MEMORANDUM

TO: Mayor and City Council

FROM: Ken Gibb, Community Development Director

DATE: April 5, 2013

RE: 49th Street Annexation, and Appeal of a Zone Change Application (ANN10-00002; ZDC10-00002)

I. Issue

The Land Development Code (LDC) specifies that the City Council make final decisions on placing annexations on the ballot for voter approval. The LDC also specifies that the Planning Commission make final decisions on Zone Change requests, unless the decision is appealed to the City Council.

The Planning Division received an application for an Annexation, Zone Change and Planned Development for the 49th Street Annexation (ANN10-00002; ZDC10-00002; PLD10-00006) on March 31, 2010. The Planning Commission held a public hearing on this matter on June 2, 2010. On that date the Commission deliberated and decided to recommend that the City Council not place the 49th Street Annexation on the November 2, 2010, ballot (ANN10-00002). The Planning Commission also denied the Zone Change and Planned Development requests. The Zone Change and Planned Development decisions were appealed on June 14, 2010. However, the applicant requested additional time to prepare materials for the appeal, and because the annexation request and associated land use actions are not subject to the State's 120-day Rule, the appeal has not expired. The Planned Development application was withdrawn on February 13, 2013. Consequently, the appeal of the Zone Change and request to place the 49th Street Annexation on the November 5, 2013, ballot shall be considered by the City Council, as specified in LDC Sections 2.0.50 and 2.19.30.02(d).

II. BACKGROUND

The underdeveloped 10.48 acre site is located at 2650 SW 49th Street. In general, the site is south of SW Country Club Drive, north of Nash Avenue, and between SW 49th and 53rd Streets. The subject site is comprised of the following tax lots and area: Benton County Assessor's Map 12-5-09 CB, Tax Lots 600, 700, and 801; and portions of SW 53rd Street that abut Tax Lots 600 and 700. The subject site is fully within the Urban Growth Boundary and abuts the City Limits along the eastern property line of Tax Lot 801.

The applicant proposes annexation of the 10.48 acre site. The following is a chronology of the progress of the land use applications thus far:

June 2, 2010: The Planning Commission held a duly noticed public hearing on the above referenced Annexation, Zone Change, and Planned Development applications. The Commission closed the public hearing, deliberated, and made the following decisions:

1. recommend that the City Council not place the proposed Annexation on the November 2, 2010, ballot;

2. Denied the Zone Change application;

3. Denied the Planned Development application.

The Planning Commission made findings in support of their decision during deliberations on the request, as reflected in the minutes from the June 2, 2010, Planning Commission public hearing **(Exhibit II)**.

June 14, 2010: An appeal of the Planning Commission's decisions to deny the Zone Change and Planned Development application was received **(Exhibit IV)**.

June 29, 2010: The applicant/appellant postponed the City Council hearing to a date uncertain **(Exhibit V)**.

January 1, 2012: DLCD and ODOT amended the State Transportation Planning Rule (TPR) to clarify that zone changes consistent with Comprehensive Plan designations are not subject to the TPR.

February 13, 2013: The applicant/appellant officially withdrew the Conceptual and Detailed Development Plan appeal, but is proceeding with the Annexation request and appeal of the Zone Change decision **(Exhibit VI.7)**.

March 25, 2013: Public notice was mailed and the site was posted for the City Council public hearing to review the Annexation application, and hear the appeal of the Zone Change application.

III. DISCUSSION

A. Annexation and Zone Change

Staff reviewed the application and provided analysis and findings in the May 21, 2010, Planning Commission Staff Report **(Exhibit III)**. The analysis and findings include the following criteria and discussion:

1. Purposes and Procedures of Annexation **(Exhibit III.6-7)**;

2. Demonstration of Public Need **(Exhibit III.7-26)**;
3. Advantages and Disadvantages of Annexation **(Exhibit III.26-31)**;
4. Annexation Site is Capable of Being Served by Urban Services and Facilities **(Exhibit III.31-42)**;
5. Land Use associated with Zone Change **(Exhibit III.48)**; and
6. Compatibility **(Exhibit III.42-46, and 49-52)**.

Consistent with LDC Section 2.6.30.08, the Planning Commission made a recommendation to the City Council regarding the placement of the Annexation request on the November 2010, ballot. The Planning Commission's recommendation to the City Council is to not place the Annexation on the November 2010, ballot. The Planning Commission's recommendation was based on findings made during deliberations on the request, as reflected in the minutes of the June 2, 2010, Planning Commission meeting **(Exhibit II.9-11)**. In general terms, the Planning Commission found that the General Land Use Plan (GLUP) and Conceptual Development Plan did not provide sufficient information to ensure that the compatibility review criteria in LDC Section 2.6.30.06(e) (Annexation criteria), and in LDC Section 2.5.40.04.a (Planned Development criteria), would be met. Additionally, the Planning Commission found that the applicant did not sufficiently demonstrate a public need for the Annexation, as required by LDC Section 2.6.30.06(a).

On June 14, 2010, the applicant appealed the Planning Commission's decisions regarding the Zone Change and Planned Development applications to the City Council **(Exhibit IV)**. The applicant argues that, per LDC Section 2.5.40.01, the Community Development Director has the ability to waive application requirements for Conceptual and Detailed Development Plans. The applicant further argues that since the application was deemed complete, the Commission had sufficient information to be evaluated against the applicable review criteria. Finally, the applicant argues that the Planning Commission erred in denying the Planned Development application based on a lack of sufficient information to properly evaluate the Conceptual Development Plan. In addition, the applicant provided supplemental information and arguments regarding the public need for the annexation.

The State's TPR in effect at the time of application submission required mitigation to the intersection of SW 53rd Street and Philomath Blvd., or a mechanism to ensure that the required mitigation will be completed in conjunction with further development on the annexed property, must be addressed at the time of the Zone Change **(Exhibit III.370-373)**. Typically, traffic mitigation associated with a land use application is satisfied through a condition of approval of the application; however, Annexation and Zone Change applications cannot be subject to conditions of approval. Because Annexation and Zone Change applications cannot be conditioned, the typical mechanism for satisfying the need for traffic mitigation is not feasible.

Consequently, the applicant requested a Conceptual and Detailed Development Plan (CDDP) for the development site. Detailed Development Plan (DDP) approval was only requested for Phase I development of the site. Phase I would have extended a public storm pipe in SW 49th Street and constructed the westerly portion of the intersection of SW 49th Street and the proposed neighborhood collector street **(Exhibit III.213)**. Future DDP phases (Phase II and beyond) would have addressed development of the remainder of the site. Prior to development of Phase II, the applicant would have been required to submit a Major Modification to the existing DDP or submit a new DDP for review and approval. The Conceptual Development Plan (CDP) covered the entire site, and showed conceptual street alignments and residential densities within each block **(Exhibit III.212)**. The CDDP was capable of receiving conditions of approval and the applicant requested that any mitigation required by ODOT to satisfy the requirements of the TPR be conditioned with the CDDP application. The condition of approval would have required that the TPR be addressed in conjunction with further development of the site (Phase II and beyond).

Because CDDPs can expire and PD Overlays can be administratively removed, the applicant proposed to preserve the CDDP approval in perpetuity by providing financial security for all public improvements related to Phase I of the CDDP. The applicant proposed to financially secure the public improvements before the City Council public hearing for the annexation application. This approach to preserve the CDDP approval in perpetuity would be consistent with the requirements of LDC Section 2.5.50.09. Before the applicant could financially secure the public improvements, a Public Improvement by Private Contract (PIPC) permit would need to be submitted and authorized by the City's Public Works Department.

One January 1, 2012, the Department of Land Conservation and Development (DLCD) and the Oregon Department of Transportation (ODOT) amended the State's TPR to clarify that a zone change consistent with the underlying Comprehensive Plan Designation is not subject to the TPR **(Exhibit VI.233-242)**. The applicant's proposed Zone Change is to apply a City Zoning of RS-6, which is consistent with the underlying Comprehensive Plan Designation of Low Density Residential. As proposed, the amended TPR is not applicable to the subject request. The applicant withdrew the CDDP application from their request, because it is no longer necessary to address traffic mitigation associated with the TPR. Because the applicant intends to develop a code-compliant development on the site in the future, the Planned Development is not needed. Consequently, the lack of detail provided on the Coceptual and Detailed Development Plan, as cited by the Planning Commission, is no longer an issue.

On June 29, 2010, the applicant postponed the City Council public hearing to a date uncertain to resolve issues that required additional time **(Exhibit V)**. In February and March 2013, the applicant submitted a revised application for the Annexation and Zone Change requests, and withdrew the application for a Conceptual and Detailed Development Plan **(Exhibit VI)**.

Public hearings for land use decisions that are appealed to the City Council are de novo hearings. This memorandum responds to issues raised on appeal. Findings in relation to all other applicable decision making criteria are found in **Exhibit III**.

B. Issues Raised on Appeal

1. Public Need

In response to the Planning Commission's recommendation to not place the annexation on the ballot, on June 14, 2010, and February 13, 2013, the applicant submitted revised application materials with additional written arguments for the Annexation request as part of their arguments on appeal **(Exhibit VI)**. The new written arguments replace the applicant's prior responses to the review criteria in LDC Sections 2.6.30.06.a. The applicable review criteria and the applicant's revised response are provided in their entirety below, followed by Staff's analysis.

Applicable Land Development Code Criteria:

2.6.30.06 - Review Criteria (Annexations)

Requests for Annexations shall be reviewed to ensure consistency with the purposes of this Chapter, applicable policies of the Comprehensive Plan, particularly Article 14, and other applicable policies and standards adopted by the City Council and State of Oregon.

Annexations can only be referred to the voters when the proposed Annexation site is within the City's Urban Growth Boundary (UGB), and where the findings below are made. The criteria are highlighted in bold type.

a. The applicant has demonstrated a public need for the Annexation -

2. <u>Major Annexations</u> - Factors to be considered in evaluating public need for Major Annexations shall include, but are not limited to:

a) The five-year supply of serviceable land of the Annexation's land use category (single-family, multi-family, Commercial, or Industrial). Annexations of land designated as Public Institutional, Open Space-Conservation, or Open Space-Agriculture on the Comprehensive Plan Map are exempt from this criteria;

b) Availability of sufficient land of this type (single-family, multi-family, Commercial, or Industrial) to ensure choices in the market place. Annexations of land designated as Public Institutional, Open Space-Conservation, or Open Space-Agriculture on the Comprehensive Plan Map are exempt from this criteria; and

c) Compliance with adopted community-wide livability indicators and benchmarks relative to Major Annexations, as identified in Section 2.6.30.07.c.

The City shall provide annually updated Citywide data for the applicant to use in calculating supply and demand for the major land use categories (single-family residential, multi-family residential, Commercial and Industrial). Residential land supply and demand data shall be calculated using housing units. Commercial and Industrial land supply and demand data shall be calculated using acres.

The required data sources and methodologies for use in determining land supply and demand for Major Annexations, and the requirements for addressing community-wide benchmarks, are outlined below in Section 2.6.30.07.

2.6.30.07 - Methodologies for Some of the Review Criteria in Section 2.6.30.06

All of the provisions within this Section are required for Major Annexation proposals except for proposals or portions of proposals that include land with Comprehensive Plan designations of Public Institutional, Open Space-Conservation, or Open Space-Agriculture. Lands with these map designations are exempt from the provisions within "a," and "b," below. Minor Annexation proposals are subject only to the provisions within "c," below.

a. Determining Five-Year Supply of Serviceable Land - Serviceable land is land within the City limits capable of being served by public facilities.

When calculating a five-year supply of serviceable land, applicants shall refer to and follow the Council Policy addressing the five-year supply, as amended from time to time. This Policy outlines the accepted methodology and will result in more uniform application submittals.

Applicant's Response:

Response: *As no Council Policy actually exists, it is difficult to calculate a five-year supply of serviceable land based on any uniform standards. The City's 2011 Land Development Information Report (2011 LDIR) is likely the most objective source for available land information. In it, are the following quantities of vacant land zoned Low-Density Residential—both unconstrained and constrained by natural features:*[3]

	Unconstrained	*Constrained*
- RS-3.5 ….. 67.52 acres		*33.85 acres*
- RS-5 ….. 119.48 "		*107.62 "*
- RS-6 …... 141.54 "		*53.36 "*

To calculate the minimum amount of land available, we assume the worst case scenario of 100% constraint & most generous application of MADA allowances for natural features constrained lands, and add that amount to the unconstrained acreage:

- *17,500 sf/acre of each of the 33.85 constrained acres of RS-3.5 land could be developed for 13.60 additional acres;*
- *15,250 sf/acre of each of the 107.62 constrained acres of RS-5 land could be developed for 37.68 additional acres;*
- *13,000 sf/acre of each of the 53.36 constrained acres of RS-6 land could be developed for 15.92 additional acres.*

Therefore, the total minimum additional vacant, natural features constrained acreage available is 67.20 acres. Adding this to unconstrained acreage results in 395.74 acres minimum for all Low-Density Residential land. For RS-6 land alone, this results in a total of 157.46 acres, minimum.

If we generously assume all constrained lands are 100% developable (not likely, since they are constrained, to some extent), there is between 395.74 and 523.37 acres of vacant Low-Density Residential land in the City of Corvallis. And under a similar assumption, the quantity of vacant land zoned RS-6 is between 157.46 and 194.90 acres.

Total vacant & vacant approved single family lots in the RS-6 zone totaled only 121 as of December 2011,[4] compared to 346 lots for lower density (RS-5 and RS-3.5). The below table provides a view of what is available from the remaining Low-Density Residential lots listed in the 2011 LDIR, among subdivisions with 10 or more available lots.

[3] "*2011 Corvallis Land Development Information Report*", (Corvallis: Corvallis Community Development Department, 2012), 30.
[4] "*2011 Corvallis Land Development Information Report*", *op. cit.*, 26

Approved, Vacant Lots, Low-Density Residential[5]

Subdivision	Remaining lots[6]	Zoning	Typical lot, sf
Brooklane Heights	42	RS-3.5	13,000
Oakmont Addition	24	RS-3.5	13,000
Meadowridge	16	RS-3.5, 5	12,500
Cascade Crest	10	RS-3.5	11,500
Coronado	46	RS-3.5, 5, 12	8,000
Sparrow Hill	11	RS-6	8,500
Suncrest I & II	42	RS-6	5,300[7]
Megan's Addition	13	RS-6	5,200
Ashwood Preserve	28	RS-6[8]	2,800
Total	222		8,000[9]

49th St, General Land Use Plan, Proposed Lots (for comparison)

49th St. (GLUP)	61	RS-6	4,000[10]

[5] "*2011 Corvallis Land Development Information Report*", *op. cit.*, 25
[6] *Ibid*, 26
[7] ~2/3 of lots >5,200 sf
[8] RS-9 building types and density, due to wetlands/open space density transfer
[9] Mean lot size, rounded off to nearest 100 sf
[10] " "

Looking at the market for vacant lots, choices are even more limited. Of 40 lots listed in 2012, only 3 were in the RS-6 zone. The remainder of lots were in lower density zones than RS-6, with half of the active listings from the Coronado Subdivision. Below table is a summation/average of all Low-Density Residential lots that were listed in Corvallis for 2012:

Corvallis Low-Density Residential Lots, Listed, 2012[11]

Status	Price	Area	$/sf	$/acre	#s, RS-6	#s, RS-3.5 & RS-5
Sold	$102,000	10,150 sf	$10.0	$533,000	3[12]	16
Active	$130,600	10,650 sf	$12.3	$600,200	0	24[13]

The Suncrest Planned Development & Subdivisions are also in the RS-6 zone. Phase 1 was approved in 1995 for 9 lots on 82 acres; Phase 2 was platted in 1998 for 87 lots on 16 acres. As of December 2011, 42 of Phase 2 lots were vacant.[14] *Approximately 63 acres remain to be platted and approved. This remaining acreage is significantly constrained by protected natural features, including: High Protection Proximate Wetlands Adjacent to Riparian Corridors; Locally Protected Wetlands of Special Significance; High Protection 75 foot Riparian Corridors; and High Protection 100 foot Riparian Corridors.*[15] *At a glance, it appears that at least 1/3 of the 63 acres of vacant land are constrained by these natural features;and potentially more is impacted, if a large grove of trees is preserved, as well. It is unclear exactly how much of the parcel is constrained until a formal wetlands delineation is conducted, and the fate of the tree grove is decided. No tentative plat application or subdivision plan has been submitted for the remaining 63 acres.*

The other subdivisions with any appreciable amount of available lots—Brooklane Heights, Meadowridge, Cascade Crest, and Coronado—are in lower density zoning (RS-3.5 & RS-5), and offer much larger lots and houses, at much higher prices. For example, the two most recent listed lots at Meadowridge averaged 12,000 sf each, with an average list price of $220,000.[16]

The 15.25 acre piece of RS-6 zoned vacant land adjacent to Suncrest Planned Development has no land development approval associated with it. The property is heavily constrained by natural features and lack of readily available infrastructure. It is owned by a corporation that in 2008 filed for Chapter 11 Bankruptcy Protection. Again, it is highly unlikely that these 15.25 acres will be available as lots on the market any time within the next five years.

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[11] WVMLS, mean averages
[12] Megan's Addition
[13] 12 lots in Coronado Subdivision
[14] *"2011 Corvallis Land Development Information Report", op. cit.*, 25
[15] *"Riparian Corridors and Wetlands, Corvallis, Oregon—Map"*, (Corvallis: City of Corvallis, Public Works Department, GIS Services, 2006)
[16] WVMLS, February 5, 2013

Ashwood Subdivision is on RS-6 zoned land, however the platted housing types are RS-9—with 3 and 5 unit attached townhouses at 9 units per acre—allowed through a density transfer from adjacent undeveloped wetlands.

Megan's Addition, with 10 vacant lots,[17] and, to a lesser degree, Suncrest, with 42 vacant lots,[18] are the only approved, Low-Density Residential subdivisions that are even close to comparable with development that can occur at the 49th Street property. And neither of those subdivisions contains duplexes or triplexes, as does 49th Street.

In conclusion, the 49th St. Annexation, if approved, will bring not only a more diverse palette of housing than currently exists, it will certainly bring more housing at a lower price than other existing Low-Density Residential subdivisions.

[17] As of December 2012 (3 lots sold in 2012)
[18] "*2011 Corvallis Land Development Information Report*", *op. cit.*, 25

Staff Response:
To calculate the five-year supply of serviceable land, LDC Section 2.6.30.07 refers applicants to a Council Policy which has not been created. Since no Council Policy exists, the applicant has provided a calculation of the amount of Low Density Residential land that currently exists inside the City Limits. This calculation is based on data in the 2011 Corvallis Land Development Information Report (LDIR). The applicant's calculation is demonstrated in the table below, and staff have verified that the data and calculations are accurate.

Table I: "Worst-Case" Developable Low Density Residential Land within the City

(All figures in acres unless otherwise noted)	Vacant Area w/in Zone	Vacant Land, Subject to Planned Development Overlay	Vacant Land, Constrained with Natural Features	MADA developable land (sq. ft. per acre)	"Worst - Case" developable constrained land*	Minimum potential developable Low Density Land
RS-3.5	101.37	31.21	33.85	17,500	13.60	81.12
RS-5	227.10	150.07	107.62	15,250	37.68	157.16
RS-6	194.90	155.31	53.36	13,000	15.92	157.46
Total	523.37	336.59	194.83	N/A	67.20	395.74

* This scenario is described as "worst-case" because it assumes that all constrained properties are 100% constrained, and that resultant developable area would be no more than the minimum allowed by the Minimum Assured Development Area (MADA) provisions in the LDC. In reality, most properties will not be 100% constrained by natural features, meaning that the amount of developable Low Density Residential land within the City will likely be larger.

The Corvallis Buildable Land Inventory (BLI) was completed in 1998 and projects trends regarding land need and supply based on 1996 data. The BLI anticipates a significant supply of Low Density Residential land to meet the projected demand over the 1996-2020 planning period. Table 8 of the BLI anticipates a 341-acre surplus of vacant Low Density Residential land by 2020 **(Exhibit III.81)**. The LDC does not specify how much land is needed for

a five-year supply of serviceable land, nor does it indicate how to calculate this figure. Land Development Code Section 2.6.30.07(a) identifies "serviceable land" as land within the City Limits capable of being served by public facilities. Nearly all land in the Urban Growth Boundary is proposed to be served by public facilities at some point in the future. However, currently there are lands within the City Limits that cannot be immediately served by public facilities, because of the physical separation and the need to extend the services. Consequently, staff are not able to develop an estimate for what a five-year supply of serviceable land should be.

The applicant has provided an analysis of vacant RS-6 land, based on approved lots, and argues that this method provides a better indication of the actual supply of serviceable RS-6 land. As reflected in the Minutes from the June 2, 2010, Planning Commission public hearing, the Planning Commission thought providing this information may be a more persuasive way to demonstrate a public need for the annexation **(Exhibit II.10)**. According to the 2011 LDIR, the total number of vacant and approved lots zoned low density residential is 346, of which 121 are zoned RS-6. The applicant identified nine approved subdivision applications on land zoned low density residential within the City Limits. The total number of vacant lots in the nine approved subdivisions is 254, of which 85 are zoned RS-6. The applicant provided analysis regarding a few of the RS-6 approved subdivisions and the availability of serviceable lots. As of December 2011, there were 42 vacant lots in the Suncrest Phase II development. There remain 63 acres of unplatted land within this development, plus an additional 15.25 acres west of the Suncrest Development site zoned RS-6. These areas are highly constrained with protected Natural Features and do not have readily available infrastructure. As such, the applicant does not believe these 78.25 acres are likely to be subdivided and available to the market within the next five years.

Ashwood Preserve is another approved subdivision zoned RS-6. However, the lots are proposed to be platted and developed to RS-9 (medium density residential) standards due to a density transfer allowed to preserve the abutting natural resources. Because the lots are proposed to be platted to a higher density than RS-6, the applicant believes that this approval should not be considered as serviceable low density residential land. Staff agree with the applicant’s analysis, regarding the Ashwood Preserve approval, but note that this approval could expire and be platted and developed to RS-6 standards in the future.

A portion of Megan’s Addition and all of Sparrow Hill are approved subdivisions with 21 remaining vacant lots zoned RS-6. The lots within these two subdivisions are considered serviceable and are available to the market. However, the applicant argues that when looking at the market for vacant lots, the availability of RS-6 zoned lots is very limited. In 2012, and using data from Willamette Valley Multiple Listing Service, only 3 lots (Megan’s Addition)

zoned RS-6 were sold, while 16 lots zoned RS3.5 or RS-5 were sold **(Exhibit VI.36)**. At the end of 2012, there were no active listings for vacant lots zoned RS-6, and 24 active listing for lots zoned RS-3.5 or RS-5.

Staff have reviewed the applicant's data and calculations and find them to be accurate. Because there is not an accepted methodology for the determination of a five-year supply of serviceable land, Staff are unable to make a determination of what that five-year supply should be. Given that, and as noted above, the LDC does not specify how much land is required to maintain a five-year supply of serviceable land. The applicant proposes to annex 10.48 acres of low density residential land, which would be zoned RS-6 and increase the amount of developable land within the City to roughly 406.22 acres.

b. Providing information on land availability to ensure choices in the market place - Comprehensive Plan Policy 14.3.6 states that "factors to be considered in evaluating public need for Annexation may include... the availability of sufficient land of this type to ensure choices in the market place." Minor Annexation applications are not required to include information on market choice. However, Major Annexation applications shall provide this information. Appropriate and encouraged market choice topics include, but are not limited to:

1. Information regarding a housing/jobs balance;

Applicant's Response:

Response: *In 2010, 28,026 people were employed in Corvallis.[19] The most current housing data from the City show that, as of December, 2011, the Corvallis housing stock consisted of 23,752 housing units,[20] of which 44.9%, or 10,665, are units in multi-unit structures.[21] That leaves 13,087 units remaining as single family detached. And a large percentage of multi-unit housing is occupied by OSU students, and are, by and large, rental properties, not owner-occupied.*

On first appearance, Corvallis has a job to housing ratio of 1.2 workers (jobs) to 1 housing unit. Many planners recommend a range of 1.4:1 to 1.6:1.[22] However, the above calculation does not take into account the number of housing units occupied by students (24,425 currently enrolled at OSU),[23] retirees (5,718),[24] stay

[19] "*Work Area Profile Analysis for Corvallis, Oregon*" (US Census Bureau, 2010). Retrieved 2/5/2013, from http://onthemap.ces.census.gov
[20] "*2011 Corvallis Land Development Information Report*", *op.cit.*, 15
[21] "*State and County Quick Facts, Corvallis, Oregon*". (US Census Bureau, 2011). Retrieved 2/5/2013, from http://quickfacts.census.gov/qfd/states/41/4115800.html
[22] Weitz, J. (2003) "*Jobs-Housing Balance*". Planning Advisory Service, Report 56, American Planning Association, 4.
[23] "*Oregon State University Enrollment Summary—Winter Term 2012*", (Corvallis: OSU Office of Institutional Research, #10, 2012), 1.
[24] "*State and County Quick Facts, Corvallis, Oregon*". *op. cit.* 2010. (65 years and over)

at home parents, or other non-employed persons. The resulting practical housing/jobs balance is undoubtedly much lower than the above number, though it is difficult to quantify without more detailed demographic information. And, when one considers the fact that many households are inhabited by more than one wage earner,[25] it can easily be inferred that the existing balance is quite inadequate to support the employment level of Corvallis.

[25] Planners typically assume an average of 1.5 workers per household

2. Housing rental rates and prices;

Applicant's Response:

Response: Current data for the U.S. Housing & Urban Development Department (HUD) Fair Market Rents for the Corvallis Metropolitan Statistical Area (aka Benton County) are as follows:[26]

Size	*Monthly Rent*
1 Bedroom:	*$578/month*
2 Bedroom:	*$757/month*
3 Bedroom:	*$1115/month*

The median value of Corvallis owner-occupied housing units, from 2007-2011, was $253,300.[27] On February 5, 2013, there were 47 residential housing units for sale in Corvallis listed below the median price, and 83 above median.[28]

Typical approximate monthly payment figures for home ownership are as follows:

Listed Price	*Monthly Payment**	*Available[29]*
$75K-$150K	*<$625/mo*	*0 listings*
$151K-$200K	*$625/mo-$900/mo*	*16 listings*
$201K-$250K	*$900/mo-$1250/mo*	*26 listings*
$251-$300K	*$1250/mo-$1600/mo.*	*22 listings*

*Calculated at 30 year fixed mortgage, 20% down payment, 6.0% interest

[26] *FY 2013 Corvallis, OR MSA, Fair Market Rent Documentation System"*, (Washington, D.C.: U.S. Department of Housing and Urban Development, 2012). Retrieved 2/5/2013 from http://www.huduser.org/portal/datasets/fmr/fmrs/FY2013_code/select_Geography.odn
[27] *State and County QuickFacts, Corvallis, Oregon. op. cit.*, 2011
[28] WVMLS
[29] WVMLS, 2/4/2013

3. Vacancy rates; and

Applicant's Response:

Response: The US Census Bureau estimates the homeowner vacancy rate in Corvallis at 1.6%, and the rental vacancy rate at 7.9%.[30]

[30] *2007-2011 American Community Survey* (U.S. Census Bureau, 2011). Retrieved 2/5/2013, from http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk

4. A comparison of housing costs related to incomes, land prices, and land availability.

Applicant's Response:

Response: *Housing costs and affordability as related to income are calculated based on monthly housing payments compared to gross monthly income. When a household's monthly housing payment exceeds 30% of their gross monthly income, that household is considered by HUD to be "cost burdened". For purposes of the following discussion concerning what income levels are necessary for households to be able to afford a house, that standard is used.*

Following is a breakdown of the full-time hourly wage(s) necessary for a household to earn in order to afford a house in each price range:

Listed Price	Hourly wage for affordability*
$90K-$150K	$13/hr-$19/hr
$150K-$200K	$19/hr-$25/hr
$200K-$250K	$25/hr-$30/hr

*Calculated at 30 year fixed mortgage, 20% down payment, 6.0% interest rate

As the median house price in Corvallis is $253,300, over half of the houses for sale are only affordable to households that earn a total wage of more than $30/hour. Working class jobs typically do not earn more than $15/hour. From this, it is clear that the majority of residential units for sale in Corvallis are well out of the price range of households with working class incomes, even when there is more than one wage earner in the household.

When compared to neighboring communities, Corvallis housing costs are significantly more expensive. The below table (next page) compares real estate listings for 3 different price ranges, single family residences and bare lots among 3 central Willamette Valley communities.[31]

[31] WVMLS, November 1, 2012 through January 1, 2013. Mean averages, BR & BA rounded to nearest 0.5

City	# Listings	$226K-$275K	$176K-$225K	$125K-175K	<1 acre lot
Corvallis	98	39 avail 1670 sf 3.5BR, 2.0 BA 0.27 acre $243,457 $146/sf	34 avail. 1294 sf 3.0BR, 2BA 0.14 acre $211,475 av. $163/sf	15 avail. 1146 sf 3.0BR, 1.5BA 0.17 acre $170,250 av. $149/sf	10 avail., $45K-$250K $19.4/sf
Albany	207	33 avail. 2197 sf 4BR, 2.5BA .38 acre $244,728 av. $111/sf	64 avail. 1862 sf 3.5BR, 2.5BA .20 acre $206,809 av. $111/sf	86 avail. 1497 sf 3.0BR, 2.0BA 0.21 acre $152,548 av. $102/sf	24 avail., $24K-$125K $5.9/sf
Lebanon	39	2 avail. 2678 sf 4BR, 2.5BA .25 acre $256,750 $96/sf	8 avail. 2185 sf 3.5BR, 2BA, .41 acre $209,161 av. $96/sf	27 avail. 1382 sf 3.0BR, 2.0BA 0.24 acre $145,507 av. $105/sf	2 avail., $30K-$35K $1.2/sf

This chart demonstrates that, for a comparable house in terms of square footage and lot size, prospective buyers can expect to pay approximately $100,000 more to live in Corvallis than in Albany or Lebanon. And in a recent survey of home listing prices, Corvallis ranked as the second most expensive housing market in Oregon, after Lake Oswego.[32] Not only are the prices higher, but the quantity of houses to choose from is lower, especially in the lower range of affordability. As a result, 63% (17,706) of Corvallis' 26,496 workers live outside the city.[33]

The net result of all this data concerning jobs, vacancy rates, housing availability, income, and housing prices is that the market in Corvallis is extremely limited in the choices it offers the people who work here, especially those who work at jobs that are not exceptionally high-paying. The annexation of this site would provide approximately 61 additional housing units. As these units would be developed to RS-6 standards, many of them will be on smaller lot sizes and/or be attached housing types, which will provide more choices to an area of the market that is currently underserved.

[32] *"Coldwell Banker Real Estate Home Listing Report"*. Based on the average home listing price for a 4BR, 2BR home on coldwellbanker.com from January to June 2012. It included over 72,000 listings in 2,500 markets nationwide

[33] *Inflow/Outflow Job Counts (All Jobs) in 2010, Corvallis, OR"*, (U.S. Census Bureau, 2013), Retrieved 2/5/2013 from http://onthemap.ces.census.gov.

The City does not independently review and verify documentation of this nature. Therefore, an applicant's market choice arguments shall be developed by a recognized professional in the field. Additionally, the applicant shall identify the methodologies used and the sources of information.

The Director will summarize the applicant's arguments and methodologies in the staff report provided to the hearing authority, and identify them as the applicant's arguments. The hearing authority shall determine the validity of the arguments based on the information provided by the applicant and on public comments during the public hearing process. The hearing authority shall also determine to what extent these arguments affect the criteria in Section 2.6.30.06.b.

Staff Response:
As noted in the methodology for evaluating the review criteria, Staff do not independently review and verify documentation of this nature. The market choice arguments presented by the applicant above are data-based, and the applicant has provided the sources of the data. Consistent with Section 2.6.30.07.b, the applicant's arguments have been provided for the City Council to consider.

c. Providing information on community-wide livability indicators and determining compliance with adopted community-wide benchmarks -

1. The City has just begun the process of identifying livability indicators to ultimately assist in the development of community-wide benchmarks. Additionally, many of the community-wide livability indicators are not applicable to Annexation proposals.

2. Table 2.6-1- Livability Indicators and Benchmark Criteria provides interim direction to applicants in addressing livability indicator and benchmark criteria. As the community further develops these livability indicators and benchmarks, this Section of this Code shall be updated accordingly.

a) The livability indicators and benchmarks in the following table are intended to be balanced and identified as advantages and disadvantages relative to an Annexation proposal. Compliance with all benchmarks is not required. However, when balanced and viewed in aggregate, the decision-makers need to find that the advantages to the community outweigh the disadvantages.

b) The number of applicable livability indicators and benchmarks varies, depending on the Comprehensive Plan Map designation(s) of the property involved in the Annexation request, as well as whether the Annexation is categorized as a Minor Annexation or a Major Annexation.

c) For those livability indicators and benchmarks that require distance measurements from an amenity to a proposed Annexation site, measurements shall be taken from the average point within the Annexation site.

Applicant's Response:

Table 2.6-1 – Community-wide Livability Indicators and Benchmarks for Annexation Proposals

Note: The following livability indicators and benchmarks have been placed into the categories of the City's 2020 Vision Statement. As this categorization is a first attempt based upon the actual wording in the Vision Statement, there may need to be some re-categorization and/or other revisions with future updates of this Code.

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Where People Live"				
1. Annexation Density	Average density of proposed Annexation relative to the average density of land within the City that is developed and of the same type (single-family or multi-family)	Meet or exceed the average density of developed land within the City, of the same type as the proposed annexation.	*Complies. The net density for the proposed General Land Use Plan, excluding public right-of-way, is 5.8 dwelling units/acre. The average net density of land within the City is 3.6 dwelling units/acre.*	Complies. The gross density shown on the GLUP (5.5 DUs/acre) exceeds the average net density of Low Density Residential land within the City, which is 3.6 dwelling units/acre, based on a recent Staff query using the City's Geographic Information System.
2. Rural Development Potential	Type of county development that could occur if property not Annexed (depends on county land use policies in effect at time of proposed Annexation).	Development on land within the Urban Growth Boundary is done in a fashion that does not preclude urban-level development on the subject site and/or on adjacent properties within the UGB.	*Complies. Current county standards allow development of Manufactured Home Park, or Mining Operation, which preclude urban-level development on the subject site.*	Complies. The subject site is not currently developed in a manner that would preclude urban-level development on the subject site, nor would the current development pattern impede urban development on neighboring properties.
3. Adjacent to City	Percentage of the perimeter of the Annexation that is enclosed within the City Limits	It is considered an advantage if > = 50% of the perimeter of an Annexation site is enclosed within the City limits	*Less than 50% of the perimeter is adjacent to existing City Limits*	Does not comply. The annexation site is adjacent to the City limits on the east property line. This property line is roughly 12.2% of the perimeter of the Annexation site.

