

Pedestrians	South	0	West	1	East	0	North	1	2
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Peak Hour Information

Peak Hour 7:45 8:45

Movement Total	Eastbound			Westbound			Northbound			Southbound			Totals
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Peak Hour Factor	NA	0.88	0.89	0.80	0.86	NA	NA	NA	NA	0.87	NA	0.78	0.89

Enter Totals	269			545			0			235		
Peak Hour Factor	0.88			0.89			NA			0.89		

Exit Totals	128			561			360			0		
Peak Hour Factor	0.84			0.87			0.84			NA		

Light Trucks	0	3	6	9	10	0	0	0	0	6	0	3	37
Medium Trucks	0	0	4	1	5	0	0	0	0	2	0	0	12
Heavy Trucks	0	0	0	0	3	0	0	0	0	0	0	0	3
% Trucks	NA	3.7%	5.3%	5.8%	4.8%	NA	NA	NA	NA	4.3%	NA	6.4%	5.0%
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	2	0	0	1	0	0	0	0	0	0	0	3

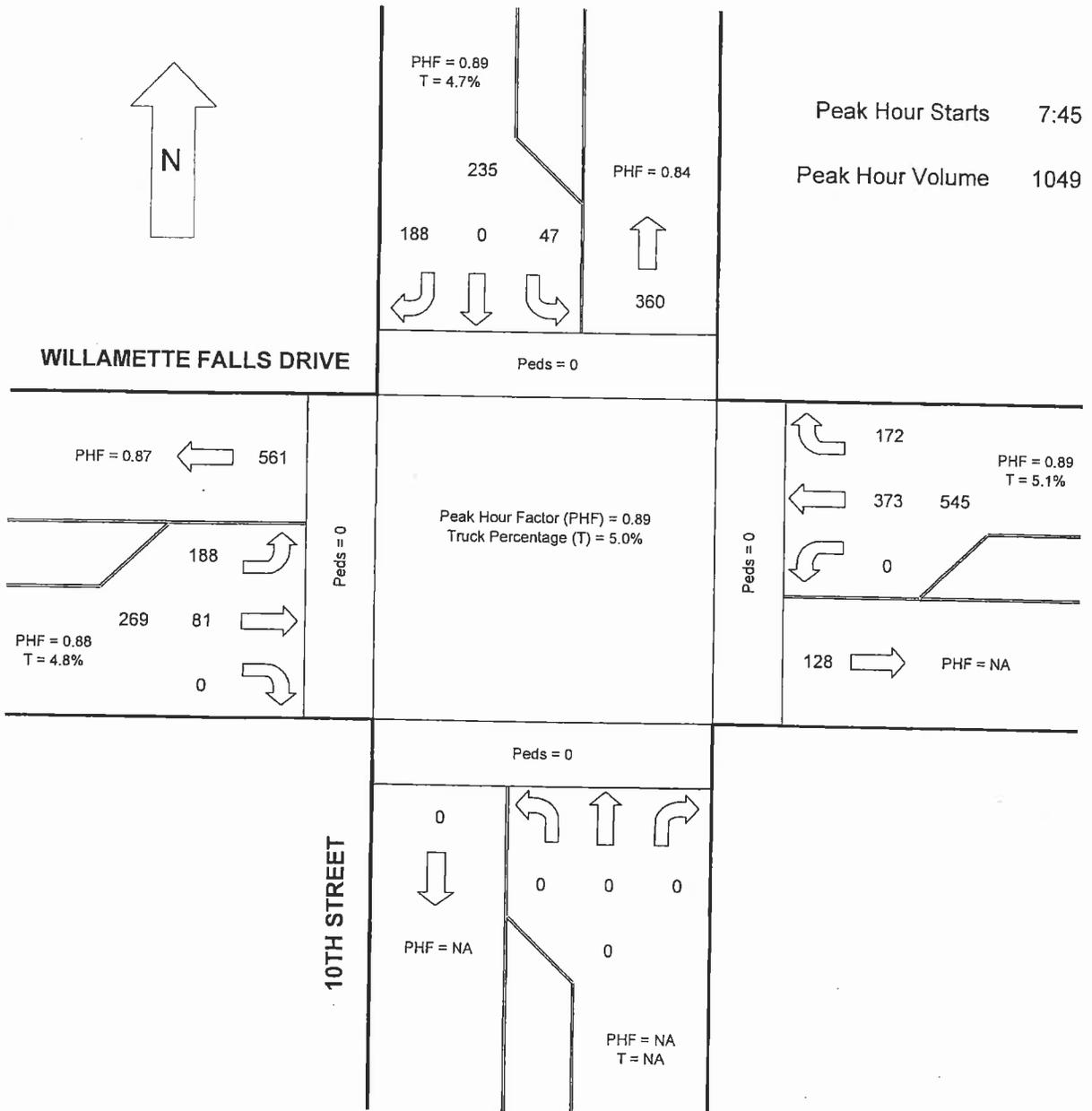
Pedestrians	South	0	West	0	East	0	North	0	0
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Intersection Turning Movement Peak Hour Diagram

Location WILLAMETTE FALLS DRIVE AT 10TH STREET
 Date 7/24/2007
 Day of Week Tuesday
 Time Begin 7:00
 Reviewed By: DE



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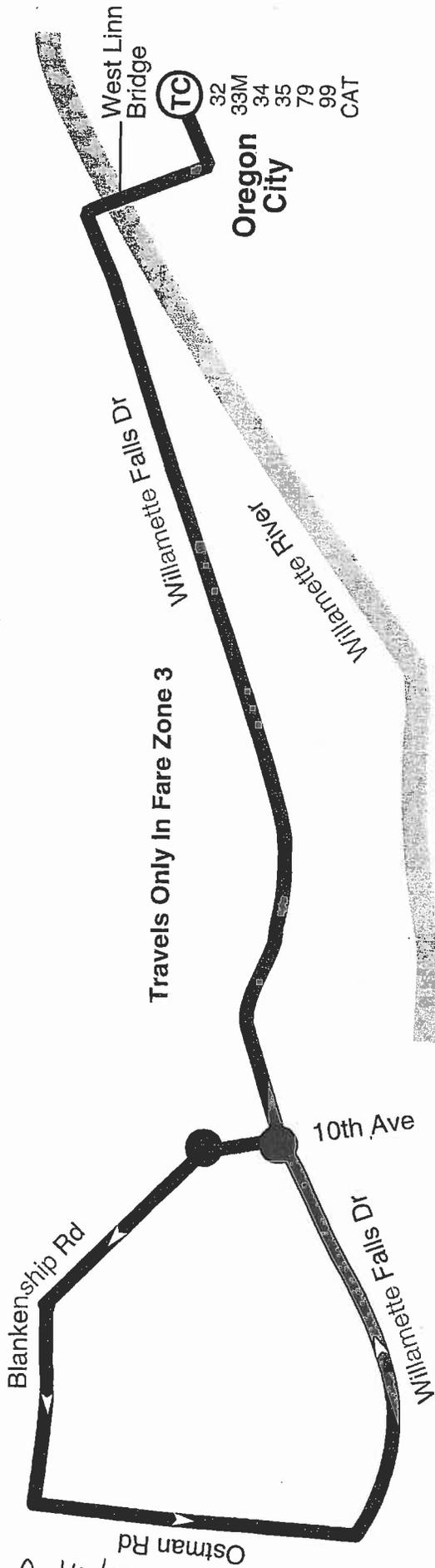
154-Willamette

Weekday	To Oregon City TC		To Willamette	
	Blankenship & Tanner Dr Stop ID 9297	Oregon City Transit Center Stop ID 10447	Oregon City Transit Center Stop ID 10447	Blankenship & Tanner Dr Stop ID 9297
6:20	6:27	6:34	6:11	6:20
6:51	6:58	7:05	6:42	6:51
7:41	7:48	7:54	7:32	7:41
8:42	8:49	8:55	8:33	8:42
9:40	9:47	9:53	9:31	9:40
10:40	10:47	10:53	10:31	10:40
11:40	11:47	11:53	11:31	11:40
12:40	12:47	12:53	12:31	12:40
1:38	1:45	1:51	1:29	1:38
2:38	2:45	2:52	2:29	2:38
3:38	3:45	3:52	3:29	3:38
4:36	4:43	4:50	4:27	4:36
5:23	5:30	5:38	5:14	5:23
5:55	6:02	6:09	5:46	5:55
6:23	6:30	6:37	6:14	6:23

154-Willamette



Times in darker print are p.m.



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TRIP GENERATION CALCULATIONS

Land Use: Hotel
Land Use Code: 310
Variable: Rooms
Variable Value: 70

AM PEAK HOUR

Trip Rate: 0.56

	Enter	Exit	Total
Directional Distribution	61%	39%	
Trip Ends	24	15	39

PM PEAK HOUR

Trip Rate: 0.59

	Enter	Exit	Total
Directional Distribution	53%	47%	
Trip Ends	22	19	41

WEEKDAY

Trip Rate: 8.17

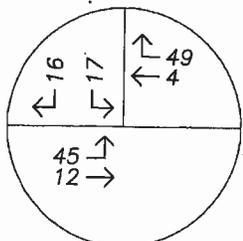
	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	286	286	572

SATURDAY PEAK HOUR

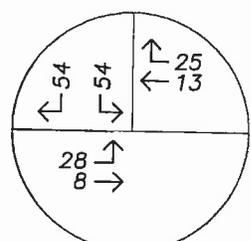
Trip Rate: 0.87

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	30	30	60

Source: Trip Generation, Seventh Edition



AM PEAK HOUR



PM PEAK HOUR



No Scale

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TRAFFIC VOLUMES
 In-Process Traffic Volumes
 AM & PM Peak Hours

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	GAJ	Intersection	Willamette Falls Dr/10th St
Agency/Co.	Lancaster Engineering	Jurisdiction	West Linn
Date Performed	7/27/2007	Analysis Year	EX Cond
Analysis Time Period	AM Peak Hour		

Project ID 07175 - Holiday Inn Express	
East/West Street: Willamette Falls Drive	North/South Street: 10th Street

