



proud past, promising future

## COMMUNITY PLANNING

### Planning Commission Recommendation to the Clark County Board of County Commissioners

**FROM:** Steve Morasch, Chair  
Valerie Uskoski, Vice-Chair

**DATE:** November 6<sup>th</sup>, 2014

**SUBJECT:** CPZ2014-00005 Fifth Plain Creek

**RECOMMENDATION:** Reclassify roads in the Arterial Atlas

**PURPOSE:** This memorandum outlines the proposal before the Board of County Commissioners (BoCC), background on the project, public comments, planning review criteria, and the recommendation from Planning Commission.

**PROPOSED ACTION:** The proposal is as follows:

- NE 88<sup>th</sup> St., from NE Ward Rd to NE 182<sup>nd</sup> Ave., from a two-lane Rural Major Collector (R-2) to a two-lane Urban Collector with center turn-lane and bike lane (C-2cb).
- The portion of NE 83<sup>rd</sup> St, from NE 78<sup>th</sup> Street to the edge of the Urban Growth Boundary on the East, from Rural Minor Collector (Rm-2) to a two-lane Urban Collector with bike lanes (C-2b).
- NE 182<sup>nd</sup> Ave., from NE 88<sup>th</sup> Street to NE Fourth Plain Road, from a Rural Major Collector (R-2) to two-lane Urban Collector with center turn-lane and bike lane (C-2cb).
- A map of the affected roads and the proposed cross-sections are attached to this staff report and is found in Exhibit 1.

**BACKGROUND:** The Board lifted urban holding in the Fifth Plain Creek area, as part of the 2013 docket process (CPZ 2013-00007 Fifth Plain Creek). This current docket item is a follow-up to last year's action to lift urban holding to ensure roads are built to urban development standards when it occurs. The re-designation of the above roads to urban standards facilitates development in this area, per the comprehensive plan. The three streets listed above currently have rural designations and this proposal simply involves changing the road designations to urban road designations. No new roads are proposed and no construction is proposed with this docket item.

One primary issue that has arisen for this area is the extension of NE 83<sup>rd</sup> Street, which would extend from the existing NE 83<sup>rd</sup> Street westward through the Monet's Garden subdivision, and connect to the existing NE 78<sup>th</sup> Street, adjacent to Frontier Middle School and Pioneer Elementary School. And NE 78<sup>th</sup> Street, the short section in front of Frontier Middle School, is located within the City of Vancouver. NE 78<sup>th</sup> Street in Vancouver is designated as a minor arterial, which is the street design that most closely approximates the county's designation of a two-lane collector (C-2). The NE 83<sup>rd</sup> Street extension has been on the Clark County Arterial

Atlas since 1998. The Planning Commission voted to recommend the road be classified as a C-2b to allow bike lanes and prohibit parking. In their deliberations, they said the C-2b would be more appropriate for the neighborhood than C-2 because parking would be prohibited.

When the Monet's Garden rural cluster went through the land development process, the developer was required to dedicate 60' of right-of-way for the future extension of NE 83<sup>rd</sup> Street; therefore, more land is not required to improving NE 83<sup>rd</sup> Street to the proposed C-2b standard. In addition, the future road location was required to be included on the recorded plat. The plan is for NE 83<sup>rd</sup> Street to be extended and connect west to the existing NE 78<sup>th</sup> Street. A copy of the Monet's Garden plat is attached to this staff report in Exhibit 2. The proposed changes will only ensure that when NE 83<sup>rd</sup> Street is constructed, that it will be built to urban standards.

NE 83<sup>rd</sup> Street is classified as a collector and will facilitate circulation of local traffic. The extension of NE 83<sup>rd</sup> Street provides circulation in the Fifth Plain Creek area; it will help carry traffic from the increased traffic volumes due to land development, and it will improve safety because it will provide an alternative route to the existing roads. It will provide a direct connection between future neighborhoods and the schools located to the west of the area.

Since concerns have been raised, the county had DKS study the proposed extension of NE 83<sup>rd</sup> Street and a copy of this report is attached to this staff report in Exhibit 3. The DKS traffic study, in summary, shows that the proposed NE 83<sup>rd</sup> Street extension serves local traffic as was envisioned in the arterial atlas. The traffic study indicates that the proposed road extension also assists in moving local traffic to the arterial streets and helps minimize cut-through traffic on the local street system.

### **GENERAL INFORMATION:**

**Location:** Fifth Plain Creek area: The general vicinity includes NE Ward Road to the west, NE Fourth Plain Boulevard on the south side, and the urban growth boundary borders the east side.

**Existing land use designations:** Properties south and west of the proposed arterial atlas amendments are zoned for low-density residential (R1-10 and R1-20) and properties to the east of the proposed arterial atlas amendments are located outside the urban growth boundary and zoned for agriculture (AG-20).

### **SUMMARY OF COMMENTS RECEIVED**

The Washington State Department of Transportation (WSDOT) submitted a letter of support of this docket item. The reason indicated for supporting this arterial atlas amendment is that the local roads will reduce traffic demands on the state road system. The letter can be found in Exhibit 4 of this staff report.

Staff held an open house regarding the proposed arterial atlas amendments on Tuesday, April 1<sup>st</sup> at the Sifton Fire Station from 6:30-8:30 PM. Approximately 20 people attended the open house and fifteen people signed the sign-in sheets. Their comments can be found in Exhibit 5 of this staff report.

Since a SEPA issue was done for last year's docket item for Fifth Plain Creek urban holding lifting, it was determined that last year's SEPA review covered this docket item; therefore, no SEPA was issued this year's docket because it was not needed.

Staff received an email from Randy Printz questioning the need for the extension and it is Exhibit 6 of this staff report. His email was shared with Planning Commission. As previously mentioned NE 83<sup>rd</sup> Street was placed on the arterial atlas in 1996 and right-of-way was dedicated for this future road. The road would provide local circulation for the future residences and a direct, east-west connection between residences and the school.

Per last year's lifting of urban holding, a \$1 million project was placed on the Capital Facilities Plan for the intersection of NE 182<sup>nd</sup> Avenue and NE Fourth Plain Boulevard.

Staff received email from a local property owner named Steven Douglass and his email is Exhibit 7 of this staff report. He was concerned that right-of-way would be taken from either his property or his neighbor's property on NE 88<sup>th</sup> Street. NE 88<sup>th</sup> Street is currently designated as a two-lane Rural Major Collector, or R-2. The proposed designation for NE 88<sup>th</sup> Street is a C-2cb is 70'. NE 88<sup>th</sup> Street currently has approximately 60' of right-of-way. The road would be improved through future development and right-of-way dedication would be determined during development review. The property north of NE 88<sup>th</sup> Street, between NE 182<sup>nd</sup> Avenue and NE Ward Road, is located outside the urban growth boundary and would not trigger frontage improvements.

Lori Griffith, a local property owner, submitted emails showing her support for the proposal. Her comments can be found in Exhibit 8 of this staff report.

Brian Mooer's, a Monet's Garden property owner, submitted an email regarding the proposal. He expressed concern regarding losing property for the future road. His property backs onto NE 88<sup>th</sup> Street, where additional right-of-way should not be required. In addition, it is unlikely this section of NE 88<sup>th</sup> Street would be upgraded in the near future since the property north of NE 88<sup>th</sup> Street in this section is located outside the urban growth boundary. His comments can be found in Exhibit 9 of this staff report.

### **APPLICABLE CRITERIA, EVALUATION OF REQUEST AND FINDINGS**

In order to comply with the Plan Amendment Procedures in the Clark County Unified Development Code (UDC 40.560.010), requests to amend the Arterial Atlas must meet all of the criteria in Section N.

The Unified Development Code (UDC 40.560.010 N) delineates specific criteria that apply to Arterial Atlas amendments.

- a. There a need for the proposed change.
- b. The proposed change is compliant with the Growth Management Act
- c. The proposed change is consistent with the adopted comprehensive plan, including the land use plan and the rest of the Arterial Atlas.
- d. The proposed change is consistent with applicable interlocal agreements; and
- e. The proposed change does not conflict with the adopted Metropolitan Transportation Plan

### **CRITERIA FOR ARTERIAL ATLAS AMENDMENTS**

- a. **There a need for the proposed change.**

Finding: With last year's lifting of urban holding in the Fifth Plain Creek Area, property will now be developed to urban standards and therefore increase potential trip generation. A change is needed to ensure that the roads are properly classified to urban standards so the roads are constructed to support traffic for future development.

**b. The proposed change is compliant with the Growth Management Act.**

The GMA goals set the general direction for the county in adopting its framework plan and comprehensive plan policies. The most pertinent GMA goals that apply to this proposal are Goals 3 and 12

*(3) Transportation. Encourage efficient multimodal transportation systems that are based on regional priorities and coordinated with county and city comprehensive plans.*

*(12) Public Facilities and Services. Ensure that those public facilities and services necessary to support development shall be adequate to serve development at the time the development is available for occupancy and use without decreasing current service levels below locally established minimum standards.*

Finding: Changing the three subject roads, including the future extension of NE 83<sup>rd</sup> Street, to compatible urban road designations will implement the County's Comprehensive Plan and also the changed road classifications will ensure that future development have adequate transportation facilities that support future development in this area.

**c. The proposed change is consistent with the adopted comprehensive plan, including the land use plan and the rest of the Arterial Atlas.**

The Clark County Comprehensive Plan contains many policies that guide urban form and efficient land use patterns. The most relevant goals and policies applicable to this application are as follows:

*Chapter 5 Transportation Element*

*GOAL: Develop a regionally-coordinated transportation system that supports and is consistent with the adopted land use plan.*

*GOAL: Ensure mobility throughout the transportation system.*

Finding: This proposal contributes to the development and improvement of an interconnected transportation system. The proposed functional classification of urban street designations supports both access and mobility, and is integrated with the land use plan as well as the Arterial Atlas.

**d. The proposed change is consistent with applicable interlocal agreements; and**

Finding: There are no interlocal agreements which directly apply to this proposal.

**e. The proposed change does not conflict with the adopted Metropolitan Transportation Plan.**

Finding: The urban street designations will help preserve an acceptable traffic circulation for the land where urban holding was lifted last year in the Fifth Plain Creek area.

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**PLANNING COMMISSION RECOMMENDATION:**

Planning Commission heard this matter at a duly advertised public hearing on October 16, 2014. The Planning Commission voted 6 to 0 to recommended approval for reclassifying the roads as staff recommended, with the exception of re-classifying NE 83<sup>rd</sup> Street to a C-2b instead of a C-2.

Their recommendation is summarized as follows:

- NE 88<sup>th</sup> St., from NE Ward Rd to NE 182<sup>nd</sup> Ave., from a two-lane Rural Major Collector (R-2) to a two-lane Urban Collector with center turn-lane and bike lane (C-2cb).
- The portion of NE 83<sup>rd</sup> St, from NE 78<sup>th</sup> Street to the edge of the Urban Growth Boundary on the East, from Rural Minor Collector (Rm-2) to a two-lane Urban Collector with bike lanes (C-2b).
- NE 182<sup>nd</sup> Ave., from NE 88<sup>th</sup> Street to NE Fourth Plain Road, from a Rural Major Collector (R-2) to two-lane Urban Collector with center turn-lane and bike lane (C-2cb).

### **RECOMMENDATION SUMMARY**

The following table lists the applicable criteria and summarizes the findings of the staff report for Arterial Atlas Amendment Case # CPZ2014-00005. The Planning Commission findings were added to the table after public deliberation.