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
4. Development Plans	Concurrent processing of Detailed Development Plan and/or Tentative Subdivision Plat with Annexation Request	It is not considered a disadvantage and may be considered an advantage if an Annexation request is processed concurrently with a Detailed Development Plan and/or Tentative Subdivision Plat, even though such land use decisions may be changed after Annexation.	*General Land Use Plan Provided*	No concurrent plans have been provided. As noted, this is not a disadvantage.
5. Distance to Bicycle and Pedestrian Access	Distance to bike lanes. Distance to sidewalk. Distance to multi-use path	0.5-mile to bike lane. 0.25-mile to sidewalk 0.5-mile to multi-use path.	*Complies. Less than 0.25 mile to existing bike lane and sidewalk. Less than .5 mile to multi-use path.*	Partially complies. There are existing bike lanes and sidewalk within 0.25-mile of the center of the annexation site. Existing bike lanes are located on SW 49th and SW 53rd Street. There is an existing sidewalk on the east side of SW 49th Street just north of the annexation site. The nearest multi-use path is located along SW Country Club Drive. From the center of the annexation site, the multi-use path is roughly 0.55-mile away.

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
6. Connectivity & Extension of Bicycle and Pedestrian Facilities	It is considered an advantage if improvements proposed as part of the Annexation request would connect to and extend existing bicycle and pedestrian facilities.	Connection to existing pedestrian facilities and extension of them by at least 350'; or connection to existing pedestrian facilities and filling a gap between existing pedestrian facilities of at least 100'. Connection to existing bicycle facilities and extension of them by at least 350'; or connection to existing bicycle facilities and filling a gap between existing pedestrian facilities of at least 100'.	*New pedestrian and bicycle facilities do not connect to existing facilities, as SW 49th Street and SW 53rd Street are not developed to City Standards adjacent to the annexation site.*	Partially complies. New pedestrian facilities would not connect the annexation site with existing facilities. There is an existing sidewalk on the east side of SW 49th Street that terminates just north of the annexation site. The west side of SW 49th Street has bike lanes that terminate at the north end of the Annexation site. With future development, the bike lanes would be required to be extended along the 400 ft. of frontage for the site.
7. Planned Public Transportation Improvements	Type and Extent of public transportation improvements (street, bicycle, pedestrian) that are listed in City master plans and would occur with urban-level development of Annexation site	It is considered an advantage if public transportation improvements (street, bicycle, pedestrian) would be installed with the Annexation, are listed in City master plans, and would enable other sites within the Urban Growth Boundary to ultimately develop.	*Complies. New pedestrian facilities on the west side of SW 49th Street will enable other properties in the UGB to ultimately develop. The new neighborhood collector street is included on the City's master plan and will enable other properties to the south to ultimately develop.*	Complies. The new pedestrian and bicycle facilities on SW 49th and SW 53rd Street would enable other properties to ultimately develop. In addition, the neighborhood collector through the site and the proposed multi-use path along SW 53rd Street are included in the City's master plans.

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
8. Distance to Shopping	Distance from neighborhood shopping opportunities (both existing and planned).	Annexation site is within 0.5-mile of neighborhood shopping opportunities (existing and planned). More advantage associated with shorter distances from existing (as opposed to planned) shopping opportunities and/or location within 0.5-mile from existing shopping opportunities.	*Annexation site is approximately 0.68 mile from nearest neighborhood shopping opportunities.*	Does not comply. The nearest neighborhood shopping opportunity is located at the Corner of SW 53rd Street and SW Technology Loop. From the average point of the annexation site to the intersection of SW 53rd Street and Technology Loop is roughly 0.81-miles.
9. Affordable Housing	Housing Affordability	It is considered an advantage if more than 50 percent of the proposed residential housing units are classified as Affordable Housing using the definition of Chapter 1.6 - Definitions. This benchmark will be refined with future update to this code.	*Less than 50 percent of the proposed residential units will be classified as Affordable Housing.*	Does not comply. The applicant doesn't provide data on how many units will be affordable, but does indicate in their analysis that the number will be less than 50 percent.
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Economic Vitality"				
10. Employment/Housing	Balance of jobs and housing	To be developed as part of a future update of this Code, and following completion of regional studies.	*Not applicable*	Complies. Although there is not a community benchmark, it could be anticipated that annexation of more Low Density Residential land would, when developed, improve the job/housing balance, because

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
				currently in the community there are more jobs than housing.
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Protecting the Environment"				
11. Natural Features	Acres and percentage of Annexation site with Significant Natural Features	Consistency with Significant Natural Feature protections specified by Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazards and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions; and Chapter 4.13 - Riparian Corridor and Wetland Provisions. It is considered an advantage of Significant Natural Features are protected through Annexation, since they may be better protected within the City.	*Complies. The site contains steep slopes, which will be afforded better protection under the LDC than currently apply.*	Complies. If annexed, the steep slopes will be regulated by Chapter 4.14 of the LDC.

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
12. Distance to Transit	Distance from an existing transit line and/or bus stop.	Annexation site is within 0.5-mile of an existing transit line and/or bus stop.	*Complies. Annexation site is approximately 0.4 miles from nearest transit stop, at 49th Street and Country Club Dr.*	Complies. The number 3 and C3 buses run along SW Country Club Drive between SW 49th and 53rd Street, and the number 8 bus runs south on 49th Street and turns east onto Country Club Drive. From the center of the annexation site the nearest bus stop is located roughly 0.54-mile. The Philomath Connector bus route runs along SW 53rd Street adjacent to the site. From the average point of the annexation site, the nearest bus stop is roughly 0.24-mile away.
13. Distance to Major Street	Distance to nearest Collector and/or Arterial Street(s) that would serve the proposed annexation site and is fully improved to City standards or is improved to City standards with regard to bicycle and pedestrian facilities.	Distance to nearest Collector and/or Arterial Street(s) that would serve the proposed annexation site < = 0.25-mile and is fully improved to City standards or is improved to City standards with regard to bicycle and pedestrian facilities.	*Does not comply. Annexation site is approximately 0.38 miles from SW Country Club Drive, which is the nearest Collector or Arterial fully improved to City standards.*	Partially Complies. SW 49th Street is a neighborhood collector. It is improved with bike lanes on both sides of the street and has a sidewalk on the east side of the street that terminates just north of the annexation site. Although the sidewalk is not located on the same side of SW 49th Street as the annexation site it is less than 0.25-mile from the center of the site.

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
14. Intersection	Levels of service for intersections of Arterial and/or Collector Streets, as determined by the City's Traffic Engineer, within a one-mile radius of the site	Levels of service for intersections of Arterial and/or Collector Streets affected by the proposal, as determined by the City's Traffic Engineer, and generally within one-mile radius of the site, will be a level of service "D" or better following urban level development of the Annexation Site.	*Complies. Level of service for intersections of Arterial or Collector streets will be "D" or greater. Intersection improvements such as signaling will be required to meet this standard.*	Partially complies. The intersections at SW 53rd Street and Country Club Drive as well as SW 53rd Street and Philomath Blvd. will be affected by the annexation (generate more than 30 peak hour trips). The LOS for the Intersection at SW 53rd Street and Country Club Drive will perform at an acceptable LOS. The LOS at the intersection of SW 53rd Street and SW Philomath Blvd. currently is performing at a level E. Analyzing this intersection at the Planning Horizon drops the LOS to an F. Because the intersection is already functioning at a LOS below D, future development proposals will be required to complete a TIA that provides mitigation for all of the increased trips to the intersection of SW 53rd and Philomath Blvd.
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of				
15. Local School Capacity/	Student enrollment, capacity, and average class size of public	Public schools that would serve the Annexation site are	*The nearest public elementary school is Adams*	Partially complies. Adams Elementary school is the nearest

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
Travel Distance	schools to serve the Annexation site. Distance to public elementary school.	not overcrowded. Corvallis School District goals for average class sizes may vary among grades. 0.5-mile to public elementary school. School District policies, re: boundaries of closest schools or additional schools, factor into potential redefinition of school boundaries.	*Elementary, which is approximately 1.5 miles, with separated multi-use path the majority of the way. There is sufficient capacity at all public schools that would serve the annexation site.*	school and is located more than 0.5-mile away from the average point of the annexation site. The school district was routed a copy of the application materials and did not provide comments. Presumably, this indicates no concerns with the impact of this application on school enrollment.
16. Police Response Time	Number of police officers per 1,000 persons residing within City limits	At least 1.2 officers per 1,000 persons residing within City limits.	*56 officers/54,000 people = 1.04 / 1,000 persons.*	Does not comply. There are 56 sworn police officers in the City. The population of Corvallis is 55,125 people. The ratio is 1.02 officers / 1,000 persons.
17. Distance from Fire Station	Distance from an existing fire station.	All buildable portions of the Annexation site are within 1.5 miles of a fire station with an engine company.	*The annexation site is approximately 3.0 miles from the nearest fire station.*	Does not comply. Fire Station 2 is the station closest to the annexation site. Fire Station 2 is roughly 2.47 miles from the average point of the annexation site.
18. Public Improvements	Type and extent of public improvements developed to City standards; and urban-level development, such as clustered housing, etc., existing on the proposed Annexation site.	Annexation of partially developed land within the Urban Growth Boundary (UGB) that already contains some public improvements developed to City standards, and urban-level	*The Annexation site is undeveloped at this time.*	Does not comply. No portion of the annexation site is developed to City standards.

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
		development on part of the site, is considered more advantageous to the City than Annexation of undeveloped land.		
19. Distance to Sewer and Water	Distance to adequately sized public sanitary sewer and water lines needed to serve the site.	Sanitary sewer and water facilities are proximate to the Annexation site. After some monitoring, distances for this benchmark may be specified in a future update of this code.	*Complies. Sanitary sewer and water facilities are proximate to the Annexation site.*	Complies. Sanitary sewer and public water facilities are located in the portion of SW 49th Street that fronts the annexation site. The applicant proposes to also extend these facilities in SW 53rd Street from Country Club Drive.
20. Planned Public Utilities	Types and extent of public utility improvements of sanitary sewer, water, and storm drainage, that are listed in City master plans, and would occur with urban-level development of the Annexation site.	It is considered an advantage if the installation of public utilities of sanitary sewer, water, and storm drainage, listed in City master plans, would enable other sites within the UGB to ultimately develop.	*Complies. Development of site will include the installation of the Southwest 2nd Level Water Pump Station listed in the City Utility master plan, as well as the extension of a 16" water main in SW 53rd Street.*	Complies. The extension of the 16" water main in SW 53rd Street as well as the installation of the Southwest 2nd Level Water Pump Station, listed in the City's master plans, will enable other sites within the UGB to ultimately develop in the future.
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of				
21. Distance to Parks	Distance from an existing public park.	Annexation site is within 0.5-mile of an existing public park.	*The Annexation site is approximately 0.58 miles from Sunset Park.*	Does not comply. The nearest public park to the annexation site is Sunset Park. From the average point of the annexation site to Sunset Park is roughly 0.73-mile.

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Central City"				
22. Distance to Downtown	Distance of the Annexation from the Central Business Zone intersection of SW Third Street and SW Monroe Avenue.	It is considered an advantage if an Annexation site is within 3.8 miles from the intersection of SW Third Street and SW Monroe Avenue, within the boundaries of the Central Business Zone.	*Complies. The Annexation site is approximately 3.6 miles from the intersection of SW 3rd and SW Monroe.*	Complies. The distance to the intersection of SW Third Street and SW Monroe Avenue from the average point of the Annexation site is roughly 3.6 miles.

Analysis:

The livability benchmarks are grouped according to various goals that are listed in the Corvallis 2020 Vision Statement: Where People Live, Protecting the Environment, Education/Human Services, and Central City. This analysis will discuss the benchmarks within each goal, and the goals as they compare to each other for this annexation site. Note: the goal "Economic Vitality" is not included in this analysis as the City of Corvallis has not yet defined a specific benchmark to which an annexation can be compared.

Where We Live

The annexation meets approximately half of the livability benchmarks in this category: Annexation Density, Development Plans, Rural Development Potential, Distance to Bicycle and Pedestrian Access, Planned Public Transportation Improvements. The benchmarks that are not met include Adjacent to City, Connectivity & Extension of Bicycle and Pedestrian Facilities,

Distance to Shopping, and Affordable Housing. One of these benchmarks, Distance to Shopping, requires that the site be 0.5 miles or less to said amenity. As the actual distance from the site to amenities is 0.68 miles to the corner of SW 53rd Street and SW Philomath Blvd., the benchmark is not met. However, it is close enough that the disadvantage associated with this benchmarks not being met is minimal.

While no units are designated as being set aside as affordable units, it is unlikely that any annexation would meet this benchmark, unless the applicant is a developer devoted specifically to affordable housing and the project is subsidized as such. That said, the mixture of lot sizes and housing types on the site indicate that many of the units would be available at costs lower than typically found in the Corvallis area market. This is discussed in greater detail above under Section 2.6.30.07.b.

In conclusion, as the number of benchmarks met under this category exceeds the numbers not met, it would appear the advantages outweigh the disadvantages for the annexation application at this time, under the category "Where We Live."

Protecting the Environment

The application meets all but one of the benchmarks under Protecting the Environment. It meets them for Natural Features, Intersection, Distance to Transit and Distance to Major Street. The site contains steep slopes, which will be afforded greater protection from development if the subject site is annexed. Level of service for intersections of Arterial and/or Collector streets will be "D" or greater. Intersection improvements such as signaling will be provided as required to meet this standard. The distance from the site to the nearest transit stop is 0.4 miles. The site fronts SW 53rd Street, which is classified as an arterial street.

The applicable benchmark that is not met is Distance to Major Street. This benchmark requires that the site be <= 0.25 miles or less to said amenity. As the actual distance from the site to Major Street is 0.38 miles to Country Club Drive, the benchmark is not met. However, it is close enough that the disadvantage associated with this benchmarks not being met is minimal. Furthermore, the site fronts SW 53rd Street, which is classified as an arterial and will eventually be developed to City Standards, at which point the benchmark will be met.

Annexation of the site would reduce greenhouse gas emissions, particulate pollution, and fossil fuel usage associated with automobiles, by providing more housing opportunities to convert inbound commuters to residents. Currently, a staggering 17,706 (63%) of all Corvallis workers live outside the city.[34] While a certain percentage of these commuters may choose to live outside the city, there is likely an overwhelming percentage who can't afford to purchase a home and live where they work.

In conclusion, it would appear that the application advantages strongly outweigh the disadvantages in the category of "Protecting the Environment."

Education/Human Services

While the application meets two of the livability benchmarks for this group (Distance to Water and Sewer and Planned Public Utilities), it does not meet any of the other benchmarks for this category. The disadvantages to annexation outweigh the advantages under the category "Education/Human Services."

That said, the primary reason cited by Corvallis 509J school administrators for declining enrollment and reduced state funding is the lack of affordable housing for those who work here. (see Appendix for newspaper articles, editorials, and letters to the editor that support this). This is evidenced by the fact that while the Corvallis population increased 10% in from 2000 to 2010,[35] during the same period, our K-12 student population has shrunk by 11%. By providing entry-level housing for young families, the 49th Street Annexation and future subdivision will provide a necessary and important solution in helping halt the decline in Corvallis' K-12 public school enrollment.

Central City
The application meets the only benchmark in this category, "Distance to Downtown".

Conclusion
The application confers more advantages than disadvantages in three of the four categories under analysis. Overall, the benchmarks that it meets or nearly meets include: Annexation Density, Rural Development Potential, Distance to Bike, Sidewalk, & Multi-use Path, Planned Public Transportation Improvements, Distance to Transit, Intersection, Distance to Water and Sewer, Planned Public Utilities, and Distance to Downtown. These represent a wide variety of advantages and diversity in opportunities to assist in the orderly growth and urbanization of the associated area. Furthermore, many of the benchmarks that are not met could be remedied in time, as SW 53rd Street gets developed to City Standards, additional school facilities are constructed, and City police staffing is expanded. In conclusion, overall the advantages of the annexation outweigh the disadvantages, in terms of livability benchmarks.

Staff Response:
As noted by the applicant, the proposal provides for more advantages than disadvantages in three of the four categories listed. The LDC does not provide guidance on whether each livability indicator is granted equal value in balancing the advantages and disadvantages contemplated in Section 2.6.30.07.c.2.a. Strictly by the numbers, the proposal complies with nine, does not comply with seven and partially complies with five of the livability indicators.

Staff note the City Council has a goal for 2013-2014 to evaluate the demands for housing in the Urban Growth Boundary and the causes for the current housing mix. The City Council may find that this proposal will help to achieve that goal by providing additional land whereby a mix of housing types could be developed within the City.

Conclusion on Public Need: Consistent with LDC Section 2.6.30.08, the Planning Commission's recommendation regarding the placement of an annexation request on the ballot is forwarded to the City Council for a final decision. As outlined above, the May 21, 2010, Staff Report to the Planning Commission contains an analysis of the relevant criteria **(Exhibit III.6-70)**. The Planning Commission held a public hearing to review the request and Staff's analysis and voted unanimously to recommend that the City Council not place the 49th Street Annexation request (ANN10-00002) on the November 2, 2010, ballot **(Exhibit II)**. In response to the Planning Commission's recommendation, the applicant submitted additional analysis regarding the public need for the annexation **(Exhibit VI)**. Staff have reviewed the additional analysis and have provided a response above. Based on the additional information and analysis provided by the applicant, Staff find the public need criterion is satisfied.

2. Sufficient Information on the GLUP to Evaluate the Request

As reflected in the June 2, 2010, Planning Commission meeting minutes, the Planning Commission recommended denial of the Annexation and denied the

Zone Change and Planned Development applications, in part due to insufficient information contained within the applicant's General Land Use Plan (GLUP) and Conceptual Development Plan **(Exhibit II.10-11)**. Because of the limited information provided by the applicant, the Planning Commission was not able to make positive findings regarding compatibility criteria for the Zone Change (LDC Section 2.2.40.05(a)) and for the Planned Development (LDC Section 2.5.40.04(a)).

On June 14, 2010, the applicant appealed the Planning Commission's decisions to the City Council **(Exhibit IV)**. The grounds for appeal are related to the Planning Commission's finding that the GLUP and Conceptual Development Plan did not provide sufficient detail to positively evaluate the request based on the applicable criteria. The balance of this section of the report will outline the appellant's appeal statement (in *Italics*), followed by Staff's analysis and conclusion on the appeal.

Appellant's Statement of Appeal:
Per LDC Section 2.5.30 - General Provisions, an applicant may request approval of a Conceptual Development Plan in accordance with Section 2.5.40 and later apply for a Detailed Development Plan. The application requirements for a Conceptual Development Plan to be reviewed are outlined in Section 2.5.40.01. However, per that LDC Section, "When the Director deems any requirement below unnecessary for proper evaluation of a proposed application, it may be waived." As the City Staff report deemed the application to be complete, the Conceptual Development Plan contained sufficient information for proper evaluation. The Planning Commission review of the application is to evaluate the Conceptual Development Plan against the review criteria outlined in Section 2.5.40.04, not to attempt to determine whether it contains sufficient information to perform that evaluation. That decision is made by the Director, and in this case the application was deemed satisfactory." **(Exhibit IV)**

Staff's Response:
On February 13, 2013, the applicant withdrew their appeal of the Conceptual and Detailed Development Plan **(Exhibit VI.7)**. Therefore, the appeal issue, as it relates to the Conceptual and Detailed Development Plan is no longer applicable. As noted in the June 2, 2010, Planning Commission meeting minutes, the Planning Commission also found the General Land Use Plan GLUP failed to provide sufficient information to determine compatibility based on the criteria in LDC Section 2.6.30.06.e **(Exhibit II.10-11)**. The applicant submitted a GLUP for the subject property with the original Annexation application. The GLUP proposed a street network with four bounded blocks, identified the type and number of dwelling units within each block, and showed preliminary locations for a 2nd level water pump station and storm water detention facilities. The proposed GLUP demonstrated one way future development could occur on the site, but did not include a proposed lotting

plan, nor did it include detail regarding the sizes or locations of the proposed building types. City Staff reviewed the proposed GLUP against the applicable development standards, such as block perimeter standards, density, and mix of housing types, and found that it was in compliance with the applicable LDC standards. Staff identified no apparent conflicts between the proposed GLUP and Land Development Code requirements. Additionally, Staff determined that the proposal could be reviewed for compatibility, based on the criteria in LDC Section 2.6.30.06.e.

As noted above, the Planning Commission found that the GLUP did not provide sufficient detail to evaluate the proposal for compliance, based on the basic site design, visual elements, and preservation of natural features compatibility criteria. In response to the Planning Commission's findings, the applicant has provided a revised GLUP with additional information that they believe is adequate to evaluate for compliance with the applicable compatibility criteria **(Exhibit VI.78)**. The revised GLUP maintains the previous street layout with the proposed neighborhood collector street running along the north property line, and a parallel local street running the distance of the south property line connecting SW 49th Street with SW 53rd Street. There are four proposed blocks with 62 lots. The proposed lots have a mix of sizes and allow for single detached, single attached – two units, and single attached – three unit structures. Below is an analysis of the compatibility criteria for the Annexation and Zone Change applications, based on the proposed GLUP. It should be noted that the GLUP is not binding, meaning it shows one way the site could be developed, but may not be how the site is ultimately developed, if annexed. Consequently, compatibility analysis should not be based on the GLUP, but on the general characteristics and requirements that would be brought to bear on permitted uses within the proposed zoning district.

e. Compatibility - The application shall demonstrate compatibility in the following areas, as applicable:

1. Basic site design - the organization of Uses on a site and its relationship to neighboring properties;

2. Visual elements (scale, structural design and form, materials, etc.);

3. Noise attenuation;

4. Odors and emissions;

5. Lighting;

6. Signage;

7. Landscaping for buffering and screening;

8. Transportation facilities;

9. **Traffic and off-site parking impacts;**

10. **Utility infrastructure;**

11. **Effects on air and water quality (note: a DEQ permit is not sufficient to meet this criterion);**

12. **Consistency with the applicable development standards, including the applicable Pedestrian Oriented Design Standards;**

13. **Preservation and/or protection of Significant Natural Features, consistent with Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions. Streets shall also be designed along contours, and structures shall be designed to fit the topography of the site to ensure compliance with these Code standards.**

Consistent with Section 2.6.30.06(e) above, Staff will analyze the annexation request for compatibility in the following areas, as applicable:

- Basic Site Design
- Visual Elements
- Noise Attenuation
- Odors and Emissions
- Landscaping for Buffering and Screening
- Signage
- Lighting
- Transportation Facilities
- Traffic and off-site parking impacts
- Utility Infrastructure
- Effects on air and water quality
- Natural Features
- Consistency with the applicable development standards, including the applicable PODS

<u>Basic Site Design - The organization of Uses on a site and its relationship to neighboring properties</u>

As stated previously, the GLUP is not a binding DDP and represents one way the site could be developed in the future, if annexed. Because the GLUP is not a binding development plan, staff would err to analyze it as a development plan for compatibility with surrounding uses. The GLUP demonstrates compliance with the applicable provisions in Article III and IV of the LDC. Staff find that the proposed GLUP demonstrates one way in which the site could be developed to the RS-6 zoning standards. The neighboring uses to the south, west and north are currently outside the City limits and have a Comprehensive Plan designation of Low Density Residential. It is anticipated that these neighboring properties would be compatible when developed at an urban level, because the Comprehensive Plan designations are the same as the subject site.

The properties to the east are within the City limits, but are not developed to urban level densities. These properties also share the same Comprehensive Plan designation as the subject site and would be compatible when developed to urban level densities.

Based on the above analysis, staff find the annexation request will result in site designs for development that would be compatible with other low density residential development in the City.

Visual Elements (scale, structural design and form, materials, etc.)
The applicant submitted typical building designs with the revised annexation application **(Exhibit VI.258-266)**. The typical building elevations were submitted, because the GLUP is not a binding development plan and the ultimate building designs may vary from that which is provided. Because all of the surrounding properties are zoned RS-6 or would be upon annexation, staff find that urban level development within the site and vicinity will be visually compatible, and that building scale, design, and form will comply with City Standards.

Noise Attenuation, and Odors and Emissions
If annexed, it is anticipated that the land would be developed to RS-6 zoning standards. As such, it would be anticipated that the noise, odors and emissions would be typical of Low Density Residential development, and compatible with the neighboring properties that also have a Low Density Residential Comprehensive Plan designations.

Lighting and Signage
If annexed, exterior lighting and signage on the site would be subject to the requirements for lighting and signage in Sections 4.2.80 and 4.7.90.01 of the LDC. These requirements would ensure that resultant lighting and signage on the development site would be compatible with neighboring properties.

Landscaping for Buffering and Screening
If annexed, landscaping would be subject to the standards in LDC Chapter 4.2 - Landscaping, Buffering, Screening and Lighting. When developed, staff find the proposal will be compatible with neighboring properties which will also be required to comply with the same provisions when developed to urban densities.

Transportation Facilities, Traffic and Off-site Parking Impacts, and Utility Infrastructure

Circulation
The applicant's site is accessed from both SW 53rd Street and SW 49th Street, south of SW Country Club Drive. The City's Transportation Plan shows a

new neighborhood collector street between SW 53rd Street and SW 49th Street at this location.

SW 53rd Street is designated as an arterial street and is under Benton County's jurisdiction. The section of SW 53rd Street adjacent to the applicant's site is currently improved to County standards with two travel lanes, bike lanes and open ditches. Future City standard improvements will include the addition of curbs, gutters, setback sidewalks, landscape strips and a piped drainage system. Future development will need to address City standard improvements along the site frontage that may also include right-of-way dedications **(Development Related Concern A)**.

SW 49th Street is designated as a neighborhood collector street. The section of SW 49th Street adjacent to the applicant's site is currently improved to County standards with two travel lanes and open ditches. City standard improvements will include the addition of curbs, gutters, bike lanes, setback sidewalks, landscape strips and a piped drainage system. Future development will need to address City standard improvements along the site frontage that may also include right-of-way dedications **(Development Related Concern A)**.

The City's Transportation Plan shows a new neighborhood collector street constructed between SW 53rd Street and SW 49th Street, along the northern portion of the applicant's property. The applicant's GLUP shows a new neighborhood collector street, as described above. Future development will need to incorporate this neighborhood collector street **(Development Related Concern B)**.

A trip generation study was conducted for the most intensive development possible under the proposed zoning for this site. The report conducted trip generation calculations based on the proposed RS-6 zoning of the applicant's site. The trip generation rates for development are based on standards established by the Institute of Transportation Engineers and are published in the ITE Trip Generation Manual, 7th Edition. One "trip" is defined as a vehicle leaving from or arriving at the development.

ITE land use code 210, Single-Family Detached Housing was used in the study. In total, the worst case development scenario would generate 64 PM peak hour trips. The City of Corvallis typically defines an impact as 30 or more peak hour trips to a single intersection. Because the calculated peak hour trip total is higher than the City's threshold, a trip distribution and Traffic Impact Analysis (TIA) was conducted.

The Traffic Impact Analysis (TIA) that was included in the application is from the original 2010 application and the traffic count information is out of date by ODOT standards. The applicant had a traffic engineer review the TIA and the

traffic counts that were included in the TIA, along with current traffic count data from ODOT. The information provided in a January 25, 2013, supplementary report shows that traffic volumes at the intersection of SW 53rd Street with SW Philomath Boulevard (Hwy 20/34) have decreased since the original TIA was conducted **(Exhibit VI.166-167)**. Because traffic volumes have decreased, the original TIA is shown to still be acceptable.

The included TIA incorporated the Cannon-Applegate Annexation application (withdrawn). A trip distribution analysis was done as part of the TIA. It used existing traffic volumes at the study intersections to determine the distributional patterns of the worst case for future development.

The TIA analyzed all intersections that met the 30 or more peak hour trip threshold stated above. The intersection of SW 53rd Street and the site's access and the intersection of SW 53rd Street and SW Country Club Drive are shown to perform at acceptable Levels of Service (LOS) with the worst case development scenario at the planning horizon.

The TIA included analysis of the intersection of SW 53rd Street with SW Philomath Boulevard (Hwy 20/34) because the Transportation Planning Rule (TPR), OAR 660-012-0060, that was in place at the time of the original application required mitigation of any additional trips that would worsen an already failing LOS of an intersection on a state highway. Since that time, the TPR rules have been amended. The current rule states that a local government may find that an amendment to a zoning map does not significantly affect an existing or planned transportation facility if the proposed zoning is consistent with the City's existing Comprehensive Plan and Transportation Plan. The zoning proposed (RS-6) with the annexation application is consistent with the City's Comprehensive Plan and Transportation Plan; therefore, the requirements of the TPR no longer apply.

The analysis in the TIA for the intersection of SW 53rd Street with SW Philomath Boulevard (Hwy 20/34) shows a LOS of E with existing background conditions and no additional trips. The City has established an acceptable LOS to be D or better. Analyzing this intersection at the planning horizon drops the LOS further to F. Adding in the worst case scenario for site trips keeps the LOS at F. The TIA has proposed mitigating this intersection with the addition of a north bound right turn lane. The analysis shows this mitigation to lower the Volume over Capacity Ratio (V/C), but the LOS still remains at F. However, since development on the subject site is not anticipated to cause a significant effect at the 53rd and Philomath Blvd. intersection, no specific mitigation measures are warranted at that intersection in conjunction with future development on this site. Off site impacts from development are typically mitigated through payment of System Development Charge (SDC) fees. SDC fees are used to fund projects that improve system capacity.

Future development on the site will need to complete a TIA in accordance with 4.0.60.a. The City Engineer shall define the scope of the traffic impact study based on established procedures. The TIA shall be submitted for review to the City Engineer. The proposed TIA shall reflect the magnitude of the project in accordance with accepted traffic engineering practices. The applicant shall complete the evaluation and present the results with an overall site development proposal **(Development Related Concern C)**.

Public on-street bike lanes exist along the applicant's frontage of SW 53rd Street, however, no bike lanes are present along the SW 49th Street frontage.

The City's Parks & Recreation Facilities Plan shows a proposed trail/multi-use path along the site's SW 53rd Street frontage. The Plan does not detail on what side of SW 53rd Street the trail would be located. The application does show how it can be incorporated into the design of future development by including it in the General Land Use Plan.

Public set back sidewalks do not exist along either the SW 53rd Street or SW 49th Street frontages. Setback sidewalks and planter strips are City standards and components of safe public sidewalks that are taken into consideration when determining serviceability. The applicant benefits from these neighborhood street improvements in the form of:

- An enhanced aesthetic experience for pedestrians as the separation from motor vehicle traffic decreases road noise, prevents water from the roadway being splashed on pedestrians and provides an enhanced sense of security.
- An enhanced environment for wheelchair users as the sidewalk can be kept at a constant slope with the steeper slopes for driveway approaches built into the planting strip.
- An area for street trees, sign posts, utility and signal poles, mailboxes, fire hydrants, etc.
- Mature street trees may reduce vehicle speed.
- When wide enough, a place for a motor vehicle to wait out of the stream of traffic while yielding to a pedestrian crossing a driveway.
- A break in hard surfacing with added pervious area.

Future development will need to address City standard improvements along the site frontage that may also include right-of-way dedications **(Development Related Concern A)**.

Corvallis Transit System (CTS) Routes 3 and 8 currently provide service to SW Country Club Drive, north of the site. The Philomath Connection currently provides service along SW 53rd Street, adjacent to the site's frontage.

Conclusion on Circulation
Given the discussion above, the 49th Street Annexation has demonstrated that, with improvements, the existing circulation network can accommodate development of the subject property consistent with the City's LDC, Transportation Plan, and Parks & Recreation Facilities Plan.

Public Facilities and Services
The proposed annexation site is located in the City's first level (elevation 210-290') and second level (elevation 290-410') water service area. There is an existing 8 inch waterline located in SW 49th Street, adjacent to the site.

The application proposes to serve the site by constructing a 16 inch distribution line in SW 53rd Street from the intersection of SW Country Club Drive to the site. This improvement is consistent with the City's Water Master Plan. Local distribution piping would also be installed within the future development to serve the site and create a looped system between SW 53rd Street and SW 49th Street.

The application presents an alternative to extending the 16 inch distribution line in SW 53rd Street. The site can also be served by extending the 24 inch waterline in SW Nash Avenue from SW 45th Street to SW 49th Street and extending a waterline from the existing 8 inch line in SW 49th Street to SW Nash Avenue.

The application proposes to construct a second level pump station to serve the second level water service area within this proposal and the adjacent second level service area. A second level pump station is consistent with the City's Water Master Plan. Future development would need to build the second level pump station to the City's Design Standards for Water Booster Stations, Reservoir and Wastewater Lift Station Standards **(Development Related Concern D)**.

The applicant has provided water system calculations showing that the proposed annexation can be served by the existing water system with the proposed improvements.

The proposed annexation site is located within the Country Club basin. The City's Wastewater Utility Master Plan does not show a backbone collection system upgrade during the current planning horizon. The Master Plan anticipates local collection piping will be adequate to serve the area.

The annexation site straddles a shallow ridge line that drains to the east and west. The application proposes to serve future development on the site by extending an 8 inch sanitary sewer in SW 53rd Street between SW Country Club drive and the site to collect wastewater from the western portion of the

site. The eastern portion of the site can be served by draining wastewater to the existing 8 inch sanitary sewer line located in SW 49th Street.

The applicant has provided sanitary sewer calculations showing that the proposed annexation can be served by the existing sanitary sewer system with the proposed improvements.

The proposed annexation site is located within the Dunawi Creek basin. Existing roadside ditches convey existing stormwater runoff. Future development will be required to comply with the City's water quality and quantity standards in accordance with the LDC 4.0.130, appendix F of the City's Storm Water Master Plan, and the King County, Washington, Surface Water Design Manual. The application shows tracts on the General Land Use Plan that could be set aside with future development for the purpose of stormwater quality and detention.

The annexation site straddles a shallow ridge line that drains to the east and west. The application proposes to serve future development on the west side of the site by draining stormwater into the County's roadside ditch. Benton County has agreed to this with the understanding that stormwater entering the ditch meets the City's quality and quantity standards.

Future development on the site that creates more than 5,000 ft^2 of pollution generating impervious surfaces will be required to construct stormwater quality facilities. Stormwater quality facilities shall be designed in accordance with criteria established in Appendix F of the Stormwater Master Plan and the most recent version of the *King County, Washington, Surface Water design Manual*. The water quality facilities shall be designed to remove 70 percent of the total suspended solids (TSS) entering the facility during the water quality design storm, 0.9-inch 24-hr rainfall event with NRCS Type 1A distribution **(Development Related Concern E)**.

Future detailed development phases on the site that create more than 25,000 ft^2 of impervious surfaces will be required to construct stormwater detention facilities in accordance with the LDC section 4.0.130.b. Detention facilities shall be designed to maximize storm water infiltration. Maintenance of these facilities is most efficiently provided with open systems because they facilitate visible evaluation of system conditions and accommodate routine, low-technology maintenance practices. Open systems also allow stormwater contact with vegetation and soil to enhance water quality, infiltration, and maintaining the properly functioning hydrological and biological condition of open drainageways. The storm water detention facilities shall be designed consistent with both criteria outlined in Appendix F of the Storm Water Master Plan, and criteria outlined in the most recent King County, Washington, Surface Water Design Manual, and shall be designed to capture run-off so that the run-off rates from the site after development do not exceed the pre-

developed conditions, based on the 2-year, 5-year, and 10-year, 24-hour design storms **(Development Related Concern F)**.

Currently there are no street lights in the vicinity of this project. Future development of the site would require the installation of a City standard street light system **(Development Related Concern G)**.