Volume Adjustments and Site Characteristics								
Approach	Eastbound			Westbound				
Movement	L	T	R	L	T	R		
Volume (veh/h)	188	81	0	0	373	172		
%Thrus Left Lane								
Approach	Northbound			Southbound				
Movement	L	T	R	L	T	R		
Volume (veh/h)	0	0	0	47	0	188		
%Thrus Left Lane								
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	L	T	TR				L	R
PHF	0.89	0.89	0.89				0.89	0.89
Flow Rate (veh/h)	211	91	612				52	211
% Heavy Vehicles	5	5	5				5	5
No. Lanes	2		1		0		2	
Geometry Group	5		3b				1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet							
Prop. Left-Turns	1.0	0.0	0.0			1.0	0.0
Prop. Right-Turns	0.0	0.0	0.3			0.0	1.0
Prop. Heavy Vehicle	0.0	0.0	0.0			0.0	0.0
hLT-adj	0.5	0.5	0.2	0.2		0.2	0.2
hRT-adj	-0.7	-0.7	-0.6	-0.6		-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7		1.7	1.7
hadj, computed	0.6	0.1	-0.1			0.3	-0.5

Departure Headway and Service Time							
hd, initial value (s)	3.20	3.20	3.20			3.20	3.20
x, initial	0.19	0.08	0.54			0.05	0.19
hd, final value (s)	6.66	6.15	5.45			6.59	5.77
x, final value	0.39	0.16	0.93			0.10	0.34
Move-up time, m (s)	2.3		2.0			2.0	
Service Time, ts (s)	4.4	3.9	3.5			4.6	3.8

Capacity and Level of Service								
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	461	341	658				302	461
Delay (s/veh)	13.56	9.98	42.42				10.28	11.70
LOS	B	A	E				B	B
Approach: Delay (s/veh)	12.48		42.42				11.42	
LOS	B		E				B	
Intersection Delay (s/veh)	27.81							
Intersection LOS	D							

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ALL-WAY STOP CONTROL ANALYSIS

General Information	Site Information
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Analyst: GAJ Agency/Co.: Lancaster Engineering Date Performed: 7/27/2007 Analysis Time Period: PM Peak Hour	Intersection: Willamette Falls Dr/10th St Jurisdiction: West Linn Analysis Year: EX Cond
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Project ID 07175 - Holiday Inn Express

East/West Street: Willamette Falls Drive North/South Street: 10th Street

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	454	641	0	0	188	94
%Thrus Left Lane						

Approach	Northbound			Southbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	0	0	0	115	0	294
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	L	T	TR				L	R
PHF	0.96	0.96	0.96				0.96	0.96
Flow Rate (veh/h)	472	667	292				119	306
% Heavy Vehicles	1	1	3				1	1
No. Lanes	2		1		0		2	
Geometry Group	5		3b				1	
Duration, T	0.25							

Saturation, Headway, Adjustment Worksheet

Prop. Left-Turns	1.0	0.0	0.0			1.0	0.0
Prop. Right-Turns	0.0	0.0	0.3			0.0	1.0
Prop. Heavy Vehicle	0.0	0.0	0.0			0.0	0.0
hLT-adj	0.5	0.5	0.2	0.2		0.2	0.2
hRT-adj	-0.7	-0.7	-0.6	-0.6		-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7		1.7	1.7
hadj, computed	0.5	0.0	-0.1			0.2	-0.6

Departure Headway and Service Time

hd, initial value (s)	3.20	3.20	3.20			3.20	3.20
x, initial	0.42	0.59	0.26			0.11	0.27
hd, final value (s)	6.77	6.27	6.42			6.68	5.87
x, final value	0.89	1.16	0.52			0.22	0.50
Move-up time, m (s)	2.3		2.0			2.0	
Service Time, t _s (s)	4.5	4.0	4.4			4.7	3.9

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	532	667	542				369	556
Delay (s/veh)	42.11	112.94	16.17				11.57	14.57
LOS	E	F	C				B	B
Approach Delay (s/veh)	83.59		16.17				13.73	
LOS	F		C				B	
Intersection Delay (s/veh)	56.99							
Intersection LOS	F							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst Agency/Co. Date Performed Analysis Time Period	GAJ Lancaster Engineering 7/27/2007 AM Peak Hour	Intersection Jurisdiction Analysis Year	Willamette Falls Dr/10th St West Linn BK Cond

Project ID 07175 - Holiday Inn Express	
East/West Street: Willamette Falls Drive	North/South Street: 10th Street

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	250	101	0	0	412	237
%Thrus Left Lane						

Approach	Northbound			Southbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	0	0	0	68	0	221
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	L	T	TR				L	R
PHF	0.92	0.92	0.92				0.92	0.92
Flow Rate (veh/h)	271	109	704				73	240
% Heavy Vehicles	5	5	5				5	5
No. Lanes	2		1		0			2
Geometry Group	5		3b					1
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	1.0	0.0	0.0			1.0	0.0
Prop. Right-Turns	0.0	0.0	0.4			0.0	1.0
Prop. Heavy Vehicle	0.0	0.0	0.0			0.0	0.0
hLT-adj	0.5	0.5	0.2	0.2		0.2	0.2
hRT-adj	-0.7	-0.7	-0.6	-0.6		-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7		1.7	1.7
hadj, computed	0.6	0.1	-0.1			0.3	-0.5

Departure Headway and Service Time

hd, initial value (s)	3.20	3.20	3.20			3.20	3.20
x, initial	0.24	0.10	0.63			0.06	0.21
hd, final value (s)	6.96	6.45	5.74			6.88	6.07
x, final value	0.52	0.20	1.12			0.14	0.40
Move-up time, m (s)	2.3		2.0			2.0	
Service Time, t _s (s)	4.7	4.2	3.7			4.9	4.1

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	510	359	704				323	490
Delay (s/veh)	17.08	10.71	97.10				11.00	13.13
LOS	C	B	F				B	B
Approach: Delay (s/veh)	15.25		97.10				12.63	
LOS	C		F				B	
Intersection Delay (s/veh)	55.91							
Intersection LOS	F							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst Agency/Co. Date Performed Analysis Time Period	GAJ Lancaster Engineering 7/27/2007 PM Peak Hour	Intersection Jurisdiction Analysis Year	Willamette Falls Dr/10th St West Linn BK Cond

Project ID 07175 - Holiday Inn Express	East/West Street: Willamette Falls Drive
North/South Street: 10th Street	

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	524	708	0	0	218	128
%Thrus Left Lane						

Approach	Northbound			Southbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	0	0	0	180	0	375
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	L	T	TR				L	R
PHF	0.96	0.96	0.96				0.96	0.96
Flow Rate (veh/h)	545	737	360				187	390
% Heavy Vehicles	1	1	3				1	1
No. Lanes	2		1		0		2	
Geometry Group	5		3b				1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	1.0	0.0	0.0			1.0	0.0
Prop. Right-Turns	0.0	0.0	0.4			0.0	1.0
Prop. Heavy Vehicle	0.0	0.0	0.0			0.0	0.0
hLT-adj	0.5	0.5	0.2	0.2		0.2	0.2
hRT-adj	-0.7	-0.7	-0.6	-0.6		-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7		1.7	1.7
hadj, computed	0.5	0.0	-0.2			0.2	-0.6

Departure Headway and Service Time

hd, initial value (s)	3.20	3.20	3.20			3.20	3.20
x, initial	0.48	0.66	0.32			0.17	0.35
hd, final value (s)	7.40	6.89	6.81			6.90	6.08
x, final value	1.12	1.41	0.68			0.36	0.66
Move-up time, m (s)	2.3		2.0			2.0	
Service Time, t, (s)	5.1	4.6	4.8			4.9	4.1

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	545	737	523				437	585
Delay (s/veh)	104.12	215.72	23.10				13.70	20.06
LOS	F	F	C				B	C
Approach: Delay (s/veh)	168.28		23.10				18.00	
LOS	F		C				C	
Intersection Delay (s/veh)	105.65							
Intersection LOS	F							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	GAJ	Intersection	Willamette Falls Dr/10th St
Agency/Co.	Lancaster Engineering	Jurisdiction	West Linn
Date Performed	7/27/2007	Analysis Year	BK + ST Cond
Analysis Time Period	AM Peak Hour		

Project ID 07175 - Holiday Inn Express

East/West Street: Willamette Falls Drive

North/South Street: 10th Street

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	250	107	0	0	416	247
%Thrus Left Lane						
Approach	Northbound			Southbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	0	0	0	84	0	221
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	L	T	TR				L	R
PHF	0.92	0.92	0.92				0.92	0.92
Flow Rate (veh/h)	271	116	720				91	240
% Heavy Vehicles	5	5	5				5	5
No. Lanes	2		1		0			2
Geometry Group	5		3b					1
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	1.0	0.0	0.0				1.0	0.0
Prop. Right-Turns	0.0	0.0	0.4				0.0	1.0
Prop. Heavy Vehicle	0.0	0.0	0.0				0.0	0.0
hLT-adj	0.5	0.5	0.2	0.2			0.2	0.2
hRT-adj	-0.7	-0.7	-0.6	-0.6			-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7			1.7	1.7
hadj, computed	0.6	0.1	-0.1				0.3	-0.5

Departure Headway and Service Time

hd, initial value (s)	3.20	3.20	3.20				3.20	3.20
x, initial	0.24	0.10	0.64				0.08	0.21
hd, final value (s)	7.03	6.52	5.80				6.90	6.08
x, final value	0.53	0.21	1.16				0.17	0.41
Move-up time, m (s)	2.3		2.0				2.0	
Service Time, L (s)	4.7	4.2	3.8				4.9	4.1

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	506	366	720				341	490
Delay (s/veh)	17.34	10.94	110.47				11.35	13.17
LOS	C	B	F				B	B
Approach Delay (s/veh)	15.42		110.47				12.67	
LOS	C		F				B	
Intersection Delay (s/veh)	62.38							
Intersection LOS	F							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	GAJ	Intersection	Willamette Falls Dr/10th St
Agency/Co.	Lancaster Engineering	Jurisdiction	West Linn
Date Performed	7/27/2007	Analysis Year	BK + ST Cond
Analysis Time Period	PM Peak Hour		

Project ID 07175 - Holiday Inn Express

East/West Street: Willamette Falls Drive

North/South Street: 10th Street

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	524	714	0	0	223	141
%Thrus Left Lane						