<b>COMPLIANCE WITH APPLICABLE CRITERIA</b>	<b>Criteria Met?</b>	
	<b>Staff Report</b>	<b>Planning Commission Findings</b>
<b>Criteria for Arterial Atlas Changes</b>		
<b>1. Need for Change</b>	Yes	Yes
<b>2. Compliance with GMA</b>	Yes	Yes
<b>3. Consistency with the adopted Comprehensive Plan</b>	Yes	Yes
<b>4. Consistency with applicable interlocal agreements</b>	Yes	Yes
<b>5. Consistency with adopted MTP</b>	Yes	Yes
<b>Recommendation:</b>	<b>Approve</b>	<b>Approve</b>

### **EXHIBITS:**

- Exhibit 1: Map of affected roads and Arterial Atlas cross-sections
- Exhibit 2: Monet's Garden recorded plat map
- Exhibit 3: DKS Traffic Study
- Exhibit 4: WSDOT letter
- Exhibit 5: Typed comments from April 1, 2014 open house
- Exhibit 6: Randy Printz letter
- Exhibit 7: Steven Douglass email
- Exhibit 8: Lori Griffiths comments
- Exhibit 9: Brian Moer's email

Legend

Urban Growth Area(UGA) Boundary 

City Limits 

Arterial 

Public Road 

Private 

Incorporated 

Urban Growth Area 

Unincorporated 

Arterial Classification

C-2 

C-2b 

C-2cb 

Local 

M-2cb 

M-4b 

M-4c 

M-4cb 

Nbr 

Pa-4cb 

Pr-2cb 

Pr-4cb 

Pr-6c 

Pr-6cb 

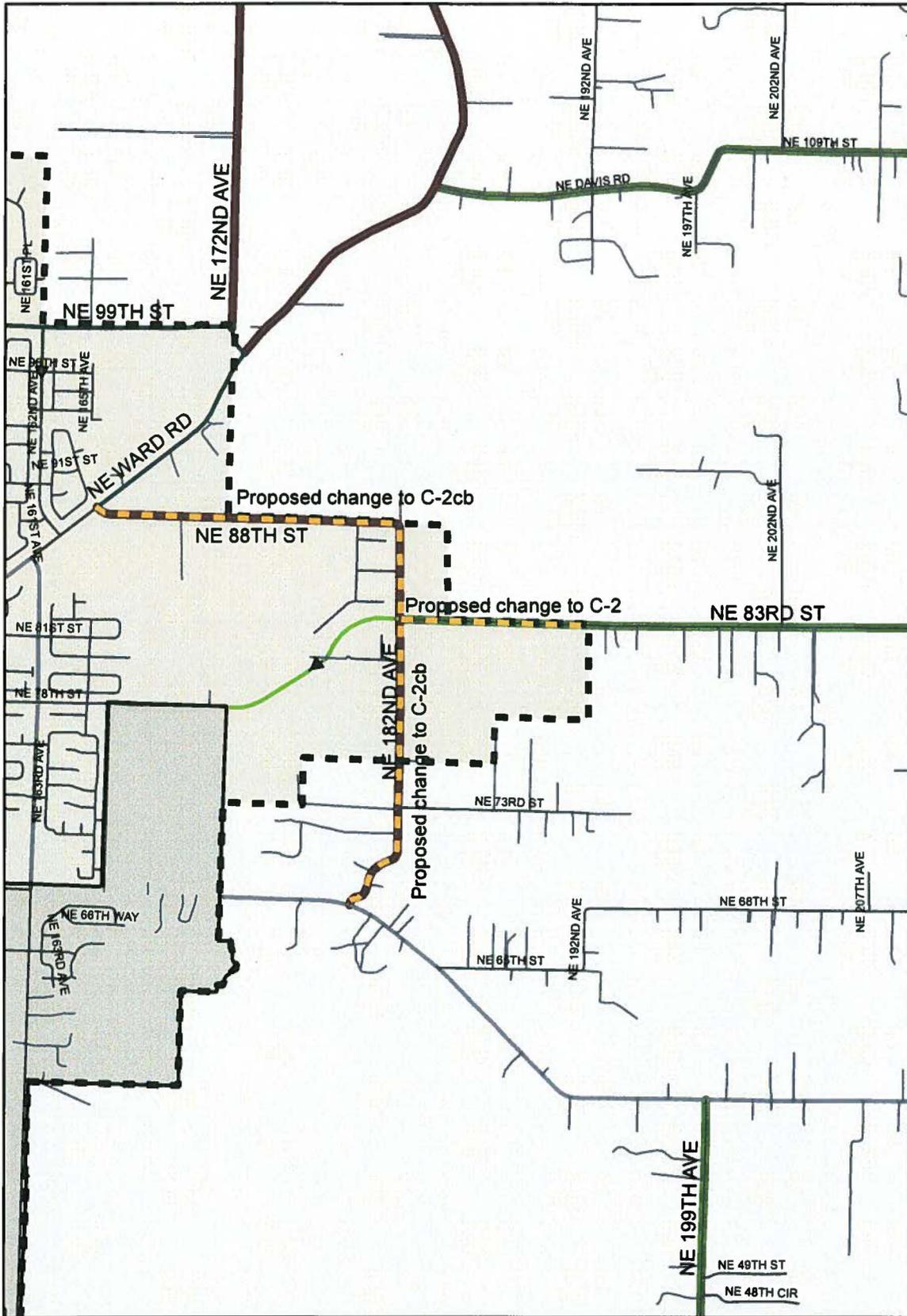
Proposed 

R-2 

Rm-2 

S 

W 



Prepared by Community Planning

NOTE: Information shown on this map was collected from several sources. Clark County accepts no responsibility for any inaccuracies that may be presented.

OPEN HOUSE - APRIL 1, 2014

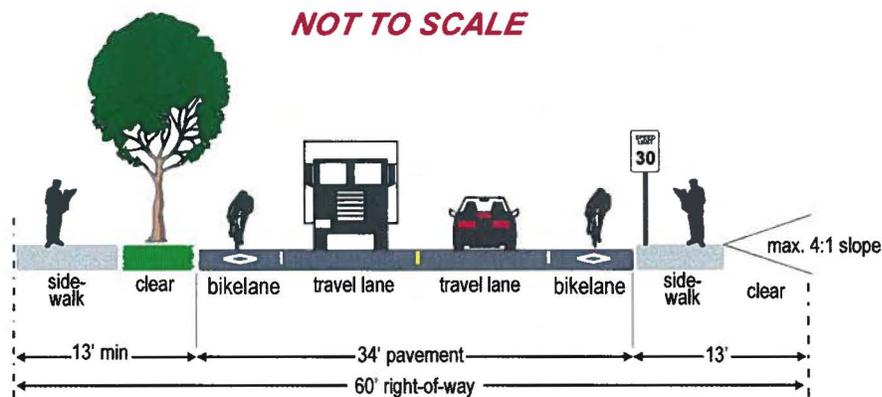
## 2-lane Collector with bike lanes

C-2b

Collector streets connect local traffic to arterial roads. Access to abutting properties and parking is controlled through the use of raised channelization, driveway spacing, and pavement markings. Typically, collectors are not continuous for any great length, nor do they form a network by themselves. Fixed route transit service is low while bicycling and pedestrian activity ranges from moderate to high.

Photo unavailable.

For technical specifications, refer to Chapter 40.350.030, Clark County Code



Street Width:	34 ft.
Right-of-way:	60 ft.
Design Volume:	2,000 to 12,000 vehicles per day
Design Speed:	35 MPH
Typical Posted Speed:	30 MPH
Maximum Grade:	7 to 10 percent
Cross Streets:	Min. 275 ft. separation

## C-2cb

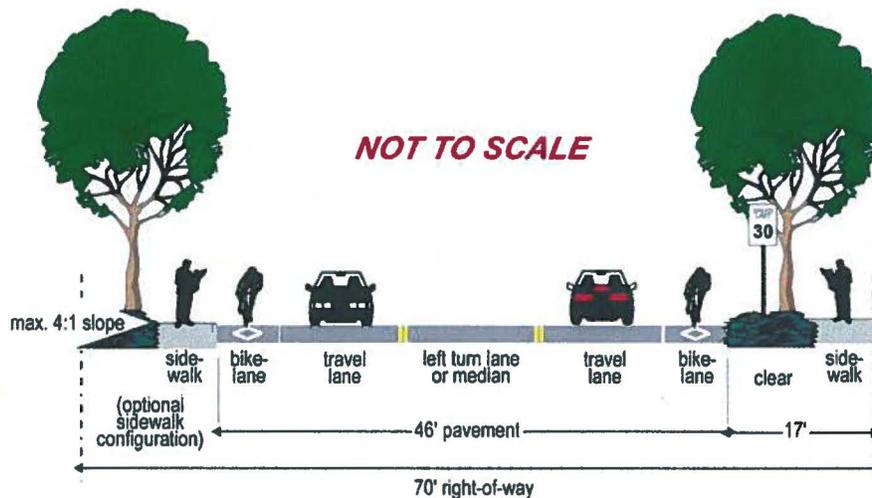
## 2-lane Collector with CLT &amp; bike lanes



Collector streets connect local traffic to arterial roads. Access to abutting properties and parking is controlled through the use of raised channelization, driveway spacing, and pavement markings. Typically, collectors are not continuous for any great length, nor do they form a network by themselves. Fixed route transit service is low while bicycling and pedestrian activity ranges from moderate to high.

Left: NE 88th Street

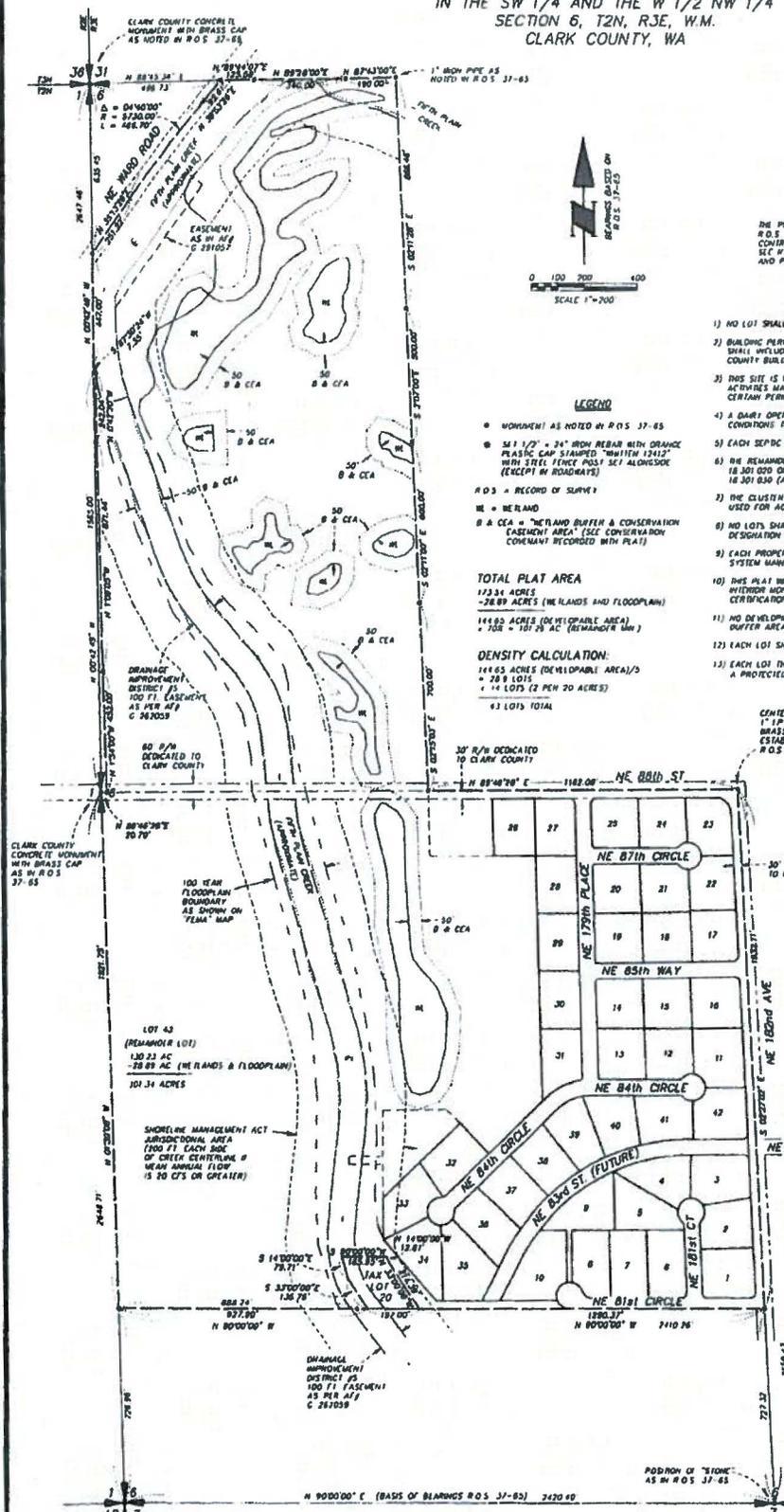
For technical specifications, refer to Chapter 40.350.030, Clark County Code



<b>Street Width:</b>	46 ft.
<b>Right-of-way:</b>	70 ft.
<b>Design Volume:</b>	<16,000 vehicles per day
<b>Design Speed:</b>	35 MPH
<b>Typical Posted Speed:</b>	30 MPH
<b>Maximum Grade:</b>	7 to 10 percent
<b>Cross Streets:</b>	Min. 275 ft. separation

# MONET'S GARDEN

FORMERLY KNOWN AS SI ELLEN ESTATES  
IN THE SW 1/4 AND THE W 1/2 NW 1/4  
SECTION 6, T2N, R3E, W.M.  
CLARK COUNTY, WA



**NARRATIVE**

THE PERIMETER OF THIS PLAT HAS ESTABLISHED AND MONUMENTED IN R.O.S. 37-65. CORNERS WILL BE SET RADIALY FROM THE RANDOM CONTROL TRAVERSE POINTS REMAINING FROM THAT WORK. SEE R.O.S. 37-63 FOR ROAD ESTABLISHMENT DATA, SECTION SUBDIVISION AND PERIMETER DETAILS.