Existing franchise utilities are located in the vicinity of the subject site. In accordance with LDC 2.6.60.03.i.1, the applicant has provided letters confirming the ability to serve the site. Future development of the site will require the granting of a minimum 7 ft Utility Easement (UE) adjacent to all street rights-of-way in according with LDC 4.0.100.b **(Development Related Concern H)**.

Conclusion on Utilities and Services
Given the discussion above, the 49th Street Annexation has demonstrated that, with improvements, the existing water, sewer, stormwater, and streetlight networks can accommodate development of the subject property consistent with the City's Land Development Code and applicable Master Plans.

Effects on Air and Water Quality
If annexed, development on the subject site is anticipated to be similar to other low density development within Corvallis. As such, air and water quality impacts are anticipated to be negligible, in part because water quality measures will be required for stormwater leaving the site, consistent with City standards, at the time of development. Air emissions are monitored by the Oregon Department of Environmental Quality (DEQ). The DEQ indicates that the City of Corvallis is in compliance with all Federal and State air quality regulations.

Consistency with Development Standards, including PODS
The GLUP was evaluated against the applicable development standards in Articles III and IV of the LDC, including the Pedestrian Oriented Design Standards in LDC Chapter 4.10. Staff find the GLUP complies with the applicable development standards, and is one way the site could be developed upon annexation. As noted above, the GLUP is not a binding development plan.

Preservation and/or Protection of Significant Natural Features and Natural Hazards
The site does contain slopes between 10 and 15 percent. These Significant Natural Features are regulated by LDC Chapter 4.5 - Natural Hazards and Hillside Development. If annexed, future development will be required to comply with the applicable hillside development provisions of the LDC. No action is required with the present application. Staff find the proposal is

consistent with the above criterion and compatible with surrounding properties.

Conclusion of Compatibility Analysis
The GLUP is not a binding development plan and should not be analyzed for compatibility with neighboring uses. If annexed, development on the site will be subject to all applicable development standards in Articles III and IV of the LDC. Because the site and abutting properties share a common Comprehensive Plan designation, it could be anticipated that when all of the abutting properties are developed to urban densities, the development will be compatible. The annexation application was reviewed for compatibility and staff found the annexation is compatible with neighboring uses for each of the criteria noted above.

Conclusion regarding Sufficient Information to Evaluate the Proposal Based on the Review Criteria: Staff find the revised GLUP provides sufficient detail to evaluate the proposal for compliance with the applicable review criteria in LDC Section 2.6.30.06(e), as well as other applicable decision criteria. Therefore, Staff recommend that the City Council reverse the Planning Commission's decision to deny the Zone Change application and approve the appeal.

IV. REQUESTED ACTIONS

Annexation:
The City Council has the following options relative to the proposed 49th Street Annexation:

Option #1: **Approve** placement of the 49th Street Annexation (ANN10-00002) on the November 5, 2013, ballot; or

Option #2: **Deny** placement of the 49th Street Annexation (ANN10-00002) on the November 5, 2013, ballot.

As evidenced by the findings contained in the May 21, 2010, Staff Report to the Planning Commission, and the April 5, 2013, Staff memorandum to the City Council, Stafff recommend **Option #1**. If the City Council agrees with this recommendation, it is recommended that the Council entertain the following motion:

MOTION: I move to approve the 49th Street Annexation application, based on the findings contained in the April 5, 2013, Staff memorandum to the City Council, and subject to adoption of Formal Findings and a resolution to place the annexation on the November 5, 2013 ballot.

Zone Change Appeal

The City Council has the following options relative to the Zone Change appeal:

OPTION #1: Uphold the Planning Commission's decision to deny the Zone Change, and **deny** the appeal;

OPTION #2: Reverse the Planning Commission's decision to deny the Zone Change, and **approve** the appeal; or

OPTION #3: Reverse the Planning Commission's decision to deny the Zone Change, and **modify and approve** the appeal with modifications.

It should be noted that the basis of the Planning Commission's denial of the Zone Change was the applicant's failure to adequately address compatibility criteria associated with the Planned Development application, and consequent failure to address the Annexation compatibility criteria. If the City Council finds that the revised application adequately addresses the Annexation compatibility criteria, then that bases for denial of the Zone Change would no longer exist. As evidenced by the findings contained in the May 21, 2010, Staff Report to the Planning Commission, and the April 5, 2013, Staff memorandum to the City Council, Staff recommend **Option #2**. If the City Council agrees with this recommendation, it is recommended that the Council entertain the following motion:

MOTION: **I move to reverse the Planning Commission's decision to deny the Zone Change application (ZDC10-00002), and approve the appeal. This motion is based on findings contained in the April 5, 2013, Staff memorandum to the City Council, and subject to the adoption of Formal Findings in support of the appeal.**

V. DEVELOPMENT RELATED CONCERNS

A. Future development will need to address City standard improvements along the site frontage that may also include right-of-way dedications. Roadway, bicycle, and pedestrian improvements shall be consistent with the City's Land Development Code, the Transportation Plan, and the Parks & Recreation Facilities Plan.

B. Future development will be required to include a new neighborhood collector street, consistent with the City's Transportation Plan.

C. Future development on the site will need to complete a TIA in accordance with 4.0.60.a. The City Engineer shall define the scope of the traffic impact study

based on established procedures. The TIA shall be submitted for review to the City Engineer. The proposed TIA shall reflect the magnitude of the project in accordance with accepted traffic engineering practices. The applicant shall complete the evaluation and present the results with an overall site development proposal.

D. Consistent with the City's Water Master Plan, future development in the City's second level water service area (elevation 290-410') shall construct a second level pump station. Future development shall build the second level pump station to the City's Design Standards for Water Booster Stations, Reservoir and Wastewater Lift Station Standards.

E. Future development on the site that creates more than 5,000 ft^2 of pollution generating impervious surfaces shall construct stormwater quality facilities. Stormwater quality facilities shall be designed in accordance with criteria established in Appendix F of the Stormwater Master Plan and the most recent version of the *King County, Washington, Surface Water Design Manual*. The water quality facilities shall be designed to remove 70 percent of the total suspended solids (TSS) entering the facility during the water quality design storm, 0.9-inch 24-hr rainfall event with NRCS Type 1A distribution.

F. Future development on the site that creates more than 25,000 ft^2 of impervious surfaces shall construct stormwater detention facilities in accordance with the LDC section 4.0.130.b. Detention facilities shall be designed to maximize storm water infiltration. Maintenance of these facilities is most efficiently provided with open systems because they facilitate visible evaluation of system conditions and accommodate routine, low-technology maintenance practices. Open systems also allow stormwater contact with vegetation and soil to enhance water quality, infiltration, and maintaining the properly functioning hydrological and biological condition of open drainageways. The storm water detention facilities shall be designed consistent with both criteria outlined in Appendix F of the Storm Water Master Plan, and criteria outlined in the most recent *King County, Washington, Surface Water Design Manual*, and shall be designed to capture run-off so that the run-off rates from the site after development do not exceed the pre-developed conditions, based on the 2-year, 5-year, and 10-year, 24-hour design storms.

G. Future development of the site shall require the installation of a City standard street light system in accordance with LDC 4.0.70.a and 4.2.80.f.

H. Future development of the site will require the granting of a minimum 7 ft Utility Easement (UE) adjacent to all street rights-of-way in according with LDC 4.0.100.b.

VI. EXHIBITS

Exhibit I:	Planning Commission Notice of Disposition, dated June 4, 2010
Exhibit II:	Minutes of the June 2, 2010, Planning Commission meeting
Exhibit III:	May 21, 2010, Staff Report to the Planning Commission
Exhibit IV:	Appeal of the Planning Commission's Zone Change and Planned Development decisions (ZDC10-00002; PLD10-00006), received June 14, 2010
Exhibit V:	June 29, 2010, letter postponing the City Council public hearing.
Exhibit VI:	Revised application materials submitted by the applicant, received February 13 & 26, and March 7, 11, & 15, 2013.
Exhibit VII:	Public Testimony Received on March 29, 2013

Review and Concur:

Jim Patterson, City Manager

Community Development
Planning Division
501 SW Madison Avenue
P.O. Box 1083
Corvallis, OR 97339-1083
(541) 766-6908
FAX: (541) 754-1792
Planning@ci.corvallis.or.us

CORVALLIS PLANNING COMMISSION
NOTICE OF DISPOSITION

ORDER 2010-00032

CASE: **49th Street Annexation (ANN10-00002; ZDC10-00002; PLD10-00006)**

REQUEST: The applicant requests that the Planning Commission recommend that the City Council place a measure on the November, 2010, ballot to annex 10.48 acres of privately owned land into the City Limits. The applicant also requests that the Planning Commission approve a Zone Change to designate the site with a City zone of Low Density Residential with a Planned Development Overlay PD(RS-6). The current Benton County zoning of the properties is Urban Residential with 5 acre minimum lot size (UR-5). Finally, the applicant requests that the Planning Commission approve a Conceptual and Detailed Development Plan to construct Phase I site improvements. The Zone Change and Conceptual and Detailed Development Plan decisions would be contingent upon passage of the annexation measure on the November, 2010, ballot.

Applicant	Owner	Owner
49th Street Annexation Partners 2022 SW 45th Street Corvallis, OR 97333	Russell Crenshaw PO Box 31089 Flagstaff, AZ 86003	Joe and Jean Ellingson 420 W Lassen Ave Chico, CA 95973

LOCATION: The subject site is located at 2650 SW 49th Street. In general, the site is south of SW Country Club Drive, north of Nash Avenue, and abuts SW 49th and 53rd Street. The subject site is also identified on Benton County Assessor's Map 12-5-09CB as Tax Lots 600, 700, and 801.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit I.1

DECISION: The Corvallis Planning Commission conducted a public hearing on June 2, 2010, and made the following recommendation and two decisions: first, the Planning Commission decided to recommend that the City Council not place the proposed Annexation (ANN10-00002) on the November, 2010, ballot; second, the Planning Commission denied the Zone Change application (ZDC10-00002); and third, the Planning Commission denied the Conceptual and Detailed Development Plan application (PLD10-00006). These recommendation and decisions are based upon the findings made during deliberations on the applications at the June 2, 2010 Planning Commission meeting. All three actions made by the Planning Commission during the June 2, 2010, meeting were by unanimous vote.

The action on the Annexation application is a recommendation to the City Council and is not appealable. If you are an affected party and wish to appeal the Planning Commission's decisions regarding the Zone Change and Planned Development applications, appeals must be filed, in writing, with the City Recorder within 12 days from the date that the order is signed. The following information must be included:

1. Name and address of the appellant(s).
2. Reference the subject development and case number, if any.
3. A statement of the specific grounds for appeal.
4. A statement as to how you are an affected party.
5. Filing fee of $250.00.

Appeals must be filed by 5:00 p.m. on the final day of the appeal period. When the final day of an appeal period falls on a weekend or holiday, the appeal period shall be extended to 5:00 p.m. on the subsequent work day. The City Recorder is located in the City Manager's Office, City Hall, 501 SW Madison Avenue, Corvallis, Oregon.

Jennifer Gervais, Vice Chair
Corvallis Planning Commission

Signed this 4th day of June, 2010.

Appeal Deadline: Tuesday, June 16, 2010, at 5 p.m.

Community Development
Planning Division
501 SW Madison Avenue
Corvallis, OR 97333

Approved as corrected, June 16, 2010

CITY OF CORVALLIS
PLANNING COMMISSION MINUTES
June 2, 2010

Present
James Feldmann
Jennifer Gervais, *Vice Chair*
Frank Hann
Tony Howell
Steve Reese
Jim Ridlington
Jasmin Woodside
Mark O'Brien, *Council Liaison*

Staff
Jim Brewer, Deputy City Attorney
Kevin Young, Planning Division Manager
Jeff McConnell, Development Engineering Supervisor
Ted Reese, Development Review Engineer
Brian Latta, Associate Planner
Terry Nix, Recorder

Excused
Tad Abernathy
Karyn Bird, *Chair*

SUMMARY OF DISCUSSION

	Agenda Item	Information Only	Held for Further Review	Recommendations
I.	Visitors' Propositions	X		
II.	Public Hearing **49th Street Annexation, (ANN10-00002, ZDC10-00002, PLD10-00006)**			Recommend the City Council deny the request to place the Annexation on the November, 2010 ballot; Deny the requested Zone Change and Planned Development requests.
III.	Planning Commission Minutes A. May 19, 2010			Approved as revised.
IV.	Old Business	X		
V.	New Business	X		
VI.	Adjournment – 9:20 p.m.			

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit II.1

CONTENT OF DISCUSSION

The Corvallis Planning Commission was called to order by Vice Chair Jennifer Gervais at 7:04 p.m. in the Downtown Fire Station Meeting Room, 400 NW Harrison Boulevard.

I. **VISITOR'S PROPOSITIONS:** There were no propositions brought forward.

II. **PUBLIC HEARING – 49th Street Annexation (ANN10-00002, ZDC10-00002, PLD10-00006:**

A. Opening and Procedures:

The Chair welcomed citizens and reviewed the public hearing procedures. Staff will present an overview followed by the applicant's presentation. There will be a staff report and public testimony, followed by rebuttal by the applicant, limited in scope to issues raised in opposition and sur-rebuttal by opponents, limited in scope to issues raised on rebuttal. The Commission may ask questions of staff, engage in deliberations, and make a final decision. Any person interested in the agenda may offer relevant oral or written testimony. Please try not to repeat testimony offered by earlier speakers. It is sufficient to say you concur with earlier speakers without repeating their testimony. For those testifying this evening, please keep your comments brief and directed to the criteria upon which the decision is based.

Land use decisions are evaluated against applicable criteria from the Land Development Code and Comprehensive Plan. A list of the applicable criteria for this case is available as a handout at the back of the room.

Persons testifying either orally or in writing may request a continuance to address additional documents or evidence submitted in favor of the application. If this request is made, please identify the new document or evidence during your testimony. Persons testifying may also request that the record remain open seven additional days to submit additional written evidence. Requests for allowing the record to remain open should be included within a person's testimony.

The Chair opened the public hearing.

B. Declarations by the Commission: Conflicts of Interest, Ex Parte Contacts, Site visits, or Objections on Jurisdictional Grounds

1. Conflicts of Interest: None.
2. Ex Parte Contacts: None.
3. Site Visits: Commissioners Gervais, Howell, Reese, Ridlington and Woodside.
4. Objections on Jurisdictional Grounds: None.

C. Staff Overview:

Associate Planner Brian Latta distributed written testimony from ODOT and from citizen Violet Campbell, received after the staff report was issued but before the public hearing.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit II.2

Planner Latta said the applicant requests three land use actions. The first is a request for the Planning Commission to recommend that the City Council place a measure on the November, 2010, ballot to annex 10.48 acres of privately-owned land into the City of Corvallis. The second request is approval of a Zone Change application to assign a zoning designation of PD(RS-6) to the annexed property. The third request is approval of a Conceptual and Detailed Development Plan (CDDP) to construct Phase I public improvements. The public improvements include extending the public storm pipe in SW 49th Street south to the site, and constructing the western portion of the intersection of SW 49th Street and the proposed neighborhood collector street.

Planner Latta reviewed an aerial photograph of the site and vicinity. He reviewed Comprehensive Plan Map and Zoning Map designations for the subject site and surrounding areas. He then reviewed the General Land Use Plan (GLUP), the Conceptual Development Plan (CDP), and the Detailed Development Plan (DDP), as detailed in the written staff report.

D. Legal Declaration:

Deputy City Attorney Jim Brewer said the Commission will consider the applicable criteria as outlined in the staff report, and he asked that citizens direct their testimony to the criteria in the staff report or other criteria that they believe are applicable. It is necessary at this time to raise all issues that are germane to this request. Failure to raise an issue, or failure to provide sufficient specificity to afford the decision-makers an opportunity to respond, precludes an appeal to the State Land Use Board of Appeals on that issue.

The failure of the applicant to raise constitutional or other issues relating to proposed conditions of approval with sufficient specificity to allow the local government to respond to the issue precludes an action for damages in Circuit Court.

E. Applicant's Presentation:

Lyle Hutchens, Devco Engineering, said he is providing consulting assistance to the 49th Street Annexation Partners for this application. He introduced Jim Boeder, who is present this evening representing 49th Street Annexation Partners. Mr. Hutchens stated that the subject site consists of three tax lots located between SW 49th and 53rd Streets, south of Country Club Drive, and north of Nash Avenue. The site abuts the exiting City limits to the east and would have a maximum density of approximately 63 dwelling units. The application is primarily for an annexation of the site into the City limits; it is accompanied by a Zone Change with a Planned Development (PD) Overlay application that would change the zoning designation to PD(RS-6). Mr. Hutchens showed a graphic of the GLUP. He said this is the first annexation proposal to be evaluated since the City adopted a new Land Development Code (LDC) in 2006, and it stands as an opportunity to put a majority of the LDC planning objectives into practice on a new piece of property. The GLUP includes a new neighborhood collector street along the northern boundary, a local street along the south boundary, and three north/south local streets that collectively create a pattern of small, walkable blocks on the site. The first phase of development is to include extension of a public storm drain in SW 49th Street from north of the site to the southerly boundary of the site, and construction of the easterly portion of the new neighborhood collector street with the

intersection of SW 49th Street. The inclusion of the PD Overlay and CDDP with this application is triggered by the state's Transportation Planning Rule (TPR) which requires mitigation or a mechanism to ensure mitigation to any state highway facility that could be significantly affected by the potential for more intensive development when compared to the present zoning. Typically, traffic mitigation is satisfied through a condition of approval; however, annexation and zone change applications in Corvallis cannot be subject to conditions of approval. The applicant requests a CDDP approval for the annexation site; the CDDP is capable of receiving conditions of approval and the applicant requests that any mitigation required by ODOT be conditioned with the CDDP. The condition of approval would require that the TPR be addressed in conjunction with the further development of the site, in this case Phase II and beyond. Because the CDDP can expire and PD Overlays can be administratively removed, the applicant proposes to preserve the CDDP approval in perpetuity by providing financial security for all of the public improvements. This approach is consistent with LDC 2.5.50.09 and the City's established procedures. The applicant, the City, and ODOT worked together to arrive at a solution which is mutually satisfactory; Mr. Hutchens showed a graphic of this process which, he said, the Planning Commission may see in future applications.

Regarding the merits of the annexation application, Mr. Hutchens said that the site is readily served by all facilities, or will be upon completion of improvements required with development. Water, sewer, stormdrain and franchise utilities are available. The transportation system is adequate or will be adequate with proposed improvements. Local schools all have ample capacity to absorb the additional student load that could result from development of the site.

Mr. Hutchens said the public need for the annexation is amply demonstrated. He reviewed the three factors to be used in evaluating annexations as follows:

Regarding the five-year supply of serviceable land of the annexation's land use category, this factor references a Council policy that is not yet in existence. Even though there is information available from the City's Land Development Information Report indicating the presence of approximately 420 acres of vacant, developable, low density land within the City limits, there is no analysis available to demonstrate whether or not this quantity is adequate. Not all of the developable land is necessarily serviceable by the infrastructure, nor is it known whether this land will ever be made available for development by its owners.

Regarding the availability of land of this type to ensure choices in the market place, this factor is not met by the current supply of vacant low density residential land. There are about 20 percent more jobs in Corvallis than dwelling units; more than half of the houses for sale in Corvallis are unaffordable to working class families, as the median purchase price of a house requires a full time income of approximately $30 per hour; the homeowner vacancy rate by the most recent measure was only at 2.2 percent; and the cost of a three-bedroom, two-bath house on an approximately 0.2-acre lot is typically $100,000 higher in Corvallis than in Lebanon and Albany. Over 20 percent of Benton County workers commute from other communities. Mr. Hutchens showed a photograph showing rush hour traffic waiting to leave Corvallis at the Van Buren Street Bridge. When comparing the likely length of these commutes to the distance from Downtown Corvallis to the annexation site, it is clear that the annexation

site provides the more environmentally favorable option. Planning communities so that people can live where they work greatly decreases consumption of fossil fuels and environmental emissions; it also provides economic advantages by keeping income that is generated in Corvallis circulating in the City.

Regarding compliance with adopted community-wide livability indicators and benchmarks, the site fully complies with 10 livability benchmarks, partially complies with five, and fails to comply with seven. A full discussion is included in the staff report.

Subsequent to the annexation, the site would be developed to City standards ensuring neighborhood compatibility. The applicants have met with the neighbors; there is no known opposition from the neighbors to the annexation request. Mr. Hutchens asked that the Planning Commission recommend the City Council place the annexation on the 2010 ballot, and that the Planning Commission approve the Zone change and CDDP, both of which would be contingent upon voter approval of the annexation.

Commissioner Reese asked why affordable housing is shown as one of the benchmarks that are not met. Mr. Hutchens said that, although having more choices in the marketplace results in the potential of having less expensive housing, the applicant stayed away from trying to make a definition of affordable housing.

Commissioner Howell referred to the need requirement. Past annexation applications have looked at the number of vacant lots with active approval to show if there is an excess capacity given the current market or if there is room to expand. Mr. Hutchens said that the applicant tried to follow the script for the current LDC with this application. Commissioner Howell noted that the LDC anticipated a Council policy that does not yet exist; it is his interpretation that what is brought forward could help to form that future policy.

Commissioner Howell referred to comments about housing choice and homeowner vacancy rates; he asked if it is known what the rental vacancy rate is. Mr. Hutchens said the rental vacancy rate is 7.1 percent according to the most recent census data.

Commissioner Howell said he thinks there are studies that show a comparison of the commute rate into Corvallis as compared to the commute out of Corvallis. Mr. Hutchens said there is not a lot of current data for some of the other communities.

Commissioner Howell said the CDP does not meet the application requirements in his view. There are many items in the application that are described as not applicable. Typically, the Planning Commission will see CDPs that address footprints of the buildings, solar orientation, the grading plan, how north/south streets will mesh to properties to the north and south, etc. Mr. Hutchens said that all of those things will come with the DDP and this process assures that will happen. This is the only way under the present LDC language that it was possible to get the applicant, the City, and ODOT all moving in the same direction. Commissioner Howell expressed concern about being bound to an approved CDP. Mr. Hutchens said the DDP could include a CDP Modification application.

F. Staff Report:

Planner Latta said that he will identify the applicable review criteria and briefly summarize how the proposal is consistent with the criteria, as detailed in the written staff report.

Regarding the Annexation application, the first factor to be considered is the five-year supply of serviceable low density residential land; this refers to a Council Policy that has not yet been created. The applicant provided a calculation based on available data that shows there is a minimum of 421 acres of Low Density Residential Land; the 1998 Buildable Lands Inventory anticipates a 341-acre supply of vacant Low Density Residential land by 2020. The proposed 10.48-acre annexation will increase the total supply, which is already in excess of the surplus anticipated for 2020.

The second factor to be evaluated is the availability of low density residential land to ensure choices in the market place. The LDC outlines appropriate and encouraged market choice topics and states that the applicant's arguments will be summarized by staff and the hearing authority will determine the validity of the arguments. The applicant's arguments are included in the written staff report.

The third factor to be evaluated is compliance with community-wide livability indicators and benchmarks. There are 22 livability indicators. The application fully complies with ten, partially complies with five, and does not comply with seven.

The next criterion states that the annexation provides more advantages to the community than disadvantages. The applicant provided a discussion of advantages and disadvantages. As directed by the LDC, staff provided the applicant's arguments and analysis in the staff report, but did not verify or justify the applicant's arguments. The criteria states that the annexation site needs to be capable of being served by urban services and facilities required with development. Staff finds the proposed annexation site is capable of being served by urban services and facilities. The LDC includes 13 compatibility criteria. Staff found that the GLUP is not a binding development plan and should not be analyzed as a development plan for compatibility. The GLUP does demonstrate one way the site could be developed to RS-6 densities. Future development of the site would be required to comply with applicable zoning standards and development standards.

Staff recommends that the Planning Commission recommend the City Council forward the 10.48 acre site for consideration of annexation by the voters on the November, 2010, ballot.

The applicant requests that the annexed land be assigned a zoning designation of RS-6 and requests a PD Overlay and subsequent CDDP as a mechanism to attach a condition of approval for development on the site that will ensure that the provisions of the TPR shall be addressed to the satisfaction of ODOT. The request for the PD Overlay is consistent with the LDC because it would enable the applicant to satisfy the requirements of the TPR at the time of development, which could not occur otherwise. When developed to urban densities, the subject site and neighboring properties will be subject to LDC development. Staff finds the proposed zoning is consistent with the LDC criteria and with neighboring zones based on the 13 compatibility criteria, and

recommends that the Planning Commission approve the Zone Change application, contingent upon voter approval of the annexation application.

Regarding the Planned Development application, Planner Latta reviewed the CDP, which is synonymous with the GLUP. He noted that the CDP is conceptual and can be modified by a DDP through a future development proposal. He then reviewed the DDP, which implements the CDP in phases. The CDDP was reviewed for compatibility based on the LDC criteria, as detailed in the written staff report. The applicant has proposed to bond for public improvements related to Phase I of the project as a way to ensure that the CDDP cannot expire; this is addressed in Condition 1. Staff recommends that the Planning Commission approve the CDDP as conditioned.

G. Public Testimony in favor of the application:

Kathy Phillips spoke in support of the annexation. She has five acres directly across the street from the subject site. She expressed concern about the block layout and straight streets shown in the conceptual plan. From discussion with City staff, she understands that LDC requirements dictate this type of "postage-stamp" layout; this will not work in this area due in part to steep slopes in the eastern portion of the site. She noted that Stoneybrook and other neighborhoods in this area were developed without this type of grid pattern and she said that the developer cannot make affordable housing and address solar issues by laying out a subdivision as shown in the conceptual design. She hopes that leadership will step up and make revisions to the LDC to address what it really takes for affordable housing in Corvallis. She encouraged the Planning Commission to recommend approval of the annexation request in order to get it on the November ballot.

H. Public Testimony in opposition to the applicant's request:

Jonathan Hayes said that he is President of the Stoneybrook Homeowners Association; Stoneybrook residents are concerned about traffic impacts of this proposal. He said that Planner Latta has been very responsive and helpful. The staff report shows that the Traffic Engineer conducted some impact studies, but did not study the potential impact on SW 49th Street. Planner Latta indicated that it was determined that SW 49th Street would get less than 30 peak hour trips. Mr. Hayes drew attention to the proposed layout, which shows that the neighborhood collector would connect to SW 49th Street. He would have a difficult time supporting this annexation when the issue of traffic on SW 49th Street is not addressed.

John Carey said his property abuts the proposed annexation site. He said that he is also speaking for his neighbor, Francis Johnson. The subject site is surrounded by rural properties with one exception – the adjoining property that allows it to be considered for annexation. This rural area is of exceptional beauty and residents appreciate the amenities and wildlife. He expressed concern that the proposed water collection appears to be open, which could lead to mosquito breeding. He expressed concern about traffic and offsite parking impacts. He expressed concern about more traffic on SW Nash Avenue and about the safety of area children. As a regular bicycle commuter, he is nervous about additional traffic on SW 49th Street. His site is uphill

from this area and he has concerns about construction noise, as well as day-to-day noise from the new development.

Commissioner Feldmann asked if SW 49th Street has a bike lane. Mr. Carey said there is a bike lane two-thirds of the way down SW 49th Street, but it does not reach the subject site.

Commissioner Hann asked about horseback riding and livestock in the area. Mr. Carey said horseback riding is not very frequent; some of the neighbors, including him, do have pastures with livestock.

Liz Frenkel said that, although she lives in Stoneybrook, she wants to make clear that this is not a "not in my backyard" statement. Her concern has to do with transportation and about how ODOT will handle the intersection at SW 53rd Street and Philomath Boulevard in the future. The staff report seems to say that, when looking at the five-year land supply, livability standards, etc., on average it seems to come out okay. She doesn't think this is a great way to deal with planning. She is concerned that people will take SW 49th Street to avoid the messy intersection at Philomath Boulevard and SW 53rd Street. She is concerned that there is not a fundamental understanding of whether this annexation is needed. She thinks we need to look more clearly at the basis for how we do or do not support this request.

Rana Foster said that the layout as shown in the GLUP does not follow the contour line. She referred to LDC 4.5.4.13, which says streets shall be designated along contours and structures shall be designated to fit the topography for the site. She said the staff report has another drawing which shows the neighborhood collector being curvier to match some of the east/west topography.

I. Neutral testimony: None.

Questions from the Commission:

Commissioner Howell said he is struggling with how to evaluate this proposal. He does not think that the CDP has the required elements that would allow for an evaluation of whether the block design meets compatibility standards.

Planning Division Manager Kevin Young said that there is some flexibility in terms of what staff expects to see with the CDP. The LDC allows some discretion in terms of what is required; the application requirements are viewed as guidelines, but are not decision criteria. There is no requirement as part of the annexation and zone change applications for a DDP or a subdivision design. It would be acceptable for an applicant requesting an annexation to present a GLUP that would show a means by which a site could be developed. With this application, the applicant submitted a CDP to address the TPR. Efforts have been made for some time to address the TPR, reconciling state law with local standards. The CDP is conceptual and subject to change; staff has done its due diligence and does not see anything in the CDP that is in conflict with the LDC.

Commissioner Howell asked if the utilities plan, shown in M-104, should be considered part of the CDP. Planner Latta said those are preliminary lots drawn by the applicant

and would not be considered part of the CDP. Commissioner Howell expressed concern that approval of the CDP could conceivably constrain future evaluation of a DDP in a way that may result in variances or tradeoffs that are not desirable. In the past, he said, the Planning Commission has been bound by CDP approval and had to make concessions when a DDP was brought forward. Manager Young said that he would not agree that approval of the CDP would lock the Planning Commission into this design. If a future DDP would have multiple exceptions to LDC standards, for example, it is within the Planning Commission's discretion to deny that application. The CDP does set a pattern to some extent, but that pattern can be changed in the future. Commissioner Howell said that is different information than he has been given in prior hearings when the Planning Commission has had to comply with an approved CDP, with the reason that an applicant spent money to do a CDP, receives approval, and then goes to the extra cost to develop a DDP.

J. Rebuttal by Applicant:

Lyle Hutchens referred to public testimony from Jonathan Hayes. He clarified that the local street along the southerly boundary of the site will connect to both SW 53rd and SW 49th Streets and has more than enough capacity to handle the traffic from the subdivision and any bypass traffic.

K. Sur-rebuttal:

Jonathan Hayes said he was not implying that the local street did not connect. His point is that the neighborhood collector street on the north side, which is being connected to SW 49th Street, would appear to him to be the natural exit for the traffic. In response to an inquiry from Commissioner Feldmann, Mr. Hayes said that Stoneybrook has been in existence for approximately 10 years.

L. Additional time for applicant to submit final argument:

The applicant waived the additional time to submit written argument.

M. Close the public hearing:

MOTION: Commissioner Reese moved to close the public hearing. Commissioner Woodside seconded the motion and it **passed** unanimously.

N. Discussion and Action by the Commission:

Commissioner Howell asked whether, if the applicant presented public improvement financing security and did the improvement at SW 53rd Street and Philomath Boulevard in conjunction with Phase II, the improvement would be SDC reimbursable.

Engineering Supervisor Jeff McConnell said that the intersection is identified as an SDC project and it is possible to get SDC reimbursement for it. Commissioner Howell said he is trying to evaluate whether this might push a project outside of the order of need. Supervisor McConnell noted that SDC projects are development driven. If the SDC account is depleted, future developers would be given credits.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit II.9

MOTION: Commissioner Howell moved to deny the 49th Street Planned Development request (PLD10-00006), based on findings presented during the Planning Commission deliberations. Commissioner Hann seconded the motion.

Commissioner Howell said that some of the things that are typically required in a CDP, but which the applicant indicated were not applicable, include: the number of lots and their dimensions; general location and floor area of existing and proposed structures and other improvements; maximum building heights; building types; gross density per acre; general location and dimensions of areas to be dedicated or reserved as common area or open spaces; existing proposed circulation system (driveways, sidewalks, multiuse paths, and alleys if needed); conceptual landscape plan; conceptual grading plan; indication of which buildings will have solar access protection; total number and type of dwelling units; square footage of all structures; parcel sizes; proposed lot coverage; and number of parking spaces. He said it appears that the GLUP was shoehorned into a CDP in trying to satisfy the TPR.

It is the Planning Commission's burden to find enough detail to evaluate the compatibility criteria which includes a basic site design. In spite of what staff says, Mr. Howell said, he has been instructed before that the Planning Commission cannot deny a DDP if they are asking for a variation that is consistent with an approved CDP. He noted that the LDC language for the DDP states that it is to be consistent with the CDP. He does not think this is an adequate CDP and that is the basis for his motion.

Commissioner Hann agreed; he said he has been at some of the meetings where hands were tied because of an approved CDP. He added that it is up to the Planning Commission to determine if there is available information to ensure market choice. The statement that smaller lots equal additional choice does not always bear out; he does not think that criterion has been satisfied.

The motion **passed** unanimously.

MOTION: Commissioner Howell moved to recommend that the City Council deny the request to place the proposed Annexation (ANN10-00002) on the November, 2010, ballot. The motion is based on findings presented during Planning Commission deliberations on the request. Commissioner Reese seconded the motion.

Commissioner Howell said that, although the requirements for a GLUP are less detailed than a CDP, it is required to provide enough information for this body to apply the review criteria. In terms of the 13 compatibility review criteria, several of them are difficult to evaluate with this level of GLUP. He found the detail and design were inadequate to evaluate basic site design, visual elements, preservation of natural hazard areas (steep slopes), as well as traffic and offsite parking. The argument for need was not persuasive for him. The Code currently leaves it open for the applicant to decide what they think is the most persuasive, but having the total buildable land and the statement that not all is serviceable was not persuasive for him. It would have been more persuasive to him if the applicant had addressed current approvals that are not developed. In terms of housing choice, he tends to subscribe to idea that the bigger the supply, the lower the cost, although students keep coming so that is hard to track. Regarding the data about commuters, he is not persuaded that Lebanon residents would move to Corvallis if housing were more affordable. In terms of the

benchmarks, he said that he disagreed with two that staff identified as complying: regarding the benchmark related to a DDP, he does not think that a DDP on a sliver of the annexation met the intent of that benchmark; and regarding the benchmark related to pedestrian and bicycle connections, he thinks that there would be gaps in those connections unless there is some assurance of offsite improvements. His assessment is that low market demand and the need to extend existing approvals tend to argue that there is not a strong case for additional land for development at this time.

In response to an inquiry from Commissioner Woodside, Manager Young affirmed that staff believed that the application met the requirements for the CDP.

Commissioner Hann said he thinks the subject site is serviceable and an argument could have been made, but was not, that the terrain on this property may be more favorable to development than other areas that have been approved. Although staff believed the applicants met the CDP requirement, he agrees with Commissioner Howell that they did not. He said that, for him, this boils down to the fact that he does not think there is enough information to recommend that the City Council present this annexation request to the voters.

The motion **passed** unanimously.

MOTION: Commissioner Hann moved to deny the 49th Street Zone Change request (ZDC10-0002) based on findings made by the Planning Commission during deliberations on the request. Commissioner Feldmann seconded the motion.

Commissioner Howell said the requested zoning would be the most appropriate if this area were to be annexed. Given the recommendation to deny the annexation, he will vote in favor of the motion to deny the zone change request.

The motion **passed** unanimously.

O. Appeal Period:

Attorney Brewer explained that the Annexation request will be forwarded to the City Council along with the Planning Commission's recommendation. The other two decisions will be effective 12 days from when the Notice of Disposition is signed, unless an appeal is filed with the City Recorder.