Approach	Northbound			Southbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	0	0	0	194	0	375
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	L	T	TR				L	R
PHF	0.96	0.96	0.96				0.96	0.96
Flow Rate (veh/h)	545	743	378				202	390
% Heavy Vehicles	1	1	3				1	1
No. Lanes	2		1		0			2
Geometry Group	5		3b					1
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	1.0	0.0	0.0			1.0	0.0
Prop. Right-Turns	0.0	0.0	0.4			0.0	1.0
Prop. Heavy Vehicle	0.0	0.0	0.0			0.0	0.0
hLT-adj	0.5	0.5	0.2	0.2		0.2	0.2
hRT-adj	-0.7	-0.7	-0.6	-0.6		-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7		1.7	1.7
hadj, computed	0.5	0.0	-0.2			0.2	-0.6

Departure Headway and Service Time

hd, initial value (s)	3.20	3.20	3.20			3.20	3.20
x, initial	0.48	0.66	0.34			0.18	0.35
hd, final value (s)	7.48	6.97	6.83			6.95	6.13
x, final value	1.13	1.44	0.72			0.39	0.66
Move-up time, m (s)	2.3		2.0			2.0	
Service Time, t _s (s)	5.2	4.7	4.8			4.9	4.1

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	545	743	522				452	581
Delay (s/veh)	108.73	227.91	25.29				14.32	20.42
LOS	F	F	D				B	C
Approach: Delay (s/veh)	177.48		25.29				18.34	
LOS	F		D				C	
Intersection Delay (s/veh)	110.28							
Intersection LOS	F							

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HCS+™ DETAILED REPORT

General Information		Site Information	
Analyst	GAJ	Intersection	Willamette Falls Dr/10th St
Agency or Co.	Lancaster Engineering	Area Type	All other areas
Date Performed	7/30/2007	Jurisdiction	West Linn
Time Period	AM Peak Hour	Analysis Year	EX Cond
		Project ID	07175 - Holiday Inn Express

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N _i	1	1		1	0					1		1
Lane Group	L	T		TR						L		R
Volume, V (vph)	188	81		373	172					47		188
% Heavy Vehicles, %HV	5	5		5	5					2		2
Peak-Hour Factor, PHF	0.89	0.89		0.89	0.89					0.89		0.89
Pretimed (P) or Actuated (A)	A	A		A	A					A		A
Start-up Lost Time, I ₁	2.0	2.0		2.0						2.0		2.0
Extension of Effective Green, e	2.0	2.0		2.0						2.0		2.0
Arrival Type, AT	3	3		3						3		3
Unit Extension, UE	3.0	3.0		3.0						3.0		3.0
Filtering/Metering, I	1.000	1.000		1.000						1.000		1.000
Initial Unmet Demand, Q _b	0.0	0.0		0.0						0.0		0.0
Ped / Bike / RTOR Volumes	0	0		0	0	0				0	0	0
Lane Width	12.0	12.0		12.0						12.0		12.0
Parking / Grade / Parking	N	0	N	N	0	N				N	0	N
Parking Maneuvers, N _m												
Buses Stopping, N _b	0	0		0						0		0
Min. Time for Pedestrians, G _p	3.2			3.2						3.2		

Phasing	EB Only	Thru & RT	03	04	SB Only	06	07	08
Timing	G = 10.0	G = 27.0	G = 0.0	G = 0.0	G = 11.0	G = 0.0	G = 0.0	G = 0.0
	Y = 4	Y = 4	Y = 0	Y = 0	Y = 4	Y = 0	Y = 0	Y = 0
Duration of Analysis, T = 0.25						Cycle Length, C = 60.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	211	91		612						53		211
Lane Group Capacity, c	287	1237		779						325		290
v/c Ratio, X	0.74	0.07		0.79						0.16		0.73
Total Green Ratio, g/C	0.17	0.68		0.45						0.18		0.18
Uniform Delay, d ₁	23.7	3.2		14.0						20.6		23.1
Progression Factor, PF	1.000	1.000		1.000						1.000		1.000
Delay Calibration, k	0.29	0.11		0.33						0.11		0.29
Incremental Delay, d ₂	9.5	0.0		5.3						0.2		8.9
Initial Queue Delay, d ₃	0.0	0.0		0.0						0.0		0.0
Control Delay	33.2	3.2		19.4						20.9		32.0
Lane Group LOS	C	A		B						C		C
Approach Delay	24.2			19.4						29.7		
Approach LOS	C			B						C		
Intersection Delay	22.9			X _c = 0.76			Intersection LOS			C		

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HCS+ DETAILED REPORT

General Information		Site Information	
Analyst	GAJ	Intersection	Willamette Falls Dr/10th St
Agency or Co.	Lancaster Engineering	Area Type	All other areas
Date Performed	7/30/2007	Jurisdiction	West Linn
Time Period	PM Peak Hour	Analysis Year	EX Cond
		Project ID	07175 - Holiday Inn Express

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N _i	1	1			1	0				1		1
Lane Group	L	T			TR					L		R
Volume, V (vph)	454	641			188	94				115		294
% Heavy Vehicles, %HV	1	1			3	3				1		1
Peak-Hour Factor, PHF	0.96	0.96			0.96	0.96				0.96		0.96
Pretimed (P) or Actuated (A)	A	A			A	A				A		A
Start-up Lost Time, l _i	2.0	2.0			2.0					2.0		2.0
Extension of Effective Green, e	2.0	2.0			2.0					2.0		2.0
Arrival Type, AT	3	3			3					3		3
Unit Extension, UE	3.0	3.0			3.0					3.0		3.0
Filtering/Metering, I	1.000	1.000			1.000					1.000		1.000
Initial Unmet Demand, Q _b	0.0	0.0			0.0					0.0		0.0
Ped / Bike / RTOR Volumes	0	0		0	0	0				0	0	0
Lane Width	12.0	12.0			12.0					12.0		12.0
Parking / Grade / Parking	N	0	N	N	0	N				N	0	N
Parking Maneuvers, N _m												
Buses Stopping, N _b	0	0			0					0		0
Min. Time for Pedestrians, G _p	3.2			3.2						3.2		
Phasing	EB Only	Thru & RT	03	04	SB Only	06	07	08				
Timing	G = 20.0	G = 13.0	G = 0.0	G = 0.0	G = 15.0	G = 0.0	G = 0.0	G = 0.0				
	Y = 4	Y = 4	Y = 0	Y = 0	Y = 4	Y = 0	Y = 0	Y = 0				
Duration of Analysis, T = 0.25						Cycle Length, C = 60.0						

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	473	668			294					120		306
Lane Group Capacity, c	596	1160			382					447		400
v/c Ratio, X	0.79	0.58			0.77					0.27		0.76
Total Green Ratio, g/C	0.33	0.62			0.22					0.25		0.25
Uniform Delay, d ₁	18.1	6.8			22.1					18.1		20.9
Progression Factor, PF	1.000	1.000			1.000					1.000		1.000
Delay Calibration, k	0.34	0.17			0.32					0.11		0.32
Incremental Delay, d ₂	7.3	0.7			9.3					0.3		8.6
Initial Queue Delay, d ₃	0.0	0.0			0.0					0.0		0.0
Control Delay	25.4	7.5			31.4					18.4		29.4
Lane Group LOS	C	A			C					B		C
Approach Delay	15.0			31.4						26.3		
Approach LOS	B			C						C		
Intersection Delay	20.2			X _c = 0.78			Intersection LOS			C		

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HCS+ DETAILED REPORT

General Information		Site Information	
Analyst	GAJ	Intersection	Willamette Falls Dr/10th St
Agency or Co.	Lancaster Engineering	Area Type	All other areas
Date Performed	7/30/2007	Jurisdiction	West Linn
Time Period	AM Peak Hour	Analysis Year	BK Cond
		Project ID	07175 - Holiday Inn Express

Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N _i	1	1			1	0				1		1
Lane Group	L	T			TR					L		R
Volume, V (vph)	250	101			412	237				68		221
% Heavy Vehicles, %HV	5	5			5	5				2		2
Peak-Hour Factor, PHF	0.92	0.92			0.92	0.92				0.92		0.92
Pretimed (P) or Actuated (A)	A	A			A	A				A		A
Start-up Lost Time, l _i	2.0	2.0			2.0					2.0		2.0
Extension of Effective Green, e	2.0	2.0			2.0					2.0		2.0
Arrival Type, AT	3	3			3					3		3
Unit Extension, UE	3.0	3.0			3.0					3.0		3.0
Filtering/Metering, I	1.000	1.000			1.000					1.000		1.000
Initial Unmet Demand, Q _b	0.0	0.0			0.0					0.0		0.0
Ped / Bike / RTOR Volumes	0	0		0	0	0				0	0	0
Lane Width	12.0	12.0			12.0					12.0		12.0
Parking / Grade / Parking	N	0	N	N	0	N				N	0	N
Parking Maneuvers, N _m												
Buses Stopping, N _b	0	0			0					0		0
Min. Time for Pedestrians, G _p	3.2			3.2						3.2		
Phasing	EB Only		Thru & RT	03		04	SB Only		06	07	08	
Timing	G = 11.5		G = 25.8	G = 0.0		G = 0.0	G = 10.7		G = 0.0	G = 0.0	G = 0.0	
	Y = 4		Y = 4	Y = 0		Y = 0	Y = 4		Y = 0	Y = 0	Y = 0	
Duration of Analysis, T = 0.25										Cycle Length, C = 60.0		

Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	272	110			706					74		240
Lane Group Capacity, c	329	1246			740					316		282
w/c Ratio, X	0.83	0.09			0.95					0.23		0.85
Total Green Ratio, g/C	0.19	0.69			0.43					0.18		0.18
Uniform Delay, d ₁	23.3	3.1			16.5					21.1		23.9
Progression Factor, PF	1.000	1.000			1.000					1.000		1.000
Delay Calibration, k	0.36	0.11			0.46					0.11		0.38
Incremental Delay, d ₂	15.8	0.0			22.5					0.4		21.3
Initial Queue Delay, d ₃	0.0	0.0			0.0					0.0		0.0
Control Delay	39.1	3.1			39.0					21.5		45.1
Lane Group LOS	D	A			D					C		D
Approach Delay	28.8			39.0						39.6		
Approach LOS	C			D						D		
Intersection Delay	36.3			X _c = 0.90			Intersection LOS			D		