- NOTES**
- NO LOT SHALL ACCESS DIRECTLY ONTO PROPOSED NE 81ST STREET
  - BUILDING PERMITS WHICH ARE ISSUED FOR CONSTRUCTION ON THE LOTS SHOWN ON THIS PLAT SHALL INCLUDE AN APPROVED ENGINEER CONTROL PLAN WHICH IS ON FILE WITH THE CLARK COUNTY BUILDING DEPARTMENT.
  - THIS SITE IS HIGH DESIGNATED AGRICULTURAL LAND ON WHICH A VARIETY OF COMMERCIAL ACTIVITIES MAY OCCUR THAT ARE NOT COMPATIBLE WITH RESIDENTIAL DEVELOPMENT FOR CERTAIN PERIODS OF LIMITED DURATION.
  - A BARN OPERATION ON THE REMAINDER PARCEL MAY RESULT IN ADVERSE LOOKS OF OTHER CONDITIONS THAT MAY BE INCOMPATIBLE WITH RESIDENTIAL USE.
  - EACH SEPTIC SYSTEM SHALL BE ON THE SAME LOT THAT IT SERVES.
  - THE REMAINDER LOT SHALL BE USED ONLY FOR THE USES PERMITTED OUTSIDE IN SECTION 18.301.020 OF THE CLARK COUNTY CODE AND THOSE CONDITIONAL USES LISTED IN SECTION 18.301.030 (A, C, AND E) OF THE CLARK COUNTY CODE.
  - THE CLUSTER LOTS SHALL HAVE A MINIMUM FRONT YARD SETBACK OF 25 FEET AND BUILDINGS USED FOR AGRICULTURAL PURPOSES SHALL HAVE A MINIMUM SIDE YARD SETBACK OF 50 FEET.
  - NO LOTS SHALL BE FURTHER DIVIDED OR RELINQUISHED IN SIZE UNTIL SUCH TIME AS THE ZONING DESIGNATION MAY BE CHANGED TO ALLOW A MORE INTENSIVE USE OF DENSITY.
  - EACH PROPERTY OWNER IS REQUIRED TO PARTICIPATE IN A MANDATORY ON-SITE SEWAGE SYSTEM MAINTENANCE PROGRAM.
  - THIS PLAT WILL BE POST MONUMENTED IN COMPLIANCE WITH CLARK COUNTY CODE 11.01.010. INTERIOR MONUMENTS TO BE SET AFTER RECORDING ARE CLAIMED BY A DEVELOPER'S CERTIFICATION OF POSSESSION.
  - NO DEVELOPMENT SHALL OCCUR WITHIN THE WETLANDS OR WETLAND BUFFERS. THE WETLAND BUFFER AREAS SHALL BE MAINTAINED BY A NATURAL STATE.
  - EACH LOT SHALL BE SERVED BY PUBLIC WATER, CLARK PUBLIC UTILITIES, PURE FOR.
  - EACH LOT THAT DOES NOT COMPLY WITH THE BASIC SOLAR DESIGN STANDARD SHALL HAVE A PROTECTED SOLAR BUILDING LINE.

**LEGEND**

- MONUMENT AS NOTED IN R.O.S. 37-65
- 3/4" x 1/2" x 3/4" IRON REBAR WITH ORANGE PLASTIC CAP STAMPED "WHITEN 12412" WITH STEEL FENCE POST SET ALONGSIDE (EXCEPT IN ROADWAYS)
- R.O.S. = RECORD OF SURVEY
- W.M. = WETLAND
- B & CEA = WETLAND BUFFER AREA (SEE CONSERVATION COVENANT RECORDED WITH PLAT)

**TOTAL PLAT AREA**

173.34 ACRES  
 -28.89 ACRES (WETLANDS AND FLOODPLAIN)  
 144.45 ACRES (DEVELOPABLE AREA)  
 + 708' = 101.26 AC (REMAINDER LOT)

**DENSITY CALCULATION:**

144.45 ACRES (DEVELOPABLE AREA) / 5  
 = 28.89 LOTS  
 + 14 LOTS (2 PER 20 ACRES)  
 = 43 LOTS TOTAL

**DEPARTMENT OF COMMUNITY DEVELOPMENT**  
 APPROVED BY: *M. M. M. 8/2/96*  
 CLARK COUNTY PLANNING DIRECTOR

**COUNTY DEPARTMENT OF PUBLIC WORKS**  
 APPROVED BY: *P. B. B. 8-2-96*  
 CLARK COUNTY ENGINEER

**COUNTY ASSESSOR**  
 THIS PLAT MEETS THE REQUIREMENTS OF RCW, W.A. 80.17.130, LAWS OF WASHINGTON, 1981, TO BE KNOWN AS SI ELLEN ESTATES PLAT NO. 2-2333 IN THE COUNTY OF CLARK, STATE OF WASHINGTON. *8/2/96*

**COUNTY AUDITOR** *8/2/96*  
 ATTEST BY: *8/2/96*  
 COUNTY AUDITOR

**COUNTY COMMISSIONER**  
 APPROVED AND ACCEPTED BY THE BOARD OF COUNTY COMMISSIONERS, COUNTY OF CLARK, STATE OF WASHINGTON, THIS 28th DAY OF *8/2/96*  
*8/2/96* ATTEST: *8/2/96*  
 CHAIR OF THE BOARD CLERK TO THE BOARD

**SOUTHWEST WASHINGTON HEALTH DISTRICT**  
 THIS SUBDIVISION IS APPROVED IN GENERAL ONLY. ALL LAND-USES MUST COMPLY WITH THE RULES & REGULATIONS IN EFFECT AT THE TIME OF IMPLEMENTATION AND/OR PERMIT APPLICATION.  
 AN APPROVED MUNICIPAL PUBLIC WATER SUPPLY SYSTEM IS REQUIRED.  
 AN APPROVED SMALL PUBLIC WATER SUPPLY SYSTEM IS REQUIRED.  
 LOTS IN THIS PLAT MAY BE SERVED BY INDIVIDUAL WATER SYSTEMS SUBJECT TO HEALTH DISTRICT APPROVAL.  
 AN APPROVED PUBLIC SEWER SYSTEM IS REQUIRED.  
 LOTS IN THIS PLAT MAY BE SERVED BY INDIVIDUAL ON-SITE SEWAGE SYSTEMS, SUBJECT TO HEALTH DISTRICT APPROVAL.  
*8/2/96*  
 DISTRICT HEALTH OFFICER DATE

**UTILITY EASEMENT**

AN EASEMENT IS HEREBY RESERVED UNDER AND UPON THE EXTERIOR SIX (6) FEET OF FRONT AND REAR BOUNDARY LINES AND THE EXTERIOR THREE (3) FEET OF SIDE BOUNDARY LINES OF ALL LOTS FOR THE PURPOSES OF LINES, CONDUITING, ROUTING, OPERATING AND MAINTAINING ELECTRICAL, CABLE T.V., TELEPHONE AND SANITARY SEWER SERVICE.

**LAND SURVEYOR'S CERTIFICATE**

I HEREBY CERTIFY THAT THIS PLAT, AS SHOWN, IS A TRUE RETURN FROM THE FIELD AND THAT THE CALCULATION IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.



1" IRON PIPE WITH BRASS CAP AS IN R.O.S. 37-65

PURSUANT TO CHAPTER 18.05 OF THE CLARK COUNTY CODE THE IMPACT FEES FOR SAID PROJECT SHALL BE PAID FOR A PERIOD OF THREE YEARS BEGINNING FROM THE DATE OF PRELIMINARY PLAT APPROVAL, DATED JUNE 11, 1992 AND ENDING ON JUNE 11, 1995. IMPACT FEES FOR PERMITS APPLIED FOR FOLLOWING SAID EXPIRATION DATE SHALL BE CALCULATED USING THE THEN-CURRENT REGULATIONS AND ALL SCHEDULED FEES SHALL BE IMPOSED ON A PER LOT/ACRE BASIS AT THE TIME OF BUILDING PERMIT APPLICATION. THESE FEES DO NOT INCLUDE A NEW HOME/ONE LOT, BUT ARE COLLECTED AS A CONDITION OF INITIAL BUILDING PERMIT ISSUANCE. IMPACT FEES APPLICABLE TO THIS PROJECT ARE AS FOLLOWS:

SCHOOLS DISTRICT EVERETTEN WITH A CURRENT FEE OF \$931 AND HOCHSOWN WITH A CURRENT FEE OF \$1000 PER SINGLE FAMILY UNIT.

**HAGEDORN, INC.**  
 1924 Broadway Way  
 Ph (206) 696-4428

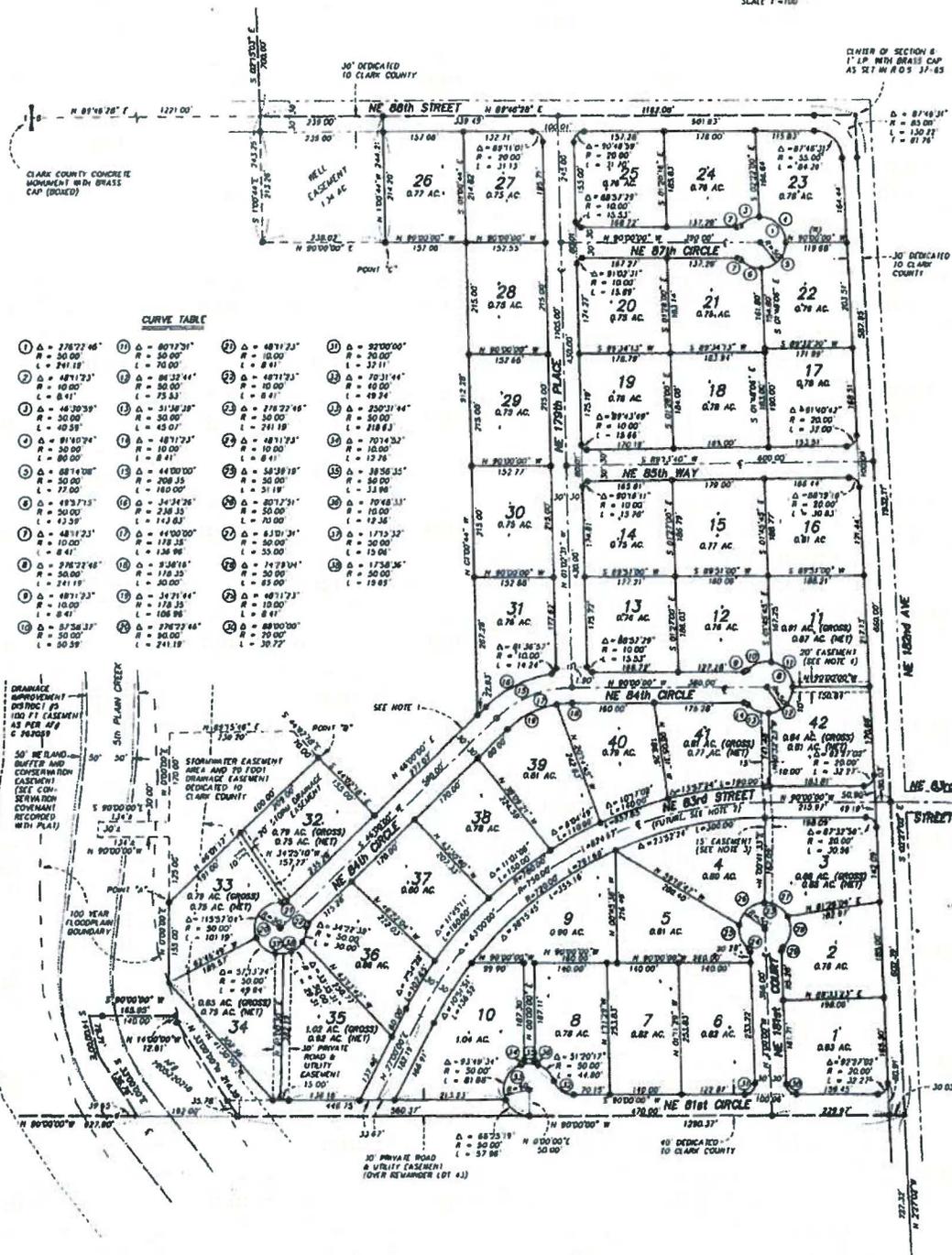
SCALE 1"=200' DATE 8/2/96

# MONET'S GARDEN

FORMERLY KNOWN AS SI ELLEN ESTATES  
IN THE SW 1/4 AND THE W 1/2 NW 1/4  
SECTION 6, T2N, R3E, W4  
CLARK COUNTY, WA

### NARRATIVE

THE PERIMETER OF THIS PLAT WAS ESTABLISHED AND MONUMENTED IN R.O.S. 37-65 CORNERS WILL BE SET RADIALLY FROM THE RANDOM CORNER TRAVEISE POINTS BEGINNING FROM DUA1 HERE