III. PLANNING COMMISSION MINUTES:

A. May 19, 2010:

Planning Commissioners requested the following changes to the May 19 minutes:

- Page 1, under Absent, correct spelling for *Abernathy*.
- Page 4, third paragraph, change end of sentence to read: *...through the Evanite property over the Marys River to downtown.*
- Page 4, fourth paragraph, change to read: *Commissioner Howell added that it would be good to explore obtaining a bicycle-pedestrian access easement through*

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit II.11

Chapman Place in South Corvallis and a multi-modal path connection through the railroad right-of-way off South 3rd Street….

- Page 4, fifth paragraph, last sentence, change *He's* to *He would.*
- Page 4, sixth paragraph, last phrase, change to read: *the County has much of the responsibility but does not have the funding for all of the improvements at this time.*

MOTION: Commissioner Hann moved to approve the minutes with the above revisions. Commissioner Woodside seconded the motion and it **passed** unanimously.

IV. OLD BUSINESS: None.

V. NEW BUSINESS:

Planning Division Manager Kevin Young called attention to the new meeting schedule on the back of the agenda. He noted that Commissioner Bird did not reapply to the Commission; he would like to take an opportunity at the June 16 meeting to thank her for her many years of service on the Planning Commission.

VI. ADJOURNMENT: The meeting was adjourned at 9:20 p.m.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit II.12

Corvallis Planning Division
Report to the Planning Commission
Planning Commission Hearing: June 2, 2010
Staff Report Prepared: May 21, 2010
Staff: Brian Latta, (541) 766-6908

TOPIC: **Annexation, Zone Change, and Conceptual and Detailed Development Plan**

CASE: **49th Street Annexation (ANN10-00002; ZDC10-00002; PLD10-00006)**

REQUEST: The applicant requests that the Planning Commission recommend that the City Council place a measure on the November, 2010, ballot to annex 10.48 acres of privately-owned land into the City Limits. The applicant also requests that the Planning Commission approve a Zone Change to zone the site Low Density Residential with a Planned Develolpment Overlay PD(RS-6), and a Conceptual and Detailed Development Plan to extend the public storm pipe in SW 49th Street to the subject site and construct the westerly portion of the intersection of SW 49th Street and the proposed neighborhood collector street. The current Benton County zoning of the properties is Urban Residential with 5 acre minimum lot sizes (UR-5). The Zone Change and Conceptual and Detailed Development Plan decisions would be contingent upon passage of the annexation measure on the November 2010 ballot.

APPLICANT: 49th Street Annexation Partners
2022 SW 45th Street
Corvallis, OR 97333

OWNERS:

Tax Lots 600 & 700	**Tax Lot 801**
Russell Crenshaw	Joe and Jean Ellingson
PO Box 31089	420 W Lassen Ave
Flagstaff, AZ 86003	Chico, CA 95973

LOCATION: The subject site is located at 2650 SW 49th Street. In general, the site is south of SW Country Club Drive, north of Nash Avenue, and abuts SW 49th and 53rd Streets. The subject site is also identified on Benton County Assessor's Map 12-5-09CB as Tax Lots 600, 700, and 801.

ACREAGE: 10.48

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.1

COMP PLAN DESIGNATION: Residential - Low Density

EXISTING ZONING DESIGNATION: UR-5 - Urban Residential (Benton County Zoning District)

PUBLIC COMMENT: On May 11, 2010, 122 public notices were mailed or emailed. As of May 21, 2010, one piece of written testimony has been received and is included as an attachment to this staff report. A prenotification of this hearing was sent to all neighborhood associations, concerned citizens, and groups on record on April 28, 2010.

ATTACHMENTS:

A. General Land Use Plan/Conceptual Development Plan
B. Detailed Development Plan
C. Comprehensive Plan Map
D. Current City Zoning District Map
E. Current County Zoning District Map
F Existing Conditions Map
G. Natural Features and Topography Map
H. 1998 Buildable Lands Inventory: Table 8
I. City's Conceptual Community Park Service Area Map
J. City's Conceptual Park Layout Plan
K. City's Conceptual Trails Plan
L. Staff-identified Review Criteria
M. Application, Narrative, and Graphics
N. Written Public Testimony Received Prior to May 21, 2010
O. Excerpt from Oregon Administrative Rule 660-012-0060
P. Email Correspondence from ODOT Region 2 Senior Planner John DeTar, Dated October 31, 2008
Q. Letter from ODOT Region 2 Senior Planner John DeTar, Dated May 29, 2009

APPLICANT'S PROPOSAL

The applicant proposes to annex 10.48 acres into the City of Corvallis. A General Land Use Plan (GLUP) is included in the application that shows one way in which the site may be developed **(Attachment A)**. The GLUP is not binding and may be modified with a future development proposal. The proposed GLUP shows the location of a new Neighborhood Collector street along the northern boundary of the annexation site. A local street is proposed along the span of the south boundary line and will connect SW 49th and 53rd Streets. The GLUP shows three local street oriented north/south that connect the proposed east/west Neighborhood Collector and Local Streets. The four bounded blocks are shown to contain a mix of housing types for a total of 58 dwelling units.

Upon annexation, the applicant requests a Zone Change to replace the Benton County Zone UR-5 (Urban Residential) with the City's RS-6 (Low Density Residential) Zone and place a Planned Development (PD) Overlay on the site, consistent with LDC Chapter 3.33 **(Attachments D and E)**. Per OAR 660-012-0060, a Zone Change application is one of the actions that trigger consideration of the State's Transportation Planning Rule (TPR), as described in OAR 660-012-0060 **(Attachment O)**. Per the TPR, the Oregon Department of Transportation (ODOT) would require mitigation or a mechanism to ensure mitigation to any state highway facility that could be significantly affected by the potential for more intensive development that would be allowed by the proposed Zone Change from Benton County zoning. In the case of the current proposal, the intersection of SW 53rd Street and OR Highway 20/34 (Philomath Blvd.) would be significantly affected by the proposed Zone Change application.

Per the TPR, the required mitigation to the intersection of SW 53rd Street and Philomath Blvd., or a mechanism to ensure that the required mitigation will be completed in conjunction with further development on the annexed property, must be addressed at the time of the Zone Change **(Attachment O)**. Typically, traffic mitigation associated with a land use application is satisfied through a condition of approval of the application; however, Annexation and Zone Change applications cannot be subject to conditions of approval. Because Annexation and Zone Change applications cannot be conditioned, the typical mechanism for satisfying the need for traffic mitigation is not feasible.

Consequently, the applicant requests a Conceptual and Detailed Development Plan (CDDP) for the development site. Detailed Development Plan (DDP) approval is only requested for Phase I development of the site. Phase I would extend a public storm pipe in SW 49th Street and construct the westerly portion of the intersection of SW 49th Street and the proposed neighborhood collector street **(Attachment B)**. Future DDP phases (Phase II and beyond) will address development of the remainder of the site. Prior to development of Phase II, the applicant will be required to submit a Major Modification to the existing DDP or submit a new DDP for review and approval. The Conceptual Development Plan (CDP) covers the entire site, and shows conceptual street alignments and residential densities within each block **(Attachment A)**. The CDDP is capable of receiving conditions of approval and the applicant requests that any mitigation required by ODOT to satisfy the requirements of the TPR be conditioned with the CDDP application. The condition of approval would require that the TPR be addressed in conjunction with further development of the site (Phase II and beyond).

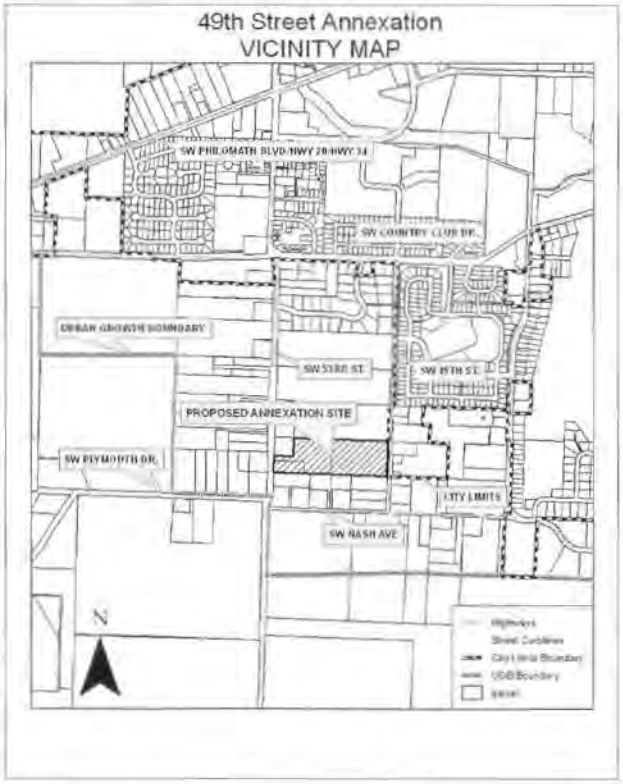
Because CDDPs can expire and PD Overlays can be administratively removed, the applicant proposes to preserve the CDDP approval in perpetuity by providing financial security for all public improvements related to Phase I of the CDDP. The applicant proposes to financially secure the public improvements before the City Council public hearing for the annexation application. This approach to preserve the CDDP approval in perpetuity is consistent with the requirements of LDC Section 2.5.50.09. Before the applicant can financially secure the public improvements, a Public Improvement by Private

Contract (PIPC) permit must be submitted and authorized by the City's Public Works Department.

Upon development of the site, and with future DDPs, the applicant will be required to provide public utilities and mitigate for impacts to traffic and natural features. The application includes a detailed discussion of how public streets, water, sanitary sewer, stormwater, and other infrastructure needs could be accommodated on the site to serve the most intensive possible development scenario under the proposed PD(RS-6) zoning designation. In the application, the applicant proposes to extend public water and sanitary sewer in SW 53rd St., as well as connect to the existing public water, sewer, and storm lines in SW 49th St. to serve the site **(Attachment M)**. A traffic impact analysis has also been provided that identifies the impacts to nearby intersections and required mitigation. The applicant proposes a neighborhood collector street that will run in an east to west direction and is located along the northern boundary line of the site. The neighborhood collector is proposed to stub at Tax Lot 500 and will connect to SW 53rd Street with future development.

SITE AND VICINITY

The site proposed to be annexed consists of three tax lots that combined are roughly 10.48 acres. The right-of-way abutting the site's frontage of SW 53rd Street is also proposed to be annexed to allow for future annexation of adjacent properties. The site's frontage of 49th Street is already within the City Limits, and therefore does not require annexation. The site and all of the abutting properties have a Comprehensive Plan Designation of Residential - Low Density **(Attachment C)**. The site and neighboring properties to the north, south and west are currently zoned UR-5 (Urban Residential - 5 acre minimum lot size), and are located outside of the City limits **(Attachment E)**. The neighboring properties to the east are within the City limits and are zoned RS-6 (Low Density Residential) **(Attachment D)**.



Two single family residences are located on the site **(Attachment F)**. Physically, the site is divided by a hill that is located in the center of Tax Lot 801. The topography gently slopes away from the hill to the north and west, and has a steeper slope on the east side of the hill **(Attachment G)**. The slopes to the east of the hill are mapped as 10-15% slopes on the Corvallis Natural Features Map **(Attachment G)**. There are no other Significant Natural Features regulated by the Land Development Code located on the site.

CRITERIA, STAFF REPORT FORMAT, AND ACTION REQUIRED

This report responds to Annexation, Zone Change, and Planned Development criteria and applicable Land Development Code (LDC) development standards. The adoption of the 2006 LDC fully implements the Comprehensive Plan, as acknowledged by the Department of Land Conservation and Development (DLCD). Therefore, Comprehensive Plan Policies will be addressed in this report only to the extent that they clarify any ambiguities regarding LDC standards.

This report is organized into three parts. Part I discusses the Annexation request, Part II discusses the Zoning District Change, and Part III discusses the Planned Development request. All three parts are organized by the review criteria of their respective LDC Chapters outlined below:

Part I: Annexation	Part II: Zone District Change
Chapter 2.6 Annexation A. Purposes and Procedures B. Demonstrate a Public Need C. Advantages and Disadvantages to the community D. Site's capability of being served by urban services E. Compatibility	Chapter 2.2 Zone District Change A. Land Use B. Compatibility
Part III: Planned Development	
Chapter 2.5 Planned Development A. Applicability and Purposes of Chapter 2.5 B. Improvements Required with Development C. Compatibility	

Based on the conclusions reached in the staff report, the Planning Commission is asked to recommend that the City Council either place or not place the annexation on the November 2010, ballot. The Planning Commission is also asked to either approve or deny the Zone Change and Conceptual and Detailed Development Plan, both of which would be contingent upon the City Council placement of the Annexation request on the November 2010, ballot, and voter approval of the measure.

PART I: ANNEXATION

A. Purposes and Procedures of Chapter 2.6 - Annexation

Land Development Code Section 2.6.30.06 states that requests for annexations shall be reviewed to ensure consistency with the purposes of Chapter 2.6, applicable policies of the Comprehensive Plan, particularly Article 14 of the Comprehensive Plan, and other policies and standards adopted by the City Council and State of Oregon. The purposes of Chapter 2.6 are provided below:

Section 2.6.20 - PURPOSES

The procedures and review criteria for proposed Annexations are established for the following purposes:

a. **Maximize citizen involvement in the Annexation review process;**

b. **Establish methodology to evaluate need, serviceability, and the economic, environmental, and related social effects of proposed Annexations;**

c. **Provide adequate public information and sufficient time for public review before an Annexation election;**

d. **Ensure adequate time for City staff review; and**

e. **Allow for simultaneous review of multiple Annexation proposals.**

The applicant submitted applications for an Annexation, Zone Change and CDDP on the March 31, 2010, deadline to submit annexation requests in order to be placed on the November 2010, ballot. A prenotification of the application was mailed on April 28, 2010, and a public hearing notice was mailed on May 11, 2010, which provided the public with information regarding the proposal. A schedule has been prepared for the application to ensure that public hearings before the Planning Commission and City Council can be accommodated, as well as preparation and public review of the ballot title, publication of a display advertisement as required by the LDC, and publication of the annexation explanatory statement in "The City" newsletter prior to the November election on the matter. Staff find the purposes of Chapter 2.6 have been met by the proposed Annexation request.

LDC Section 2.6.30 - PROCEDURES

An application filed for Annexation shall be reviewed in accordance with the following procedures:

2.6.30.01 - Determination of Annexation Type

The Director shall determine whether an application is for a Minor or Major Annexation as follows:

a. **Minor Annexation - Intended to address situations where properties are proposed for Annexation and, by virtue of their size and development potential, have negligible impacts on surrounding properties and neighborhoods, and on the community as a whole. These Annexations are typically proposed to gain access to public services, such as sanitary sewer and water facilities, before actual Health Hazards are declared; to incorporate infill sites into the City; and/or to allow a limited level of urban development to occur on existing parcels. Minor Annexation provisions are not intended to provide piecemeal Annexations whereby a property owner within the county partitions a small piece of land specifically to be classified as a Minor Annexation, and then continues to partition small sites and propose multiple Minor Annexations.**

   An Annexation shall be considered Minor if all of the following conditions exist:

   1. **No more than one parcel is involved;**

   2. **For residential Annexations, the parcel is capable of providing not more than 10 dwelling units (at maximum allowed density per gross acre). For commercial and industrial Annexations, the parcel is no greater than one acre; and**

   3. **City services are contiguous to the parcel.**

   When addressing the review criteria in Section 2.6.30.06.a and Section 2.6.30.06.b, a Minor Annexation proposal need not provide the same level of detail as a Major Annexation proposal. See Section 2.6.30.06 and Section 2.6.30.07 for specifics. All other submittal requirements and review criteria, however, are applicable.

b. **Major Annexation - An Annexation shall be considered Major if it does not meet all three conditions for a Minor Annexation as outlined in "a," above.**

The annexation application involves two parcels (three Tax Lots) that have a Residential Comprehensive Plan Designation. Upon annexation, the 10.48 acre site would be able to achieve a maximum density of 63 dwelling units. The subject annexation does not qualify for a Minor Annexation as outlined in LDC Section 2.6.30.01(a), and therefore, shall be considered a Major Annexation.

B. Demonstration of a Public Need for the Annexation

LDC Section 2.6.30.06(a)

The applicant has demonstrated a public need for the Annexation -

2. **<u>Major Annexations</u> - Factors to be considered in evaluating public need for Major Annexations shall include, but are not limited to:**

   a) **The five-year supply of serviceable land of the Annexation's land use category (single-family, multi-family, Commercial, or Industrial). Annexations of land designated as Public Institutional, Open Space-Conservation, or Open Space-Agriculture on the Comprehensive Plan Map are exempt from this criteria;**

b) Availability of sufficient land of this type (single-family, multi-family, Commercial, or Industrial) to ensure choices in the market place. Annexations of land designated as Public Institutional, Open Space-Conservation, or Open Space-Agriculture on the Comprehensive Plan Map are exempt from this criteria; and

c) Compliance with adopted community-wide livability indicators and benchmarks relative to Major Annexations, as identified in Section 2.6.30.07.c.

The City shall provide annually updated Citywide data for the applicant to use in calculating supply and demand for the major land use categories (single-family residential, multi-family residential, Commercial, and Industrial). Residential land supply and demand data shall be calculated using housing units. Commercial and Industrial land supply and demand data shall be calculated using acres.

The required data sources and methodologies for use in determining land supply and demand for Major Annexations, and the requirements for addressing community-wide benchmarks, are outlined below in Section 2.6.30.07.

LDC Section 2.6.30.07

All of the provisions within this Section are required for Major Annexation proposals except for proposals or portions of proposals that include land with Comprehensive Plan designations of Public Institutional, Open Space-Conservation, or Open Space-Agriculture. Lands with these map designations are exempt from the provisions within "a," and "b," below. Minor Annexation proposals are subject only to the provisions in "c," below.

a. Determining Five-Year Supply of Serviceable Land - Serviceable land is land within the City limits capable of being served by public facilities.

   When calculating a five-year supply of serviceable land, applicants shall refer to and follow the Council Policy addressing the five-year supply, as amended from time to time. This Policy outlines the accepted methodology and will result in more uniform application submittals.

b. Providing information on land availability to ensure choices in the market place - Comprehensive Plan Policy 14.3.6 states that "factors to be considered in evaluating public need for Annexation may include... the availability of sufficient land of this type to ensure choices in the market place." Minor Annexation applications are not required to include information on market choice. However, Major Annexation applications shall provide this information. Appropriate and encouraged market choice topics include, but are not limited to:

   1. Information regarding a housing/jobs balance;

   2. Housing rental rates and prices;

   3. Vacancy rates; and

   4. A comparison of housing costs related to incomes, land prices, and land availability.

   The City does not independently review and verify documentation of this nature. Therefore, an applicant's market choice arguments shall be developed by a recognized professional in

the field. Additionally, the applicant shall identify the methodologies used and the sources of information.

The Director will summarize the applicant's arguments and methodologies in the staff report provided to the hearing authority, and identify them as the applicant's arguments. The hearing authority shall determine the validity of the arguments based on the information provided by the applicant and on public comments during the public hearing process. The hearing authority shall also determine to what extent these arguments affect the criteria in Section 2.6.30.06.b.

c. Providing information on community-wide livability indicators and determining compliance with adopted community-wide benchmarks -

1. The City has just begun the process of identifying livability indicators to ultimately assist in the development of community-wide benchmarks. Additionally, many of the community-wide livability indicators are not applicable to Annexation proposals.

2. Table 2.6-1- Livability Indicators and Benchmark Criteria provides interim direction to applicants in addressing livability indicator and benchmark criteria. As the community further develops these livability indicators and benchmarks, this Section of this Code shall be updated accordingly.

a) The livability indicators and benchmarks in the following table are intended to be balanced and identified as advantages and disadvantages relative to an Annexation proposal. Compliance with all benchmarks is not required. However, when balanced and viewed in aggregate, the decision-makers need to find that the advantages to the community outweigh the disadvantages.

b) The number of applicable livability indicators and benchmarks varies, depending on the Comprehensive Plan Map designation(s) of the property involved in the Annexation request, as well as whether the Annexation is categorized as a Minor Annexation or a Major Annexation.

c) For those livability indicators and benchmarks that require distance measurements from an amenity to a proposed Annexation site, measurements shall be taken from the average point within the Annexation site.

Land Development Code Section 2.6.30.06(a) above provides three factors that are to be used in determining whether an applicant has demonstrated a public need for the annexation. The factors are, but are not limited to, the five-year supply of serviceable land of the annexation's land use category, the availability of sufficient land of this type to ensure choices in the market place, and compliance with the community-wide livability indicators and benchmarks. As noted above, LDC Section 2.6.30.07 provides the methodologies for demonstrating a public need for the annexation.

1. Five-year Supply of Serviceable Land

To calculate the five-year supply of serviceable land, LDC Section 2.6.30.07 refers applicants to a Council Policy which has not been created. Since no Council Policy exists, the applicant has provided a calculation of the amount of Low Density Residential Land that currently exists inside of the City Limits. This is based on data

in the January 2006 - June 2008 Corvallis Land Development Information Report (LDIR). The applicant's calculation is demonstrated in the table below, and staff have verified that the data and calculations are accurate.

Table I: "Worst-Case" Developable Low Density Residential Land within the City

(All figures in acres unless otherwise noted)	Vacant Area w/in Zone	Unconstrained Vacant Land	Constrained Vacant Land	MADA developable land (sq. ft. per acre)	"Worst - Case" developable constrained land*	Minimum potential developable Low Density Land
RS-3.5	142.69	92.64	50.05	17,500	20.11	112.75
RS-5	207.79	112.06	95.73	15,250	33.51	145.57
RS-6	201.90	146.24	55.66	13,000	16.61	162.85
Total	552.38	350.94	201.44	N/A	70.23	421.17

* This scenario is described as "worst-case" because it assumes that all constrained properties are 100% constrained, and that resultant developable area would be no more than the minimum allowed by the Minimum Assured Development Area (MADA) provisions in the LDC. In reality, most properties will not be 100% constrained by natural features, meaning that the amount of developable Low Density Residential land within the City will likely be larger.

The Corvallis Buildable Land Inventory (BLI) was completed in 1998 and projects trends regarding land need and supply based on 1996 data. The BLI anticipates a significant supply of Low Density Residential land to meet the projected demand over the 1996-2020 planning period. Table 8 of the BLI anticipates a 341-acre surplus of vacant Low Density Residential land by 2020 **(Attachment H)**. The LDC does not indicate how much land is needed for a five-year supply of serviceable land, nor indicate how this figure should be calculated. The LDC also does not define "serviceable." Nearly all land within the Urban Growth Boundary is proposed to be served by City services at some point in the future. However, currently there are lands even within the City Limits that cannot be immediately served by City services, because of physical separation and the need to extend the services. Consequently, staff are not able to develop an estimate for what a five-year supply of serviceable land should be.

Based on the analysis provided in Table 8 of the BLI, the proposed annexation will increase the surplus of Low Density Residential land within the City limits. However, since the LDC does not clearly define what is meant by "five-year supply of serviceable land," it is impossible to quantify the five-year supply of serviceable Low Density Residential lands, and compare that amount to the current amount of Low Density Residential lands, plus the Low Density Residential land proposed for annexation.

2. **Sufficient Land to Ensure Market Choice**
The applicant provided arguments for the above criterion in the application **(Attachment M)**. A summary of the applicant's arguments, sources of data, and methodologies is provided below. Per LDC Section 2.6.30.07(b), the Planning Commission shall determine the validity of the applicant's arguments based on the information provided by the applicant and on public comments during the public hearing process. The Planning Commission shall also determine to what extent the applicant's arguments affect the criteria in LDC Section 2.6.30.06(b).

Land Development Code Section 2.6.30.07(b) provides four appropriate and encouraged market choice topics that the applicant can use to provide arguments for land availability to ensure choices in the market place. The four topics are: information regarding a housing/jobs balance; housing rental rates and prices; vacancy rates; and a comparison of housing costs related to incomes, land prices, and land availability. The applicant's arguments regarding each of the four topics are provided below:

a. **Information regarding a housing/jobs balance;**
The applicant provided the most current housing data from the City of Corvallis' 2006 - 2008 LDIR that shows Corvallis' housing stock consisted of 23,396 housing units. The employment figures from Benton County show that as of February 2010, total non-farm employment totaled 36,420 jobs. The applicant indicated that the data did not include the percentage of those jobs that are located specifically in Corvallis. The applicant states that the most recent detailed employment data is from a 2003 report by the Oregon Employment Department. According to the report, in 2003, approximately 31,532 people were employed in Corvallis, and the housing stock consisted of 22,238 units **(Attachment M)**.

The applicant states that if one were to assume a straight linear extrapolation of the data in the preceding paragraph would yield a result that is reasonably close to the current situation in Corvallis, then it could be assumed that in 2010, there are 29,300 jobs in Corvallis, and the present housing stock is roughly 23,859 units **(Attachment M)**.

The applicant divided the number of workers by the number of housing units to obtain the housing to jobs balance of 1 housing unit to 1.2 workers. The applicant states that this balance, "does not take into account the number of housing units occupied by full-time students, retirees, stay-at-home parents, or other non-employed persons. The resulting practical balance would actually be somewhat lower than this number, though it is difficult to objectively quantify without more demographic information" **(Attachment M)**. The applicant further states, "when one considers the fact that many households are inhabited by more than one wage earner, it can easily be concluded that the existing balance

is inadequate to support the employment level of Corvallis" **(Attachment M)**. Finally, the applicant states, "the fact that over 1/4 of all Benton County workers [in 2003] commute from out of county supports this" **(Attachment M)**.

b. Housing rental rates and prices;
The applicant provided 2008 housing rental rates as well as home prices in Corvallis. The rental rates and home prices are outlined in the two tables below. The data for the rental rates comes from the US Housing and Urban Development (HUD), and the home prices data is from the Willamette Valley Multiple Listing Service (WVMLS) **(Attachment M)**. The applicant states, "According to HUD, the median home price for Corvallis in 2008 was approximately $262,000" **(Attachment M)**.

Table II: Rental Rates

Size (# of Bedrooms)	Monthly Rent
1 Bedroom	$601/Month
2 Bedroom	$752/Month
3 Bedroom	$1067/Month

Table III: Home Prices

Listed Price	Monthly Payment*	Available
$90K - $150K	<$625/Mo	22 Listings
$150K - $200K	$625/Mo - $900/Mo	50 Listings
$200K - $250K	$900/Mo - $1230/Mo	81 Listings

*Calculated at 30 year fixed mortgage, 20% down payment, 6.0% interest

c. Vacancy Rates; and
The applicant states, "According to the most recent census data from 2000, the homeowner vacancy rate in Corvallis is 2.2%, while the rental vacancy rate is 7.1%" **(Attachment M)**.

d. A comparison of housing costs related to incomes, land prices, and land availability.
The applicant states, "Housing costs and affordability as related to income are calculated on monthly housing payments compared to gross monthly income." The applicant further states, "When a household's monthly housing payment exceeds 30% of their gross monthly income, that household is considered by HUD to be 'cost burdened'" **(Attachment M)**. The applicant indicates that this

standard is used for the following discussion on what income levels are necessary to afford a house.

The applicant provided a breakdown of the full-time hourly wage that is required to afford a house in a specific price range. The breakdown is in the following table.

Table IV: Wages Required for Affordability

Listed House Price	Hourly Wage for Affordability*
$90K - $150K	$13/hr - $19/hr
$150K - $200K	$19/hr - $25/hr
$200K - $250K	$25/hr - $30/hr

*Calculated at 30 year fixed mortgage, 20% down payment, 6.0% interest rate

The applicant states, "As the median house price in Corvallis is $262,000, over ½ of the houses for sale are only affordable to households that earn a total wage of more than $30/hour. Working Class jobs typically do not earn more than $15/hour. From this, it is clear that the majority of units for sale in Corvallis are well out of the price range of households with working class incomes, even when there is more than one wage earner in the household" **(Attachment M)**.

The applicant also indicates that the housing in Corvallis is more expensive than that of neighboring communities. The applicant provided the following table, which compares typical real estate listings for detached singles family residences and vacant lots in 3 central Willamette Valley Communities.

Table V: Real Estate Listings - Community Comparison

Community	# of Listings	Typ. $250K	Typ. $200K	Typ. $150K	<1 acre lot, cost
Corvallis	153	**1344 sf 3br, 2ba, 0.2 acre**	1040 sf, 3br, 1ba, 0.13 acre	984 sf, 2br, 2ba, condo	26 avail., $55 - $495K
Albany	301	2715 sf, 4br, 3 ba, 0.34 acre	1520 sf, 3br, 2ba, 0.2 acre	**1389 sf, 3br, 2ba, 0.2 acre**	86 avail., $18 - $150K
Lebanon	178	1850 sf, 3br, 2ba, 0.81 acre	2338 sf, 3br, 2ba, 0.38 acre	**1452 sf, 3br, 2ba, 0.25 acre**	12 avail., $40 - $130K

The applicant states, "The chart demonstrates that for a comparable house in terms of square footage and lot size, prospective buyers can expect to pay approximately $100,000 more to live in Corvallis than in Albany or Lebanon. Not only are the prices higher, but the quantity of houses to choose from is lower, especially in the lower range of affordability. As a result, over 1/4 of the Benton County workforce commutes from other counties, taking a toll on the environment in terms of gas consumption and carbon dioxide emissions" **(Attachment M)**.

The applicant concludes that, "The net result of all this data concerning jobs, vacancy rates, housing availability, income, and housing prices is that the market in Corvallis is extremely limited in the choices it offers the people who work here, especially those who work at jobs that are not exceptionally high-paying" **(Attachment M)**. The applicant further concludes that, "The annexation of this site would provide approximately 57 additional housing units. As these units would be developed to RS-6 standards, many of them will be on smaller lots sizes and/or be attached housing types, which will provide more choices to an area of the market that is currently underserved" **(Attachment M)**.

3. **Compliance with Community-Wide Livability Indicators and Benchmarks**
   Table 2.6-1 provides the livability indicators and benchmarks that are intended to be balanced and identified as advantages or disadvantages relative to an Annexation proposal. The LDC does not require compliance with all the benchmarks; however, when balanced and viewed in aggregate, the decision-makers need to find that the advantages outweigh the disadvantages **(Attachment L)**.
   The applicant has provided a table analyzing the applicable Livability Indicators in relation to the proposed annexation. The following table includes the applicable Livability Indicators with the applicant's analysis, including an added column for Staff's analysis.

Table VI: Analysis of Compliance with Livability Indicators and Benchmarks

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Where People Live"				
1. Annexation Density	Average density of proposed Annexation relative to the average density of land within the City that is developed and of the same type (single-	Meet or exceed the average density of developed land within the City, of the same type as the proposed	*Complies. The proposed gross density for the proposed General Land Use/Conceptual Development Plan*	Complies. The gross density shown on the GLUP (5.5 DUs/acre) exceeds the average net

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
	family or multi-family)	annexation.	*is 5.4 dwelling units/acre. The average net density of land within the City is 3.6 dwelling units/acre.*	density of Low Density Residential land within the City, which is 3.6 dwelling units/acre, based on a recent Staff query using the City's Geographic Information System.
2. Rural Development Potential	Type of county development that could occur if property not Annexed (depends on county land use policies in effect at time of proposed Annexation).	Development on land within the Urban Growth Boundary is done in a fashion that does not preclude urban-level development on the subject site and/or on adjacent properties within the UGB.	*Complies. Current county standards allow development of Manufactured Home Park, or Mining Operation, which preclude urban-level development on the subject site.*	Complies. The subject site is not currently developed in a manner that would preclude urban-level development on the subject site, nor would the current development pattern impede urban development on neighboring properties.
3. Adjacent to City	Percentage of the perimeter of the Annexation that is enclosed within the City Limits	It is considered an advantage if > = 50% of the perimeter of an Annexation site is enclosed within the City limits	*Less than 50% of the perimeter is adjacent to existing City Limits*	Does not comply. The annexation site is adjacent to the City limits on the east property line. This property line is roughly 12.2% of the perimeter of the Annexation site.
4. Development Plans	Concurrent processing of Detailed Development Plan and/or Tentative	It is not considered a disadvantage and may be considered an	*Complies. Concurrent application for a Detailed*	Complies. The applicant submitted a Conceptual and

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
	Subdivision Plat with Annexation Request	advantage if an Annexation request is processed concurrently with a Detailed Development Plan and/or Tentative Subdivision Plat, even though such land use decisions may be changed after Annexation.	*Development Plan approval is submitted with Annexation Application*	Detailed Development Plan concurrent with the Annexation and Zone Change Applications. However, the majority of future development on the property would require a subsequent subdivision and Planned Development process.
5. Distance to Bicycle and Pedestrian Access	Distance to bike lanes. Distance to sidewalk. Distance to multi-use path	0.5-mile to bike lane. 0.25-mile to sidewalk 0.5-mile to multi-use path.	*Complies. Less than 0.25 mile to existing bike lane and sidewalk. Less than .5 mile to multi-use path.*	Partially complies. There are existing bike lanes and sidewalk within 0.25-mile of the center of the annexation site. Existing bike lanes are located on SW 49th and SW 53rd Street. There is an existing sidewalk on the east side of SW 49th Street just north of the annexation site. The nearest multi-use path is located along SW Country Club Drive. From the center of the annexation site, the multi-use path is roughly 0.55-mile away.

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
6. Connectivity & Extension of Bicycle and Pedestrian Facilities	It is considered an advantage if improvements proposed as part of the Annexation request would connect to and extend existing bicycle and pedestrian facilities.	Connection to existing pedestrian facilities and extension of them by at least 350'; or connection to existing pedestrian facilities and filling a gap between existing pedestrian facilities of at least 100'. Connection to existing bicycle facilities and extension of them by at least 350'; or connection to existing bicycle facilities and filling a gap between existing pedestrian facilities of at least 100'.	*New pedestrian and bicycle facilities do not connect to existing facilities, as SW 49th Street and SW 53rd Street are not developed to City Standards adjacent to the annexation site.*	Partially complies. New pedestrian facilities would not connect the annexation site with existing facilities. There is an existing sidewalk on the east side of SW 49th Street that terminates just north of the annexation site. The west side of SW 49th Street has bike lanes that terminate at the north end of the Annexation site. With Phase II of the Detailed Development Plan, the bike lanes would be required to be extended along the 400 ft. of frontage for the site.
7. Planned Public Transportation Improvements	Type and Extent of public transportation improvements (street, bicycle, pedestrian) that are listed in City master plans and would occur with urban-level development of Annexation site	It is considered an advantage if public transportation improvements (street, bicycle, pedestrian) would be installed with the Annexation, are listed in City master plans, and would enable other sites within the Urban Growth Boundary to ultimately develop.	*Complies. New pedestrian facilities on the west side of SW 49th Street will enable other properties in the UGB to ultimately develop. The new neighborhood collector street is included on the City's master plan and will enable other properties to the south to*	Complies. The new pedestrian and bicycle facilities on SW 49th and SW 53rd Street would enable other properties to ultimately develop. In addition, the neighborhood collector through the site and the proposed multi-use path along

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
			ultimately develop.	SW 53rd Street are included in the City's master plans.
8. Distance to Shopping	Distance from neighborhood shopping opportunities (both existing and planned).	Annexation site is within 0.5-mile of neighborhood shopping opportunities (existing and planned). More advantage associated with shorter distances from existing (as opposed to planned) shopping opportunities and/or location within 0.5-mile from existing shopping opportunities.	*Annexation site is approximately 0.68 mile from nearest neighborhood shopping opportunities.*	Does not comply. The nearest neighborhood shopping opportunity is located at the Corner of SW 53rd Street and SW Technology Loop. From the average point of the annexation site to the intersection of SW 53rd Street and Technology Loop is roughly 0.81-miles.
9. Affordable Housing	Housing Affordability	It is considered an advantage if more than 50 percent of the proposed residential housing units are classified as Affordable Housing using the definition of Chapter 1.6 - Definitions. This benchmark will be refined with future update to this code.	*Less than 50 percent of the proposed residential units will be classified as Affordable Housing.*	Does not comply. The applicant doesn't provide data on how many units will be affordable, but does indicate in their analysis that the number will be less than 50 percent.
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Economic Vitality"				
10. Employment/	Balance of jobs and housing	To be developed as part of a future	*Not applicable*	Complies. Although there is

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.18

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
Housing		update of this Code, and following completion of regional studies.		not a community benchmark, it could be anticipated that annexation of more Low Density Residential land would, when developed, improve the job/housing balance, because currently in the community there are more jobs than housing.
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Protecting the Environment"				
11. Natural Features	Acres and percentage of Annexation site with Significant Natural Features	Consistency with Significant Natural Feature protections specified by Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazards and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions; and Chapter 4.13 - Riparian Corridor and Wetland Provisions.	*Complies. The site contains steep slopes, which will be afforded better protection under the LDC than currently apply.*	Complies. If annexed, the steep slopes will be regulated by Chapter 4.5 of the LDC.