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HCS+™ DETAILED REPORT

General Information		Site Information	
Analyst	GAJ	Intersection	Willamette Falls Dr/10th St
Agency or Co.	Lancaster Engineering	Area Type	All other areas
Date Performed	7/30/2007	Jurisdiction	West Linn
Time Period	PM Peak Hour	Analysis Year	BK Cond
		Project ID	07175 - Holiday Inn Express

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N _i	1	1			1	0						
Lane Group	L	T			TR					L		R
Volume, V (vph)	524	708			218	128				180		375
% Heavy Vehicles, %HV	1	1			3	3				1		1
Peak-Hour Factor, PHF	0.96	0.96			0.96	0.96				0.96		0.96
Pretimed (P) or Actuated (A)	A	A			A	A				A		A
Start-up Lost Time, l _i	2.0	2.0			2.0					2.0		2.0
Extension of Effective Green, e	2.0	2.0			2.0					2.0		2.0
Arrival Type, AT	3	3			3					3		3
Unit Extension, UE	3.0	3.0			3.0					3.0		3.0
Filtering/Metering, I	1.000	1.000			1.000					1.000		1.000
Initial Unmet Demand, Q _b	0.0	0.0			0.0					0.0		0.0
Ped / Bike / RTOR Volumes	0	0		0	0	0				0	0	0
Lane Width	12.0	12.0			12.0					12.0		12.0
Parking / Grade / Parking	N	0	N	N	0	N				N	0	N
Parking Maneuvers, N _m												
Buses Stopping, N _b	0	0			0					0		0
Min. Time for Pedestrians, G _p		3.2			3.2						3.2	
Phasing	EB Only	Thru & RT	03	04	SB Only	06	07	08				
Timing	G = 23.5	G = 16.6	G = 0.0	G = 0.0	G = 17.9	G = 0.0	G = 0.0	G = 0.0				
	Y = 4	Y = 4	Y = 0	Y = 0	Y = 4	Y = 0	Y = 0	Y = 0				
Duration of Analysis, T = 0.25												
												Cycle Length, C = 70.0

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	546	738			360					188		391
Lane Group Capacity, c	600	1185			416					457		409
v/c Ratio, X	0.91	0.62			0.87					0.41		0.96
Total Green Ratio, g/C	0.34	0.63			0.24					0.26		0.26
Uniform Delay, d ₁	22.2	7.9			25.6					21.7		25.7
Progression Factor, PF	1.000	1.000			1.000					1.000		1.000
Delay Calibration, k	0.43	0.21			0.40					0.11		0.47
Incremental Delay, d ₂	18.0	1.0			17.1					0.6		33.2
Initial Queue Delay, d ₃	0.0	0.0			0.0					0.0		0.0
Control Delay	40.3	8.9			42.8					22.3		58.9
Lane Group LOS	D	A			D					C		E
Approach Delay	22.2			42.8						47.0		
Approach LOS	C			D						D		
Intersection Delay	32.0			X _c = 0.91			Intersection LOS			C		

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HCS+™ DETAILED REPORT

General Information				Site Information			
Analyst	GAJ			Intersection	Willamette Falls Dr/10th St		
Agency or Co.	Lancaster Engineering			Area Type	All other areas		
Date Performed	7/30/2007			Jurisdiction	West Linn		
Time Period	AM Peak Hour			Analysis Year	BK + ST Cond		
				Project ID	07175 - Holiday Inn Express		

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N _i	1	1			1	0				1		1
Lane Group	L	T			TR					L		R
Volume, V (vph)	250	107			416	247				84		221
% Heavy Vehicles, %HV	5	5			5	5				2		2
Peak-Hour Factor, PHF	0.92	0.92			0.92	0.92				0.92		0.92
Pretimed (P) or Actuated (A)	A	A			A	A				A		A
Start-up Lost Time, I _i	2.0	2.0			2.0					2.0		2.0
Extension of Effective Green, e	2.0	2.0			2.0					2.0		2.0
Arrival Type, AT	3	3			3					3		3
Unit Extension, UE	3.0	3.0			3.0					3.0		3.0
Filtering/Metering, I	1.000	1.000			1.000					1.000		1.000
Initial Unmet Demand, Q _b	0.0	0.0			0.0					0.0		0.0
Ped / Bike / RTOR Volumes	0	0		0	0	0				0	0	0
Lane Width	12.0	12.0			12.0					12.0		12.0
Parking / Grade / Parking	N	0	N	N	0	N				N	0	N
Parking Maneuvers, N _m												
Buses Stopping, N _b	0	0			0					0		0
Min. Time for Pedestrians, G _p	3.2			3.2						3.2		
Phasing	EB Only	Thru & RT	03	04	SB Only	06	07	08				
Timing	G = 11.5	G = 25.8	G = 0.0	G = 0.0	G = 10.7	G = 0.0	G = 0.0	G = 0.0				
	Y = 4	Y = 4	Y = 0	Y = 0	Y = 4	Y = 0	Y = 0	Y = 0				
Duration of Analysis, T = 0.25				Cycle Length, C = 60.0								

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	272	116			720					91		240
Lane Group Capacity, c	329	1246			739					316		282
v/c Ratio, X	0.83	0.09			0.97					0.29		0.85
Total Green Ratio, g/C	0.19	0.69			0.43					0.18		0.18
Uniform Delay, d ₁	23.3	3.1			16.8					21.4		23.9
Progression Factor, PF	1.000	1.000			1.000					1.000		1.000
Delay Calibration, k	0.36	0.11			0.48					0.11		0.38
Incremental Delay, d ₂	15.8	0.0			26.8					0.5		21.3
Initial Queue Delay, d ₃	0.0	0.0			0.0					0.0		0.0
Control Delay	39.1	3.1			43.5					21.9		45.1
Lane Group LOS	D	A			D					C		D
Approach Delay	28.4			43.5						38.7		
Approach LOS	C			D						D		
Intersection Delay	38.3			X _c = 0.91			Intersection LOS			D		

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HCS+™ DETAILED REPORT

General Information				Site Information			
Analyst	GAJ			Intersection	Willamette Falls Dr/10th St		
Agency or Co.	Lancaster Engineering			Area Type	All other areas		
Date Performed	7/30/2007			Jurisdiction	West Linn		
Time Period	PM Peak Hour			Analysis Year	BK + ST Cond		
				Project ID	07175 - Holiday Inn Express		

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N _l	1	1			1	0				1		1
Lane Group	L	T			TR					L		R
Volume, V (vph)	524	714			223	141				194		375
% Heavy Vehicles, %HV	1	1			3	3				1		1
Peak-Hour Factor, PHF	0.96	0.96			0.96	0.96				0.96		0.96
Pretimed (P) or Actuated (A)	A	A			A	A				A		A
Start-up Lost Time, l _t	2.0	2.0			2.0					2.0		2.0
Extension of Effective Green, e	2.0	2.0			2.0					2.0		2.0
Arrival Type, AT	3	3			3					3		3
Unit Extension, UE	3.0	3.0			3.0					3.0		3.0
Filtering/Metering, I	1.000	1.000			1.000					1.000		1.000
Initial Unmet Demand, Q _b	0.0	0.0			0.0					0.0		0.0
Ped / Bike / RTOR Volumes	0	0		0	0	0				0	0	0
Lane Width	12.0	12.0			12.0					12.0		12.0
Parking / Grade / Parking	N	0	N	N	0	N				N	0	N
Parking Maneuvers, N _m												
Buses Stopping, N _b	0	0			0					0		0
Min. Time for Pedestrians, G _p	3.2			3.2						3.2		
Phasing	EB Only	Thru & RT	03	04	SB Only	06	07	08				
Timing	G = 23.5	G = 16.6	G = 0.0	G = 0.0	G = 17.9	G = 0.0	G = 0.0	G = 0.0				
	Y = 4	Y = 4	Y = 0	Y = 0	Y = 4	Y = 0	Y = 0	Y = 0				
Duration of Analysis, T = 0.25						Cycle Length, C = 70.0						

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	546	744			379					202		391
Lane Group Capacity, c	600	1185			415					457		409
v/c Ratio, X	0.91	0.63			0.91					0.44		0.96
Total Green Ratio, g/C	0.34	0.63			0.24					0.26		0.26
Uniform Delay, d ₁	22.2	7.9			26.0					21.9		25.7
Progression Factor, PF	1.000	1.000			1.000					1.000		1.000
Delay Calibration, k	0.43	0.21			0.43					0.11		0.47
Incremental Delay, d ₂	18.0	1.1			24.3					0.7		33.2
Initial Queue Delay, d ₃	0.0	0.0			0.0					0.0		0.0
Control Delay	40.3	9.0			50.3					22.5		58.9
Lane Group LOS	D	A			D					C		E
Approach Delay	22.2			50.3						46.5		
Approach LOS	C			D						D		
Intersection Delay	33.3			X _c = 0.93			Intersection LOS			C		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	GAJ	Intersection	Willamette Falls Dr/Site Acces
Agency/Co.	Lancaster Engineering	Jurisdiction	West Linn
Date Performed	7/30/2007	Analysis Year	BK + ST Cond
Analysis Time Period	AM Peak Hour		
Project Description 07175 - Holiday Inn Express			
East/West Street: Willamette Falls Drive		North/South Street: Site Access	
Intersection Orientation: East-West		Study Period (hrs): 0.25	

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	22	174			644	2
Peak-Hour Factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Hourly Flow Rate, HFR (veh/h)	24	195	0	0	723	2
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				1		14
Peak-Hour Factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Hourly Flow Rate, HFR (veh/h)	0	0	0	1	0	15
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (veh/h)	24						16	
C (m) (veh/h)	887						415	
w/c	0.03						0.04	
95% queue length	0.08						0.12	
Control Delay (s/veh)	9.2						14.0	
LOS	A						B	
Approach Delay (s/veh)	--	--					14.0	
Approach LOS	--	--					B	

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	GAJ	Intersection	Willamette Falls Dr/Site Acces
Agency/Co.	Lancaster Engineering	Jurisdiction	West Linn
Date Performed	7/30/2007	Analysis Year	BK + ST Cond
Analysis Time Period	PM Peak Hour		