### CURVE TABLE

1) Δ = 276°27'46" R = 50.00' L = 241.18'	11) Δ = 80°12'31" R = 70.00' L = 70.00'	21) Δ = 48°11'23" R = 50.00' L = 81.19'	31) Δ = 32°00'00" R = 20.00' L = 37.11'
2) Δ = 48°11'23" R = 10.00' L = 8.41'	12) Δ = 86°32'44" R = 10.00' L = 75.83'	22) Δ = 48°11'23" R = 10.00' L = 8.41'	32) Δ = 78°31'44" R = 40.00' L = 49.24'
3) Δ = 46°30'39" R = 30.00' L = 40.58'	13) Δ = 51°38'28" R = 30.00' L = 180.00'	23) Δ = 276°27'46" R = 30.00' L = 241.18'	33) Δ = 250°31'44" R = 50.00' L = 12.78'
4) Δ = 81°40'24" R = 30.00' L = 86.00'	14) Δ = 48°11'23" R = 10.00' L = 8.41'	24) Δ = 48°11'23" R = 10.00' L = 8.41'	34) Δ = 70°14'32" R = 10.00' L = 12.36'
5) Δ = 68°14'08" R = 30.00' L = 75.00'	15) Δ = 44°00'00" R = 208.35' L = 178.35'	25) Δ = 54°28'18" R = 30.00' L = 31.19'	35) Δ = 38°56'35" R = 50.00' L = 33.96'
6) Δ = 49°37'15" R = 50.00' L = 43.39'	16) Δ = 34°34'36" R = 238.33' L = 142.63'	26) Δ = 40°17'31" R = 50.00' L = 70.00'	36) Δ = 19°48'13" R = 15.00' L = 17.36'
7) Δ = 48°11'23" R = 10.00' L = 8.41'	17) Δ = 44°00'00" R = 178.35' L = 136.96'	27) Δ = 48°11'23" R = 10.00' L = 8.41'	37) Δ = 47°13'32" R = 30.00' L = 35.00'
8) Δ = 276°27'46" R = 50.00' L = 241.18'	18) Δ = 326°16' R = 178.35' L = 136.96'	28) Δ = 376°27'46" R = 10.00' L = 241.18'	38) Δ = 17°30'36" R = 30.00' L = 19.83'
9) Δ = 48°11'23" R = 10.00' L = 8.41'	19) Δ = 34°34'36" R = 238.33' L = 142.63'	29) Δ = 48°11'23" R = 10.00' L = 8.41'	39) Δ = 88°00'00" R = 30.00' L = 30.72'
10) Δ = 57°38'33" R = 30.00' L = 50.59'	20) Δ = 376°27'46" R = 50.00' L = 241.18'	30) Δ = 88°00'00" R = 30.00' L = 30.72'	

ORANGE IMPROVEMENT DISTRICT #9 100 FT CASEMENT AS PER #78 & #79

30' NE ISLAND BUTTER AND CONSERVATION CASEMENT (SEE CONSERVATION COVENANT RECORDED WITH PLAT)

100 YEAR FLOODPLAIN BOUNDARY

30' PRIVATE ROAD & UTILITY CASEMENT (OVER REWARDER LOT #43)

SEE NOTE 1

SEE NOTE 2

SEE NOTE 3

SEE NOTE 4

LEGEND  
● MONUMENT NOTED AS IN R.O.S. 37-65  
○ SET 1/2" x 24" IRON REBAR WITH ORANGE PLASTIC CAP STAMPED "HAGEDORN 17412" WITH SERIAL NUMBER(S) SET MONUMENTS (EXCEPT IN ROADWAYS)  
R.O.S. = RECORD OF SURVEY  
[Symbol] METHOD OF ON-SITE WASTE DISPOSAL ("SM" - SAND MOUND, "PD" - PRESSURE DISTRIBUTION CAP - "CAP")  
- TEST HOLE LOCATIONS FOR "PERCS"  
(NET) INDICATES AREA LESS EASEMENTS SHOWN



**HAGEDORN, INC.**  
1824 Broadway Vancouver, WA 98660  
PH (509) 576-9488 FAX (509) 576-9489

SCALE: 1"=50'  
DATE: 8/21/06  
DRAWN BY: J.C.  
CHECKED BY: J.C.

0-22-06



720 SW Washington St.  
Suite 500  
Portland, OR 97205  
503.243.3500  
www.dksassociates.com

# MEMORANDUM

**DATE:** September 4, 2014

**TO:** Laurie Lebowsky, Clark County

**FROM:** Reah Flisakowski, P.E., DKS Associates  
Julie Sosnovske, P.E., DKS Associates  
Courtney Furman, E.I.T., DKS Associates

**SUBJECT:** NE 83<sup>rd</sup> Street Extension Transportation Analysis

P#14085-001

This memorandum summarizes the existing and future transportation analysis for the planned NE 83<sup>rd</sup> Street Extension Project in Clark County, Washington. The project would extend NE 83<sup>rd</sup> Street west as a two-lane facility, connecting with NE 78<sup>th</sup> Street. The analysis provides an inventory of the existing transportation facilities, including safety and operational analysis, evaluates future conditions with and without the planned roadway extension, identifies improvements to reduce congestion and highlights benefits of the planned extension. The analysis is presented in the following sections.

## STUDY AREA

The study area (shown in Figure 1) is generally bounded by NE 88<sup>th</sup> Street on the north, NE 182<sup>nd</sup> Avenue on the east, NE Fourth Plain Road on the south, and NE Ward Road on the west. Eight study intersections were selected based on proximity to the planned NE 83<sup>rd</sup> Street extension and regional significance. Of the eight study intersections, five are signalized, including the four located on NE 162<sup>nd</sup> Avenue and the NE Ward Road/NE 78<sup>th</sup> Street intersection. The remaining three intersections are unsignalized, and operate under stop control for the minor street approach. The study area intersections are listed below and shown in Figure 1.

1. NE Ward Road/NE 88<sup>th</sup> Street
2. NE Ward Road/ NE 162<sup>nd</sup> Avenue/Retail Signal
3. NE Ward Road/NE 162<sup>nd</sup> Avenue
4. NE 162<sup>nd</sup> Avenue/NE 78<sup>th</sup> Street
5. NE 162<sup>nd</sup> Avenue/NE Fourth Plain Road
6. NE Ward Road/NE 78<sup>th</sup> Street
7. NE 182<sup>nd</sup> Avenue/NE 83<sup>rd</sup> Street
8. NE 182<sup>nd</sup> Avenue/NE Fourth Plain Road

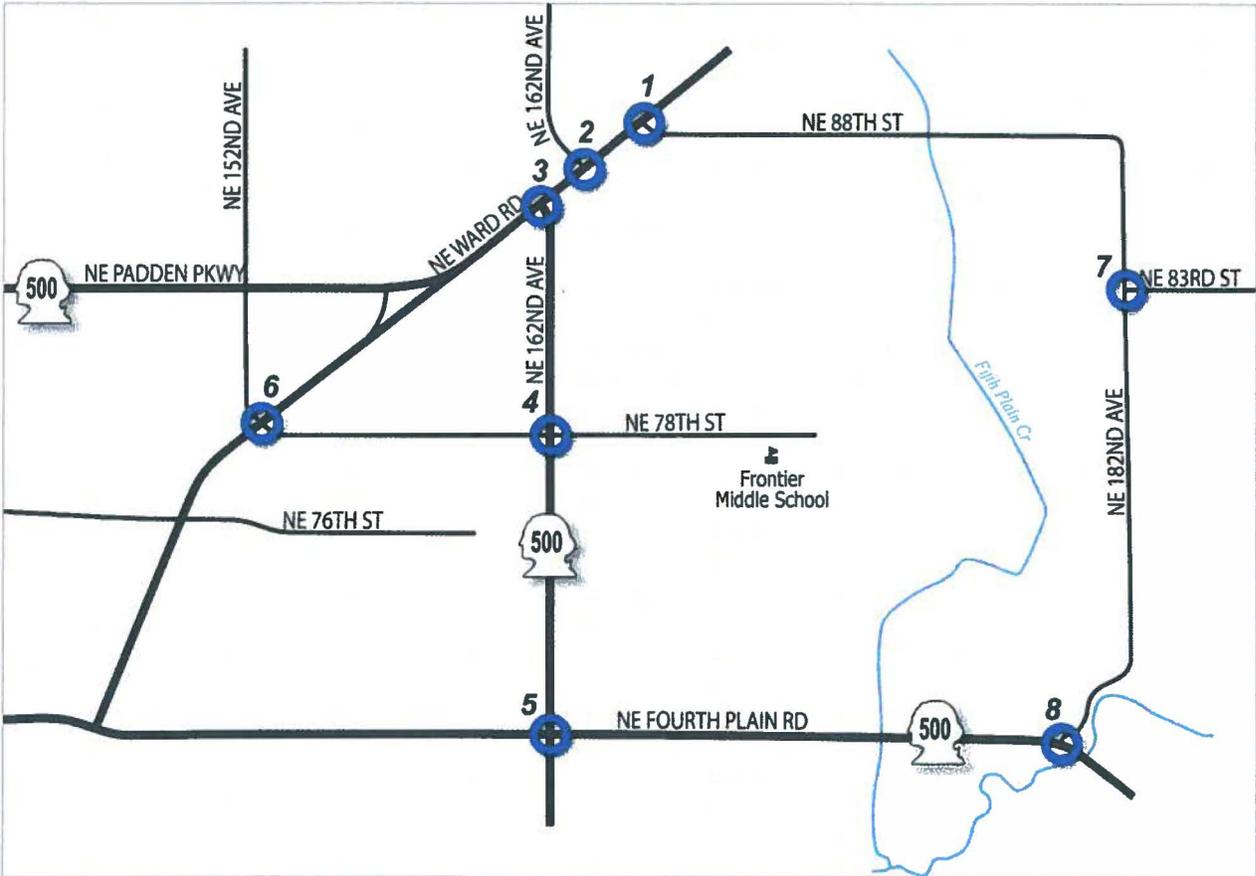


Figure 1 - Study Area



## ROADWAY CHARACTERISTICS

The key roadways within the study area are summarized in Table 1, including their jurisdiction, functional classification, cross section, posted speed, and presence of sidewalks or bicycle lanes.

**Table 1 - Roadway Characteristics**

<i>Roadway</i>	<i>Jurisdiction</i>	<i>Functional Classification</i>	<i>Cross Section</i>	<i>Posted Speed (mph)</i>	<i>Sidewalks</i>	<i>Bicycle Lanes</i>
NE Fourth Plain Rd (east of NE 162 <sup>nd</sup> Ave)	WSDOT	State Route	4 lanes	50	No	No
NE Fourth Plain Rd (west of NE 162 <sup>nd</sup> Ave)	Clark County	Primary Arterial	4 lanes	50	Yes	No
NE Ward Rd	Clark County	Urban Principal Arterial	4 lanes/ 2 lanes	40/45	Yes	Yes
NE 162 <sup>nd</sup> Ave	WSDOT	State Route	4 lanes	40	Yes	Yes
NE 78 <sup>th</sup> St	Clark County	Urban Collector	2 lanes	35/25	Partial (varies by block)	No
NE 88 <sup>th</sup> St	Clark County	Rural Major Collector	2 lanes	50*	No	No
NE 182 <sup>nd</sup> Ave	Clark County	Rural Major Collector	2 lanes	50*	No	No
NE 83 <sup>rd</sup> St	Clark County	Rural Minor Collector	2 lanes	50*	No	No

\*Speed follows Basic Speed Rule, speed shown is based on the design speed for the functional classification <sup>1</sup>

### Pedestrian Facilities

Pedestrian facilities were inventoried for the study area. Sidewalks are provided on the majority of the urban streets within the study area. The most significant gap is on NE 78<sup>th</sup> Street, between NE 154<sup>th</sup> Avenue and NE 159<sup>th</sup> Avenue. Additionally, there is a signalized pedestrian crossing on NE Ward Road where the merge occurs with NE Padden Parkway. The crossing leads to a trail on the south side of NE Padden Parkway that connects to the NE Padden Parkway/NE Ward Road intersection just west of the pedestrian crossing. The pedestrian network generally has good connectivity within the study area in the urban area, and provides access between the residential areas, commercial centers and neighborhood schools.