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
		It is considered an advantage of Significant Natural Features are protected through Annexation, since they may be better protected within the City.		
12. Distance to Transit	Distance from an existing transit line and/or bus stop.	Annexation site is within 0.5-mile of an existing transit line and/or bus stop.	*Complies. Annexation site is approximately 0.4 miles from nearest transit stop, at Stoneybrook and Country Club Dr.*	Complies. The number 3 and C3 buses run along SW Country Club Drive between SW 49th and 53rd Street, and the number 8 bus runs south on 49th Street and turns east onto Country Club Drive. From the center of the annexation site the nearest bus stop is located roughly 0.54-mile. The Philomath Connector bus route runs along SW 53rd Street adjacent to the site. From the average point of the annexation site, the nearest bus stop is roughly 0.24-mile away.
13. Distance to Major Street	Distance to nearest Collector and/or Arterial Street(s) that would serve the proposed annexation site and is fully	Distance to nearest Collector and/or Arterial Street(s) that would serve the proposed	*Does not comply. Annexation site is approximately 0.38 miles from SW Country Club Drive, which is the*	Partially Complies. SW 49th Street is a neighborhood collector. It is improved with

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
	improved to City standards or is improved to City standards with regard to bicycle and pedestrian facilities.	annexation site < = 0.25-mile and is fully improved to City standards or is improved to City standards with regard to bicycle and pedestrian facilities.	*nearest Collector or Arterial fully improved to City standards.*	bike lanes on both sides of the street and has a sidewalk on the east side of the street that terminates just north of the annexation site. Although the sidewalk is not located on the same side of SW 49th Street as the annexation site it is less than 0.25-mile from the center of the site.
14. Intersection	Levels of service for intersections of Arterial and/or Collector Streets, as determined by the City's Traffic Engineer, within a one-mile radius of the site	Levels of service for intersections of Arterial and/or Collector Streets affected by the proposal, as determined by the City's Traffic Engineer, and generally within one-mile radius of the site, will be a level of service "D" or better following urban level development of the Annexation Site.	*Complies. Level of service for intersections of Arterial or Collector streets will be "D" or greater. Intersection improvements such as signaling will be required to meet this standard.*	Partially complies. The intersections at SW 53rd Street and Country Club Drive as well as SW 53rd Street and Philomath Blvd. will be affected by the annexation (generate more than 30 peak hour trips). The LOS for the Intersection at SW 53rd Street and Country Club Drive will perform at an acceptable LOS. The LOS at the intersection of SW 53rd Street and SW Philomath Blvd. currently is performing at a level E. Analyzing this intersection at the Planning

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
				Horizon drops the LOS to an F. Because the intersection is already functioning at a LOS below D, future development proposals will be required to complete a TIA that provides mitigation for all of the increased trips to the intersection of SW 53rd and Philomath Blvd.
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of				
15. Local School Capacity/ Travel Distance	Student enrollment, capacity, and average class size of public schools to serve the Annexation site. Distance to public elementary school.	Public schools that would serve the Annexation site are not overcrowded. Corvallis School District goals for average class sizes may vary among grades. 0.5-mile to public elementary school. School District policies, re: boundaries of closest schools or additional schools, factor into potential redefinition of school boundaries.	*The nearest public elementary school is Adams Elementary, which is approximately 1.5 miles. There is sufficient capacity at all public schools that would serve the annexation site.*	Partially complies. Adams Elementary school is the nearest school and is located more than 0.5-mile away from the average point of the annexation site. The school district was routed a copy of the application materials and did not provide comments. Presumably, this indicates no concerns with the impact of this application on school enrollment.

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
16. Police Response Time	Number of police officers per 1,000 persons residing within City limits	At least 1.2 officers per 1,000 persons residing within City limits.	*56 officers/54,000 people = 1.04 / 1,000 persons.*	Does not comply. There are 56 sworn police officers in the City. The population of Corvallis is 55,125 people. The ratio is 1.02 officers / 1,000 persons.
17. Distance from Fire Station	Distance from an existing fire station.	All buildable portions of the Annexation site are within 1.5 miles of a fire station with an engine company.	*The annexation site is approximately 2.3 miles from the nearest fire station.*	Does not comply. Fire Station 2 is the station closest to the annexation site. Fire Station 2 is roughly 2.47 miles from the average point of the annexation site.
18. Public Improvements	Type and extent of public improvements developed to City standards; and urban-level development, such as clustered housing, etc., existing on the proposed Annexation site.	Annexation of partially developed land within the Urban Growth Boundary (UGB) that already contains some public improvements developed to City standards, and urban-level development on part of the site, is considered more advantageous to the City than Annexation of undeveloped land.	*The Annexation site is undeveloped at this time.*	Does not comply. No portion of the annexation site is developed to City standards.
19. Distance to Sewer and Water	Distance to adequately sized public sanitary sewer and water lines needed to serve the	Sanitary sewer and water facilities are proximate to the Annexation site.	*Complies. Sanitary sewer and water facilities are proximate to the*	Complies. Sanitary sewer and public water facilities are located in the

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
	site.	After some monitoring, distances for this benchmark may be specified in a future update of this code.	*Annexation site.*	portion of SW 49th Street that fronts the annexation site. The applicant proposes to also extend these facilities in SW 53rd Street from Country Club Drive.
20. Planned Public Utilities	Types and extent of public utility improvements of sanitary sewer, water, and storm drainage, that are listed in City master plans, and would occur with urban-level development of the Annexation site.	It is considered an advantage if the installation of public utilities of sanitary sewer, water, and storm drainage, listed in City master plans, would enable other sites within the UGB to ultimately develop.	*Complies. Development of site will include the installation of the Southwest 2nd Level Water Pump Station listed in the City Utility master plan, as well as the extension of a 16" water main in SW 53rd Street.*	Complies. The extension of the 16" water main in SW 53rd Street as well as the installation of the Southwest 2nd Level Water Pump Station, listed in the City's master plans, will enable other sites within the UGB to ultimately develop in the future.
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of				
21. Distance to Parks	Distance from an existing public park.	Annexation site is within 0.5-mile of an existing public park.	*The Annexation site is approximately 0.58 miles from Sunset Park.*	Does not comply. The nearest public park to the annexation site is Sunset Park. From the average point of the annexation site to Sunset Park is roughly 0.73-mile.
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Central City"				
22. Distance to Downtown	Distance of the Annexation from the	It is considered an advantage if an	*Complies. The Annexation site is*	Complies. The distance to the

Livability Indicators	Description of Livability Indicators	Benchmarks	Applicant's Analysis of Compliance	Staff's Analysis of Compliance
	Central Business Zone intersection of SW Third Street and SW Monroe Avenue.	Annexation site is within 3.8 miles from the intersection of SW Third Street and SW Monroe Avenue, within the boundaries of the Central Business Zone.	*approximately 3.6 miles from the intersection of SW 3rd and SW Monroe.*	intersection of SW Third Street and SW Monroe Avenue from the average point of the Annexation site is roughly 3.6 miles.

Compliance with Livability Indicators and Benchmarks

Of the 21 applicable livability indicators, the proposed annexation would fully comply with ten, partially comply with five, and not comply with seven of the indicators. The LDC does not provide guidance on whether each livability indicator is granted equal value in balancing the advantages and disadvantages contemplated by Section 2.6.30.07(c).2(a). Strictly by the numbers, the annexation fully complies with ten livability indicators, does not comply with seven, and partially complies with five.

Conclusion on Public Need for the Annexation

The applicant provided information and arguments regarding the five-year supply of serviceable land of the annexation's land use category, the availability of sufficient land of this type to ensure choices in the market place, and compliance with the community-wide livability indicators and benchmarks.

In regards to the analysis of the five-year supply of serviceable land, Staff find that there are currently at minimum 421.17 acres of developable Low Density Residential land within the City limits. Also, Staff find that the BLI projects a surplus of 341 acres of Low Density Residential land within the City limits in the year 2020. However, staff note that not all Low Density Residential land within the City limits is immediately serviceable due to physical constraints or the need to extend the City services. Staff do not have data on the amount of Low Density Residential land that is immediately serviceable.

The applicant has also provided information and arguments regarding the availability of sufficient Low Density Residential land within the City to ensure choices in the market place. As specified by LDC Section 2.6.30.07.b, Staff have not evaluated this information, but have simply summarized the applicant's data and arguments for decision-makers **(Attachment L)**.

Lastly, the applicant has provided information regarding the consistency of the proposed annexation with community-wide livability indicators and benchmarks relative to Major Annexations, as identified in Section 2.6.30.07(c). Although it is not clear to Staff if all livability indicators are to be granted equal value in the evaluation of the advantages and disadvantages of the annexation, Staff find that the proposed annexation would fully comply with ten, partially comply with five, and not comply with seven of the indicators.

C. The Advantages to the Community Outweigh the Disadvantages

LDC Section 2.6.30.06

b. The Annexation provides more advantages to the community than disadvantages - To provide guidance to applicants, examples of topics to address for the advantages versus disadvantages discussion are highlighted in Section 2.6.30.07.

2. Major Annexations - Major Annexation proposals shall include a discussion of advantages and disadvantages in terms of the methodologies outlined in Section 2.6.30.07. Applicants are required to document the methodologies and criteria used. The Director will review the applicant's arguments, but will not conduct independent research to verify or justify them.

The information provided below is taken verbatim from the application and is in *italics*. The applicant's methodology and criteria for determining if the advantages to the community outweigh the disadvantages, is guided by the Community-wide Livability Indicators and Benchmarks for Annexation Proposals in Table 2.6-1 **(Attachment L)**. Per Section 2.6.30.06(b).2 noted above, City Staff are to review the applicant's arguments regarding the advantages and disadvantages to the community, but will not conduct independent research to verify or justify them.

Response: The following table outlines the advantages versus the disadvantages of annexing the property. As can be seen, the advantages strongly outweigh the disadvantages.

Criterion	*Advantages*	*Disadvantages*	*Neutral*	*Discussion*
Annexation Density, Rural Development Potential	*RS-6 development will exceed City's average, preclude development to County standards*	*No disadvantages to this.*	*No neutral aspects of this.*	*As the proposed gross density for the proposed land use plan, is 5.4 dwelling units/acre, and the average net density of land within the City is 3.6 dwelling units/acre,*

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.26

Criterion	Advantages	Disadvantages	Neutral	Discussion
				development of this site to RS-6 standards will result in a slight increase to the City's average density, which results in a more compact & efficient use of land. Current county standards could allow development of aggregate mining operation or manufactured home park, both of which are less desirable.
Planned Public Transportation Improvements	*Builds new neighborhood collector street per City's Transportation Plan*	*No disadvantages to this.*	*No neutral aspects of this.*	*Addition of new neighborhood collector street extending from SW 49th Street to SW 53rd Street will greatly enhance automobile, bicycle, and pedestrian connectivity in Southwest Corvallis.*
Development Plans	*Detailed Development Plan submitted as part of application.*	*No disadvantages to this.*	*No neutral aspects of this.*	*Though immediate development is limited to Phase 1 of the Detailed Development Plan, the strictness of the LDC means that little variation from the proposed General Land Use/Conceptual Development Plan*

Criterion	Advantages	Disadvantages	Neutral	Discussion
				is likely or even possible in the future.
Adjacency to City	No advantages to this.	Site is not adjacent to City limits for over 50% of its perimeter.	No neutral aspects of this.	Does not assist in the orderly expansion of the City boundary.
Distance to bicycle and pedestrian access, shopping, transit, major street, local school, fire station, parks, and/or downtown.	Location is close to major street, transit stop, and bike lanes. Also close to downtown and an existing park.	Location is not close to shopping, existing sidewalk, fire station, or elementary school.	Location is not far from existing multi-use path. Existing police force has close to optimal level of staffing for City's population.	See Table 2.6-1 for numerical tabulations of distances to existing facilities and amenities.
Connectivity & extension of existing pedestrian facilities.	New sidewalk and proposed multi-use path abutting SW 53rd Street will assist other properties in UGB to develop.	No connectivity to existing sidewalk(s).	No neutral aspects of this.	When other properties in the City or UGB wish to develop, the sidewalk facilities installed under this project will be available for connection.
Affordable Housing	46% of units will be attached, therefore likely to be affordable to low-income buyers.	No guarantee that attached units will be affordable.	54% of lots will be detached single-family, selling at market rate.	Attached housing tends to sell for less money than detached in Corvallis. Low-income families, defined as being at 80% of median-income or lower (<$54,400/year) will likely find attached units to be within their means where detached are not.

Criterion	Advantages	Disadvantages	Neutral	Discussion
Distance to sewer and water	*Sanitary Sewer service is available adjacent to the site. This development will begin some of the second level water system improvements anticipated in the City's Water Master Plan.*	*Water service will need to be extended from the corner of SW 53rd Street and SW Country Club Drive. Storm Sewer service will need to be extended from north of the site.*	*No neutral aspects of this.*	*Utilities are essentially readily available. The extension of the utilities will be done by the developer, and are anticipated in the respective utility system master plans.*
Natural Features	*The site contains steep slopes, which will be afforded greater protection if annexed.*	*No disadvantages to this.*	*No neutral aspects of this.*	*The site contains steep slopes, which will be protected under the provisions of LDC Chapter 4.5.*
Public Improvements	*All new development will be to current LDC standards.*	*No disadvantages to this.*	*No existing urban development on site at this time.*	*All urban development on site will be new with this proposal, and developed to current LDC standards.*
Intersection	*All adjacent intersections will be upgraded as required to achieve LOS "D" or greater.*	*Development of site will increase traffic on SW 49th Street and SW 53rd Street.*	*No neutral aspects of this.*	*Increase in traffic will occur with development. However, developer will perform any necessary upgrades to nearby intersections as indicated by traffic study to be necessary to maintain acceptable level of service.*

The following is the applicant's analysis (in *italics)* of the Community-wide Livability Indicators and Benchmarks in Table2.6-1, and how the annexation proposal conveys more advantages than disadvantages.

The livability benchmarks are grouped according to various goals that are listed in the Corvallis 2020 Vision Statement: Where People Live, Protecting the Environment, Education/Human Services, and Central City. This analysis will discuss the benchmarks within each goal, and the goals as they compare to each other for this annexation site. Note: the goal "Economic Vitality" is not included in this analysis as the City of Corvallis has not yet defined a specific benchmark to which an annexation can be compared.

Where We Live

The annexation meets approximately half of the livability benchmarks in this category: Annexation Density, Development Plans, Rural Development Potential, Distance to Bicycle and Pedestrian Access, Planned Public Transportation Improvements. The benchmarks that are not met include Adjacent to City, Connectivity & Extension of Bicycle and Pedestrian Facilities, Distance to Shopping, and Affordable Housing. One of these benchmarks, Distance to Shopping, requires that the site be 0.5 miles or less to said amenity. As the actual distance from the site to amenities is 0.68 miles to the corner of SW 53rd Street and SW Philomath Blvd., the benchmark is not met. However, it is close enough that the disadvantage associated with this benchmarks not being met is minimal.

While no units are designated as being set aside as affordable units, it is unlikely that any annexation would meet this benchmark, unless the applicant is a developer devoted specifically to affordable housing and the project is subsidized as such. That being said, the mixture of lot sizes and housing types on the site indicate that many of the units would be available at costs lower than typically found in Corvallis area market. This is discussed in greater detail above under Section 2.6.30.07-b.

In conclusion, as the number of benchmarks met under this category exceeds the numbers not met, it would appear the advantages outweigh the disadvantages for the annexation application at this time, under the category "Where We Live."

Protecting the Environment

The application meets all but one of the benchmarks under Protecting the Environment: Natural Features, Intersection, Distance to Transit and Distance to Major Street. The site contains steep slopes, which will be afforded greater protection from development if the subject site is annexed. Level of service for intersections of Arterial and/or Collector streets will be "D" or greater. Intersection improvements such as signaling will be provided as required to meet this standard. The distance from the site to the nearest transit stop is 0.4 miles. The site fronts SW 53rd Street, which is classified as an arterial street.

The applicable benchmark that is not met is Distance to Major Street. This benchmark requires that the site be 0.5 miles or less to said amenity. As the actual distance from the site to amenities is 0.68 miles to the corner of SW 53rd Street and SW Philomath Blvd., the benchmark is not met. However, it is close enough that the disadvantage associated with this benchmarks not being met is minimal. Furthermore, the site fronts SW 53rd Street, which is classified as an arterial and will, eventually, be developed to City Standards, at which point the benchmark will be met.

In conclusion, it would appear that the application advantages strongly outweigh the disadvantages in the category of "Protecting the Environment."

Education/Human Services
While the application meets two of the livability benchmarks for this group (Distance to Water and Sewer and Planned Public Utilities), it does not meet any of the other benchmarks for this category. The disadvantages to annexation outweigh the advantages under the category "Education/Human Services."

Central City
The application meets the only benchmark in this category, "Distance to Downtown."

Conclusion
The application confers more advantages than disadvantages in three of the four categories under analysis. Overall, the benchmarks that it meets or nearly meets include: Annexation Density, Rural Development Potential, Distance to Bike, Sidewalk, & Multi-use Path, Planned Public Transportation Improvements, Distance to Transit, Intersection, Distance to Water and Sewer, Planned Public Utilities, and Distance to Downtown. These represent a wide variety of advantages and diversity in opportunities to assist in the orderly growth and urbanization of the associated area. Furthermore, many of the benchmarks that are not met could be remedied in time, as SW 53rd Street gets developed to City Standards, additional school facilities are constructed, and City police staffing is expanded. In conclusion, over all the advantages of the annexation outweigh the disadvantages, in terms of livability benchmarks.

D. The Site is Capable of being Served by Urban Services and Facilities Required with Development

The following section evaluates the proposal's compliance with Section 2.6.30.06(c) and Chapter 4.0 - Improvements Required with Development of the LDC **(Attachment L)**. Evaluation occurs under three broad categories: Circulation, Public Facilities and Services, and Franchise Utilities.

1. CIRCULATION

The following discussion addresses criteria related to vehicles, bicycles, pedestrians and transit.

Vehicular Circulation:
Applicable Land Development Code Criteria:

2.6.30.06 - Review Criteria

c. The site is capable of being served by urban services and facilities required with development - The developer is required to provide urban services and facilities to and through the site. At minimum, both Minor and Major Annexations shall include consideration of the following:

4. Transportation facilities consistent with the City's Transportation Plan and Chapter 4.0 - Improvements Required with Development; and

5. Park facilities consistent with the City's Parks Master Plan.

4.0.60 - PUBLIC AND PRIVATE STREET REQUIREMENTS

a. Traffic evaluations shall be required of all development proposals in accordance with the following:

1. Any proposal generating 30 or more trips per hour shall include Level of Service (LOS) analyses for the affected intersections. A Traffic Impact Analysis (TIA) is required, if required by the City Engineer. The TIA shall be prepared by a registered professional engineer. The City Engineer shall define the scope of the traffic impact study based on established procedures. The TIA shall be submitted for review to the City Engineer. The proposed TIA shall reflect the magnitude of the project in accordance with accepted traffic engineering practices. The applicant shall complete the evaluation and present the results with an overall site development proposal.

e. Development sites shall be provided with access from a public street or a private street that meets the criteria in "d," improved to City standards in accordance with the following:

1. Where a development site abuts an existing public street not improved to City standards, the abutting street shall be improved to City standards along the full frontage of the property concurrently with development. Where a development site abuts an existing private street not improved to City standards, and the private street is allowed per the criteria in "d", above, the abutting street shall meet all the criteria in "d", above and be improved to City standards along the full frontage of the property concurrently with development.

k. Location, grades, alignments, and widths for all public and private streets shall be considered in relation to existing and planned streets, topographical conditions, public convenience and safety, and proposed land use. Where topographical conditions present special circumstances, exceptions to these standards may be granted by the City

Engineer provided that the safety and capacity of the street network is not adversely effected. The following standards shall apply:

8. **Right-of-way and improvement widths shall be as specified in the Transportation Plan and Table 4.0-1 - Street Functional Classification System.**

The applicant's site is accessed from both SW 53rd Street and SW 49th Street, south of SW Country Club Drive and North of SW Nash Avenue. The City's Transportation Plan shows a new neighborhood collector street between SW 53rd Street and SW 49th Street at this location.

SW 53rd Street

SW 53rd Street is designated as an arterial street and is under Benton County's jurisdiction. Once annexed into the City, Benton County will maintain jurisdiction of SW 53rd Street. The section of SW 53rd Street adjacent to the applicant's site is currently improved to County standards with two travel lanes, bike lanes and open ditches. Future City standard improvements will include the addition of curbs, gutters, setback sidewalks, landscape strips and a piped drainage system. Phase 1 of the DDP does not propose any improvements along the SW 53rd Street frontage. Future DDP phases will need to address the extent of improvements along this frontage **(Development Related Concern A)**. Benton County has expressed a preference for future development to prepay for improvements in order to fund a Capital Improvement or MPO project rather than having piecemeal or half street improvements along this corridor.

SW 49th Street

SW 49th Street is designated as a neighborhood collector street. The section of SW 49th Street adjacent to the applicant's site is currently improved to County standards with two travel lanes and open ditches. City standard improvements will include the addition of curbs, gutters, bike lanes, setback sidewalks, landscape strips and a piped drainage system.

Phase 1 of the proposed DDP includes construction of the western portion of an intersection leg for a new neighborhood collector street. The location of a new neighborhood collector street at this location is consistent with the City's Transportation Plan.

Future DDP phases will need to address the extent of improvements along this frontage beyond the phase 1 frontage. Improvements will need to be constructed concurrent with development of the site **(Development Related Concern A)**.

New Neighborhood Collector

The City's Transportation Plan shows a new neighborhood collector street constructed between SW 53rd Street and SW 49th Street, along the northern portion of the applicant's property. The applicant's GLUP shows a new neighborhood collector street,

as described above. Future DDP phases will need to incorporate this neighborhood collector street.

Trip Generation

A trip generation study was conducted for the "worst case" development of this site. The "worst case" calculates the highest peak hour impacts that can be developed within the designated zone. The report conducted trip generation calculations based on the proposed RS-6 zoning of the applicant's site. The trip generation rates for development are based on standards established by the Institute of Transportation Engineers and are published in the ITE Trip Generation Manual, 7th Edition. One "trip" is defined as a vehicle leaving from or arriving at the development.

ITE land use code 210, Single-Family Detached Housing was used in the study because of all the permitted uses in the RS-6 Zone, Single-family Detached Housing would generate the most vehicle trips. In total, the worst case development scenario would generate 64 PM peak hour trips. The City of Corvallis typically defines an impact as 30 or more peak hour trips to a single intersection. Because the calculated peak hour trip total is higher than the City's threshold, a trip distribution and Traffic Impact Analysis (TIA) was conducted.

Traffic Impact Analysis

A Traffic Impact Analysis (TIA) was completed for this annexation application. This TIA also incorporated the Cannon-Applegate Annexation application which was withdrawn on April 27, 2010. A trip distribution analysis was done as part of the TIA. It used existing traffic volumes at the study intersections to determine the distributional patterns of the worst case for future development.

The TIA analyzed all intersections that met the 30 or more peak hour trip threshold stated above. The intersection of SW 53rd Street and the site's access and the intersection of SW 53rd Street and SW Country Club Drive are shown to perform at acceptable Levels of Service (LOS) with the worst case development scenario at the planning horizon (2030).

The intersection of SW 53rd Street with SW Philomath Boulevard (Hwy 20/34) is shown to be at LOS E with existing background conditions and no additional trips. The City has established an acceptable LOS to be D or better. Analyzing this intersection at the planning horizon (2030) drops the LOS further to F. Adding in the worst case scenario for site trips keeps the LOS at F. The TIA has proposed to mitigate the site trips with the addition of a north bound right turn lane at this intersection. The analysis shows this mitigation to lower the Volume over Capacity Ratio (V/C) (how LOS is determined), but the LOS still remains at F.

ODOT has classified SW Philomath Boulevard as a State Highway Freight Route. The maximum V/C per ODOT standards is 0.80. The TIA shows the V/C for the intersection of SW 53rd Street with SW Philomath Boulevard to exceed the maximum under existing

background conditions. ODOT will require mitigation per OAR 660-012-0060 for any development that adds additional trips to the above intersection **(Development Related Concern C)**.

The TIA only analyzed the planning horizon (2030). Staff asked for the worst case site trips to be added to the existing conditions, however, the applicant did not provide this information, only stating that there is no development proposed with this application and that future development proposals would identify the number of trips that would need to be analyzed.

A Phase II Modification or a new DDP application will need to complete a TIA in accordance with LDC 2.4.30.01.g.5.b and 4.0.60.a. The City Engineer shall define the scope of the traffic impact study based on established procedures. The TIA shall be submitted for review to the City Engineer. The proposed TIA shall reflect the magnitude of the project in accordance with accepted traffic engineering practices. The applicant will need to complete the evaluation and present the results with an overall site development proposal at the time of application for further development on the site **(Development Related Concern B)**.

Conclusion on Vehicular Circulation
Given the discussion above, the 49th Street Annexation has demonstrated that, with improvements, the existing street network can accommodate development of the subject property consistent with the City's LDC and the Transportation Plan.

Bicycle/Pedestrian Circulation:
Applicable Land Development Code Criteria:

4.0.30 - PEDESTRIAN REQUIREMENTS

a. Sidewalks shall be required along both sides of all streets, as follows:

2. Sidewalks on Arterial, Collector, and Neighborhood Collector Streets - Sidewalks along Arterial, Collector, and Neighborhood Collector Streets shall be separated from curbs by a planted area. The planted area shall be a minimum of 12 ft. wide and landscaped with trees and plant materials approved by the City. The sidewalks shall be a minimum of five ft. wide. An exception to these provisions is that this separated tree planting area shall not be provided adjacent to sidewalks where they are allowed to be located within Natural Resource areas governed by Chapter 4.12 - Significant Vegetation Protection Provisions and Chapter 4.13 - Riparian Corridor and Wetland Provisions. This separated tree planting area shall also not be provided adjacent to sidewalks where they are allowed to be located within drainageway areas governed by regulations in Chapter 4.5 - Natural Hazard and Hillside Development Provisions.

3. Sidewalk Installation Timing - The timing of the installation of sidewalks shall be as follows:

a) **Sidewalks and planted areas along Arterial, Collector, and Neighborhood Collector Streets shall be installed with street improvements.**

d. **To provide for orderly development of an effective pedestrian network, pedestrian facilities installed concurrently with development of a site shall be extended through the site to the edge of adjacent property(ies).**

f. **Prior to development, applicants shall perform a site inspection and identify any Contractor Sidewalk/street Stamps in existing sidewalks that will be impacted by the development. If such a Contractor Sidewalk/street Stamp exists, it shall either be left in its current state as part of the existing sidewalk, or incorporated into the new sidewalk for the development site, as close as possible to the original location and orientation.**

4.0.40 - BICYCLE REQUIREMENTS

a. **On-street Bike Lanes - On-street bike lanes shall be required on all Arterial, Collector, and Neighborhood Collector Streets and constructed at the time of street improvements.**

Public on-street bike lanes exist along the applicant's frontage of SW 53rd Street, however, no bike lanes are present along the SW 49th Street frontage. Phase 1 of the DDP will construct the western portion of an intersection leg for a new neighborhood collector street. These improvements will be built to City standards that will include offsets to facilitate bike lanes and sidewalk connections. As detailed above in the Vehicular Circulation section, Phase II of the DDP will need to address the extent of improvements along the site's frontage. Improvements will need to be constructed concurrent with development of the site.

The City's Parks & Recreation Facilities Plan shows a proposed trail/multi-use path along the site's SW 53rd Street frontage. The Plan does not detail on what side of SW 53rd Street the trail would be located. The application does show how it can be incorporated into the design of future development by including it in the GLUP/CDP.

Public set back sidewalks do not exist along either the SW 53rd Street or SW 49th Street frontages. Setback sidewalks and planter strips are City standards and components of safe public sidewalks that are taken into consideration when determining serviceability. The applicant benefits from these neighborhood street improvements in the form of;

- An enhanced aesthetic experience for pedestrians as the separation from motor vehicle traffic decreases road noise, prevents water from the roadway being splashed on pedestrians and provides an enhanced sense of security.
- An enhanced environment for wheelchair users as the sidewalk can be kept at a constant slope with the steeper slopes for driveway approaches built into the planting strip.
- An area for street trees, sign posts, utility and signal poles, mailboxes, fire hydrants, etc.
- Mature street trees may reduce vehicle speed.

- When wide enough, a place for a motor vehicle to wait out of the stream of traffic while yielding to a pedestrian crossing a driveway.
- A break in hard surfacing with added pervious area.

Phase II of the DDP will need to address the extent of improvements along the site's frontage. Improvements will need to be constructed concurrent with development of the site **(Development Related Concern A)**.

Conclusion on Bicycle/Pedestrian Circulation
Given the discussion above, the 49th Street Annexation has demonstrated that, with improvements, the existing bicycle and pedestrian circulation network can accommodate development of the subject property consistent with the City's LDC, Transportation Plan, and the Parks & Recreation Facilities Plan.

Transit
Applicable Land Development Code Criteria:

4.0.50 - TRANSIT REQUIREMENTS

a. **Development sites located along existing or planned transit routes shall, where appropriate, incorporate transit stops and shelters into the site design. These improvements shall be installed in accordance with the guidelines and standards of the Corvallis Transit System.**

b. **Development sites at or near existing or planned transit stops shall provide safe, convenient access to the transit system, as follows:**

   1. **All Commercial and Civic Use developments shall provide a prominent entrance oriented toward Arterial, Collector, and Neighborhood Collector Streets, with front setbacks reduced as much as possible to provide access for pedestrians, bicycles, and transit.**

   2. **All developments shall provide safe, convenient pedestrian walkways between the buildings and the transit stop, in accordance with the provisions of Section 4.0.30.b.**

Corvallis Transit System (CTS) Routes 3, C3, and 8 currently provide service to SW Country Club Drive, north of the site. The Philomath Connection currently provides service along SW 53rd Street adjacent to the site's frontage. No transit improvements are anticipated along the site's SW 53rd Street frontage at this time.

Conclusion on Transit
Given the discussion above, the 49th Street Annexation has demonstrated that, the existing transit network can accommodate development of the subject property consistent with the City's LDC and Transportation Plan.

Overall Conclusion on Circulation
Given the discussion above, the 49th Street Annexation has demonstrated that, with improvements, the existing circulation network can accommodate development of the

subject property consistent with the City's LDC, Transportation Plan, and the Parks & Recreation Facilities Plan.

2. PUBLIC FACILITIES AND SERVICES

The following discussion addresses criteria related to public water, sanitary sewer, storm drainage, and street lights.

Applicable Land Development Code Criteria:

2.6.30.06 - Review Criteria

c. The site is capable of being served by urban services and facilities required with development - The developer is required to provide urban services and facilities to and through the site. At minimum, both Minor and Major Annexations shall include consideration of the following:

1. **Sanitary sewer facilities consistent with the City's Sanitary Sewer Master Plan and Chapter 4.0 - Improvements Required with Development;**

2. **Water facilities consistent with the City's Water Master Plan, Chapter 4.0 - Improvements Required with Development, and fire flow and hydrant placement;**

3. **Storm drainage facilities and drainageway corridors consistent with the City's Stormwater Master Plan, Chapter 4.0 - Improvements Required with Development, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions;**

4.0.60 - PUBLIC AND PRIVATE STREET REQUIREMENTS

q. Development shall include underground electric services, light standards, wiring and lamps for streetlights according to the specifications and standards of the City Engineer. The developer shall be responsible for installation of underground conduit for street lighting along all public streets improved in conjunction with such development in accordance with the following:

1. **The developer shall coordinate with the City Engineer to determine the location of future street light poles.**

2. **The streetlight plan shall be designed to provide illumination meeting standards set by the City Engineer.**

3. **The standard street light installation is a wood pole.**

The developer shall install such facilities and make the necessary arrangements with the serving electric utility for the City-owned and operated street lighting system to be served at the lowest applicable rate available to the City. Upon City's acceptance of such development improvements, the street lighting system, exclusive of utility-owned service lines, shall be and become the property of the City.

4.0.70 - PUBLIC UTILITY REQUIREMENTS (OR INSTALLATIONS)

a. All development sites shall be provided with public water, sanitary sewer, storm drainage, and street lights.

b. Where necessary to serve property as specified in "a" above, required public utility installations shall be constructed concurrently with development.

c. Off-site public utility extensions necessary to fully serve a development site and adjacent properties shall be constructed concurrently with development.

d. To provide for orderly development of adjacent properties, public utilities installed concurrently with development of a site shall be extended through the site to the edge of adjacent property(ies).

e. All required public utility installations shall conform to the City's adopted facilities master plans.

f. Private on-site sanitary sewer and storm drainage facilities may be allowed, provided all the following conditions exist:

    1. Extension of a public facility through the site is not necessary for the future orderly development of adjacent properties;

    2. The development site remains in one ownership and Land Division does not occur, with the exception of Land Divisions that may occur under the provisions of Section 4.0.60.d, above; and

    3. The facilities are designed and constructed in accordance with the Uniform Plumbing Code and other applicable codes, and permits are obtained from the Development Assistance Center prior to commencement of work.

4.0.100 - LAND FOR PUBLIC PURPOSES

a. Easements for public sanitary sewer, water, storm drain, streetlight, transit, pedestrian and bicycle facilities shall be provided whenever these facilities are located outside a public right-of-way. The minimum easement width for a single utility is 15 ft. The minimum easement width for two adjacent utilities is 20 ft. The easement width shall be centered on the utility to the greatest extent practicable. Wider easements may be required for unusually deep facilities.

b. Utility easements with a minimum width of seven ft. shall be granted to the public adjacent to all street rights-of-way for franchise utility installations.