Project Description	07175 - Holiday Inn Express		
East/West Street:	Willamette Falls Drive	North/South Street:	Site Access
Intersection Orientation:	East-West	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	20	868			366	2
Peak-Hour Factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Hourly Flow Rate, HFR (veh/h)	20	904	0	0	381	2
Percent Heavy Vehicles	0	-	-	0	-	-
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				1		18
Peak-Hour Factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Hourly Flow Rate, HFR (veh/h)	0	0	0	1	0	18
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (veh/h)	20						19	
C (m) (veh/h)	1187						580	
v/c	0.02						0.03	
95% queue length	0.05						0.10	
Control Delay (s/veh)	8.1						11.4	
LOS	A						B	
Approach Delay (s/veh)	--	--					11.4	
Approach LOS	--	--					B	

A-131

Whereas, the Oregon Department of Transportation, has been requested to perform an investigation pursuant to the provisions of ORS 810.180, has caused an engineering and traffic investigation to be made for the section(s) of state highway, county highway, city highway, or highway under the jurisdiction of a federal agency described below (highway means public way); and



Speed Zone Order

Date December 15, 2003 Order No. J472

Whereas, the State Traffic Engineer has been authorized to act on behalf of the Oregon Transportation Commission; and

Jurisdiction(s)
West Linn

Whereas, the data, facts, and information obtained in connection with said engineering and traffic investigation are on file in the office of the Traffic Management Section of the Oregon Department of Transportation in Salem, Oregon; and

Whereas, based upon said engineering and traffic investigation, the Traffic Engineer has found that the speed designated in ORS 811.105 or ORS 811.123 is greater than is reasonable under the conditions found to exist upon the section(s) of highway for which a lesser speed is herein designated or that the speed designated in said statute is less than is reasonable under the conditions found to exist upon the section(s) of highway for which a greater speed is herein designated; and

Whereas, the provisions of ORS 810.180 respecting notice and hearing have been complied with:

It is **Therefore Ordered** that the designated speed for the following section(s) of highway be as follows:

Name Willamette Falls Drive

Route Number _____

LOCATION OF TERMINI

From	To	Designated Speed (Miles Per Hour)
East end of Field's (Tualatin River) Bridge	Ostman Road	35
Ostman Road	16 th Street	30
10 th Street	250 feet west of Chestnut Street	45
250 feet west of Chestnut Street	Oswego Highway (OR 43)	35

School speed zones may be posted within the limits of this order as determined to be appropriate by the Road Authority, based on an engineering investigation as per the provisions of ORS 811.105, Subsection 2(c) or ORS 811.123 Subsection 1(c), and ORS 810.200.

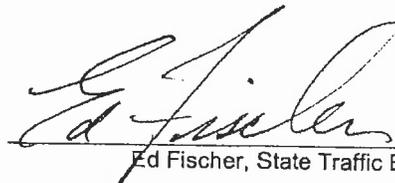
This rescinds SZRP Speed Zone Order No. 1130D dated November 7, 1995

Be it further ordered that the roadway authority or authorities responsible for the above section(s) of highway install appropriate signs giving notice of the designated speed(s) therefore as per ORS 810.180, Subsection 8(e).

Be it further ordered that signs installed pursuant to this order comply with the provisions of ORS 810.210 and 810.220.

Be it further ordered that any previous order made by the Department with respect to the designated speed for the above section(s) of highway which is in conflict with the provisions of this order is hereby rescinded.

Be it further ordered that the Traffic Engineer of the Oregon Department of Transportation is hereby delegated the authority to sign this order for and on behalf of the Department.


Ed Fischer, State Traffic Engineer

A132

TRAFFIC SIGNAL WARRANT CALCULATIONS

Major Street: Willamette Falls Drive

Minor Street: 10th Street

Background Conditions

Number of Lanes for Moving
Traffic on Each Approach:

ADT on Major St.
(total of both approaches)

ADT on Minor St.
(higher-volume approach)

WARRANT 1

CONDITION A

Major St.	Minor St.
1	1
2 or more	1
2 or more	2 or more
1	2 or more

100% Warrants	70% Warrants	100% Warrants	70% Warrants
8,850	6,200	2,650	1,850
10,600	7,400	2,650	1,850
10,600	7,400	3,550	2,500
8,850	6,200	3,550	2,500

CONDITION B

1	1
2 or more	1
2 or more	2 or more
1	2 or more

13,300	9,300	1,350	950
15,900	11,100	1,350	950
15,900	11,100	1,750	1,250
13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

Warrant Used

X	100 percent of standard warrants used
_____	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

	Number of Lanes	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>				
<i>Condition A: Minimum Vehicular Volume</i>				
Major Street	1	15,780	8,850	
Minor Street*	1	4,610	2,650	Yes
<i>Condition B: Interruption of Continuous Traffic</i>				
Major Street	1	15,780	13,300	
Minor Street*	1	4,610	1,350	Yes
<i>Warrant 3: Peak Hour Warrant - AM Peak Hour</i>				
Major Street	1	910		
Minor Street*	1	220	230	No
<i>Warrant 3: Peak Hour Warrant - PM Peak Hour</i>				
Major Street	1	1,578		
Minor Street*	1	461	100	Yes

* Minor street right-turning traffic volumes reduced by 25%

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TRAFFIC SIGNAL WARRANT CALCULATIONS

Major Street: Willamette Falls Drive

Minor Street: 10th Street

Background + Site Trips Conditions

Number of Lanes for Moving
Traffic on Each Approach:

ADT on Major St.
(total of both approaches)

ADT on Minor St.
(higher-volume approach)

WARRANT 1

CONDITION A

Major St.	Minor St.
1	1
2 or more	1
2 or more	2 or more
1	2 or more

100% Warrants	70% Warrants	100% Warrants	70% Warrants
8,850	6,200	2,650	1,850
10,600	7,400	2,650	1,850
10,600	7,400	3,550	2,500
8,850	6,200	3,550	2,500

CONDITION B

1	1
2 or more	1
2 or more	2 or more
1	2 or more

13,300	9,300	1,350	950
15,900	11,100	1,350	950
15,900	11,100	1,750	1,250
13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

Warrant Used

X	100 percent of standard warrants used
	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

	Number of Lanes	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>				
<i>Condition A: Minimum Vehicular Volume</i>				
Major Street	1	16,020	8,850	
Minor Street*	1	4,750	2,650	Yes
<i>Condition B: Interruption of Continuous Traffic</i>				
Major Street	1	16,020	13,300	
Minor Street*	1	4,750	1,350	Yes
<i>Warrant 3: Peak Hour Warrant - AM Peak Hour</i>				
Major Street	1	930		
Minor Street*	1	236	225	Yes
<i>Warrant 3: Peak Hour Warrant - PM Peak Hour</i>				
Major Street	1	1,602		
Minor Street*	1	475	100	Yes

* Minor street right-turning traffic volumes reduced by 25%

A-134

TRAFFIC SIGNAL WARRANT CALCULATIONS

Major Street: Willamette Falls Drive

Minor Street: 10th Street

Existing Conditions

Number of Lanes for Moving
Traffic on Each Approach:

ADT on Major St.
(total of both approaches)

ADT on Minor St.
(higher-volume approach)

WARRANT 1

CONDITION A

Major St.	Minor St.	100% Warrants	70% Warrants	100% Warrants	70% Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500

CONDITION B

1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

Warrant Used

<u> X </u>	100 percent of standard warrants used
<u> </u>	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

	Number of Lanes	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>				
<i>Condition A: Minimum Vehicular Volume</i>				
Major Street	1	13,770	8,850	
Minor Street*	1	3,355	2,650	Yes
<i>Condition B: Interruption of Continuous Traffic</i>				
Major Street	1	13,770	13,300	
Minor Street*	1	3,355	1,350	Yes
<i>Warrant 3: Peak Hour Warrant - AM Peak Hour</i>				
Major Street	1	814		
Minor Street*	1	188	290	No
<i>Warrant 3: Peak Hour Warrant - PM Peak Hour</i>				
Major Street	1	1,377		
Minor Street*	1	336	110	Yes

* Minor street right-turning traffic volumes reduced by 25%

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
 CRASH SUMMARIES BY YEAR BY COLLISION TYPE

10th Street at Willamette Falls Drive in West Linn
 1-1-2004 through 12-31-2006

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2005	0	0	1	1	0	0	0	0	1	1	0	1	0
ANGLE	0	0	1	1	0	0	0	0	1	1	0	1	0
2005 TOTAL	0	0	1	1	0	0	0	0	1	1	0	1	0
FINAL TOTAL	0	0	1	1	0	0	0	0	1	1	0	1	0

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

A-136



QUEUING ANALYSIS - AWSC INTERSECTION

Project Name: 07175 - Holiday Inn Express

Analyst: GAJ

Date: 7/30/2007

Intersection: Willamette Falls Drive/10th Street

Time Period: AM Peak Hour

Scenario: EX Cond

DATA ENTRY

Storage per Vehicle:

25 feet

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume:	188	81			545					47	188	
Capacity:	461	341			658					302	461	

vph

vph

CALCULATIONS

95 th Percentile Queue:	1.95404	0.90918	#DIV/0!	#DIV/0!	8.88284	#DIV/0!	#DIV/0!	#DIV/0!	0.54367	1.95404	#DIV/0!	veh
95 th Percentile Queue Length:	48.8511	22.7295	#DIV/0!	#DIV/0!	222.071	#DIV/0!	#DIV/0!	#DIV/0!	13.5917	48.8511	#DIV/0!	feet
Required Storage per Lane:	50	25	#DIV/0!	#DIV/0!	225	#DIV/0!	#DIV/0!	#DIV/0!	25	50	#DIV/0!	feet

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QUEUING ANALYSIS - AWSC INTERSECTION

Project Name: 07175 - Holiday Inn Express

Analyst: GAJ

Date: 7/30/2007

Intersection: Willamette Falls Drive/10th Street

Time Period: PM Peak Hour

Scenario: EX Cond

DATA ENTRY

Storage per Vehicle:

25 feet

Eastbound			Westbound			Northbound			Southbound		
L	T	R	L	T	R	L	T	R	L	T	R
454	641			282		115	294		369	556	
532	667			542							

Volume:

Capacity:

vph
vph

CALCULATIONS

95 th Percentile Queue:	9.05395	13.964	#DIV/0!	#DIV/0!	2.98051	#DIV/0!	#DIV/0!	#DIV/0!	1.30466	#DIV/0!	3.07727	#DIV/0!	veh
95 th Percentile Queue Length:	226.349	349.099	#DIV/0!	#DIV/0!	74.5127	#DIV/0!	#DIV/0!	#DIV/0!	32.6164	#DIV/0!	76.9316	#DIV/0!	feet
Required Storage per Lane:	225	350	#DIV/0!	#DIV/0!	75	#DIV/0!	#DIV/0!	#DIV/0!	25	#DIV/0!	75	#DIV/0!	feet

A139



QUEUING ANALYSIS - AWSC INTERSECTION

Project Name: 07175 - Holiday Inn Express

Analyst: GAJ

Date: 10/22/2007

Intersection: Willamette Falls Drive/10th Street

Time Period: AM Peak Hour

Scenario: BK Cond

DATA ENTRY

Storage per Vehicle:

25 feet

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume:	250	101			649					68	221	
Capacity:	510	359			704					323	490	

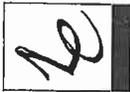
vph

vph

CALCULATIONS

95 th Percentile Queue:	2.66593	1.13451	#DIV/0!	#DIV/0!	12.5372	#DIV/0!	#DIV/0!	#DIV/0!	0.78087	2.30647	#DIV/0!	#DIV/0!	veh
95 th Percentile Queue Length:	66.6483	28.3627	#DIV/0!	#DIV/0!	313.43	#DIV/0!	#DIV/0!	#DIV/0!	19.5218	57.6618	#DIV/0!	#DIV/0!	feet
Required Storage per Lane:	75	25	#DIV/0!	#DIV/0!	325	#DIV/0!	#DIV/0!	#DIV/0!	25	50	#DIV/0!	#DIV/0!	feet

A-140



QUEUEING ANALYSIS - AWSC INTERSECTION

Project Name: 07175 - Holiday Inn Express

Analyst: GAJ

Date: 10/22/2007

Intersection: Willamette Falls Drive/10th Street

Time Period: PM Peak Hour

Scenario: BK Cond

DATA ENTRY

Storage per Vehicle:

25 feet

Eastbound			Westbound			Northbound			Southbound		
L	T	R	L	T	R	L	T	R	L	T	R
524	708			346					180		375
545	737			523					437		585

Volume:

Capacity:

vph

vph

CALCULATIONS

95 th Percentile Queue:	12.7667	14.5822	#DIV/0!	#DIV/0!	4.81607	#DIV/0!	#DIV/0!	1.97923	4.56371	#DIV/0!
95 th Percentile Queue Length:	319.166	364.554	#DIV/0!	#DIV/0!	120.402	#DIV/0!	#DIV/0!	49.4807	114.093	#DIV/0!
Required Storage per Lane:	325	375	#DIV/0!	#DIV/0!	125	#DIV/0!	#DIV/0!	50	125	#DIV/0!

veh

feet

feet



QUEUEING ANALYSIS - AWSC INTERSECTION

Project Name: 07175 - Holiday Inn Express

Analyst: GAJ

Date: 10/22/2007

Intersection: Willamette Falls Drive/10th Street

Time Period: AM Peak Hour

Scenario: BK + ST Cond

DATA ENTRY

Storage per Vehicle: 25 feet

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume:	250	107			663					84	221	
Capacity:	506	366			720					341	490	

vph
vph

CALCULATIONS

95 th Percentile Queue:	2.7016	1.19525	#DIV/0!	#DIV/0!	12.6028	#DIV/0!	#DIV/0!	#DIV/0!	0.95231	2.30647	#DIV/0!	veh
95 th Percentile Queue Length:	67.5401	29.8814	#DIV/0!	#DIV/0!	315.07	#DIV/0!	#DIV/0!	#DIV/0!	23.8079	57.6618	#DIV/0!	feet
Required Storage per Lane:	75	25	#DIV/0!	#DIV/0!	325	#DIV/0!	#DIV/0!	#DIV/0!	25	50	#DIV/0!	feet

A-142



QUEUEING ANALYSIS - SIGNALIZED INTERSECTION

Project Name: 07175 - Holiday Inn Express

Analyst: GAJ

Date: 7/30/2007

Intersection: Willamette Falls Drive/10th Street

Time Period: AM Peak Hour

Scenario: EX Cond

DATA ENTRY

Cycle Length: 60 sec

Storage per Vehicle: 25 feet

Volume:

Green Time:

Yellow Time:

Number of Lanes:

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
	188	81			545					47		188
	10	37			27					11		11
	4	4			4					4		4
	1	1			1					1		1

vph
sec
sec

CALCULATIONS

Average Total Queue:

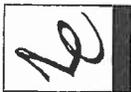
95th Percentile Queue:

95th Percentile Queue Length:

Required Storage per Lane:

2.4	0.4	0.0	0.0	0.0	4.4	0.0	0.0	0.0	0.0	0.6	0.0	2.4
5	2	#N/A	#N/A	#N/A	8	#N/A	#N/A	#N/A	#N/A	2	#N/A	5
125	50	#N/A	#N/A	#N/A	200	#N/A	#N/A	#N/A	#N/A	50	#N/A	125
125	50	#N/A	#N/A	#N/A	200	#N/A	#N/A	#N/A	#N/A	50	#N/A	125

veh
veh
feet
feet



QUEUEING ANALYSIS - SIGNALIZED INTERSECTION

Project Name: 07175 - Holiday Inn Express

Analyst: GAJ

Date: 10/22/2007

Intersection: Willamette Falls Drive/10th Street

Time Period: AM Peak Hour

Scenario: BK Cond

DATA ENTRY

Cycle Length: 60 sec
 Storage per Vehicle: 25 feet

Volume:
 Green Time:
 Yellow Time:
 Number of Lanes:

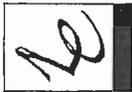
	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume:	250	101			649					68		221
Green Time:	11.5	41.3			25.8					10.7		10.7
Yellow Time:	4	4			4					4		4
Number of Lanes:	1	1			1					1		1

vph
sec
sec

CALCULATIONS

Average Total Queue:	3.1	0.4	0.0	0.0	5.4	0.0	0.0	0.0	0.0	0.9	0.0	2.8
95 th Percentile Queue:	6	2	#N/A	#N/A	9	#N/A	#N/A	#N/A	#N/A	3	#N/A	6
95 th Percentile Queue Length:	150	50	#N/A	#N/A	225	#N/A	#N/A	#N/A	#N/A	75	#N/A	150
Required Storage per Lane:	150	50	#N/A	#N/A	225	#N/A	#N/A	#N/A	#N/A	75	#N/A	150

veh
veh
feet
feet



QUEUEING ANALYSIS - SIGNALIZED INTERSECTION

Project Name: 07175 - Holiday Inn Express

Analyst: GAJ

Date: 10/22/2007

Intersection: Willamette Falls Drive/10th Street

Time Period: PM Peak Hour

Scenario: BK Cond

DATA ENTRY

Cycle Length: 60 sec

Storage per Vehicle: 25 feet

Volume:

Green Time:

Yellow Time:

Number of Lanes:

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume:	524	708			346					180		375
Green Time:	23.5	44.1			16.6					17.9		17.9
Yellow Time:	4	4			4					4		4
Number of Lanes:	1	1			1					1		1

CALCULATIONS

Average Total Queue:

95th Percentile Queue:

95th Percentile Queue Length:

Required Storage per Lane:

4.7	2.3	0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0	1.9	0.0	4.0
8	5	#N/A	#N/A	#N/A	7	#N/A	#N/A	#N/A	#N/A	4	#N/A	7
200	125	#N/A	#N/A	#N/A	175	#N/A	#N/A	#N/A	#N/A	100	#N/A	175
200	125	#N/A	#N/A	#N/A	175	#N/A	#N/A	#N/A	#N/A	100	#N/A	175



QUEUING ANALYSIS - SIGNALIZED INTERSECTION

Project Name: 07175 - Holiday Inn Express
 Analyst: GAJ
 Date: 10/22/2007
 Intersection: Willamette Falls Drive/10th Street
 Time Period: AM Peak Hour
 Scenario: BK + ST Cond

DATA ENTRY

Cycle Length: 60 sec
 Storage per Vehicle: 25 feet

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume:	250	107			663					84		
Green Time:	11.5	41.3			25.8					10.7		
Yellow Time:	4	4			4					4		
Number of Lanes:	1	1			1					1		

Volume: 221 vph
 Green Time: 10.7 sec
 Yellow Time: 4 sec
 Number of Lanes: 1

CALCULATIONS

Average Total Queue:	3.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	2.8
95 th Percentile Queue:	6	2	#N/A	#N/A	10	#N/A	#N/A	#N/A	#N/A	3	#N/A	6
95 th Percentile Queue Length:	150	50	#N/A	#N/A	250	#N/A	#N/A	#N/A	#N/A	75	#N/A	150
Required Storage per Lane:	150	50	#N/A	#N/A	250	#N/A	#N/A	#N/A	#N/A	75	#N/A	150



QUEUEING ANALYSIS - SIGNALIZED INTERSECTION

Project Name: 07175 - Holiday Inn Express

Analyst: GAJ

Date: 10/22/2007

Intersection: Willamette Falls Drive/10th Street

Time Period: PM Peak Hour

Scenario: BK + ST Cond

DATA ENTRY

Cycle Length: 60 sec

Storage per Vehicle: 25 feet

Volume:

Green Time:

Yellow Time:

Number of Lanes:

	Eastbound			Westbound			Northbound			Southbound			
	L	T	R	L	T	R	L	T	R	L	T	R	
Volume:	524	714			364					194			375
Green Time:	23.5	44.1			16.6					17.9			17.9
Yellow Time:	4	4			4					4			4
Number of Lanes:	1	1			1					1			1

CALCULATIONS

Average Total Queue:

95th Percentile Queue:

95th Percentile Queue Length:

Required Storage per Lane:

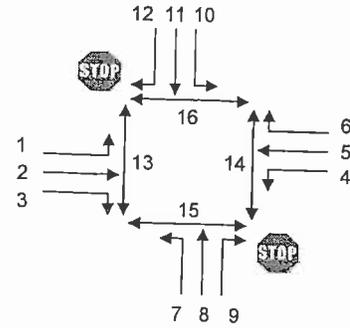
4.7	2.4	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	4.0
8	5	#N/A	#N/A	7	#N/A	#N/A	#N/A	#N/A	#N/A	5	#N/A	7
200	125	#N/A	#N/A	175	#N/A	#N/A	#N/A	#N/A	#N/A	125	#N/A	175
200	125	#N/A	#N/A	175	#N/A	#N/A	#N/A	#N/A	#N/A	125	#N/A	175

A-149

Maximum Queue Lengths at Unsignalized Intersections

Major St: Willamette Falls Drive
 Minor St: Site Access
 Scenario: BK + ST Cond
 AM Peak

	Moves	Inputs			Results		Validation
		Lanes	Va	Vc	Max Queue		
Major St	1	0	24	725	1.67	2	
	2	1	195				
	3	0	0				
	4	0	0	195	#NUM!	x	
	5	1	723				
	6	0	2				
Minor St	7	0	0	975	x	x	
	8	0	0	968	-1.90	0	
	9	0	0	195	x	x	
	10	0	1	967	x	x	
	11	1	0	967	5.24	5	
	12	0	15	724	x	x	
Pedestrian	13	0	0				
	14	0	0				
	15	0	0				
	16	0	0				
Speed (mph)	25						
PHF	0.89						
TS	0	No signal located within 1/4 mile of the intersection on Major St.					