### Bicycle Facilities

Bicycle facilities were inventoried for the study area. Bicycle lanes are provided on NE Ward Road (between NE Fourth Plain Road and NE 88<sup>th</sup> Street) and on NE 162<sup>nd</sup> Avenue (between NE Fourth Plain Road and NE Ward

<sup>1</sup> Clark County Unified Development Code, Table 40.350.030-3.



Road), within the study area. NE Fourth Plain Road has a few short sections where bicycle lanes have been constructed adjacent to new developments; however, this corridor lacks bicycle connectivity. Although there are no bicycle lanes on the other roadways within the study area, bicyclists have the option to share the roadway with motor vehicles.

## **Transit Facilities**

Transit service is provided within the study area by two fixed C-TRAN bus routes. Both routes travel into the study area only as far as NE Ward Road.

Route 44, the Fourth Plain Limited route, runs along Fourth Plain Boulevard between the Delta Park/Vanport MAX Station and the Kaiser Clinic (at NE 137<sup>th</sup> Avenue), including a loop that travels along NE Ward Road between Fourth Plain Boulevard and NE 76<sup>th</sup> Street. Route 44 provides service approximately every half-hour during both morning and evening peak periods.

Route 72, the Orchards route, runs along Fourth Plain Boulevard from the Vancouver Mall Transit Center on Ward Road to NE 99<sup>th</sup> Street, providing service to a business park, a school, and shopping centers. Route 72 travels along NE Ward Road between NE Fourth Plain Boulevard and NE 152<sup>nd</sup> Avenue. Route 72 provides service approximately every hour throughout the day between 5 AM and 9 PM.

## **ROADWAY VOLUMES**

The study area roadways are used by motor vehicles, pedestrians, and bicyclists, and their activity was recorded at each study intersection during the morning and evening peak periods<sup>2</sup>.

### **Motor Vehicle Volumes**

To determine intersection traffic operations, vehicle turn movement counts were conducted at study area intersections during the weekday morning peak period (7 to 9 AM), and evening peak period (4 to 6 PM). The raw traffic count data is included in the Appendix. Raw traffic count data were adjusted to reflect balanced volumes between nearby intersections. The adjusted peak period traffic volumes developed for the study intersections are shown in Figure 2.

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<sup>2</sup> Traffic counts conducted Thursday, June 5, 2014.





## **Pedestrian & Bicycle Volumes**

Pedestrian and bicycle count data indicates that the majority of the pedestrian activity is occurring within the urban portion of the study area and that the bicycle activity is relatively low during the AM and PM peak hours. Intersection count data is provided in the Appendix. In the morning peak hour, approximately ten pedestrians traveled on NE 78<sup>th</sup> Street, crossing at the intersections with NE 162<sup>nd</sup> Avenue and NE Ward Road. This pedestrian activity is most likely related to the nearby Pioneer Elementary School and Frontier Middle School, located on NE 166<sup>th</sup> Avenue. In the afternoon peak hour, the pedestrian activity appears to be primarily related to the shopping centers located the NE Ward Road/NE 162<sup>nd</sup> Avenue and NE 162<sup>nd</sup> Avenue/NE Fourth Plain Road intersections.

## **MOTOR VEHICLE OPERATIONS**

The existing traffic operating conditions at the study intersections were determined for the AM, and PM peak hours based on the 2010 Highway Capacity Manual methodology<sup>3</sup> for signalized and unsignalized intersections. The conditions include the estimated average delay, level of service (LOS), and volume-to-capacity (V/C) ratio of the study intersections.

### **Intersection Performance Measures**

Level of service (LOS) and volume-to-capacity (V/C) ratios are two commonly used performance measures that provide a gauge of intersection operations. In addition, they are often incorporated into agency mobility standards. Descriptions are given below:

- Level of service (LOS): A “report card” rating (A through F) based on the average delay experienced by vehicles at the intersection. LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F represents conditions where average vehicle delay has become excessive and demand has exceeded capacity. This condition is typically evident in long queues and delays.
- Volume-to-capacity (V/C) ratio: A decimal representation (between 0.00 and 1.00) of the proportion of capacity that is being used (i.e., the saturation) at a turn movement, approach leg, or intersection. It is determined by dividing the peak hour traffic volume by the hourly capacity of a given intersection or movement. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00, congestion increases and performance is reduced. If the ratio is greater than 1.00, the turn movement, approach leg, or intersection is oversaturated and usually results in excessive queues and long delays.

### **Jurisdictional Operating Standards**

All study intersections have been compared against the applicable jurisdictional operating standards. The study intersections on SR 500 must comply with a level of service target of E for urban areas, since SR 500 is not a

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<sup>3</sup> 2010 Highway Capacity Manual, Transportation Research Board, Washington DC, 2010.



Highway of State Significance (non-HSS) under WSDOT jurisdiction within Clark County<sup>4</sup>. All other intersections must comply with the Clark County mobility targets<sup>5</sup>, where signalized intersections must comply with a level of service target of D and unsignalized with a level of service of E.

## Existing Motor Vehicle Traffic Operations

Existing motor vehicle operations at the study intersections are shown in Table 2. During the AM and PM peak hours, all study area intersections operate within the corresponding jurisdictional standard.

**Table 2 - Existing Intersection Operations**

Intersection	Jurisdictional Standard	AM Peak Hour			PM Peak Hour			
		LOS	Delay	v/c	LOS	Delay	v/c	
<b>Signalized Intersections</b>								
2	NE Ward Road/NE 162nd Avenue/Retail	D	B	12.9	0.33	B	18.2	0.37
3	NE Ward Road/NE 162nd Avenue	E	C	32.2	0.44	D	37.6	0.60
4	NE 162nd Avenue/NE 78th Street	E	B	16.8	0.34	B	15.4	0.45
5	NE 162nd Avenue/NE Fourth Plain Road	E	C	33.1	0.72	D	44.9	0.74
6	NE Ward Road/NE 78th Street	D	C	28.3	0.22	C	33.6	0.31
<b>Unsignalized Intersections</b>								
1	NE Ward Road/NE 88th Street	E	A/C	22.8	0.28	B/E	37.6	0.47
7	NE 182nd Avenue/NE 83rd Street	E	A/A	9.5	0.06	A/A	9.5	0.11
8	NE 182nd Avenue/NE Fourth Plain Road	E	A/C	18.4	0.45	A/D	28.9	0.53

Two-Way Stop: LOS = Level of Service of Major Street/Minor Street, V/C = Volume-to-Capacity Ratio of Worst Movement  
 NE 182<sup>nd</sup> Avenue/NE 83<sup>rd</sup> Street intersection control was modified to report traffic operations due to software limitations.

## Queuing Analysis

An estimate of the 95th percentile vehicle queues for each of the signalized intersection approach movements was made using SimTraffic modeling software and supplemented with field observations for existing conditions. Queuing results are summarized in the Appendix. The 95<sup>th</sup> percentile queue lengths at all study intersections would be accommodated by the existing available storage lengths.

## Safety Analysis

The most recent five years (January 2009 – December 2013) of available crash data for the study area was obtained from the Washington Department of Transportation (WSDOT)<sup>6</sup> and used to evaluate the crash history. To identify potential deficiencies, crash types were analyzed to identify patterns or trends.

<sup>4</sup> WSDOT, Level-of-service Standards for Washington State Highways, January 1, 2010.

<sup>5</sup> Clark County Code, Level of Service Standards, <http://www.codepublishing.com/wa/clarkcounty.html>, Accessed June 16, 2014.

<sup>6</sup> Washington Department of Transportation, Collision Data & Analysis Branch, received on June 18, 2014.



**Study Area Collisions**

The individual crash types within the study area were examined to see if any patterns would emerge. Figure 3 breaks down the crash types and severities experienced, with percentages of each shown. There were a total of 73 collisions (January 2009 – December 2013). The majority of the collisions resulted in property damage only (about three quarters), and only one percent resulted in serious injury. There was a mix of angle, rear end, turning, and fixed object collision types.

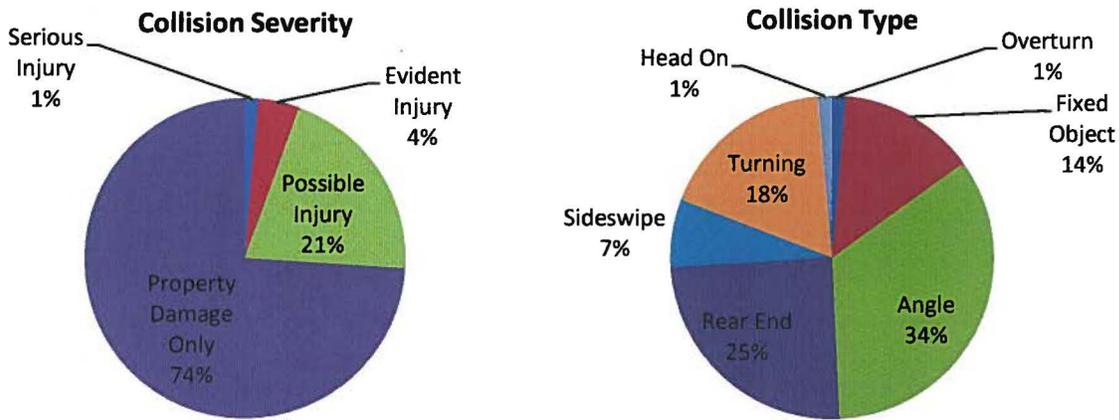


Figure 3 - Collisions by Type & Severity

**Intersection Safety Analysis**

Crash rates at study intersections were calculated to identify problem areas using the crash frequency and traffic volumes (MEV - million entering vehicles). Using this technique, a crash rate of 1.0 MEV or greater is commonly used to identify when further investigation is warranted. As shown in Table 3, no intersections were flagged by this criterion, as their observed crash rates are all below 1.0. It is worth noting that the NE 182<sup>nd</sup> Avenue/NE Fourth Plain Road intersection had the highest crash rate of 0.80.

Table 3 - Study Intersection Collision Data

Intersection		Number of Crashes	MEV	Crash Rate
1	NE Ward Road/NE 88th Street	1	25.28	0.04
2	NE Ward Road/ NE 162nd Avenue/Retail Signal	6	28.62	0.21
3	NE Ward Road/NE 162nd Avenue	12	41.04	0.29
4	NE 162nd Avenue/NE 78th Street	6	31.85	0.19
5	NE 162nd Avenue/NE Fourth Plain Road	24	62.42	0.38
6	NE Ward Road/NE 78th Street	3	17.96	0.17
7	NE 182nd Avenue/NE 83rd Street	4	7.87	0.51
8	NE 182nd Avenue/NE Fourth Plain Road	17	21.19	0.80

## Intersection Sight Distance

All study intersections should meet Clark County sight distance requirements<sup>7</sup> as measured from 15 feet back from the edge of the traveled way. Based on the posted speed, each of the unsignalized study intersections require between 400 and 500 feet of clear sight distance.

The two study intersections along NE 182<sup>nd</sup> Avenue, including NE 182<sup>nd</sup> Avenue/NE 83<sup>rd</sup> Street and NE 182<sup>nd</sup> Avenue/NE Fourth Plain Road, have adequate sight distance of at least 500 feet. However, the NE Ward Road/NE 88<sup>th</sup> Street study intersection does not meet the four hundred feet of required sight distance in the northeast direction, due to landscaping on the street corner. The landscaping would need to be trimmed back to provide adequate sight distance at this location.



NE 88<sup>th</sup> Street looking east to NE Ward Road

## FUTURE CONDITIONS

The transportation network was evaluated for the future year 2035 to assess the impact of the NE 83<sup>rd</sup> Street Extension Project on the study intersections. The two scenarios that were evaluated include the Future Baseline and the Future Baseline with Project. The NE 83<sup>rd</sup> Street Extension Project would connect NE 83<sup>rd</sup> Street between NE 78<sup>th</sup> Street and NE 182<sup>nd</sup> Avenue, as shown in Figure 5.

## Traffic Forecasting

The Southwest Washington Regional Transportation Council (SWRTC) travel demand models were used for developing future traffic volumes. The models, as provided by SWRTC, generally contain regionally significant facilities, typically arterials and above, with some collector roadways. DKS reviewed network elements of the travel demand models in the study area (speeds, number of travel lanes, capacities) for consistency between facility types and with the existing roadway network. DKS also refined the models in the study area by adjusting and adding centroid connectors to better reflect access to the street network. No land use or trip generation adjustments were made to the travel demand models.