4.2.30 - REQUIRED TREE PLANTINGS AND MAINTENANCE

b. Areas Where Trees May Not be Planted -

    1. Trees may not be planted within five ft. of permanent hard surface paving or walkways, unless special planting techniques and specifications are used and particular species of trees are planted, as outlined in Section 4.2.40.c or approved by the Director. These limitations apply most frequently in areas such as landscape parkways, pedestrian walkways, and plaza areas, where there may be tree grates.

2. **Unless approved otherwise by the City Engineer, trees may not be planted:**

   a) **Within 10 ft. of fire hydrants and utility poles;**

   b) **Within 20 ft. of street light standards;**

   c) **Within five ft. from an existing curb face, except where required for street trees;**

   d) **Within 10 ft. of a public sanitary sewer, storm drainage, or water line; or**

   e) **Where the Director determines the trees may be a hazard to the public interest or general welfare.**

Water

The proposed annexation site is located in the City's first level (elevation 210-290') and second level (elevation 290-410') water service area. There is an existing 8 inch waterline located in SW 49th Street, adjacent to the site.

The applicant proposes to serve the site by constructing a 16 inch distribution line in SW 53rd Street from the intersection of SW Country Club Drive to the site. This improvement is consistent with the City's Water Master Plan. Local distribution piping would also be installed within the future development to serve the site and create a looped system between SW 53rd Street and SW 49th Street.

The applicant presents an alternative to extending the 16 inch distribution line in SW 53rd Street. The site can also be served by extending the 24 inch waterline in SW Nash Avenue from SW 45th Street to SW 49th Street and extending a waterline from the existing 8 inch line in SW 49th Street to SW Nash Avenue.

The applicant proposes to construct a second level pump station to serve the second level water service area within this proposal and the adjacent second level service area. A second level pump station is consistent with the City's Water Master Plan. Concurrent with Phase II development, the second level pump station would need to be built to the City's Design Standards for Water Booster Stations, Reservoir and Wastewater Lift Station Standards **(Development Related Concern D)**.

The applicant has provided water system calculations showing that the proposed annexation can be served by the existing water system with the proposed improvements.

Sanitary Sewer

The proposed annexation site is located within the Country Club basin. The City's Wastewater Utility Master Plan does not show a backbone collection system upgrade during the current planning horizon. The Master Plan anticipates local collection piping will be adequate to serve the area.

The annexation site straddles a shallow ridge line that drains to the east and west. The applicant proposes to serve future development on the site by extending an 8 inch sanitary sewer in SW 53rd Street between SW Country Club drive and the site to collect wastewater from the western portion of the site. The eastern portion of the site can be served by draining wastewater to the existing 8 inch sanitary sewer line located in SW 49th Street.

The applicant has provided sanitary sewer calculations showing that the proposed annexation can be served by the existing sanitary sewer system with the proposed improvements.

Storm Drainage

The proposed annexation site is located within the Dunawi Creek basin. Existing roadside ditches convey existing stormwater runoff. With Phase 1 of the DDP the applicant proposes to extend the existing 36 inch storm pipe in SW 49th Street, south, to the site. Future development on Phase II lands will be required to comply with the City's water quality and quantity standards in accordance with the LDC 4.0.130, appendix F of the City's Storm Water Master Plan, and the King County, Washington, Surface Water Design Manual. The applicant shows tracts on the GLUP/CDP that could be set aside with future development for the purpose of stormwater quality and detention. The applicant also shows typical street sections with water quality swales located in the planter strips. This application does not get into the detail of how these water quality swales meet the City's water quality standards, however future development on Phase II land would have to demonstrate compliance with the City's and King County's standards if they were to rely on planter strip swales. The applicant also states that if the landscape strip swales can not be found to be feasible, approved underground water quality facilities will be used.

The annexation site straddles a shallow ridge line that drains to the east and west. The applicant proposes to serve future development on the west side of the site by draining stormwater into the County's roadside ditch. Benton County has agreed to this with the understanding that stormwater entering the ditch meets the City's quality and quantity standards. The east side of the site is proposed to be served by extending an existing 36 inch storm drainage line in SW 49th Street to the site.

Future development on Phase II land that creates more than 5,000 ft^2 of pollution generating impervious surfaces will be required to construct stormwater quality facilities. Stormwater quality facilities shall be designed in accordance with criteria established in Appendix F of the Stormwater Master Plan and the most recent version of the *King County, Washington, Surface Water design Manual*. The water quality facilities will need to be designed to remove 70 percent of the total suspended solids (TSS) entering the facility during the water quality design storm, 0.9-inch 24-hr rainfall event with NRCS Type 1A distribution **(Development Related Concern E)**.

Future development on Phase II land that creates more than 25,000 ft^2 of impervious surfaces will be required to construct stormwater detention facilities in accordance with the LDC section 4.0.130.b. Detention facilities shall be designed to maximize storm water infiltration. Maintenance of these facilities is most efficiently provided with open systems because they facilitate visible evaluation of system conditions and accommodate routine, low-technology maintenance practices. Open systems also allow stormwater contact with vegetation and soil to enhance water quality, infiltration, and maintaining the properly functioning hydrological and biological condition of open drainageways. The storm water detention facilities shall be designed consistent with both criteria outlined in Appendix F of the Storm Water Master Plan, and criteria outlined in the most recent King County, Washington, Surface Water Design Manual, and shall be designed to capture run-off so that the run-off rates from the site after development do not exceed the pre-developed conditions, based on the 2-year, 5-year, and 10-year, 24-hour design storms **(Development Related Concern F)**.

Street Lights

Currently there are no street lights in the vicinity of this project. Future development of the site would require the installation of a City standard street light system **(Development Related Concern G)**.

Overall Conclusion on Public Utilities

Given the discussion above, the 49th Street Annexation has demonstrated that, with improvements, the existing water, sewer, stormwater, and streetlight networks can accommodate development of the subject property consistent with the City's LDC and applicable Master Plans.

3. Franchise Utilities

Applicable Land Development Code Criteria:

4.0.100 - LAND FOR PUBLIC PURPOSES

b. Utility easements with a minimum width of seven ft. shall be granted to the public adjacent to all street rights-of-way for franchise utility installations.

Existing franchise utilities are located in the vicinity of the subject site. In accordance with LDC 2.6.60.03.i.1, the applicant has provided letters confirming the ability to serve the site.

E. Compatibility

LDC Section 2.6.30.06

e. Compatibility - The application shall demonstrate compatibility in the following areas, as applicable:

1. **Basic site design - the organization of Uses on a site and its relationship to neighboring properties;**

2. **Visual Elements (scale, structural design and form, materials, etc.);**

3. **Noise attenuation;**

4. **Odors and emissions;**

5. **Lighting;**

6. **Signage;**

7. **Landscaping for buffering and screening;**

8. **Transportation facilities;**

9. **Traffic and off-site parking impacts;**

10. **Utility infrastructure;**

11. **Effects on air and water quality (note: a DEQ permit is not sufficient to meet this criterion);**

12. **Consistency with the applicable development standards, including the applicable Pedestrian Oriented Design Standards;**

13. **Preservation and/or protection of Significant Natural Features, consistent with Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions. Streets shall also be designed along contours, and structures shall be designed to fit the topography of the site to ensure compliance with these Code standards.**

Consistent with Section 2.6.30.06(e) above, Staff will analyze the annexation request for compatibility in the following areas, as applicable:

- Basic Site Design
- Visual Elements
- Noise Attenuation
- Odors and Emissions
- Lighting
- Signage
- Landscaping for Buffering and Screening
- Transportation Facilities
- Traffic and off-site parking impacts
- Utility Infrastructure
- Effects on air and water quality
- Consistency with the applicable development standards, including the applicable PODS
- Natural Features

Basic Site Design - The organization of Uses on a site and its relationship to neighboring properties

As stated previously, the GLUP is not a binding DDP and represents one way the site could be developed in the future, if annexed. Because the GLUP is not a binding development plan, staff would err to analyze it as a development plan for compatibility with surrounding uses. The applicant made application for a CDDP concurrent with the Annexation application. The CDP for the site is identical to the GLUP. However, DDP approval has only been required for Phase I development on the site, which consists of a small public improvement to the SW 49th Street frontage of the site. Future DDP approval would be required prior to any additional development on the site. A compatibility analysis of the development proposed for the site will occur at that time.

The GLUP does demonstrate how the site can comply with the Block Perimeter Standards in LDC Section 4.0.60(n) and the density requirements of the RS-6 Zone in LDC Table 3.3-1. Staff find that the proposed GLUP does demonstrate one way in which the site could be developed to the RS-6 zoning standards. The neighboring uses to the south, west and north are currently outside the City limits and have a Comprehensive Plan designation of Low Density Residential. It is anticipated that these neighboring properties would be compatible when developed at an urban level, because the Comprehensive Plan designations are the same.

The properties to the east are within the City limits, but are not developed to urban level densities. These properties also share the same Comprehensive Plan designation as the proposed site and would be compatible when developed to urban level densities.

In addition, when development occurs with Phase II of the DDP, the annexation site will be subject to development standards such as a mix of housing types, building height, lot coverage/open space, setbacks, landscaping, parking and pedestrian-oriented design standards. These development standards would help to ensure compatibility with neighboring properties and similar Low Density Residential development in the City.

Based on the above analysis, staff find the annexation request will result in site designs for development that would be compatible with other low density residential development in the City.

Visual Elements (scale, structural design and form, materials, etc.)

No building designs were submitted with the annexation request. Development with Phase II of the DDP will need to be consistent with the RS-6 development standards and the pedestrian-oriented design standards in Chapter 4.10 of the LDC. Because all of the surrounding properties are zoned RS-6 or would be upon annexation, staff find that urban level development within the site and vicinity will be visually compatible, and that building scale, design, and form will comply with City Standards.

Noise Attenuation, and Odors and Emissions
If annexed, it is anticipated that the land would be developed to RS-6 zoning standards. As such, it would be anticipated that the noise, odors and emissions would be typical of Low Density Residential development, and compatible with the neighboring properties that also have a Low Density Residential Comprehensive Plan designations.

Lighting and Signage
If annexed, exterior lighting and signage on the site would be subject to the requirements for lighting and signage in Sections 4.2.80 and 4.7.90.01 of the LDC **(Attachment L)**. These requirements would ensure that resultant lighting and signage on the development site would be compatible with neighboring properties.

Landscaping for Buffering and Screening
Landscaping requirements will be determined with development of Phase II of the DDP, and will be consistent with LDC Chapter 4.2 - Landscaping, Buffering, Screening and Lighting. When developed, staff find the proposal will be compatible with neighboring properties.

Transportation Facilities, Traffic and Off-site Parking Impacts, and Utility Infrastructure
Transportation facilities are available to the site and nearby area, as outlined in Part I Section D of this report. The applicant's TIA analyzed impacts to the transportation system resulting from development at the highest density allowed under the proposed PD(RS-6) Zone. The provision of adequate street, bicycle, pedestrian, and transit improvements at the time of Phase II development will mitigate impacts associated with the development. A detailed discussion of the traffic impact study is included above in Part I Section D of this report and findings related to the transportation facilities in that section of this report are hereby incorporated by reference as findings under this criterion.

The transportation system requirements will be addressed with development of Phase II of the DDP. It is anticipated that a collector street would need to be provided through the site, as well as other local streets on-site, as depicted in the GLUP/CDP. As shown on the GLUP/CDP, these requirements can be accommodated on the subject site.

In conjunction with Phase II development, it is anticipated that a new TIA will be required to assess the specific traffic impacts that would be created by the development plan for the site. The TIA will need to assess whether the traffic impacts from the proposed development will need to be mitigated by the off-site improvements or other measures. Staff will evaluate any necessary mitigation, conduct a rough proportionality analysis of the traffic impacts, and either require the necessary mitigation to be completed by the applicant, or recommend denial of Phase II development until such time as the necessary mitigation is in place. All on-site parking requirements will be addressed in conjunction with Phase II development and building permit processes.

The applicant has demonstrated that the necessary utility infrastructure to serve development on the site can be provided in compliance with City requirements. In conjunction with Phase II development, staff will ensure that all necessary public improvements are in place or financially secured to the satisfaction of the City Engineer prior to occupancy of homes on the development site.

Effects on Air and Water Quality

Development on the subject site is anticipated to be similar to other low density development within Corvallis. As such, air and water quality impacts are anticipated to be negligible, in part because water quality measures will be required for stormwater leaving the site, consistent with City standards, at the time of development. Air emissions are monitored by the Oregon Department of Environmental Quality (DEQ). The DEQ indicates that the City of Corvallis is in compliance with all Federal and State air quality regulations.

Consistency with Development Standards, including PODS

Future DDPs for Phase II of the subject DDP will be required to consistent with the development standards of the Code, including the Pedestrian Oriented Design Standards in LDC Chapter 4.10. Because the site will be subject to a Planned Development, future DDPs may include requests to vary from development standards. Any such requests would be reviewed for compatibility with the future DDP application.

Preservation and/or Protection of Significant Natural Features and Natural Hazards

The site does contain slopes between 10 and 15 percent. These Significant Natural Features are regulated by LDC Chapter 4.5 - Natural Hazards and Hillside Development. Future development of Phase II of the DDP will require compliance with Chapter 4.5 - Natural Hazards and Hillside Development. No action is required with the present application. Staff find the proposal is consistent with the above criterion and compatible with surrounding properties.

Conclusion of Compatibility Analysis

The GLUP is not a binding development plan and should not be analyzed for compatibility with neighboring uses. Development on the site will be subject to a future DDP, where a complete compatibility analysis will occur. The annexation application was reviewed for compatibility and staff found the annexation is compatible with neighboring uses for each of the criteria noted above.

Part I: Summary and Conclusions

Staff have reviewed the annexation request and found that it complies with the application requirements, and the purposes of Chapter 2.6 - Annexation. In terms of the review criteria, staff reviewed and provided analysis on each of the criteria except for LDC Sections 2.6.30.06.a.2(b) and 2.6.30.06.b.2, which clearly state that City staff are not to review or provide evaluation and recommendation. The applicant's arguments have been provided for those criteria. Per LDC Sections 2.6.30.06.a.2(b) and 2.6.30.06.b.2, the Planning Commission shall determine the validity of the arguments

based on the information provided by the applicant and on public comments during the public hearing process.

The applicant has provided information and arguments stating that there is a public need for the annexation. Staff reviewed the five-year supply of serviceable land and found that the City has not determined an accepted methodology for determining what would be the five-year supply of Low Density Residential land. The 1998 BLI indicated that in the year 2020, the city would have a 341-acre surplus of Low Density Residential land. The applicant calculated that currently there is a minimum of 421.17 acres of Low Density Residential land within the City limits. Staff note that not all of this land is likely serviceable, but are not able to calculate a precise quantity of serviceable land without clear guidelines. Staff found that the annexation would increase the supply of Low Density Residential land in the City.

Staff also reviewed the annexation's compliance with adopted community-wide livability indicators and benchmarks. Staff found the annexation request fully complied with eleven, did not comply with seven, and partially complied with four of the livability indicators and benchmarks.

Staff found the annexation site is capable of being served by urban services and facilities that would be required with development. With improvements, the transportation networks and public facilities could be accommodated by the proposal.

Lastly, Staff found the proposed annexation request would be compatible with each of the 13 compatibility criteria as noted above.

Based on the criteria, findings, and conclusions stated above, it is recommended that the Planning Commission recommend to the City Council to **FORWARD** the 10.48-acre annexation site for consideration of annexation (ANN10-00002) by the voters of the City of Corvallis, at the November, 2010, election. A motion to forward the annexation application would be based upon the criteria, discussions, and conclusions contained within the May 21, 2010, staff report to the Planning Commission, and upon the reasons given by the Planning Commission members during deliberations on this application. A recommended motion is provided at the end of this staff report.

PART II: ZONE CHANGE
(District Designation Upon Annexation)

A. Land Use

Land Development Code Section 3.3.10 of the LDC discusses the purpose of the RS-6 (Low Density Residential) Zone. A portion of that section is provided below.

Section 3.3.10 - Purpose

The RS-6 Zone shall be applied to all lands zoned RS-6 as of the adoption of this Code, as well as all future Low Density Residential lands. Additionally, the RS-6 Zone applies to single-family residential areas that are unplatted, greater than one acre in size, and that were zoned RS-5 at the time of the adoption of this Code.

The subject property currently has a Comprehensive Plan designation of Low Density Residential and a County Zoning Designation of UR-5 (Urban Residential 5-acre minimum) **(Attachments C and E)**. Upon annexation into the City of Corvallis, and per Section 3.3.10, staff find the subject property should receive a City zoning designation of RS-6 (Low Density Residential).

In addition to the new zoning designation, the applicant requests that the site receive a PD Overlay, consistent with LDC Chapter 3.33. Land Development Code Sections 3.33.30 and 3.33.40 describe the implementation and initiation processes associated with assigning a PD Overlay to a site. Those LDC sections are provided below.

Section 3.33.30 - IMPLEMENTATION

Upon request by a property owner, property may be designated with a Residential PD Overlay in any of the following ways:

a. Upon Annexation in accordance with Chapter 2.6 - Annexation;

b. In conjunction with a Comprehensive Plan Map Amendment in accordance with Chapter 2.1 - Comprehensive Plan Amendment; or

c. In conjunction with a Zone Map Change in accordance with Chapter 2.2 - Zone Changes.

A Residential PD Overlay can also be applied through the use of the provisions in Chapter 2.5 - Planned Development, which allow such an Overlay in conjunction with approval of a Conceptual and Detailed Development Plan. However, Residential PD Overlay established in accordance with Chapter 2.5 only remain as long as there is an active Conceptual and Detailed Development Plan on the site (active defined in Section 2.5.40.09) or an active Detailed Development Plan on the site (active defined in Section 2.5.50.09).

Section 3.33.40 - INITIATION

A Residential PD Overlay may only be initiated by an application filed by a property owner, on property(ies) with a residential land use designation(s). Such application must be in conjunction with an Annexation, Comprehensive Plan Amendment, or Zone Map Change; and under circumstances where the property owner states and the hearing authority finds that the applicable underlying zone standards are not adequate to address any of the following concerns:

a. Circulation or other common facilities issues;

b. Resolution of issues related to an unusual site configuration, steep topography, or Significant Natural Feature;

c. Assurance of comprehensive planning and coordinated development where the property is large and/or has mixed uses; or

d. Compatibility issues where it is desirable to locate more intensive land uses next to less intensive residential land uses.

Consistent with LDC Section 3.33.30(c) the applicant requests to apply a Residential PD Overlay in conjunction with a Zone Map Change application. The applicant requests the PD Overlay and subsequent CDDP as a mechanism to attach a condition of approval for development on the site that will ensure that, with development, the provisions of the Oregon Transportation Planning Rule (TPR) shall be addressed to the satisfaction of ODOT. The TPR is a comprehensive planning requirement that cannot be addressed in any other fashion, consistent with legal principles and the City's rules and regulations. The PD Overlay allows the applicant to request a CDDP which is capable of receiving conditions of approval. The applicant requests that any mitigation required by ODOT to satisfy the requirements of the TPR be conditioned with the CDDP application. The condition of approval would require that the TPR be addressed in conjunction with further development of the site (Phase II and beyond). The request is consistent with LDC Section 3.33.40, because the PD Overlay would enable the applicant to satisfy the requirements of the TPR at the time of development, which could not occur otherwise.

Conclusion on Land Use

The proposed zoning district of PD(RS-6) - Low Density Residential with a PD Overlay is found to be consistent with the underlying Comprehensive Plan designation, the purposes of the RS-6 (Low Density Residential) Zone, and LDC Chapter 3.33 - Residential Planned Development Overlay.

B. Compatibility

LDC Section 2.2.40.05

a. Review Criteria for Zone Changes, Except Those Requesting to Apply or Remove a Historic Preservation Overlay

Quasi-judicial Zone Changes shall be reviewed to determine how they affect City facilities and services, and to ensure consistency with the purposes of this Chapter, policies of the Comprehensive Plan, and any other applicable policies and standards adopted by the City Council. The application shall demonstrate compatibility in the following areas, as applicable:

1. **Basic site design (e.g., the organization of uses on a site and the uses' relationships to neighboring properties);**
2. **Visual elements (scale, structural design and form, materials, etc.);**
3. **Noise attenuation;**
4. **Odors and emissions;**
5. **Lighting;**
6. **Signage;**
7. **Landscaping for buffering and screening;**
8. **Transportation facilities;**
9. **Traffic and off-site parking impacts;**
10. **Utility infrastructure;**
11. **Effects on air and water quality (note: a DEQ permit is not sufficient to meet this criterion);**
12. **Consistency with the applicable development standards, including the applicable Pedestrian Oriented Design Standards;**
13. **Preservation and/or protection of Significant Natural Features, consistent with Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions. Streets shall also be designed along contours, and structures shall be designed to fit the topography of the site to ensure compliance with these Code standards.**

Consistent with Section 2.2.40.05(a) above, staff will analyze the Zone Change request for compatibility in the following areas, as applicable:

- Basic Site Design
- Visual Elements
- Noise Attenuation
- Odors and Emissions
- Lighting
- Signage
- Landscaping for Buffering and Screening
- Transportation Facilities
- Traffic and off-site parking impacts
- Utility Infrastructure
- Effects on air and water quality
- Consistency with the applicable development standards, including the applicable PODS
- Natural Features

Basic Site Design, Visual Elements, Landscaping for Buffering and Screening, Traffic and Off-site Parking Impacts, Utility Infrastructure, Consistency with Development Standards, and Natural Features

If the subject site is annexed into the City limits, the Zone Change application is necessary to assign a City zone to the site. As noted previously, the applicant requests a PD(RS-6) Zone to be assigned to the site. This zone is a Low Density Residential zone that is consistent with the underlying Comprehensive Plan Designation of Low Density Residential. All neighboring properties to the subject site, whether in the City or not, have an underlying Comprehensive Plan Designation of Low Density Residential and are or will be similarly zoned when within the City. When developed to urban level densities, the subject site and neighboring properties will be subject to the RS-6 zoning and development standards of the LDC, such as setbacks, building heights, green area, landscaping, parking, and public improvements.

Given the above discussion, staff find the proposed PD(RS-6) Zone is compatible with neighboring properties and zones.

Noise Attenuation, Odors and Emissions, and Effects on Air and Water Quality

The applicant requests a PD Overlay to be placed over the entire site in conjunction with the Zone Change application. Future development plans will be required to be reviewed for compatibility, based on the criteria noted above, through the Planned Development process. As such, staff find the request for a PD(RS-6) Zone is compatible.

Transportation Facilities

The Oregon Department of Transportation staff have indicated that the proposed zone change, from Benton County UR-5 zoning to Corvallis PD(RS-6) zoning requires analysis of whether development allowed by the zone change could result in a "significant effect" to any ODOT facility, per OAR660-012-0060(1)(c)(C) **(Attachment P)**. The applicant included a Traffic Impact Analysis with the application that analyzed the intersection of SW 53rd Street and Philomath Blvd.

The intersection of SW 53rd Street with SW Philomath Boulevard (Hwy 20/34) is shown to be at LOS E with existing background conditions and no additional trips. The City has established an acceptable LOS to be D or better. Analyzing this intersection at the

planning horizon (20 years) drops the LOS further to F. Adding in the worst case scenario for site trips keeps the LOS at F. The TIA has proposed to mitigate the site trips with the addition of a north bound right turn lane at this intersection. The analysis shows this mitigation to lower the Volume over Capacity Ratio (V/C) (how LOS is determined), but the LOS still remains at F. However, LOS F is anticipated to be the future level of service for this intersection, regardless of development on the subject site. City standards require that traffic mitigation be provided proportionately to a development's anticipated traffic impacts. For this reason, a TIA will be required in conjunction with an application for further development on the property in order to determine the development's proportionate share of traffic mitigation.

ODOT has classified SW Philomath Boulevard as a State Highway Freight Route. The maximum V/C per ODOT standards is 0.80. The TIA shows the V/C for the intersection of SW 53rd Street with SW Philomath Boulevard to exceed the maximum under existing background conditions. ODOT will require mitigation per OAR 660-012-0060 for any development that adds additional trips to the above intersection **(Development Related Concern C)**.

Summary and Conclusion of Compatibility Analysis

Given the above discussion, staff find the proposed Zone Change application is consistent with the applicable criteria and compatible with neighboring uses.

Part II: Summary and Conclusions

The RS-6 Zone is consistent with the underlying Low Density Residential Comprehensive Plan Designation. The site is 10.48 acres in size, which is able to support development at RS-6 densities. The request to place a PD Overlay on the entire development site is consistent with the applicable review criteria in LDC Sections 3.33.30 and 3.33.40.

Based on the criteria, findings and conclusions above, it is recommended that the Planning Commission **APPROVE** the proposed Zone Change application (ZDC10-00002) for the subject site. The Zone Change approval would be contingent upon a successful annexation vote in the November, 2010, election. A motion to approve would be based upon the criteria, discussions, and conclusions contained within the May 21, 2010, staff report to the Planning Commission, and upon the reasons given by the Planning Commission members during deliberations on this application. A recommended motion is provided at the end of this staff report.

PART III: PLANNED DEVELOPMENT
(Conceptual and Detailed Development Plan)

A. Applicability and Purposes of Chapter 2.5 - Planned Development

LDC Section 2.5.10

a. The Procedures of this Chapter are Applicable When -

2. A Nonresidential or Residential Planned Development Overlay, established in accordance with the provisions of Chapter 3.32 - Nonresidential PD (Planned Development) Overlay or Chapter 3.33 - Residential PD (Planned Development) Overlay, respectively, exists on the site and is shown on the City's Official Zoning Map.

LDC Section 2.5.20 - PURPOSES

Planned Development review procedures are established in this Chapter for the following purposes:

a. Promote flexibility in design and permit diversification in location of structures;

b. Promote efficient use of land and energy, and facilitate a more economical arrangement of buildings, circulation systems, land uses, and utilities;

c. Preserve, to the greatest extent possible, existing Significant Natural Features and landscape features and amenities, and use such features in a harmonious fashion;

d. Provide for more usable and suitably located pedestrian and/or recreational facilities and other public and/or common facilities than would otherwise be provided under conventional land development procedures;

e. Combine and coordinate architectural styles, building forms, and building relationships within the Planned Development;

f. Provide the applicant with reasonable assurance of ultimate approval before expenditure of complete design monies, while providing the City with assurances that the project will retain the character envisioned at the time of approval;

g. Provide greater compatibility with surrounding land uses than would otherwise be provided under conventional land development procedures; and

h. Provide benefits within the development site that compensate for the variations from development standards such that the intent of the development standards is still met.

As noted under Part II of this report, the applicant requests a Residential PD Overlay zone to be placed on the subject site. In that analysis, staff found that the request for a Residential PD Overlay was consistent with the processes of LDC Sections 3.33.30 and 3.33.40. The findings from Part II that demonstrate compliance with LDC Sections 3.33.30 and 3.33.40 are incorporated as findings here by reference. If the requested

Zone Change is approved, the site would contain a Residential PD Overlay and the procedures in LDC Chapter 2.5 would be invoked with development.

The intent and purposes of the Planned Development is to permit flexibility in the land development process, allow better preservation of Significant Natural Features, and allow for innovation in site planning and architectural design. The applicant does not request any flexibility from development standards with Phase I of the CDDP. However, the applicant states in the narrative that Phase II development will likely require flexibility from development standards, which is consistent with the purposes of Chapter 2.5 - Planned Development **(Attachment L)**.

Conclusion on Applicability and Purposes of Chapter 2.5 - Planned Development
Given the above, staff find that the procedures of Chapter 2.5 - Planned Development are applicable to the subject site and that the CDDP is consistent with the purposes of Chapter 2.5.

B. Review Criteria

LDC Section 2.5.40.04 - Review Criteria

Requests for the approval of a Conceptual Development Plan shall be reviewed to ensure consistency with the purposes of this Chapter, policies and density requirements of the Comprehensive Plan, and any other applicable policies and standards adopted by the City Council. The application shall demonstrate compatibility in the areas in "a," below, as applicable, and shall meet the Natural Resource and Natural Hazard criteria in "b," below:

a. Compatibility Factors -

1. **Compensating benefits for the variations being requested;**
2. **Basic site design (the organization of Uses on a site and the Uses' relationships to neighboring properties);**
3. **Visual elements (scale, structural design and form, materials, etc.);**
4. **Noise attenuation;**
5. **Odors and emissions;**
6. **Lighting;**
7. **Signage;**
8. **Landscaping for buffering and screening;**
9. **Transportation facilities;**
10. **Traffic and off-site parking impacts;**

11. **Utility infrastructure;**

12. **Effects on air and water quality (note: a DEQ permit is not sufficient to meet this criterion);**

13. **Design equal to or in excess of the types of improvements required by the standards in Chapter 4.10 - Pedestrian Oriented Design Standards; and**

14. **Preservation and/or protection of Significant Natural Features, consistent with Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions. Streets shall also be designed along contours, and structures shall be designed to fit the topography of the site to ensure compliance with these Code standards.**

Consistent with LDC Section 2.5.40.04(a) and 2.5.50.04 above, staff will analyze the CDDP request for compatibility in the following areas:

- Compensating Benefits for Requested Variations to LDC Standards
- Basic Site Design
- Visual Elements
- Noise Attenuation
- Odors and Emissions
- Lighting
- Signage
- Landscaping for Buffering and Screening
- Transportation Facilities
- Traffic and Off-site Parking Impacts
- Utility Infrastructure
- Effects on Air and Water Quality
- Design equal to or in excess of the types of improvements required by the standards in Chapter 4.10 - PODS
- Preservation and/or protection of Significant Natural Features

Compensating benefits for the variations being requested:
Phase I of the proposed CDDP does not require any variations from LDC standards. Future development beyond Phase I which will require DDP approval, may require variations from LDC standards. The applicant states, "Variances proposed for future development on the site will be included as part of future application(s), along with associated compensating benefits" **(Attachment M)**. Given that future development will processed as a new DDP, variations requested with that application will be subject to the above criterion and be satisfied at that time. Staff find the criterion is satisfied, and the proposal is compatible with neighboring properties.

Basic Site Design (Organization of Uses on a site and the Uses' relationship to neighboring properties):
Phase I of the CDDP includes extension of a 36 inch storm drain located in SW 49th Street north of the site, and the construction of the western portion of the intersection of SW 49th Street and the proposed neighborhood collector street. As noted above in

Part III Section B, these improvements will be constructed to City standards and therefore, will be compatible with similar surrounding improvements.

Phase II is designated as future development of the remainder of the subject site. Future development plans for Phase II shall be processed as a new DDP **(Condition 3)**. Consequently, the compatibility of Phase II development will be evaluated at the time of future DDP review. However, given that the Comprehensive Plan designation for the subject site and each of the neighboring properties is Low Density Residential **(Attachment C)**, and that the neighboring properties are either zoned RS-6 or will be zoned RS-6 upon annexation into the City, staff find that the future development of the subject site will be compatible with neighboring properties, when developed to urban densities.

Additionally, the subject site is 10.48 acres, which is sufficient for development to the RS-6 zoning standards. When development occurs with Phase II of the DDP, the proposed site would be subject to development standards such as a mix of housing types, building height, lot coverage/open space, setbacks, landscaping, parking and pedestrian-oriented design standards. These development standards would help to ensure compatibility with neighboring properties and similar Low Density Residential development in the City.

Based on the above analysis, staff find the Zone Change request will result in development compatible with neighboring properties and other low density residential development in the City.

Visual Elements (scale, structural design and form, materials, etc.);
Other than the 36 inch storm drain pipe and the intersection improvements to SW 49th Street and the future neighborhood collector street, the applicant does not propose to construct any new structures with Phase I of the CDDP. The proposed storm drain is a subsurface structure that will have no visual impact to the site or to neighboring properties. The intersection improvements to SW 49th Street and the future neighborhood collector will only impact the western frontage of SW 49th Street. The improvements include 21 feet of ROW dedication and constructing the first 21 ft. of the proposed neighborhood collector street, west of where it intersects with SW 49th Street. The intersection improvements will be constructed to city standards and will be compatible with surrounding streets.

Noise Attenuation, and Odors and Emissions;
Phase I development will not create noises or produce any noxious odors and emissions. Phase II of the DDP will be developed to RS-6 zoning standards. As such, it is anticipated that the noise, odors and emissions would be typical of Low Density Residential development, and compatible with the neighboring properties that also have a Low Density Residential Comprehensive Plan designations.

Lighting and Signage:
No new lighting or signage is proposed with Phase I development. With development of Phase II of the DDP, exterior lighting and signage on the site would be subject to the requirements for lighting and signage in Sections 4.2.80 and 4.7.90.01 of the LDC **(Attachment L)**. These standards would ensure that all future lighting and signage on the development site would be compatible with neighboring properties.

Landscaping for Buffering and Screening:
Phase I of the DDP does not require any buffering or screening. Landscaping requirements for Phase II of the DDP will be determined with future development plans, and will be consistent with LDC Chapter 4.2 - Landscaping, Buffering, Screening and Lighting, and will be reviewed through a future DDP process.

Transportation Facilities, Traffic and Off-site Parking Impacts, and Utility Infrastructure:
A complete discussion of anticipated transportation and utility improvements that would be necessary to support full development of the site is contained in Part III, Section C. Findings from that analysis are incorporated by reference as findings under the above criteria. Transportation facilities are available to the site and nearby area, as outlined in Part I Section D of this report. The applicant's TIA analyzed impacts to the transportation system resulting from development at the highest density allowed under the proposed PD(RS-6) Zone. The provision of adequate street, bicycle, pedestrian, and transit improvements at the time of future development will mitigate impacts associated with the development. A detailed discussion of the traffic impact study is included above in Part I, Section D of this report and findings related to the transportation facilities in that section of this report are hereby incorporated by reference as findings under this criterion.

Beyond Phase I improvements, most transportation system requirements would be addressed in conjunction with future DDP applications for the site. It is anticipated that a collector street would need to be provided through the site, as well as other local streets on-site, as depicted in the GLUP/CDP. As shown on the GLUP/CDP, these requirements can be accommodated on the subject site.

In conjunction with future development, it is anticipated that a new TIA will be required to assess the specific traffic impacts that would be created by the development plan for the site. The TIA will need to assess whether the traffic impacts from the proposed development will need to be mitigated by the off-site improvements or other measures. Staff will evaluate any necessary mitigation, conduct a rough proportionality analysis of the traffic impacts, and either require the necessary mitigation to be completed by the applicant, or recommend denial of future development until such time as the necessary mitigation is in place. All on-site parking requirements will be addressed in conjunction with Phase II development and building permit processes.

The applicant has demonstrated that the necessary utility infrastructure to serve development on the site can be provided in compliance with City requirements. In

conjunction with future development, staff will ensure that all necessary public improvements are in place or financially secured to the satisfaction of the City Engineer prior to occupancy of homes on the development site.