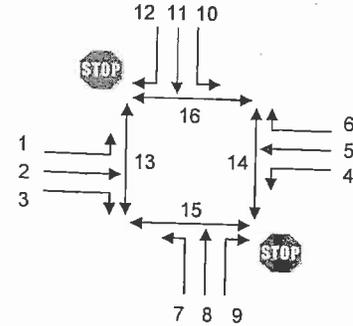
"Study" indicates that the calculated queue length is out of the field observed data ranges.

Maximum Queue Length Estimation based on John T. Gard's article
 "Estimation of Maximum Queue Lengths at Unsignalized Intersections", ITE Journal / Nov. 2001

Maximum Queue Lengths at Unsignalized Intersections

Major St: Willamette Falls Drive
 Minor St: Site Access
 Scenario: BK + ST Cond
 PM Peak

	Moves	Inputs			Results		Validation
		Lanes	Va	Vc	Max Queue		
Major St	1	0	20	383	1.45	2	
	2	1	904				
	3	0	0				
	4	0	0	904			
	5	1	381		#NUM!	x	
	6	0	2				
Minor St	7	0	0	1335	x	x	
	8	0	0	1327	2.07	2	
	9	0	0	904	x	x	
	10	0	1	1326	x	x	
	11	1	0	1326	9.87	10	
	12	0	18	382	x	x	
Pedestrian	13	0	0				
	14	0	0				
	15	0	0				
	16	0	0				
Speed (mph)	25	No signal located within 1/4 mile of the intersection on Major St.					
PHF	0.96						
TS	0						



"Study" indicates that the calculated queue length is out of the field observed data ranges.

Maximum Queue Length Estimation based on John T. Gard's article
 "Estimation of Maximum Queue Lengths at Unsignalized Intersections", ITE Journal / Nov. 2001



Oregon

Theodore R. Kulongoski, Governor

Department of State Lands

775 Summer Street NE, Suite 100

Salem, OR 97301-1279

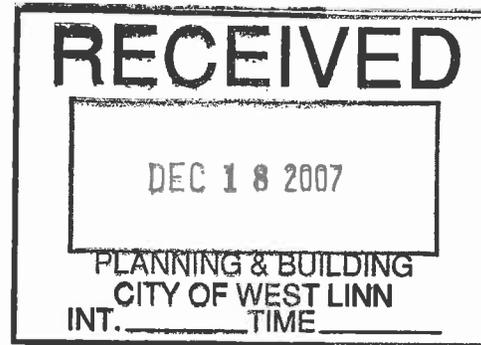
(503) 378-3805

FAX (503) 378-4844

www.oregonstatelands.us.

December 13, 2007

Manish Patel
VKNW, Inc.
12700 SE McLoughlin Blvd.
Milwaukie, OR 97222



State Land Board

Theodore R. Kulongoski
Governor

Bill Bradbury
Secretary of State

Re: Wetland Delineation Report for Willamette Falls Drive Proposed Hotel Site, West Linn, Clackamas County, T2S R1E Sec. 35D, Tax Lot 2000 and Sec. 35DD, Tax Lots 3400 and 3500 Including Vacated Willamette Falls Drive Right-of-Way Between Tax Lots; WD #06-0708

Randall Edwards
State Treasurer

Dear Mr. Patel:

The Department of State Lands has reviewed the wetland delineation report prepared by Schott and Associates for the site referenced above. Based on the information presented in the report, we concur with the wetland and waterway boundaries as mapped in Figure 3 of the report. Within the study area, 2 wetland units were identified, totaling 0.25 acres. A waterway flows within the mapped wetlands. The wetlands and waterway are subject to the permit requirements of the state Removal-Fill Law. A state permit is required for fill or excavation of 50 cubic yards or more in a wetland area or below the ordinary high water line of a waterway.

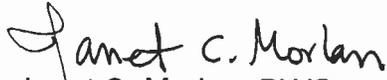
This concurrence is for purposes of the state Removal-Fill Law only. Federal or local permit requirements may apply as well. The Army Corps of Engineers will review the report and make a determination of jurisdiction for purposes of the Clean Water Act at the time that a permit application is submitted. We recommend that you attach a copy of this concurrence letter to both copies of any subsequent joint permit application to speed application review.

Please be advised that state law establishes a preference for avoidance of wetland impacts. Because measures to avoid and minimize wetland impacts may include reconfiguring parcel layout and size or development design, we recommend that you work with Department staff on appropriate site design before completing the city or county land use approval process. The permit coordinator for this site is Mike McCabe.

This concurrence is based on information provided to the agency. The jurisdictional determination is valid for five years from the date of this letter, unless new information necessitates a revision. Circumstances under which the Department may change a determination and procedures for renewal of an expired determination are found in OAR 141-090-0045 (available on our web site or upon request). The applicant, landowner, or agent may submit a request for reconsideration of this determination in writing within 60 calendar days of the date of this letter.

Thank you for having the site evaluated. Please phone me at (503) 986-5236 if you have any questions.

Sincerely,



Janet C. Morlan, PWS
Wetlands Program Manager

cc: Dale Gulliford, Schott and Associates
City of West Linn, Planning Department (Maps enclosed for updating LWI)
James Holm, Corps of Engineers
Mike McCabe, DSL