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<sup>7</sup> Intersection sight distance (ISD) is defined by AASHTO as the distance provided at an intersection to allow the driver in the stopped vehicle a sufficient view of the intersecting road to decide when to enter the road. The AASHTO and Clark County standards are based on vehicle speeds. Clark County sight distance standards are based on 10 times the vehicle speed.



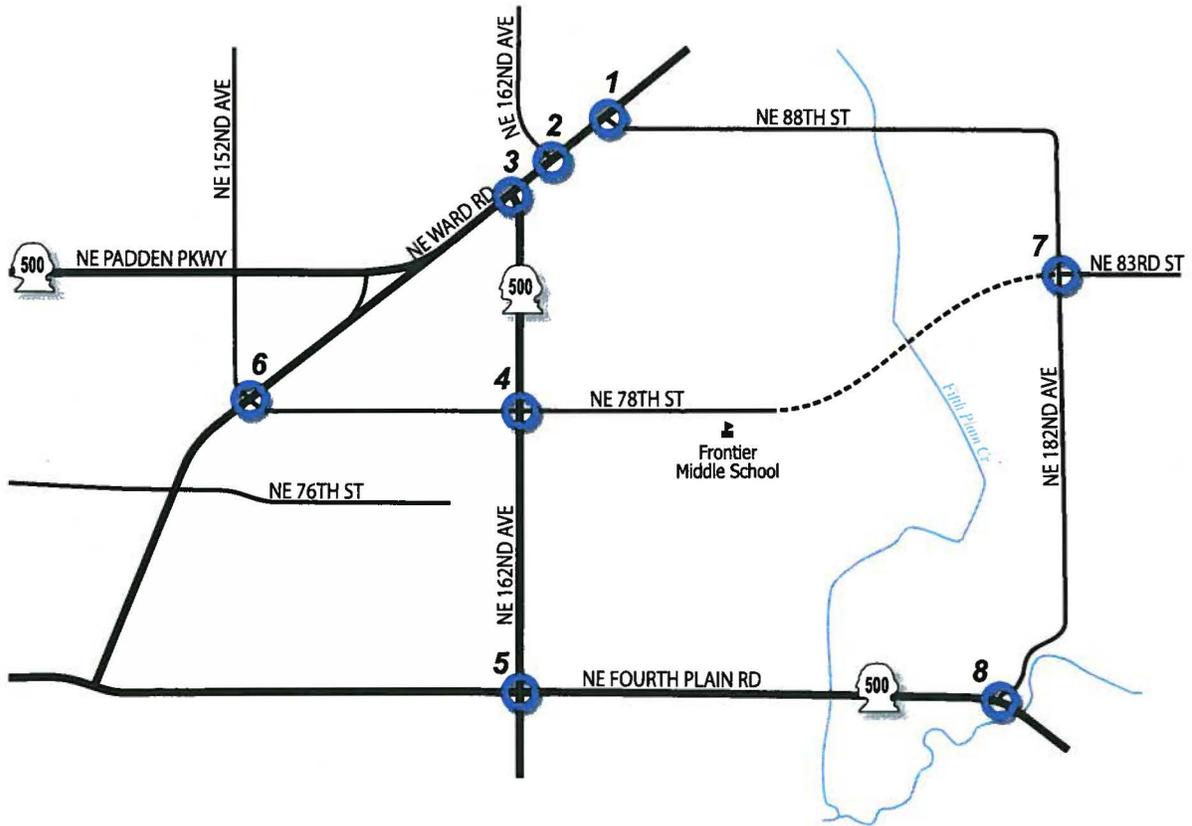
The base (2010) and future (2035) travel demand models were used to develop future year 2035 traffic volumes. The future (2035) model includes regional improvements that can reasonably be expected to be funded by (2035). The future model did not include improvements in the study area, although improvements in other parts of the region affect travel behavior and route choice. The growth increment between the base (2010) and future (2035) years was calculated for volumes at each study intersection and factored to reflect 21 years of linear growth (2014 to 2035), since existing traffic counts were collected in 2014. This growth was added to the existing traffic volumes and post-processed to create a volume forecast.

The future (2035) model was modified to include the planned NE 83<sup>rd</sup> Street extension in order to develop the Future Baseline with Project volumes. The NE 83<sup>rd</sup> Street extension was modeled as a two lane collector roadway with a 35 mph speed. The improved NE 182<sup>nd</sup> Avenue/NE 83<sup>rd</sup> Street intersection was modeled to be reconfigured as a four-leg intersection with stop control on the NE 83<sup>rd</sup> Street approaches.

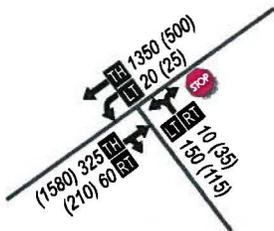
### **Future Year 2035 Volumes**

Future year 2035 traffic volumes were developed for the two scenarios, Future Baseline and Future Baseline with Project, as shown in Figures 4 and 5. Based on the model output and review of forecasted land use in the vicinity of the planned project, the NE 83<sup>rd</sup> Street extension is not expected to significantly shift travel patterns in the area. The planned roadway is an important east-west connection, but it is expected to accommodate mostly local traffic. There is limited land use growth expected to the east of NE 83<sup>rd</sup> Street and traffic destined for either NE Ward Road or NE 4<sup>th</sup> Plain Road is expected to stay on those routes. There is no direct route between the east end of the planned NE 83<sup>rd</sup> Street extension and NE Ward Road and speeds on NE Fourth Plain Boulevard are higher than those planned for the NE 83<sup>rd</sup> Street extension, so there is little incentive for existing travel patterns to change in the area.





1. NE Ward Rd./NE 88th St.



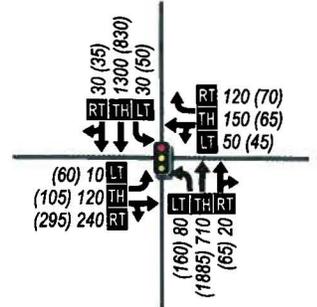
2. NE Ward Rd./NE 162nd Ave./Retail Signal



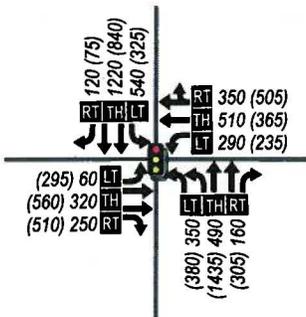
3. NE Ward Rd./NE 162nd Ave.



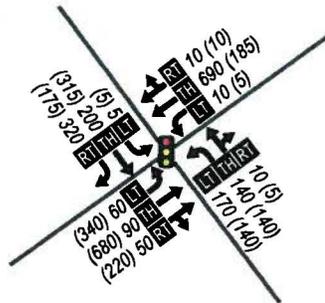
4. NE 78th St./NE 162nd Ave.



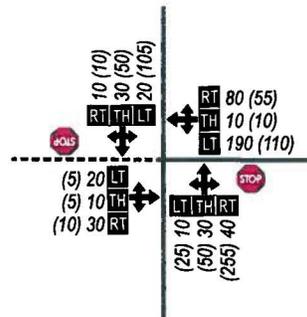
5. NE Fourth Plain Rd./NE 162nd Ave.



6. NE Ward Rd./NE 78th St.



7. NE 83rd Ave./NE 182nd Ave.



8. NE Fourth Plain Rd./NE 182nd Ave.



**LEGEND**

# - Study Intersection  
 --- - Roadway Extension

STOP - Stop Sign  
 - Traffic Signal  
 ← - Lane Configuration  
 (PM) AM - Peak Hour Traffic Volumes  
 LT TH RT - Volume Turn Movement  
 Left-Thru-Right

**DKS**



No Scale

Figure 5

**2035 FUTURE BASELINE WITH PROJECT AM/PM PEAK HOUR TRAFFIC VOLUMES**





### Future Year 2035 Motor Vehicle Traffic Operations

The future traffic operating conditions at the study intersections were determined for the PM peak hour based on the 2010 Highway Capacity Manual methodology<sup>8</sup> for signalized and unsignalized intersections. The conditions include the estimated average delay, level of service (LOS), and volume-to-capacity (V/C) ratio at the study intersections.

The following section summarizes the operational results for the two scenarios: (1) Future Baseline and (2) Future Baseline with Project, relative to their corresponding jurisdictional standard. The results are shown in Table 4 and in Table 5. The study intersection traffic operations are similar with and without the project, with the same four intersections failing in both scenarios. The future traffic volume forecasts show that, while the NE 83<sup>rd</sup> Street extension attracts traffic from local development, it does not eliminate or postpone the need for improvements along either the NE Ward Road or NE Fourth Plain Road corridors. Therefore the future 2035 traffic operations on those corridors are similar with and without the extension project.

**Table 4 - Future 2035 Baseline Intersection Operations**

Intersection		Jurisdictional Standard	AM Peak Hour			PM Peak Hour		
			LOS	Delay	v/c	LOS	Delay	v/c
<b>Signalized Intersections</b>								
2	NE Ward Road/ NE 162nd Avenue/Retail Signal	D	C	20.4	0.77	B	17.0	0.75
3	NE Ward Road/NE 162nd Avenue	E	D	38.9	0.73	F	158.4	1.29
4	NE 162nd Avenue/NE 78th Street	E	C	21.0	0.73	C	28.5	0.91
5	NE 162nd Avenue/NE Fourth Plain Road	E	F	112.4	1.24	F	116.1	1.24
6	NE Ward Road/NE 78th Street	D	C	25.0	0.56	C	34.9	0.85
<b>Unsignalized Intersections</b>								
1	NE Ward Road/NE 88th Street	E	A/F	>300	>1.5	C/F	>300	>1.5
7	NE 182nd Avenue/NE 83rd Street	E	A/B	10.4	0.09	A/B	10.3	0.21
8	NE 182nd Avenue/NE Fourth Plain Road	E	B/F	>300	>1.5	C/F	>300	>1.5

Two-Way Stop: LOS = Level of Service of Major Street/Minor Street, V/C = Volume-to-Capacity Ratio of Worst Movement

\***Bolded Red and Shaded** indicates intersection is approaching or exceeding the mobility target

NE 182<sup>nd</sup> Avenue/NE 83<sup>rd</sup> Street intersection control was modified to report traffic operations due to software limitations.

<sup>8</sup> 2010 Highway Capacity Manual, Transportation Research Board, Washington DC, 2010.



**Table 5 - Future 2035 Baseline with Project Intersection Operations**

Intersection		Jurisdictional Standard	AM Peak Hour			PM Peak Hour		
			LOS	Delay	v/c	LOS	Delay	v/c
<b>Signalized Intersections</b>								
2	NE Ward Road/ NE 162nd Avenue/Retail Signal	D	C	20.2	0.76	B	16.9	0.73
3	NE Ward Road/NE 162nd Avenue	E	D	39.0	0.73	<b>F</b>	<b>152.0</b>	<b>1.27</b>
4	NE 162nd Avenue/NE 78th Street	E	C	23.1	0.77	C	34.1	0.95
5	NE 162nd Avenue/NE Fourth Plain Road	E	<b>F</b>	<b>109.1</b>	<b>1.23</b>	<b>F</b>	<b>115.4</b>	<b>1.23</b>
6	NE Ward Road/NE 78th Street	D	C	25.1	0.58	C	34.1	0.85
<b>Unsignalized Intersections</b>								
1	NE Ward Road/NE 88th Street	E	<b>A/F</b>	<b>&gt;300</b>	<b>&gt;1.5</b>	<b>C/F</b>	<b>&gt;300</b>	<b>&gt;1.5</b>
7	NE 182nd Avenue/NE 83rd Street	E	A/C	16.6	0.17	A/C	21.5	0.45
8	NE 182nd Avenue/NE Fourth Plain Road	E	<b>B/F</b>	<b>&gt;300</b>	<b>&gt;1.5</b>	<b>C/F</b>	<b>&gt;300</b>	<b>&gt;1.5</b>

Two-Way Stop: LOS = Level of Service of Major Street/Minor Street, V/C = Volume-to-Capacity Ratio of Worst Movement

\***Bolded Red and Shaded** indicates intersection is approaching or exceeding the mobility target

## ROADWAY CONNECTIVITY

The planned project would extend NE 83<sup>rd</sup> Street west as a two-lane facility, connecting with NE 78<sup>th</sup> Street. While the NE 83<sup>rd</sup> Street extension does not attract a significant amount of traffic from either the NE Ward Road or NE Fourth Plain Road corridors, an east-west collector facility in this location does serve an important function in the study area roadway network.