As noted in Section II of this report, the TPR is a statewide administrative rule that is applicable to this land use application. The applicant intends to address the requirements of the TPR **(Attachment O)** through a condition of approval that will ensure that, in conjunction with future development on the site, the requirements of the TPR are addressed. Staff have worked with the applicant to develop this strategy to address the TPR consistent with state and local regulations, and support the proposed condition **(Condition 2)**. Because expiration of the PD or removal of the PD Overlay through an administrative process would nullify Condition 2, thereby nullifying the assurance that the TPR would be addressed with future development on the site, it is necessary for the applicant to ensure that the CDDP cannot expire. One way to do this, per LDC Section 2.5.50.09, is to install or bond for all public improvements related to the first phase of the project. Accordingly, staff recommend **Condition of Approval 1** which requires the applicant to install or secure phase I public improvements, per LDC Section 2.4.40.08.

Effects on Air and Water Quality (Note: a DEQ permit is not sufficient to meet this criterion);
Development proposed with Phase 1 will not require stormwater quality measures because the proposed development does not exceed the threshold of new pollution generating impervious surfaces.

Phase II Development on the subject site is anticipated to be similar to other low density development within Corvallis. As such, air and water quality impacts are anticipated to be negligible, in part because water quality measures will be required for stormwater leaving the site, consistent with City standards, at the time of Phase II development. Air emissions are monitored by the Oregon Department of Environmental Quality (DEQ). The DEQ indicates that the City of Corvallis is in compliance with all Federal and State air quality regulations.

Design equal to or in excess of the types of improvements required by the standards in Chapter 4.10 - Pedestrian Oriented Design Standards; and
No dwelling units are proposed with Phase I of the DDP. Therefore, the design requirements and standards of Chapter 4.10 - Pedestrian Oriented Design Standards do not apply to Phase I development. Future development located on Phase II land will be subject to the Pedestrian Oriented Design Standards in LDC Chapter 4.10, and will be constructed consistent with these standards.

Preservation and/or Protection of Significant Natural Features
Phase II lands do contain slopes between 10 and 15 percent. These Significant Natural Features are regulated by LDC Chapter 4.5 - Natural Hazards and Hillside

Development. Future development of Phase II of the DDP will require compliance with Chapter 4.5 - Natural Hazards and Hillside Development. No action is required with the present application, because Phase II is labeled as future development and will be subject to a Major Modification or new DDP process when developed. Staff find the proposal is consistent with the above criterion and compatible with surrounding properties.

Summary and Conclusions of Compatibility Analysis
Phase I development is to construct a portion of public improvements along SW 49th Street. Phase II development will be subject to future Planned Development review processes and compatibility with Phase II development will be determined with the future application processes. Given the above discussion, staff find that the proposed CDDP is compatible with neighboring properties and uses.

C. Chapter 4.0 - Improvements Required with Development

The following evaluates the proposal's compliance with applicable standards in LDC Chapter 4.0 - Improvements Required with Development. Evaluation occurs under three broad areas: Circulation, Public Facilities, and Franchise Utilities.

1. CIRCULATION

The following discussion addresses criteria related to vehicles, bicycles, pedestrians and transit.

Vehicular Circulation:
Applicable Land Development Code Criteria:

2.6.30.06 - Review Criteria

c. The site is capable of being served by urban services and facilities required with development - The developer is required to provide urban services and facilities to and through the site. At minimum, both Minor and Major Annexations shall include consideration of the following:

4. Transportation facilities consistent with the City's Transportation Plan and Chapter 4.0 - Improvements Required with Development; and

5. Park facilities consistent with the City's Parks Master Plan.

4.0.60 - PUBLIC AND PRIVATE STREET REQUIREMENTS

a. Traffic evaluations shall be required of all development proposals in accordance with the following:

1. Any proposal generating 30 or more trips per hour shall include Level of Service (LOS) analyses for the affected intersections. A Traffic Impact Analysis (TIA) is required, if required by the City Engineer. The TIA shall be prepared by a registered professional

engineer. The City Engineer shall define the scope of the traffic impact study based on established procedures. The TIA shall be submitted for review to the City Engineer. The proposed TIA shall reflect the magnitude of the project in accordance with accepted traffic engineering practices. The applicant shall complete the evaluation and present the results with an overall site development proposal.

e. Development sites shall be provided with access from a public street or a private street that meets the criteria in "d," improved to City standards in accordance with the following:

1. Where a development site abuts an existing public street not improved to City standards, the abutting street shall be improved to City standards along the full frontage of the property concurrently with development. Where a development site abuts an existing private street not improved to City standards, and the private street is allowed per the criteria in "d", above, the abutting street shall meet all the criteria in "d", above and be improved to City standards along the full frontage of the property concurrently with development.

k. Location, grades, alignments, and widths for all public and private streets shall be considered in relation to existing and planned streets, topographical conditions, public convenience and safety, and proposed land use. Where topographical conditions present special circumstances, exceptions to these standards may be granted by the City Engineer provided that the safety and capacity of the street network is not adversely effected. The following standards shall apply:

8. Right-of-way and improvement widths shall be as specified in the Transportation Plan and Table 4.0-1 - Street Functional Classification System.

The applicant's site is accessed from both SW 53rd Street and SW 49th Street, south of SW Country Club Drive and north of SW Nash Avenue. The City's Transportation Plan shows a new neighborhood collector street between SW 53rd Street and SW 49th Street at this location.

SW 53rd Street

SW 53rd Street is designated as an arterial street and is under Benton County's jurisdiction. The section of SW 53rd Street adjacent to the applicant's site is currently improved to County standards with two travel lanes, bike lanes and open ditches. Future City standard improvements will include the addition of curbs, gutters, setback sidewalks, landscape strips and a piped drainage system. Phase 1 of the DDP does not propose any improvements along the SW 53rd Street frontage. Future DDP phases will need to address the extent of improvements along this frontage **(Development Related Concern A)**. Benton County has expressed a preference for future development to prepay for improvements in order to fund a Capital Improvement or MPO project rather than having piecemeal or half street improvements along this corridor.

SW 49th Street

SW 49th Street is designated as a neighborhood collector street. The section of SW 49th Street adjacent to the applicant's site is currently improved to County standards with two travel lanes and open ditches. City standard improvements will include the addition

of curbs, gutters, bike lanes, setback sidewalks, landscape strips and a piped drainage system.

Phase 1 of the detailed development plan includes construction of the western portion of an intersection leg for a new neighborhood collector street. The location of a new neighborhood collector street at this location is consistent with the City's Transportation Plan. Prior to City Council's hearing of ANN10-00002, Phase 1 public improvements shall be installed or secured in accordance with LDC Section 2.4.40.08 **(Condition 1)**.

Future DDP phases will need to address the extent of improvements along this frontage beyond the phase 1 frontage. Improvements shall be constructed concurrent with development of the site **(Development Related Concern A)**.

New Neighborhood Collector

The City's Transportation Plan shows a new neighborhood collector street constructed between SW 53rd Street and SW 49th Street, along the northern portion of the applicant's property. The applicant's GLUP shows a new neighborhood collector street, as described above. Future DDP phases will need to incorporate this neighborhood collector street.

Trip Generation

A trip generation study was conducted for the "worst case" development of this site. The "worst case" calculates the highest peak hour impacts that can be developed within the designated zone. The report conducted trip generation calculations based on the proposed PD(RS-6) zoning of the applicant's site. The trip generation rates for development are based on standards established by the Institute of Transportation Engineers and are published in the ITE Trip Generation Manual, 7th Edition. One "trip" is defined as a vehicle leaving from or arriving at the development.

ITE land use code 210, Single-Family Detached Housing was used in the study because of all the permitted uses in the RS-6 Zone, Single-family Detached Housing would generate the most vehicle trips. In total, the worst case development scenario would generate 64 PM peak hour trips. The City of Corvallis typically defines an impact as 30 or more peak hour trips to a single intersection. Because the calculated peak hour trip total is higher than the City's threshold, a trip distribution and Traffic Impact Analysis (TIA) was conducted.

Traffic Impact Analysis

A Traffic Impact Analysis (TIA) was completed for this annexation application. This TIA also incorporated the Cannon-Applegate Annexation application which was withdrawn on April 27, 2010. A trip distribution analysis was done as part of the TIA. It used existing traffic volumes at the study intersections to determine the distributional patterns of the worst case for future development.

The TIA analyzed all intersections that met the 30 or more peak hour trip threshold stated above. The intersection of SW 53rd Street and the site's access and the intersection of SW 53rd Street and SW Country Club Drive are shown to perform at acceptable Levels of Service (LOS) with the worst case development scenario at the planning horizon (2030).

The intersection of SW 53rd Street with SW Philomath Boulevard (Hwy 20/34) is shown to be at LOS E with existing background conditions and no additional trips. The City has established an acceptable LOS to be D or better. Analyzing this intersection at the planning horizon (2030) drops the LOS further to F. Adding in the worst case scenario for site trips keeps the LOS at F. The TIA has proposed to mitigate the site trips with the addition of a north bound right turn lane at this intersection. The analysis shows this mitigation to lower the Volume over Capacity Ratio (V/C) (how LOS is determined), but the LOS still remains at F. A May 29th, 2009, letter from ODOT agrees that the construction of a north bound right turn lane would be sufficient mitigation for the proposed changes **(Attachment Q)**.

ODOT has classified SW Philomath Boulevard as a State Highway Freight Route. The maximum V/C per ODOT standards is 0.80. The TIA shows the V/C for the intersection of SW 53rd Street with SW Philomath Boulevard to exceed the maximum under existing background conditions. Future detailed development phases shall mitigate any significant affects at the intersection of SW Philomath Boulevard and SW 53rd Street resulting from development, concurrent with development, per OAR 660-012-0060. ODOT and the City shall review and approve of proposed mitigation prior to implementation **(Condition 2)**.

The TIA only analyzed the planning horizon (2030). Staff asked for the worst case site trips to be added to the existing conditions, however, the applicant did not provide this information, only stating that there is no development proposed with this application and that future development proposals would identify the number of trips that would need to be analyzed.

A Phase II Modification or new DDP application will need to complete a TIA in accordance with LDC 2.4.30.01.g.5.b and 4.0.60.a. The City Engineer shall define the scope of the traffic impact study based on established procedures. The TIA shall be submitted for review to the City Engineer. The proposed TIA shall reflect the magnitude of the project in accordance with accepted traffic engineering practices. The applicant shall complete the evaluation and present the results with an overall site development proposal at the time of application for further development on the site **(Development Related Concern B)**.

Conclusion on Vehicular Circulation
Given the discussion above, the applicant has demonstrated that, with improvements, the existing street network can accommodate development of the subject property consistent with the City's Land Development Code and the Transportation Plan.

Bicycle/Pedestrian Circulation:
Applicable Land Development Code Criteria:

4.0.30 - PEDESTRIAN REQUIREMENTS

a. Sidewalks shall be required along both sides of all streets, as follows:

2. Sidewalks on Arterial, Collector, and Neighborhood Collector Streets - Sidewalks along Arterial, Collector, and Neighborhood Collector Streets shall be separated from curbs by a planted area. The planted area shall be a minimum of 12 ft. wide and landscaped with trees and plant materials approved by the City. The sidewalks shall be a minimum of five ft. wide. An exception to these provisions is that this separated tree planting area shall not be provided adjacent to sidewalks where they are allowed to be located within Natural Resource areas governed by Chapter 4.12 - Significant Vegetation Protection Provisions and Chapter 4.13 - Riparian Corridor and Wetland Provisions. This separated tree planting area shall also not be provided adjacent to sidewalks where they are allowed to be located within drainageway areas governed by regulations in Chapter 4.5 - Natural Hazard and Hillside Development Provisions.

3. Sidewalk Installation Timing - The timing of the installation of sidewalks shall be as follows:

a) Sidewalks and planted areas along Arterial, Collector, and Neighborhood Collector Streets shall be installed with street improvements.

d. To provide for orderly development of an effective pedestrian network, pedestrian facilities installed concurrently with development of a site shall be extended through the site to the edge of adjacent property(ies).

f. Prior to development, applicants shall perform a site inspection and identify any Contractor Sidewalk/street Stamps in existing sidewalks that will be impacted by the development. If such a Contractor Sidewalk/street Stamp exists, it shall either be left in its current state as part of the existing sidewalk, or incorporated into the new sidewalk for the development site, as close as possible to the original location and orientation.

4.0.40 - BICYCLE REQUIREMENTS

a. On-street Bike Lanes - On-street bike lanes shall be required on all Arterial, Collector, and Neighborhood Collector Streets and constructed at the time of street improvements.

Public on-street bike lanes exist along the applicant's frontage of SW 53rd Street, however, no bike lanes are present along the SW 49th Street frontage. Phase 1 of the DDP will construct the western portion of an intersection leg for a new neighborhood collector street. These improvements will be built to City standards that will include offsets to facilitate bike lanes and sidewalk connections. As detailed above in the

Vehicular Circulation section, future detailed development plan phases will need to address the extent of improvements along the site's frontage. Improvements shall be constructed concurrent with development of the site.

The City's Parks & Recreation Facilities Plan shows a proposed trail/multi-use path along the site's SW 53rd Street frontage. The Plan does not detail on what side of SW 53rd Street the trail would be located. The application does show how it can be incorporated into the design of future development by including it in the GLUP/CDP.

Public setback sidewalks do not exist along either the SW 53rd Street or SW 49th Street frontages. Setback sidewalks and planter strips are City standards and components of safe public sidewalks that are taken into consideration when determining serviceability. The applicant benefits from these neighborhood street improvements in the form of;

- An enhanced aesthetic experience for pedestrians as the separation from motor vehicle traffic decreases road noise, prevents water from the roadway being splashed on pedestrians and provides an enhanced sense of security.
- An enhanced environment for wheelchair users as the sidewalk can be kept at a constant slope with the steeper slopes for driveway approaches built into the planting strip.
- An area for street trees, sign posts, utility and signal poles, mailboxes, fire hydrants, etc.
- Mature street trees may reduce vehicle speed.
- When wide enough, a place for a motor vehicle to wait out of the stream of traffic while yielding to a pedestrian crossing a driveway.
- A break in hard surfacing with added pervious area.

Phase II of the DDP will need to address the extent of improvements along the site's frontage. Improvements shall be constructed concurrent with development of the site **(Development Related Concern A)**.

Conclusion on Bicycle/Pedestrian Circulation

Given the discussion above, the 49th Street Annexation has demonstrated that, with improvements, the existing bicycle and pedestrian circulation network can accommodate development of the subject property consistent with the City's LDC, Transportation Plan, and the Parks & Recreation Facilities Plan.

Transit

Applicable Land Development Code Criteria:

4.0.50 - TRANSIT REQUIREMENTS

a. Development sites located along existing or planned transit routes shall, where appropriate, incorporate transit stops and shelters into the site design. These improvements shall be installed in accordance with the guidelines and standards of the Corvallis Transit System.

b. **Development sites at or near existing or planned transit stops shall provide safe, convenient access to the transit system, as follows:**

   1. **All Commercial and Civic Use developments shall provide a prominent entrance oriented toward Arterial, Collector, and Neighborhood Collector Streets, with front setbacks reduced as much as possible to provide access for pedestrians, bicycles, and transit.**

   2. **All developments shall provide safe, convenient pedestrian walkways between the buildings and the transit stop, in accordance with the provisions of Section 4.0.30.b.**

Corvallis Transit System (CTS) Routes 3, C3, and 8 currently provides service to SW Country Club Drive, north of the site. The Philomath Connection currently provides service along SW 53rd Street adjacent to the site's frontage. No transit improvements are anticipated along the site's frontage at this time.

Conclusion on Transit

Given the discussion above, the 49th Street Annexation has demonstrated that, the existing transit network can accommodate development of the subject property consistent with the City's LDC and Transportation Plan.

Overall Conclusion on Circulation

Given the discussion above, the 49th Street Annexation has demonstrated that, with improvements, the existing circulation network can accommodate development of the subject property consistent with the City's LDC, Transportation Plan, and the Parks & Recreation Facilities Plan.

2. PUBLIC FACILITIES AND SERVICES

The following discussion addresses criteria related to public water, sanitary sewer, storm drainage, and street lights.

Applicable Land Development Code Criteria:

2.6.30.06 - Review Criteria

c. **The site is capable of being served by urban services and facilities required with development - The developer is required to provide urban services and facilities to and through the site. At minimum, both Minor and Major Annexations shall include consideration of the following:**

   1. **Sanitary sewer facilities consistent with the City's Sanitary Sewer Master Plan and Chapter 4.0 - Improvements Required with Development;**

   2. **Water facilities consistent with the City's Water Master Plan, Chapter 4.0 - Improvements Required with Development, and fire flow and hydrant placement;**

   3. **Storm drainage facilities and drainageway corridors consistent with the City's Stormwater Master Plan, Chapter 4.0 - Improvements Required with Development, Chapter 4.5 -**

Natural Hazard and Hillside Development Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions;

4.0.60 - PUBLIC AND PRIVATE STREET REQUIREMENTS

q. Development shall include underground electric services, light standards, wiring and lamps for streetlights according to the specifications and standards of the City Engineer. The developer shall be responsible for installation of underground conduit for street lighting along all public streets improved in conjunction with such development in accordance with the following:

   1. The developer shall coordinate with the City Engineer to determine the location of future street light poles.

   2. The streetlight plan shall be designed to provide illumination meeting standards set by the City Engineer.

   3. The standard street light installation is a wood pole.

   The developer shall install such facilities and make the necessary arrangements with the serving electric utility for the City-owned and operated street lighting system to be served at the lowest applicable rate available to the City. Upon City's acceptance of such development improvements, the street lighting system, exclusive of utility-owned service lines, shall be and become the property of the City.

4.0.70 - PUBLIC UTILITY REQUIREMENTS (OR INSTALLATIONS)

a. All development sites shall be provided with public water, sanitary sewer, storm drainage, and street lights.

b. Where necessary to serve property as specified in "a" above, required public utility installations shall be constructed concurrently with development.

c. Off-site public utility extensions necessary to fully serve a development site and adjacent properties shall be constructed concurrently with development.

d. To provide for orderly development of adjacent properties, public utilities installed concurrently with development of a site shall be extended through the site to the edge of adjacent property(ies).

e. All required public utility installations shall conform to the City's adopted facilities master plans.

f. Private on-site sanitary sewer and storm drainage facilities may be allowed, provided all the following conditions exist:

   1. Extension of a public facility through the site is not necessary for the future orderly development of adjacent properties;

2. **The development site remains in one ownership and Land Division does not occur, with the exception of Land Divisions that may occur under the provisions of Section 4.0.60.d, above; and**

3. **The facilities are designed and constructed in accordance with the Uniform Plumbing Code and other applicable codes, and permits are obtained from the Development Assistance Center prior to commencement of work.**

4.0.100 - LAND FOR PUBLIC PURPOSES

a. **Easements for public sanitary sewer, water, storm drain, streetlight, transit, pedestrian and bicycle facilities shall be provided whenever these facilities are located outside a public right-of-way. The minimum easement width for a single utility is 15 ft. The minimum easement width for two adjacent utilities is 20 ft. The easement width shall be centered on the utility to the greatest extent practicable. Wider easements may be required for unusually deep facilities.**

b. **Utility easements with a minimum width of seven ft. shall be granted to the public adjacent to all street rights-of-way for franchise utility installations.**

4.2.30 - REQUIRED TREE PLANTINGS AND MAINTENANCE

b. **Areas Where Trees May Not be Planted -**

1. **Trees may not be planted within five ft. of permanent hard surface paving or walkways, unless special planting techniques and specifications are used and particular species of trees are planted, as outlined in Section 4.2.40.c or approved by the Director. These limitations apply most frequently in areas such as landscape parkways, pedestrian walkways, and plaza areas, where there may be tree grates.**

2. **Unless approved otherwise by the City Engineer, trees may not be planted:**

   a) **Within 10 ft. of fire hydrants and utility poles;**

   b) **Within 20 ft. of street light standards;**

   c) **Within five ft. from an existing curb face, except where required for street trees;**

   d) **Within 10 ft. of a public sanitary sewer, storm drainage, or water line; or**

   e) **Where the Director determines the trees may be a hazard to the public interest or general welfare.**

Water

The subject site is located in the City's first level (elevation 210-290') and second level (elevation 290-410') water service area. There is an existing 8 inch waterline located in SW 49th Street, adjacent to the site.

The applicant proposes to serve the site by constructing a 16 inch distribution line in SW 53rd Street from the intersection of SW Country Club Drive to the site. This improvement is consistent with the City's Water Master Plan. Local distribution piping

would also be installed within the future development to serve the site and create a looped system between SW 53rd Street and SW 49th Street.

The applicant presents an alternative to extending the 16 inch distribution line in SW 53rd Street. The site can also be served by extending the 24 inch waterline in SW Nash Avenue from SW 45th Street to SW 49th Street and extending a waterline from the existing 8 inch line in SW 49th Street to SW Nash Avenue.

The application proposes to construct a second level pump station to serve the second level water service area within this proposal and the adjacent second level service area. A second level pump station is consistent with the City's Water Master Plan. Concurrent with Phase II development, the second level pump station will need to be built to the City's Design Standards for Water Booster Stations, Reservoir and Wastewater Lift Station Standards **(Development Related Concern D)**.

The applicant has provided water system calculations showing that the proposed annexation can be served by the existing water system with the proposed improvements.

Sanitary Sewer

The proposed annexation site is located within the Country Club basin. The City's Wastewater Utility Master Plan does not show a backbone collection system upgrade during the current planning horizon. The Master Plan anticipates local collection piping will be adequate to serve the area.

The annexation site straddles a shallow ridge line that drains to the east and west. The application proposes to serve future development on the site by extending an 8 inch sanitary sewer in SW 53rd Street between SW Country Club drive and the site to collect wastewater from the western portion of the site. The eastern portion of the site can be served by draining wastewater to the existing 8 inch sanitary sewer line located in SW 49th Street.

The applicant has provided sanitary sewer calculations showing that the proposed annexation can be served by the existing sanitary sewer system with the proposed improvements.

Storm Drainage

The subject site is located within the Dunawi Creek basin. Existing roadside ditches convey existing stormwater runoff. With Phase I the applicant is proposing to extend the existing 36 inch storm pipe in SW 49th Street, south, to the site. Prior to City Council's hearing of ANN10-00002, Phase I public improvements shall be installed or secured in accordance with LDC Section 2.4.40.08 **(Condition 1)**. Future detailed development plan phases will be required to comply with the City's water quality and quantity standards in accordance with the LDC 4.0.130, appendix F of the City's Storm Water Master Plan, and the King County, Washington, Surface Water Design Manual.

The application shows tracts on the GLUP/CDP that could be set aside with future development for the purpose of stormwater quality and detention. The application also shows typical street sections with water quality swales located in the planter strips. This application does not get into the detail of how these water quality swales meet the City's water quality standards, however Phase II development would have to demonstrate compliance with the City's and King County's standards if they were to rely on planter strip swales. The applicant also states that if the landscape strip swales can not be found to be feasible, approved underground water quality facilities will be used.

The annexation site straddles a shallow ridge line that drains to the east and west. The application proposes to serve future development on the west side of the site by draining stormwater into the County's roadside ditch. Benton County has agreed to this with the understanding that stormwater entering the ditch meets the City's quality and quantity standards. The east side of the site is proposed to be served by extending an existing 36 inch storm drainage line in SW 49th Street to the site.

Future development on Phase II lands that creates more than 5,000 ft^2 of pollution generating impervious surfaces will be required to construct stormwater quality facilities. Stormwater quality facilities shall be designed in accordance with criteria established in Appendix F of the Stormwater Master Plan and the most recent version of the *King County, Washington, Surface Water design Manual*. The water quality facilities shall be designed to remove 70 percent of the total suspended solids (TSS) entering the facility during the water quality design storm, 0.9-inch 24-hr rainfall event with NRCS Type 1A distribution **(Development Related Concern E)**.

Future development on Phase II lands that creates more than 25,000 ft^2 of impervious surfaces will be required to construct stormwater detention facilities in accordance with the LDC section 4.0.130.b. Detention facilities shall be designed to maximize storm water infiltration. Maintenance of these facilities is most efficiently provided with open systems because they facilitate visible evaluation of system conditions and accommodate routine, low-technology maintenance practices. Open systems also allow stormwater contact with vegetation and soil to enhance water quality, infiltration, and maintaining the properly functioning hydrological and biological condition of open drainageways. The storm water detention facilities shall be designed consistent with both criteria outlined in Appendix F of the Storm Water Master Plan, and criteria outlined in the most recent King County, Washington, Surface Water Design Manual, and shall be designed to capture run-off so that the run-off rates from the site after development do not exceed the pre-developed conditions, based on the 2-year, 5-year, and 10-year, 24-hour design storms **(Development Related Concern F)**.

Street Lights

Currently there are no street lights in the vicinity of this project. Phase II development of the site would require the installation of a City standard street light system **(Development Related Concern G)**.

Overall Conclusion on Public Utilities
Given the discussion above, the 49th Street Annexation has demonstrated that, with improvements, the existing water, sewer, stormwater, and streetlight networks can accommodate development of the subject property consistent with the City's LDC and applicable Master Plans.

3. Franchise Utilities

Applicable Land Development Code Criteria:

4.0.100 - LAND FOR PUBLIC PURPOSES

b. Utility easements with a minimum width of seven ft. shall be granted to the public adjacent to all street rights-of-way for franchise utility installations.

Existing franchise utilities are located in the vicinity of the subject site. In accordance with LDC Section 2.6.60.03.i.1, the applicant has provided letters confirming the ability to serve the site with Phase II development.

Part III: Summary and Conclusions

The standards of LDC Chapter 2.5 - Planned Development are applicable when flexibility from development standards are requested or when the development site is subject to a PD Overlay. The requested Zone Change application includes a proposal to place a residential PD Overlay over the entire development site. If the Zone Change application is approved, the standards of Chapter 2.5 are applicable.

As conditioned, the CDDP is consistent with the applicable development standards of the LDC. Additionally, staff find the proposal is compatible with the neighboring properties and uses.

Based on the criteria, findings and conclusions above, it is recommended that the Planning Commission **APPROVE** the proposed Conceptual and Detailed Development Plan (PLD10-00006). A motion to approve would be based upon the criteria, discussions, and conclusions contained within the May 21, 2010, staff report to the Planning Commission, and upon the reasons given by the Planning Commission members during deliberations on this application. A recommended motion is provided below.

Recommended Motions for ANN10-00002, ZDC10-00002, and PLD10-00006

Recommended Motion for ANN10-00002

MOTION: *I move to recommend that the City Council place the proposed Annexation request permit number (ANN10-00002) on the November, 2010 ballot. This motion is based on findings presented in the May 21, 2010, Staff Report to*

the Planning Commission, and findings made by the Planning Commission during deliberations on the request.

Recommended Motion for ZDC10-00002

MOTION: *I move to approve the 49th Street Zone Change request permit number ZDC10-00002, contingent upon the City Council's placement of the associated Annexation request on the November, 2010 ballot and voter approval of the ballot measure. This motion is based on Findings presented in the May 21, 2010, Staff Report to the Planning Commission, and findings made by the Planning Commission during deliberations on the request.*

Recommended Motion for PLD10-00006

MOTION: *I move to approve the 49th Street Planned Development request permit number PLD10-00006, contingent upon the City Council's placement of the associated Annexation request on the November, 2010 ballot and voter approval of the ballot measure. This motion is based on Findings presented in the May 21, 2010, Staff Report to the Planning Commission, and findings made by the Planning Commission during deliberations on the request.*

Conditions of Approval:

1. Prior to City Council's hearing of ANN10-00002, phase 1 public improvements shall be installed or secured in accordance with LDC 2.4.40.08. Phase 1 improvements consist of installation of the western leg of a new neighborhood collector street intersection, the extension of the existing 36 inch storm line in SW 49th Street, south, to the site, and dedication of ROW to accommodate the improvements. In order to secure the public improvements, the applicant shall prepare Public Improvement by Private Contract (PIPC) permits. The plans shall be authorized and all permit items required for issuance of the permit shall be completed and on file with Development Review Engineering. The permit shall be ready to issue and the ROW dedication shall be ready to be filed upon successful annexation to the City.

2. Future development phases on the subject site shall mitigate any significant affects at the intersection of SW Philomath Boulevard and SW 53rd Street resulting from development, concurrent with development, per OAR 660-012-0060. ODOT and the City shall review and approve of proposed mitigation prior to implementation.

3. Future development plans for the subject site shall be processed through the Planned Development process.

Development Related Concerns:

A. Future detailed development plans shall address the extent of improvements along the site's frontage. Roadway, bicycle, and pedestrian improvements shall be consistent with the City's Land Development Code, the Transportation Plan, and the Parks & Recreation Facilities Plan.

B. Future detailed development plans shall complete a TIA in accordance with LDC 4.0.60.a and 2.4.30.01.g.5.b. The City Engineer shall define the scope of the traffic impact study based on established procedures. The TIA shall be submitted for review to the City Engineer. The proposed TIA shall reflect the magnitude of the project in accordance with accepted traffic engineering practices. The applicant shall complete the evaluation and present the results with future overall site development proposals.

C. ODOT has classified SW Philomath Boulevard as a State Highway Freight Route. The maximum Volume over Capacity (V/C) ratio per ODOT standards is 0.80. ODOT will require mitigation per OAR 660-012-0060 for development affecting the above intersection.

D. Consistent with the City's Water Master Plan, future development in the City's second level water service area (elevation 290-410') shall construct a second level pump station. Future development shall build the second level pump station to the City's Design Standards for Water Booster Stations, Reservoir and Wastewater Lift Station Standards.

E. Future development on the site that creates more than 5,000 ft^2 of pollution generating impervious surfaces shall construct stormwater quality facilities. Stormwater quality facilities shall be designed in accordance with criteria established in Appendix F of the Stormwater Master Plan and the most recent version of the *King County, Washington, Surface Water Design Manual*. The water quality facilities shall be designed to remove 70 percent of the total suspended solids (TSS) entering the facility during the water quality design storm, 0.9-inch 24-hr rainfall event with NRCS Type 1A distribution.

F. Future development on the site that creates more than 25,000 ft^2 of impervious surfaces shall construct stormwater detention facilities in accordance with the LDC section 4.0.130.b. Detention facilities shall be designed to maximize storm water infiltration. Maintenance of these facilities is most efficiently provided with open systems because they facilitate visible evaluation of system conditions and accommodate routine, low-technology maintenance practices. Open systems also allow stormwater contact with vegetation and soil to enhance water quality, infiltration, and maintaining the properly functioning hydrological and biological condition of open drainageways. The storm water detention facilities shall be designed consistent with both criteria outlined in Appendix F of the Storm Water Master Plan, and criteria outlined in the most recent *King County, Washington, Surface Water Design Manual*, and shall be designed to capture run-off so that the run-off rates from the site after

development do not exceed the pre-developed conditions, based on the 2-year, 5-year, and 10-year, 24-hour design storms.

G. Future development of the site shall require the installation of a City standard street light system in accordance with LDC Sections 4.0.70.a and 4.2.80.f.