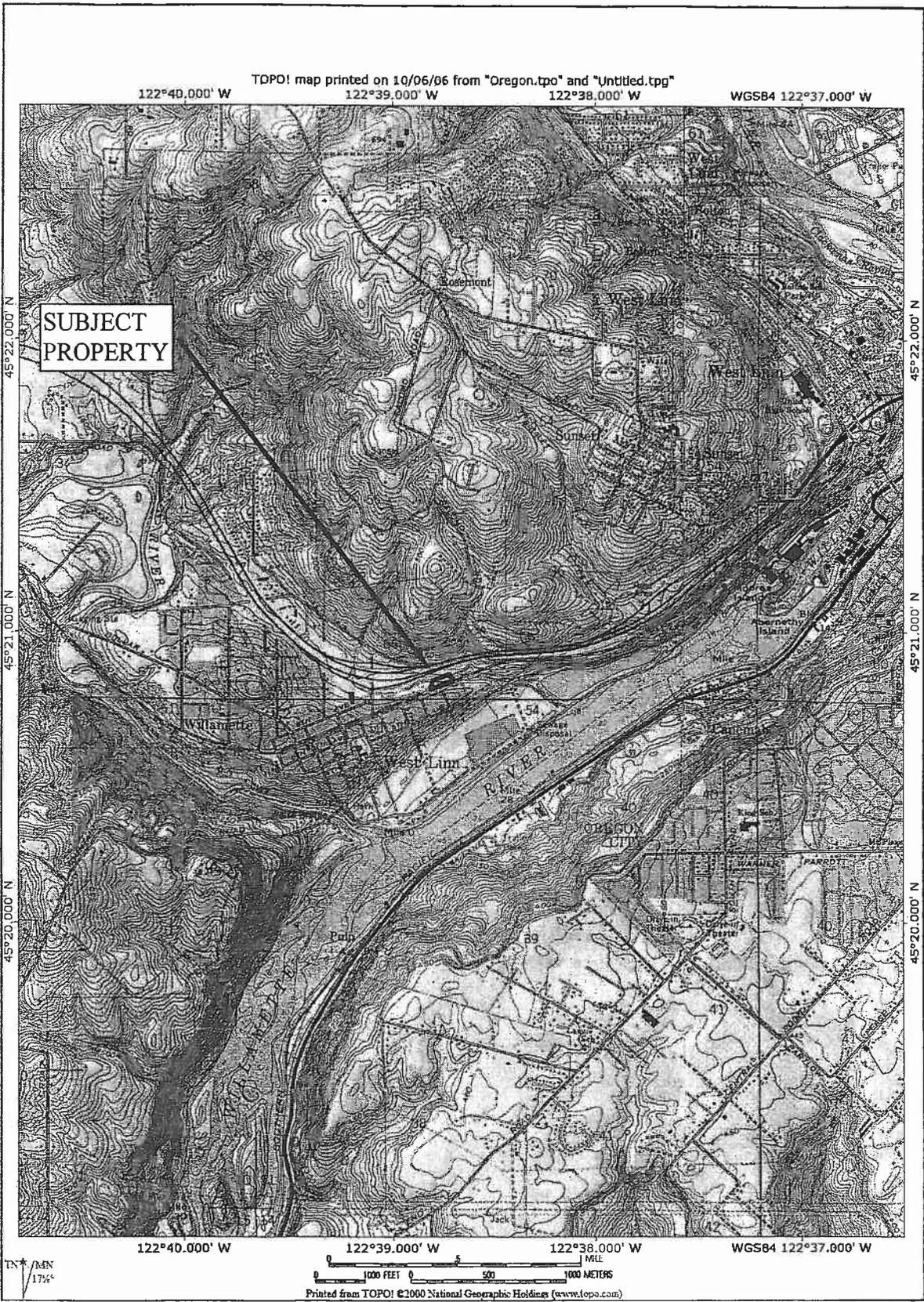
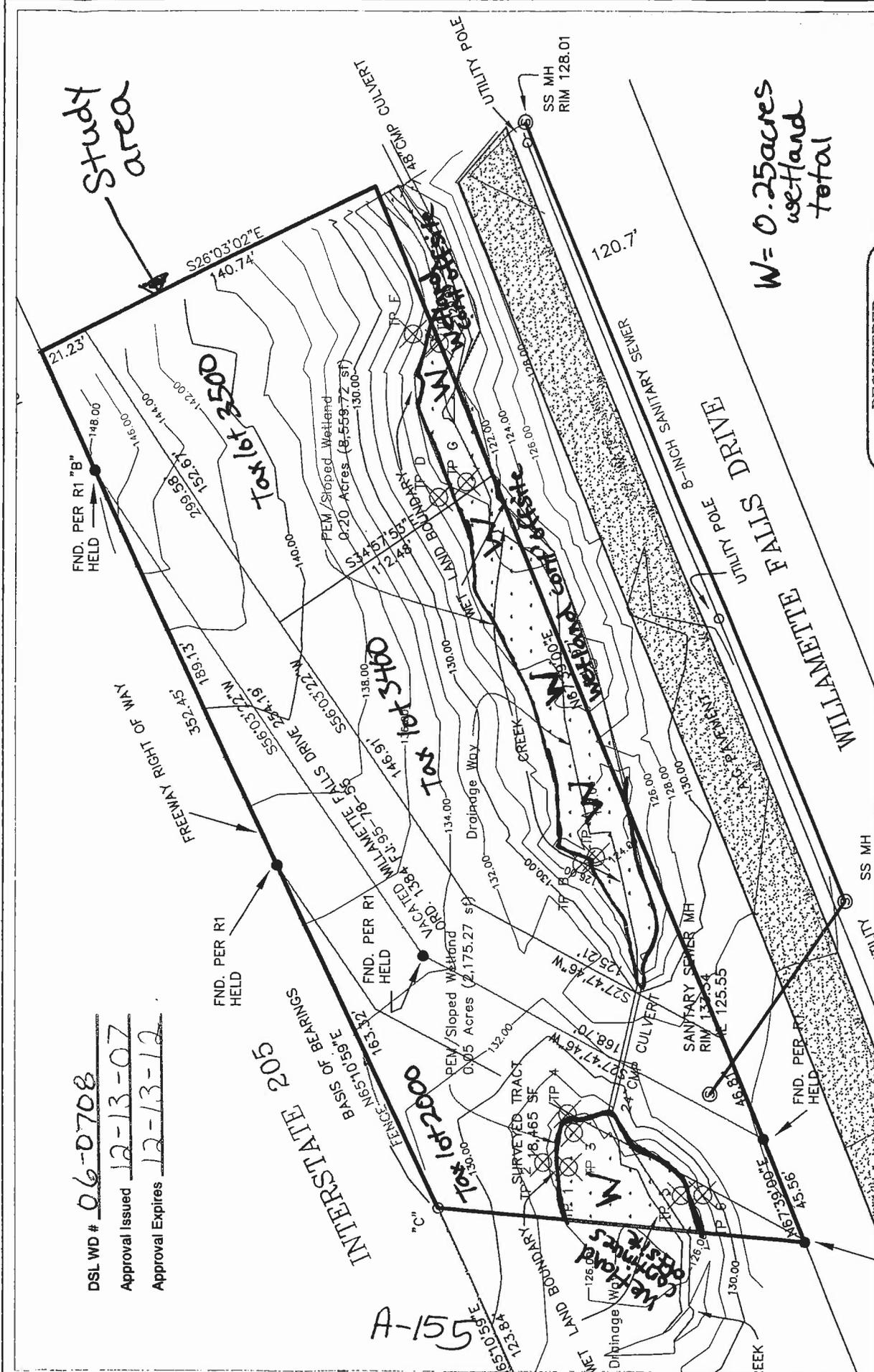


Figure 1: Topographic Map
 Holiday Inn Property – West Linn, OR

Schott & Associates
 P.O. Box 589
 Aurora, OR. 97002
 503.678.6007

A154

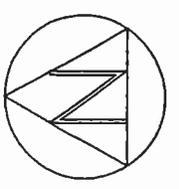


Study area

W = 0.25 acres
"wetland total"

DSL WD # 06-0708
 Approval Issued 12-13-07
 Approval Expires 12-13-12

Wetland map and survey provided by Burton Engineering (PLS).



SCALE
 1" = 60'

FIGURE 3: EXISTING CONDITION MAP - Project # 1920

Registration	
Design Team	
Design	
Drawn	
Checked	
SPE Project No.	
Client Project No.	
Client	

Vic Patel
12700 SE McLoughlin
Milwaukie, OR 97222

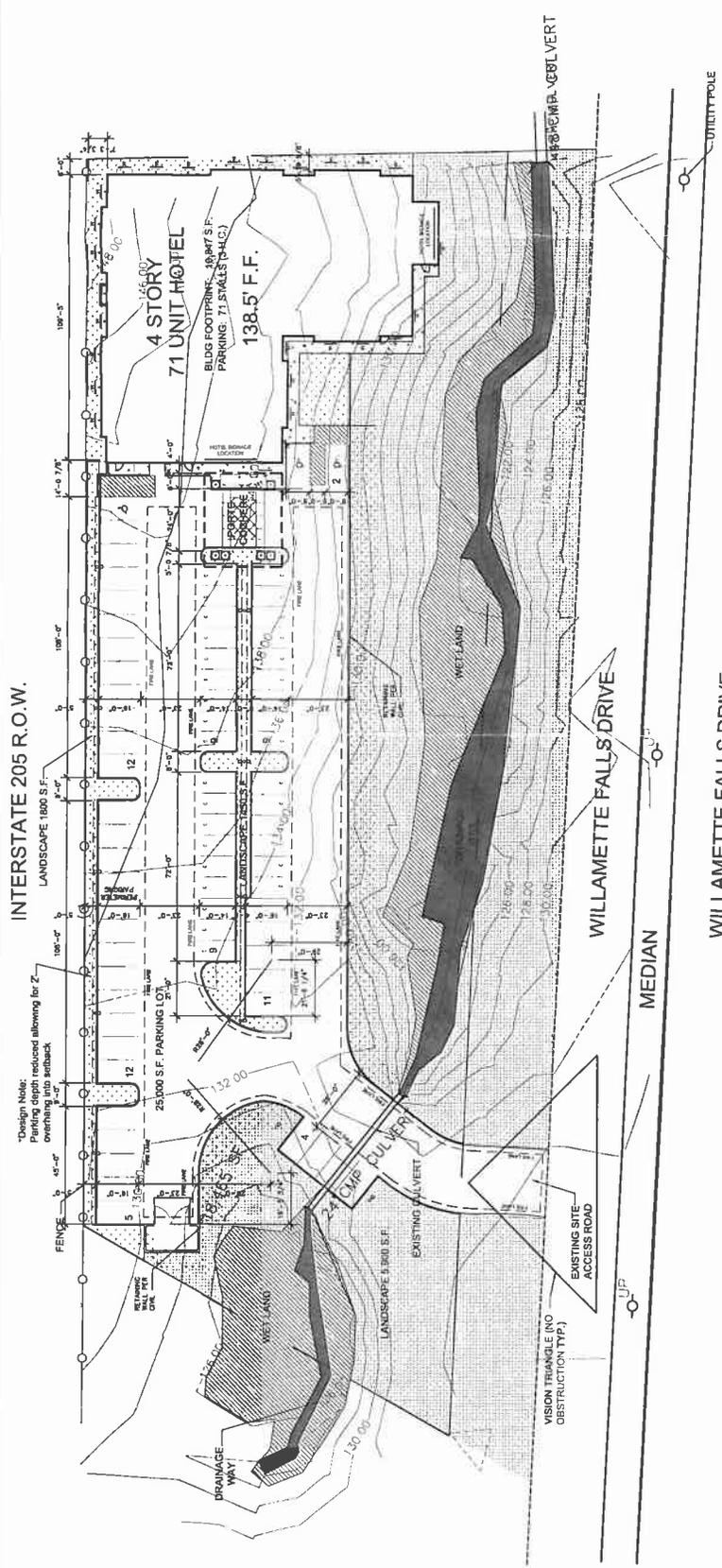
PROJECT
HOLIDAY INN EXPRESS
2400 Block Willamette Falls Drive
WEST LINN, OR 97068

NO. DATE DESCRIPTION
10-17-07 FRANCHISE SUBMITAL

SHEET TITLE
SITE PLAN

DATE
01/11/08
DRAWN BY
VP
CHECKED BY
VP
SCALE
AS SHOWN
SHEET NO.
A0.1

PERMIT



INTERSTATE 205 R.O.W.
LANDSCAPE 1800 S.F.

WILLAMETTE FALLS DRIVE

7TH STREET

LEGEND

[Symbol]	WETLAND BUFFER (NO WORK ON DISTURBED)
[Symbol]	WETLAND BUFFER RESTORATION (40% REPAIR REQUIRED)
[Symbol]	LANDSCAPING PER LANDSCAPE PLAN
[Symbol]	DRAINAGE WAY
[Symbol]	WINDOW LOCATION
[Symbol]	DOOR LOCATION
[Symbol]	LIGHT POST

LANDSCAPING

INTERIOR PARKING LOT REQUIRED = 25,000 S.F. X 1.0% = 2,500 S.F.
WETLAND BUFFER REQUIRED = 10,847 S.F. X 1.0% = 1,085 S.F.
WETLAND RESTORATION REQUIRED = 10,847 S.F. X 1.0% = 1,085 S.F.
LANDSCAPING REQUIRED = 1,085 S.F. X 1.0% = 108 S.F.
TOTAL LANDSCAPING REQUIRED = 3,673 S.F.
LANDSCAPING PROVIDED = 71 STALLS
CITY WILLAMETTE TRACTS MAPS 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

SCALE: 1" = 20'-0"

SITE PLAN

A0.1