One mile spacing for arterials and one-half mile spacing for collectors is recommended in transportation system planning to provide a balance between mobility and land accessibility. The NE 83<sup>rd</sup> Street extension is planned in a desirable location about one-half mile north of NE Fourth Plain Road and about one-half mile south of NE Ward Road. The planned extension would provide a direct connection between NE 162<sup>nd</sup> Avenue (State Route) and NE 182<sup>nd</sup> (Rural Major Collector) and access to Frontier Middle School and future neighborhoods in the area.

If an east-west collector roadway is not provided at this location, drivers will travel long distances (up to a half mile) along local streets within the neighborhoods to access the outlying State Route and Rural Major Collector facilities. This is undesirable for drivers within the neighborhoods, and unpleasant for fronting residents on local streets where traffic volumes and speeds may exceed livability thresholds. The NE 83<sup>rd</sup> Street extension would help alleviate these potential traffic issues with future development in the study area.

In addition, this route would improve bicycle and pedestrian connectivity in the area. The NE 83<sup>rd</sup> Street extension should be constructed with continuous sidewalks and bicycle lanes to provide an important east-west route in the area. This is especially needed since the parallel routes on NE Fourth Plain Road and NE 88<sup>th</sup> Street provide very narrow (NE Fourth Plain Road) or non-existent (NE 88<sup>th</sup> Street) paved shoulders for pedestrians and cyclists.



Applying the same system planning guidelines, north-south roadway connectivity is also lacking in the area. There is an approximately one-mile gap between NE 162<sup>nd</sup> Avenue and NE 182<sup>nd</sup> Avenue, with only local streets. An additional north-south collector located midway between these two routes would be desirable for motor vehicles, cyclists and pedestrians.

## INTERSECTION IMPROVEMENTS

Intersection improvements were considered for the future scenarios to reduce congestion at study intersections. Improvements considered additional capacity based on turn lane warrants and traffic signal warrants at unsignalized intersections, and turn lane capacity analysis at signalized intersections. The 2035 Baseline with Project traffic volumes were used for the turn lane and traffic signal warrant analysis presented in this memorandum (following two sections). The 2035 Baseline traffic volumes were also analyzed, however the findings were the same due to the similar future volumes.

## TURN LANE WARRANTS

Turn lane warrants were used to assess the need for left and right turn lanes at the three unsignalized study intersections, which include the following locations: NE Ward Road/NE 88<sup>th</sup> Street, NE 182<sup>nd</sup> Avenue/NE 83<sup>rd</sup> Street, and NE 182<sup>nd</sup> Avenue/NE Fourth Plain Road. The left turn lane warrants were based on the HRB criteria<sup>9</sup> and the right turn lane warrants use the NCHRP criteria<sup>10</sup>. The results of the left and right turn lane warrant analyses are summarized in Table 6.

**Table 6 - Future 2035 Turn Lane Warrants**

Intersection		Approach	Left Turn Lane		Right Turn Lane	
			AM Peak	PM Peak	AM Peak	PM Peak
1	NE Ward Road/ NE 88th Street	NB	No	No	No	No
		EB	N/A	N/A	No	Yes
7	NE 182nd Avenue/ NE 83rd Street	EB	No	No	No	No
		WB	No	No	No	No
		SB	No	No	No	No
		NB	No	No	No	Yes
8	NE 182nd Avenue/NE Fourth Plain Road	SB	No	No	Yes	Yes
		EB	Yes	Yes	N/A	N/A
		WB	N/A	N/A	No	Yes

\***Bolded Red and Shaded** indicates turn lane is warranted

<sup>9</sup> Volume Warrant for Left-Turn Storage Lanes at Unsignalized Grade Intersections, Highway Research Record 211, Highway Research Board, National Research Council, Washington D.C., 1967.

<sup>10</sup> NCHRP 279, Intersection Channelization Design Guide, National Cooperative Highway Research Program, November, 1985.



Five turn lanes are warranted in the future, including:

- NE Ward Road/NE 88<sup>th</sup> Street intersection - eastbound right turn lane
- NE 182<sup>nd</sup> Avenue/NE 83<sup>rd</sup> Street - northbound right turn lane
- NE 182<sup>nd</sup> Avenue/NE Fourth Plain Road - southbound right turn lane, eastbound left turn lane, and westbound right turn lane

## TRAFFIC SIGNAL WARRANTS

The need for a traffic signal at the three unsignalized intersections was tested by the use of the nine warrants provided by the Manual on Uniform Traffic Control Devices (MUTCD)<sup>11</sup>. The warrants are summarized below:

1. Eight-Hour Vehicular Volume: large volume of intersecting traffic (condition A) or large major street traffic volumes causing excessive delay on the intersecting minor street (condition B)
2. Four-Hour Vehicular Volume: large volume on intersecting street
3. Peak Hour: a facility attracts or discharges large numbers of vehicles over a short time
4. Pedestrian Volume: large major street traffic volumes causing pedestrians to experience excessive delay when crossing the major street
5. School Crossing: excessive delay at school crossings from large major street volumes
6. Coordinated Signal System: when needed to maintain vehicle platoons
7. Crash Experience: history of severe and frequent collisions (greater than five per year)
8. Roadway Network: part of a major route or roadway system
9. Intersection Near a Grade Crossing: close proximity to an at grade railroad crossing

Of the nine warrants, the first three are the only applicable warrants at the study intersections. The results for the first three warrants<sup>12</sup> under estimated future conditions are summarized in Table 7, which resulted in traffic signals being warranted at two unsignalized locations; NE 182<sup>nd</sup> Avenue/NE Fourth Plain Road and NE Ward Road/NE 88<sup>th</sup> Street.

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<sup>11</sup> Manual on Uniform Traffic Control Devices (MUTCD), 2009 Edition, Federal Highway Administration.

<sup>12</sup> Future volumes were estimated based on existing 16-hour counts. Warrants at NE 182<sup>nd</sup> Ave/NE Fourth Plain Rd were based on two major street lanes and two minor street lane and warrants at NE Ward Rd/NE 88<sup>th</sup> St were based on two major street lanes and one minor street lane. No right turn reductions were applied at either intersection.



**Table 7 - Future 2035 Traffic Signal Warrants**

Warrant	Warrant Name	Number of Hours Required	Meets Signal Warrant? (Number of Hours that meet criteria)		
			182 <sup>nd</sup> Ave/ Fourth Plain Rd	Ward Rd/ 88 <sup>th</sup> St	182 <sup>nd</sup> Ave/ 83 <sup>rd</sup> St
1	Eight-hour vehicular volume – Condition A	8	Yes (10)	No (4)	NA
	Eight-hour vehicular volume – Condition B	8	Yes (14)	Yes (13)	NA
2	Four-hour vehicular volume	4	Yes (14)	Yes (12)	NA
3	Peak hour	1	Yes (8)	Yes (7)	No (0)

\***Bolded Red and Shaded** indicates traffic signal is warranted

NA – Eight and Four-hour vehicular volumes not available

The intersection of NE 182<sup>nd</sup> Avenue/NE 83<sup>rd</sup> Avenue was not tested against the four hour and eight hour warrants since only peak hour counts were available. The peak hour warrant was analyzed at NE 182<sup>nd</sup> Avenue/NE 83<sup>rd</sup> Street and it was found that a signal is not warranted at this location.

## IDENTIFIED INTERSECTION IMPROVEMENTS

Two tiers of improvements were identified for both future traffic volume scenarios. Minimum improvements were identified to allow all intersections to meet jurisdictional mobility standards. At this level of improvement, all study intersections meet mobility standards, however two locations are expected to operate with a v/c ratio exceeding 1.0. In addition, initial simulation runs of the operation model indicated that reliable queuing estimates could not be provided due to excessive congestion and queueing. A second tier of recommended improvements was developed, in which study intersection v/c ratios are all under 1.0 and more reliable queuing data was available. The minimum and recommended tiers of improvements include the following, recommended improvements are shown in Figure 6:

### Minimum Improvements:

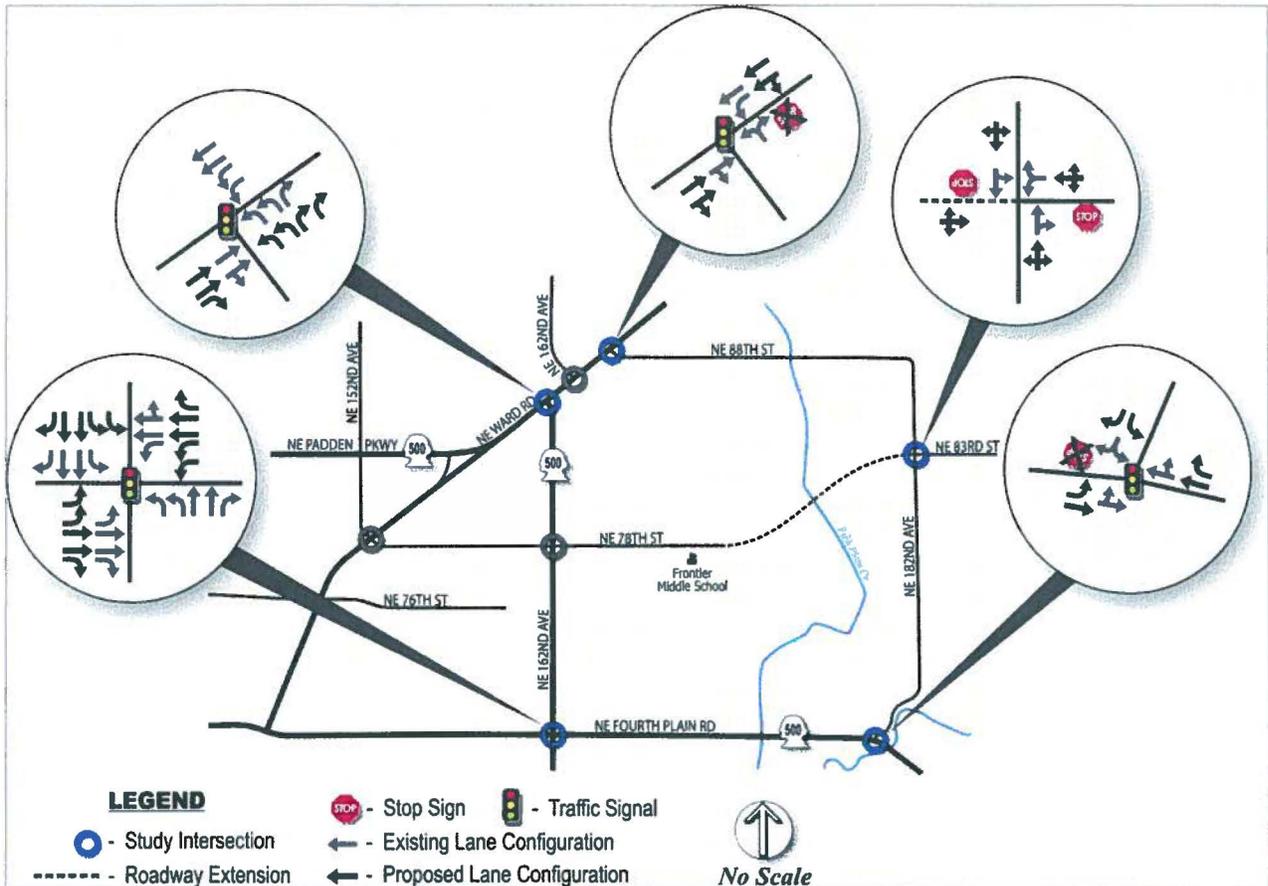
- NE Ward Road/NE 88th Street
  - Traffic signal
- NE Ward Road/NE 162nd Avenue
  - Eastbound right turn lane
- NE 162nd Avenue/NE Fourth Plain Road
  - Eastbound dual left turn lane
  - Westbound dual left turn lane
  - Westbound right turn lane
  - Southbound dual left turn lane
- E 182nd Avenue/NE 83rd Street
  - Northbound right turn lane
- NE 182nd Avenue/NE Fourth Plain Road
  - Traffic signal



- Eastbound left turn lane
- Westbound right turn lane
- Southbound right turn lane

**Recommended Improvements:**

- NE Ward Road/NE 88<sup>th</sup> Street
  - Second eastbound through lane (existing two-lane section to 1,000 feet east of intersection)
  - Second westbound through lane (convert existing left turn lane from 1,000 feet east of intersection to existing two-lane section west of intersection)
- NE Ward Road/NE 162<sup>nd</sup> Avenue
  - Second northbound right-turn lane



**Figure 7 - Future Recommended Improvements**



The future 2035 baseline with project scenario was analyzed with the identified minimum and recommended improvements. The operational results for the study intersections with these improvements added are summarized in Table 8; study intersections without improvements operate as previously shown in Table 5. With the improvements, all of the intersections are within the jurisdictional operating standards of a level of service E and have a v/c ratio less than 1.0. The intersection with the worst operating conditions is NE 162<sup>nd</sup> Avenue/NE Fourth Plain Road, with a level of service at the operating standard of E, and a volume to capacity ranging between 0.93 in the AM and 0.99 in the PM.

**Table 8 - Future 2035 Baseline with Project + Recommended Improvements Intersection Operations**

Intersection		Jurisdictional Standard	AM Peak Hour			PM Peak Hour		
			LOS	Delay	v/c	LOS	Delay	v/c
<b>Signalized Intersections</b>								
1	NE Ward Road/NE 88th Street	E	B	10.2	0.64	A	8.4	0.67
3	NE Ward Road/NE 162nd Avenue	E	D	40.1	0.74	D	48.1	0.84
5	NE 162nd Avenue/NE Fourth Plain Road	E	E	56.1	0.93	E	63.9	0.99
8	NE 182nd Avenue/NE Fourth Plain Road	E	B	10.7	0.72	A	8.1	0.75
<b>Unsignalized Intersections</b>								
7	NE 182nd Avenue/NE 83rd Street	E	A/C	16.7	0.12	A/C	17.7	0.39

Two-Way Stop: LOS = Level of Service of Major Street/Minor Street, V/C = Volume-to-Capacity Ratio of Worst Movement

The future 2035 baseline with project scenario with the identified improvements in place was analyzed further to estimate vehicle queues during the PM peak hour. The queuing analysis focused on the three closely spaced traffic signals (two existing, one future) on NE Ward Road. An estimate of the 95th percentile vehicle queues for each of the signalized intersection approach movements was made using the traffic operation model. The model simulation estimates the queue length that would not be exceeded in 95 percent of the queues formed during the peak hour. Queuing results (more detail in the Appendix) indicate that the NE 162<sup>nd</sup> Avenue/NE Ward Road intersection is expected to have significant queues in both the northbound and westbound directions, as follows:

**NE 162<sup>nd</sup> Avenue/NE Ward Road 95<sup>th</sup> Percentile Queue Lengths:**

- Northbound left: approximately 2,000 feet (back of queue extends to 78<sup>th</sup> Street intersection)
- Northbound right: approximately 1,500 feet (back of queue extends to midway between NE 81<sup>st</sup> Street and NE 78<sup>th</sup> Street)
- Westbound left: queue extends to the east through NE 162<sup>nd</sup> Avenue (North) and approximately 300 feet east of the NE 88<sup>th</sup> Street intersection

In general, when vehicle queues extend past available storage bays, queues in turn lanes can block through movements and through movements can, in turn, block upstream intersections. The result is an increased potential for rear-end collisions and a significant loss in system capacity.



The most critical movement that affects queuing on NE Ward Road is the westbound left turn at the NE 162<sup>nd</sup> Avenue/NE Ward Road intersection. The lack of storage blocks the westbound through movements for the two adjacent signalized intersections to the east.

## KEY FINDINGS

Based on the analysis presented above, the following key findings can be made regarding the planned NE 83<sup>rd</sup> Street Extension:

- Improvements will be required at several study intersections by 2035, and the addition of the planned extension does not eliminate or postpone the need for these improvements.
- Recommended system planning for collector facilities is approximately one-half mile spacing. The planned project is ideally located approximately one-half mile north of NE Fourth Plain Boulevard and approximately one-half mile south of NE Ward Road.
- Based on the recommended collector spacing of one-half mile, a north-south roadway connecting NE Fourth Plain Boulevard and NE Ward Road would be desirable midway between NE 162<sup>nd</sup> Avenue and NE 182<sup>nd</sup> Avenue.
- The planned NE 83<sup>rd</sup> Street extension provides an important collector facility for local traffic to access adjacent neighborhoods (including future developments), reducing the potential for traffic volumes and speeds to exceed livability thresholds on local streets with residential frontage.
- The planned NE 83<sup>rd</sup> Street extension provides an important connection for bicyclists and pedestrians. Dedicated bicycle lanes and sidewalks should be provided on the planned extension.



**Washington State  
Department of Transportation**

Lynn Peterson  
Secretary of Transportation

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September 22, 2014

Laurie Lebowsky  
Clark County  
1300 Franklin Street  
Vancouver, WA 98666

Re: Arterial Atlas Update

Dear Ms. Lebowsky:

The Washington State Department of Transportation (WSDOT) staff has reviewed the information you submitted regarding updating the Clark County Arterial Atlas. WSDOT would like to address our concerns and offer the following comments.

It's our understanding this proposal involves reclassifying several roads in the Fifth Plain Creek area near the SR 500/NE 182<sup>nd</sup> Avenue intersection. WSDOT encourages and supports Clark County to pursue transportation improvements that improve safety and reduce congestion on state highways.

Thank you for the opportunity to comment on this proposal. If you have any questions or need additional information, please contact Jeff Barsness, Southwest Region Development Services Engineer, at 360-905-2059.

Sincerely,

A handwritten signature in black ink that reads "Dave Bellinger".

Dave Bellinger  
Design Services Engineer

DB: jb

1. We hope impact fees will not be waived on NE 182<sup>nd</sup> Ave and 83<sup>rd</sup> St. If the land is developed there, the roads will definitely need to be improved. Also, why in the world would the County put a STOP sign northbound on NE 182<sup>nd</sup> Ave instead of NE 83<sup>rd</sup> St? It simply doesn't make any sense. The STOP sign definitely needs to go at the end of the westbound end of NE 83<sup>rd</sup> St. Crazy! The recent road improvement there makes absolutely no sense.
2. Always include an index of "codes" for each road segment. "C-2" means nothing without further description. Also, where is this information on the website?
3. No development UNTIL roads improved. Today, mark all proposed right of ways with semi-permanent flags to indicate location and extent of these proposed changes.
4. It seems to be too dangerous to continue NE 83<sup>rd</sup> St into Monet's Garden. There already have had accidents with vehicles driving through the wire fence into the neighborhood over the years. Perhaps it would be safer and make better sense to lengthen 78<sup>th</sup> St to meet NE 182<sup>nd</sup> Ave.
5. If the 83<sup>rd</sup> St goes in, it should include noise barriers on both sides of it.
6. We oppose the proposed NE 83<sup>rd</sup> St westward expansion because it will make most of our yard exposed to the public that will be using the extension.
7. NE 83<sup>rd</sup> St is not needed and creates a huge hardship for the residents of Monet's Garden.
8. I oppose 83<sup>rd</sup> St extension. This goes through the backyards of 13 homes. I see it as a dangerous situation.
9. It is immoral for you to allow the developers to post maps that do not disclose this "new road". Our seller was the builder and he said it was going to be a community trail.

## **Exhibit 6**

### **October 16, 2014 letter from Randy Printz**

**As I indicated at the workshop, I will not be able to be in attendance at tonight's Planning Commission hearing on the arterial atlas classification for 78th St./84rd St. Please place provide a copy of these comments to the Planning Commission and make them part of the record in this matter.**

The issue for many of the property owners in this area relating to this section of roadway is the bridge that would have to be constructed across Fifth Plain Creek to accommodate this east west running road when constructed. Based upon preliminary engineering, the approximate cost of the crossing is approximately a million dollars when the critical areas issues are taken into account. Last year, in working on behalf of a consortium of area property owners, I brought before Planning Commission and the Board a request to remove the area's Urban Holding designation. The removal of that designation was supported by Planning Commission and the Board.

One of the issues that arose during that process was the need for improvements at 182<sup>nd</sup>/4<sup>th</sup> Plain; 88<sup>th</sup>/Ward Road and potentially the crossing of Fifth Plain Creek through the construction of a connection between 78<sup>th</sup> Street and 84rd Street. I say potentially, because there was much discussion about whether such a crossing was needed or not. As part of that process I went to the City of Vancouver and negotiated an agreement whereby the City of Vancouver would give up the Transportation Impact Fees generated from this area, if the County placed these improvements in this area on to its Capital Facilities Plan and TIF program. The result of that is that TIF monies from this area would be collected and used for these projects.

As this area develops, the properties on the west side of the creek, will have transportation distribution patterns that will take them to the west. That is where the jobs and commercial services are located. As such, it is unlikely that any of those properties will be conditioned upon building the bridge. Similarly most of the trips on the east side of the creek will go down 182<sup>nd</sup> to access the major Fourth Plain arterial. That likely leaves the two property owners on each side of the bridge as the likely candidates to have the County try and force to build the bridge when those projects come in for development review. Absent a concurrency failure that could only be solved by the construction of the bridge, the County will not be able to force any other property owners to build this offsite improvement. While there are future likely concurrency issues at 182<sup>nd</sup>/Fourth Plain and 88<sup>th</sup>/Ward, those improvements will create most, if not all, of the capacity needed to meet the County's concurrency requirements for several years.

Now, when the property owner whose property the bridge will be built upon comes in for development, the County will try and condition the approval on construction of this million dollar bridge. While this clearly raises constitutional "rough proportionality" issues, it is far from clear today whether the County could sustain its burden or not; perhaps. However, as a matter of fairness and good public policy, the County should not create this circumstance. One can reasonably debate the merits of the crossing. The Monet's Gardens folks fought hard during

the UH hearings to make sure that the PC and the Board knew that they did not want this crossing.

If the PC is going to upgrade the status of this section of roadway, it should be done in conjunction with the placing of the bridge on the County's CFP and TIF lists. While this does not make the above described issues go away, it does mean that TIF credits would be issued to the development that builds the bridge. That fact greatly reduces the burden on one individual property owner and spreads that burden across all of those paying TIFs in the area. Due to the agreement that I negotiated with the City, there is now TIF money available to be used for these three improvements if they are placed upon the list. Thank you for the opportunity to comment on this issue.

Randall B. Printz | Attorney



**LANDERHOLM**

Legal advisors. Trusted advocates.

805 Broadway Street, Suite 1000

**NOTICE OF PUBLIC HEARING  
CLARK COUNTY PLANNING COMMISSION**  
NOTICE IS HEREBY GIVEN that the Clark County Planning Commission will conduct a public hearing on THURSDAY, October 16, 2014, at 8:30 p.m., at the Clark County Public Service Center, 6th Floor Hearing Room, 1300 Franklin, Vancouver, WA, to consider the following items:

2014 Annual Reviews and Dockets amending the 20-Year Growth Management Comprehensive Plan Map and Zone Map:

1. CPZ2014-00001 Steigerwald Commerce Center - A proposal to amend the comprehensive plan map and zoning map designation from Parks/Open Space to Industrial (IH) on the western portion of parcel number 135307000 that is outside of the Columbia River Gorge National Scenic Area. Approximately 17 acres.  
Staff contact: Jose Alvarez 360-397-2280 ext 4898 or e-mail  
[Jose.Alvarez@clark.wa.gov](mailto:Jose.Alvarez@clark.wa.gov)

2. CPZ2014-00005 - Arterial Atlas - Fifth Plain Creek Area

This proposal would amend the County Arterial Plan Map with the following:

• Amend NE 88th St., from NE Ward Rd to NE 182nd Ave., from a two-lane Rural Major Collector (R-2) to a two-lane Urban Collector with center turn-lane and bike lane (C-2cb).

• Amend the portion of NE 83rd St, from NE 78th Street to the edge of the Urban Growth Boundary on the East, from Rural Minor Collector (Rm-2) to a two-lane Urban Collector (C-2).

• Amend NE 182nd Ave., from NE 88th Street to NE Fourth Plain Road, from a Rural Major Collector (R-2) to two-lane Urban Collector with center turn-lane and bike lane (C-2cb).

Staff contact: Laurie Lebowsky 360-397-2280 ext 4544 or e-mail  
[Laurie.Lebowsky@clark.wa.gov](mailto:Laurie.Lebowsky@clark.wa.gov)

The staff report, related materials and hearing agenda will be available 15 days prior to the hearing date on the county's web page at

<http://www.clark.wa.gov/planning/PCmeetings.html>. Copies are also available at Clark County Community Planning, 1300 Franklin Street, 3rd Floor, Vancouver, Washington. Anyone wishing to give testimony in regard to this matter should appear at the time and place stated above.

Approved as to Form only:

ANTHONY F. GOLIK

Prosecuting Attorney

By:

Christine Cook,  
Deputy Prosecuting Attorney

Oct. 1

520079

Wednesday, October 01, 2014 - The Reflector -

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2. CPZ2014-00005 - Arterial

**LEGAL NOTICES**

Atlas - Fifth Plain Creek Area  
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Prosecuting Attorney

By: Christine Cook

Deputy Prosecuting Attorney

Oct 1