ATTACHMENT "K"

FOR LAND USE PURPOSES ONLY

No.	REVISION	DATE
1	REVISED FOR CITY COMMENTS	04/26/10

DEVCO

PROJECT: 49TH STREET ANNEXATION

PROJECT LOCATION: 2800 SW 49TH STREET

CLIENT: 49th STREET ANNEXATION PARTNERS

SHEET TITLE: GENERAL LAND USE/ CONCEPTUAL DEVELOPMENT PLAN

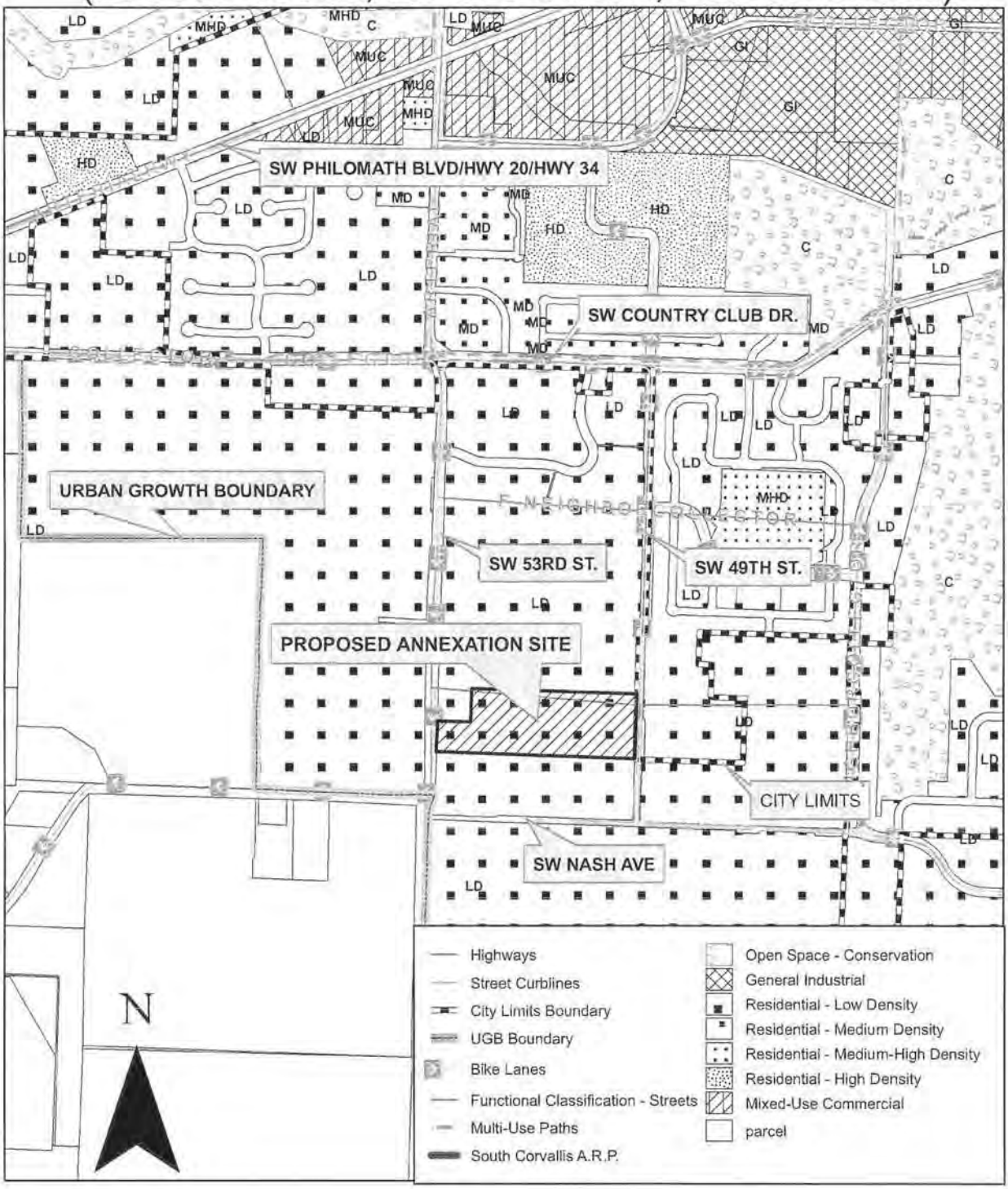
JOB NO: 06-442
ISSUED: 03/30/09
DRAWN BY: DEVCO
DRAWING:
OF SHEETS IN SET:

49th Street Annexation
(ANN10-00002 ZDC10-00002)
ATTACHMENT A.1

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.74

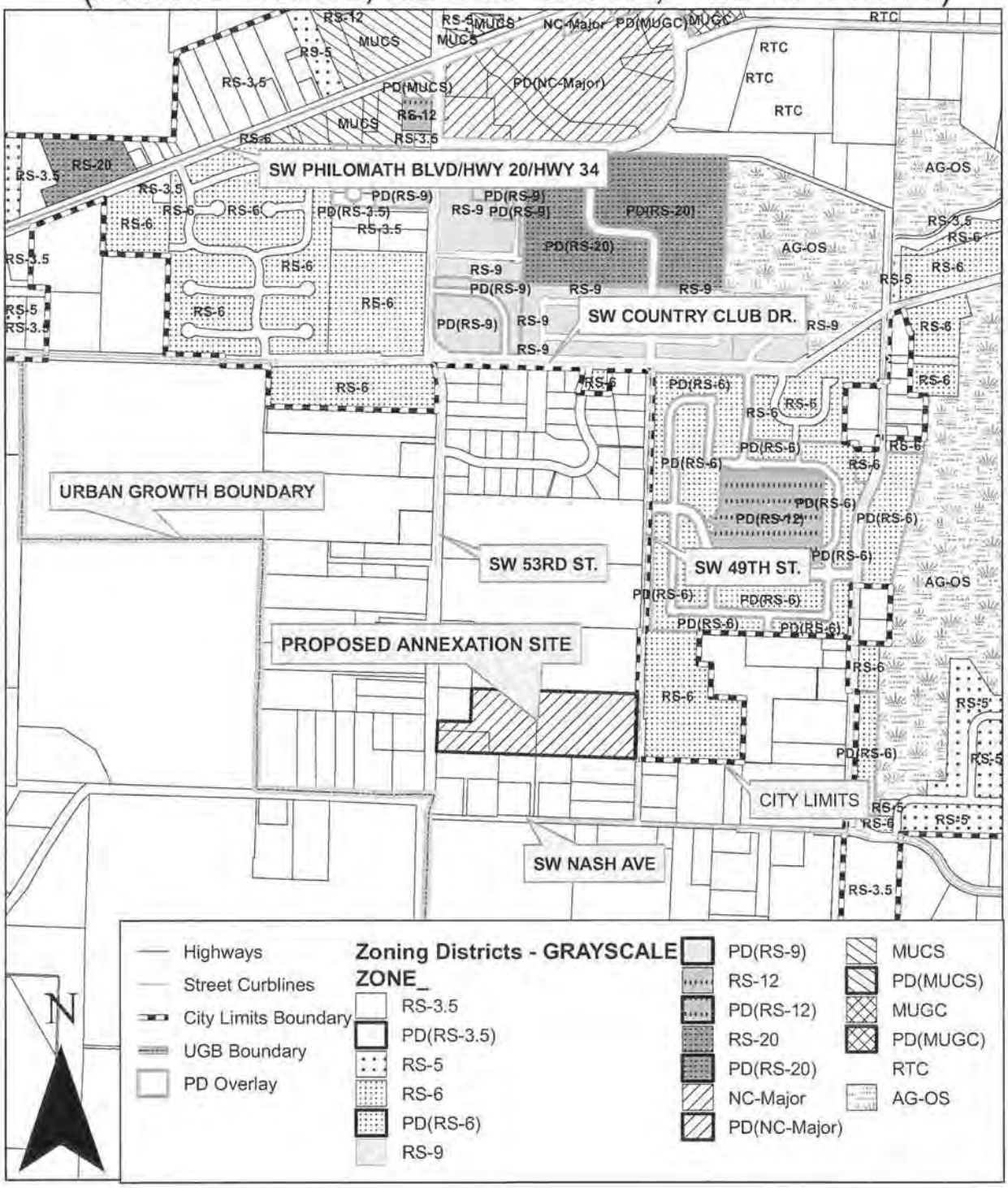
SW 53RD STREET (ARTERIAL)
SW 49TH STREET
(NEIGHBORHOOD COLLECTOR)
DETAILED DEVELOPMENT PHASING PLAN
FOR LAND USE PURPOSES ONLY
DETAILED DEVELOPMENT PHASING PLAN
49TH STREET ANNEXATION
2002 SW 49TH STREET
49TH STREET ANNEXATION PARTNERS
RECEIVED
APR 30 2010
Planning Division
ATTACHMENT "K-1"

49th Street Annexation - Comprehensive Plan Map (ANN10-00002; ZDC10-00002; PLD10-00006)



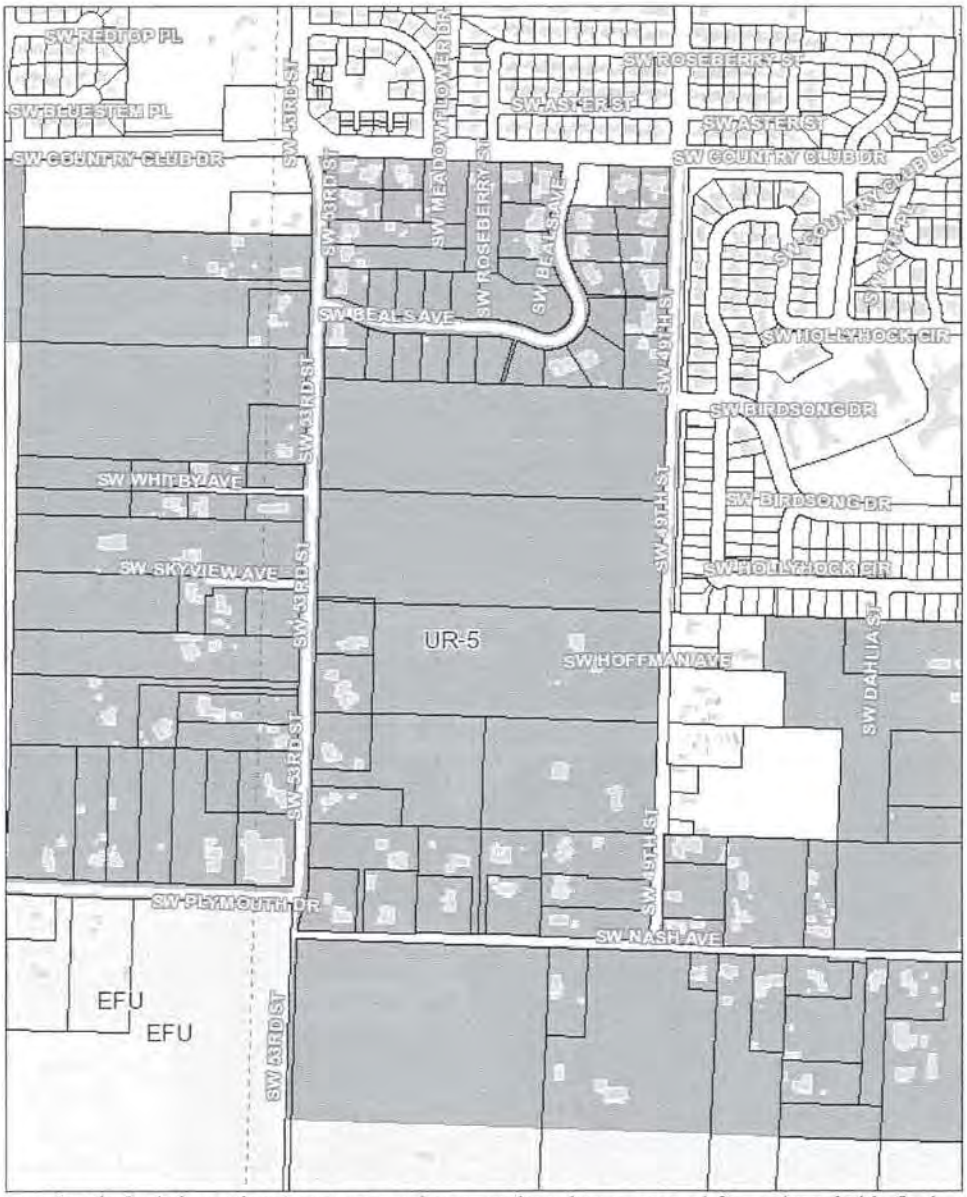
49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT C.1

49th Street Annexation - City Zoning Map
(ANN10-00002; ZDC10-00002; PLD10-00006)



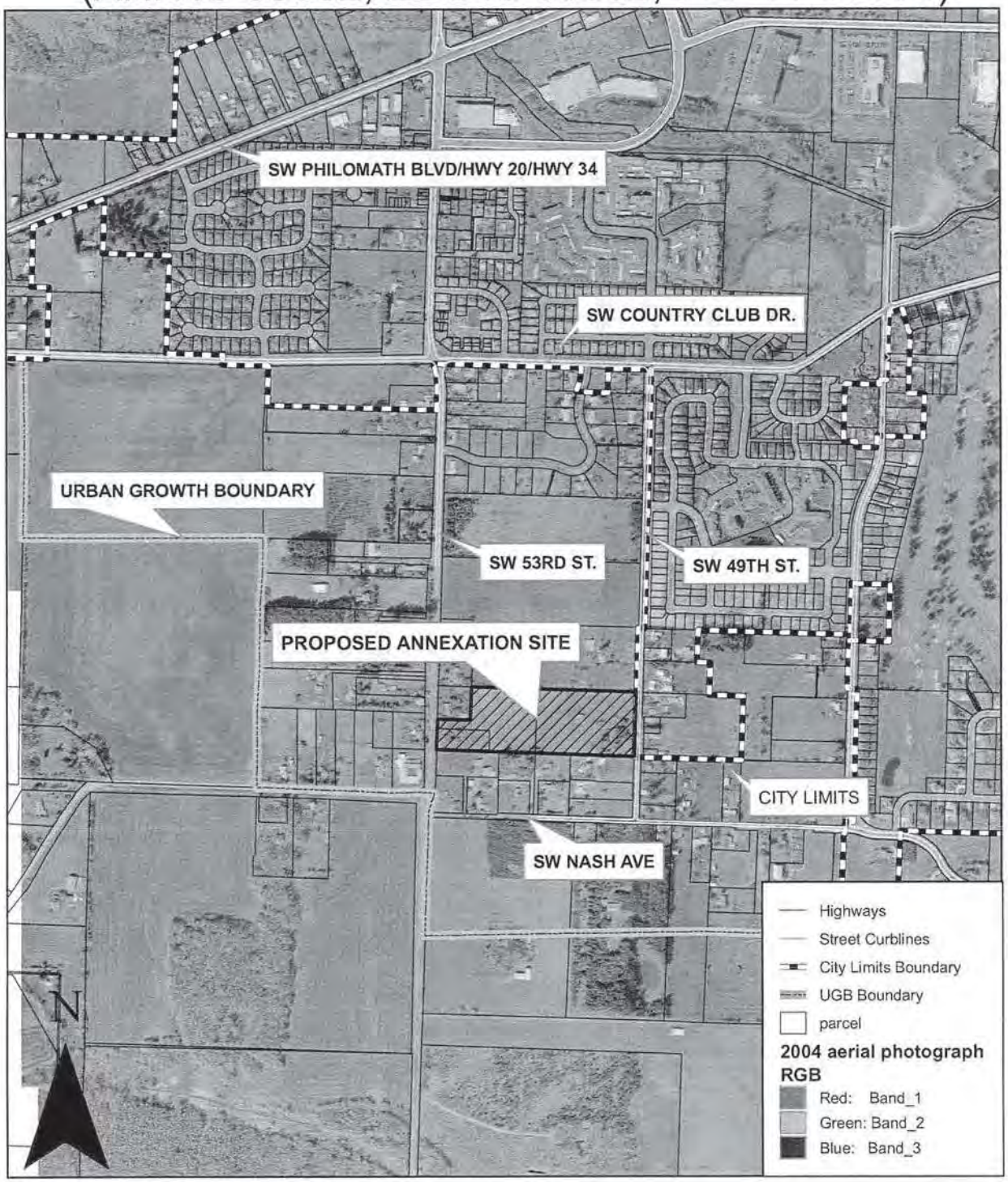
49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT D.1

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.77



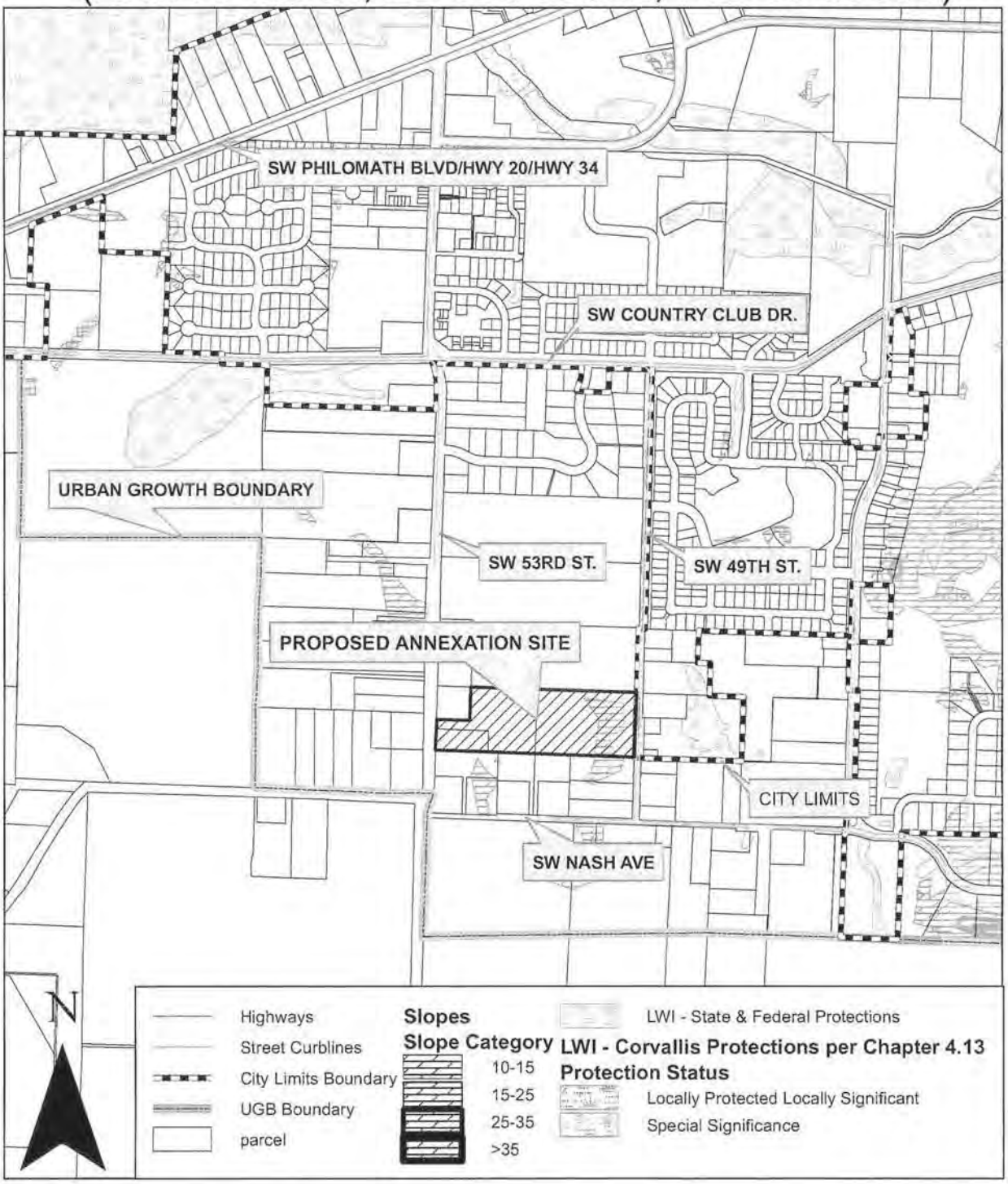
This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

49th Street Annexation - Existing Conditions Map (ANN10-00002; ZDC10-00002; PLD10-00006)



49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT F.1

49th Street Annexation - Natural Features Map
(ANN10-00002; ZDC10-00002; PLD10-00006)



49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT G.1

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.80

Table 8. Comparison of Land Need and Supply, *City Limit*, 1996-2020

Plan Designation	Land Need: Net Acres	Land Need: Gross Acres	Land Supply: Unconst. Vacant Acres	Land Supply: Redev Acres[a]	Land Supply: Total Buildable Acres	Mixed Use Allocation	Surplus/ Deficit
Agriculture			10		10	0	10
Commercial/Office							
Commercial (CB/LC/SA)	60	76	3	12	15	98	37
Office (PAO)	176	220	41	3	44	49	-127
Comm/Office Total	236	296	44	15	59	147	-90
Industrial							
Heavy Industrial (GI/II)	35	44	417	13	430	12	398
Light Industrial (LI/RTC)	86	108	76	5	81	64	37
Industrial Total	121	152	493	18	511	76	435
Mixed Use[b]							
Intensive Development Sector	see text				-		0
Limited Office-Industrial			50	1	51		51
Mixed Use Commercial			123	29	152		152
Mixed Use Employment			31	4	35		35
Mixed Use Residential			19	-	19		19
Mixed Use Total			223	34	257		257
Public Institutional	672	739	72		72		-667
Residential							
Low Density Residential	430	558	892		892	7	341
Medium Density Residential	156	199	407		407	22	230
Medium-High Density Residential	129	161	87	7	94	3	-64
High-Density Residential	24	26	6	8	14	-	-12
Residential Total	738	944	1,392	15	1,407	33	496
Total, All Designations[c]	1,767	2,131	2,234	82	2,059	257	185

Source: ECONorthwest, 1998.

[a] Redevelopable land includes commercial, industrial ,and multi-family residential (medium-high and high) land.

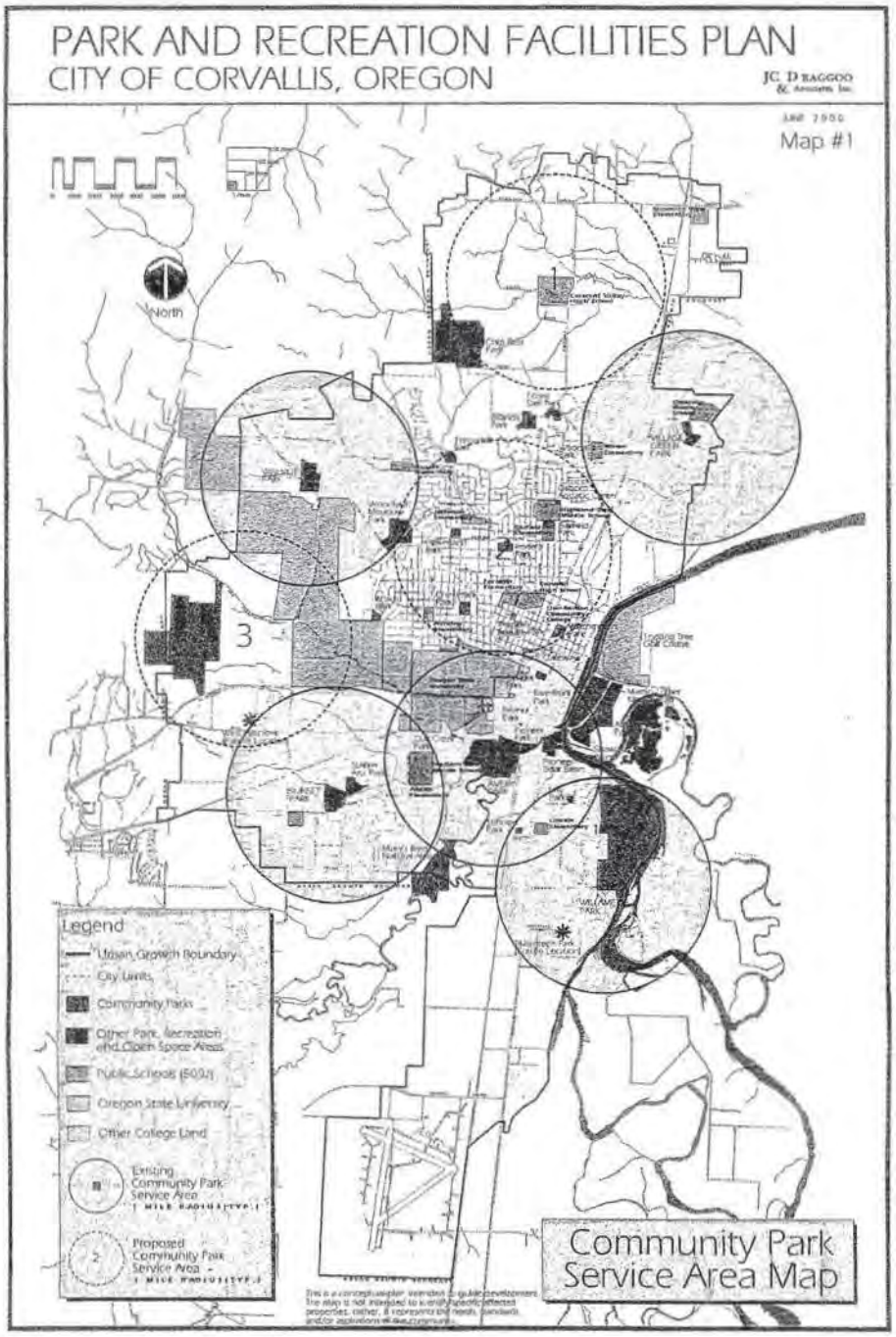
[b] No land need was allocated to this sector. Mixed use allocations are shown in a separate column. Total mixed use allocation sums to vacant buildable acres in mixed use designations as shown by the shaded cells

[c] Some numbers may not add exactly because of rounding. The Total Buildable Acres value does not include acres in mixed use designations, those are shown in the mixed-use allocation column

Tables 7 and 8 suggest that public/institutional and commercial designations have land deficits. Those estimates are misleading.

The City has a deficit (estimated at 667 acres) of vacant public and institutional land. Well over half of the need derives from the City's policy stating that it should add 35 acres of parkland for every 1,000 people added to the City's population. For these uses the City is probably not required to re-designate land to address the potential deficit. The City can rely on its oversupply of low-density residential land, its subdivision and PUD process, and the land taken out of the buildable land inventory because of its natural features (e.g., steep slopes, wetlands, floodplains) to meet much of this need.

CONCEPTUAL



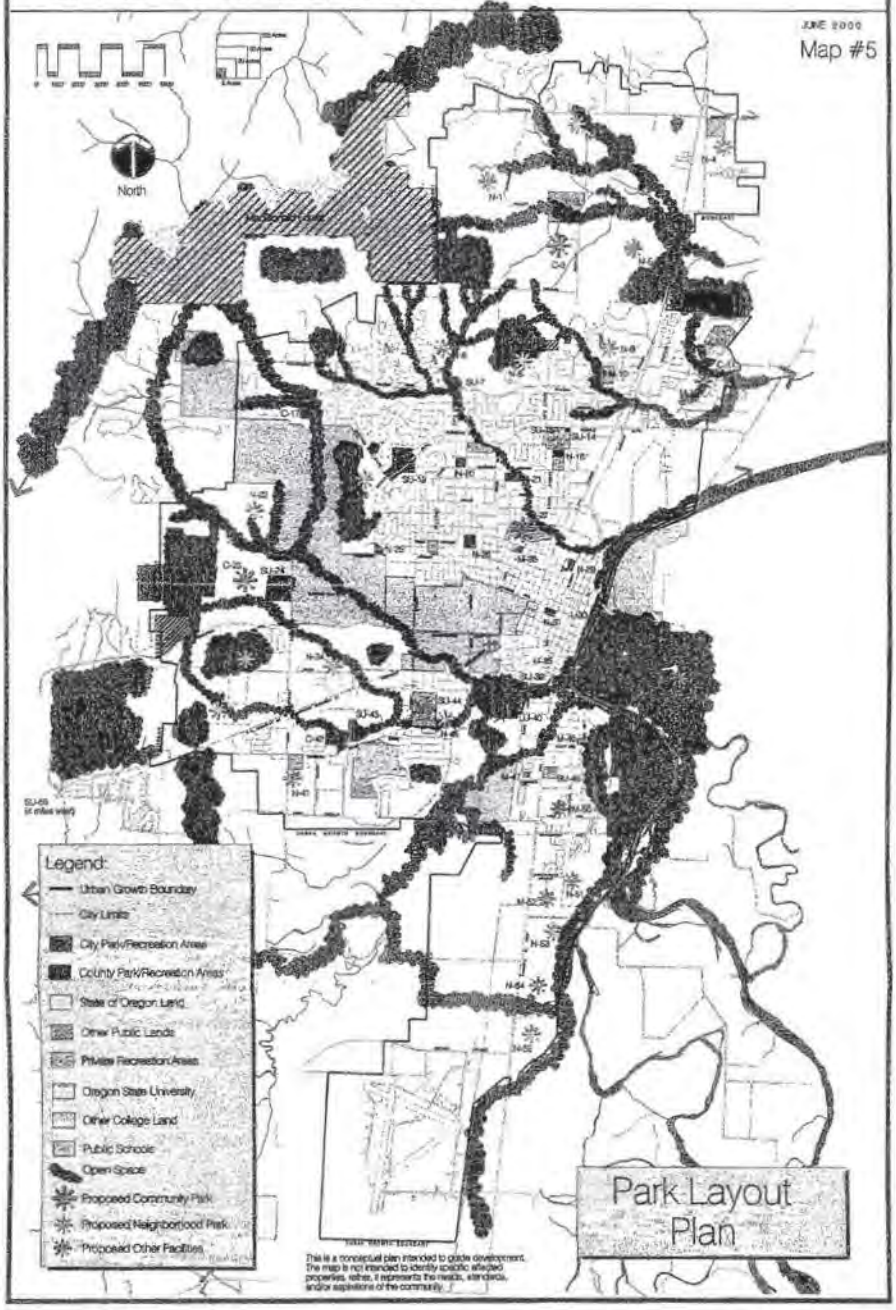
49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT I.1

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.82

CONCEPTUAL

PARK AND RECREATION FACILITIES PLAN

CITY OF CORVALLIS, OREGON



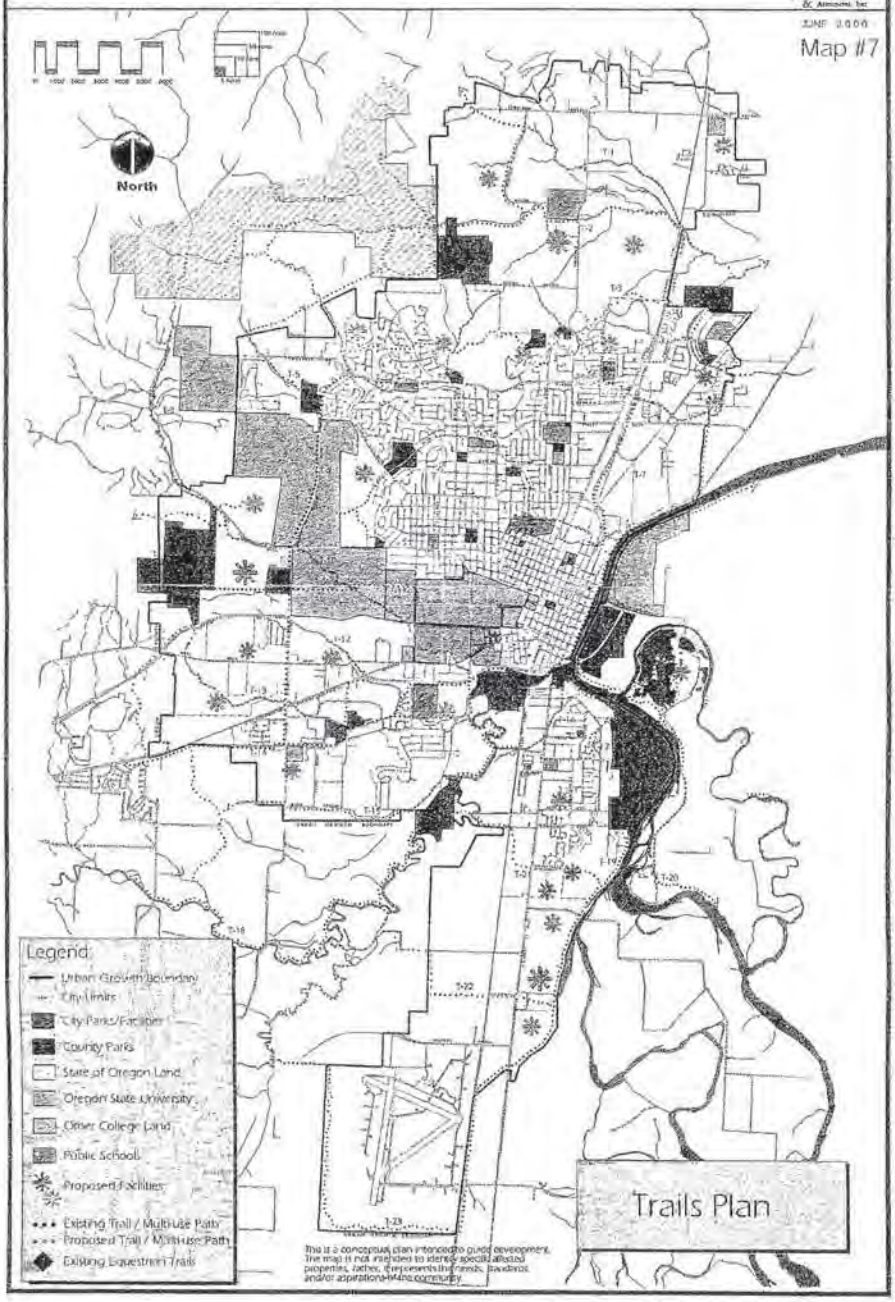
49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT J.1

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.83

CONCEPTUAL

PARK AND RECREATION FACILITIES PLAN

CITY OF CORVALLIS, OREGON



49th Street Annexation
(ANN10-0002 ZDC10-0002)
Exhibit III.84

Staff Identified Review Criteria

49th Street Annexation
Annexation, Zone Change, and Planned Development (ANN10-00002; ZDC10-00002; PLD10-00006)

The following are complete excerpts of Land Development Code provisions referenced in the May 21, 2010, Staff Report to the Planning Commission. These standards, review criteria, and policies were used by City Staff to evaluate the subject Annexation and Zone Change and Planned Development applications. Other local, state, and federal regulations may apply even if not referenced below or in the body of the staff report.

LDC Chapter 2.2 - Zone District Change

2.2.40.05 - Review Criteria

a. Review Criteria for Zone Changes, Except Those Requesting to Apply or Remove a Historic Preservation Overlay

Quasi-judicial Zone Changes shall be reviewed to determine how they affect City facilities and services, and to ensure consistency with the purposes of this Chapter, policies of the Comprehensive Plan, and any other applicable policies and standards adopted by the City Council. The application shall demonstrate compatibility in the following areas, as applicable:

1. Basic site design (e.g., the organization of uses on a site and the uses' relationships to neighboring properties);
2. Visual elements (scale, structural design and form, materials, etc.);
3. Noise attenuation;
4. Odors and emissions;
5. Lighting;
6. Signage;
7. Landscaping for buffering and screening;
8. Transportation facilities;
9. Traffic and off-site parking impacts;
10. Utility infrastructure;
11. Effects on air and water quality (note: a DEQ permit is not sufficient to meet this criterion);
12. Consistency with the applicable development standards, including the applicable Pedestrian Oriented Design Standards;
13. Preservation and/or protection of Significant Natural Features, consistent with Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter

4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions. Streets shall also be designed along contours, and structures shall be designed to fit the topography of the site to ensure compliance with these Code standards.

LDC Chapter 2.5 - Planned Development

Section 2.5.10 - BACKGROUND

It is the intent of this Chapter to establish procedures that permit flexibility in the land development process, allow for better preservation of Significant Natural Features, and allow for innovation in site planning and architectural design.

The Planned Development process is established to allow the review and approval of Conceptual and Detailed Development Plans, to provide the mechanism for achieving greater flexibility and improved design in cases where the scope of proposed modifications to pre-stated standards exceeds that permitted through a Lot Development Option. A Lot Development Option allows minor modifications to required specification standards on an individual lot of record. The procedures for a Lot Development Option are identified in Chapter 2.12 - Lot Development Option.

a. The Procedures of this Chapter are Applicable When -

1. A property owner requests a Conceptual and/or Detailed Development Plan concurrent with a specific project review; or

2. A Nonresidential or Residential Planned Development Overlay, established in accordance with the provisions of Chapter 3.32 - Nonresidential PD (Planned Development) Overlay or Chapter 3.33 - Residential PD (Planned Development) Overlay, respectively, exists on the site and is shown on the City's Official Zoning Map.

Depending on the level of detail provided in a Planned Development application, a Planned Development project proposal is called a Conceptual Development Plan or a Detailed Development Plan. A Conceptual Development Plan provides general concepts for development on a site. A Detailed Development Plan provides the specifics for development on a site and is required following or simultaneously with approval of a Conceptual Development Plan. When a Detailed Development Plan is processed simultaneously with a Conceptual Development Plan, it is called a Conceptual and Detailed Development Plan. Upon Planning Commission approval of a Detailed Development Plan or a Conceptual and Detailed Development Plan, Building Permits are issued consistent with that Plan.

c. On Residentially Designated Properties - Upon approval of a Conceptual Development Plan on residentially designated land, a Residential Planned Development Overlay is placed on the site and shown on the Official Zoning Map for as long as the property owner desires to keep the Conceptual Development Plan active, up to the expiration period defined in Section 2.5.40.09. Upon approval of a Detailed Development Plan on residentially designated land, a Residential Planned Development Overlay is placed on the site and shown on the Official Zoning Map for as long as the Detailed Development Plan remains active, as defined in Section 2.5.50.09.c. In cases where an approved Conceptual and/or Detailed Development Plan is no longer active, the associated Residential Planned Development Overlay is automatically removed from the Official Zoning Map.

e. Applying a Nonresidential or Residential Planned Development Overlay Without a Conceptual or Detailed Development Plan -

Without approval of a Conceptual and/or Detailed Development Plan, a Nonresidential or Residential Planned Development Overlay can only be applied through the use of Chapter 3.32 - Nonresidential PD (Planned Development) Overlay and Chapter 3.33 - Residential PD (Planned Development) Overlay, respectively.

Section 2.5.20 - PURPOSES

Planned Development review procedures are established in this Chapter for the following purposes:

a. Promote flexibility in design and permit diversification in location of structures;

b. Promote efficient use of land and energy, and facilitate a more economical arrangement of buildings, circulation systems, land uses, and utilities;

c. Preserve, to the greatest extent possible, existing Significant Natural Features and landscape features and amenities, and use such features in a harmonious fashion;

d. Provide for more usable and suitably located pedestrian and/or recreational facilities and other public and/or common facilities than would otherwise be provided under conventional land development procedures;

e. Combine and coordinate architectural styles, building forms, and building relationships within the Planned Development;

f. Provide the applicant with reasonable assurance of ultimate approval before expenditure of complete design monies, while providing the City with assurances that the project will retain the character envisioned at the time of approval;

g. Provide greater compatibility with surrounding land uses than would otherwise be provided under conventional land development procedures; and

h. Provide benefits within the development site that compensate for the variations from development standards such that the intent of the development standards is still met.

Section 2.5.40 - CONCEPTUAL DEVELOPMENT PLAN REVIEW PROCEDURES

An application filed for a Conceptual Development Plan shall be reviewed in accordance with the following procedures.

2.5.40.04 - Review Criteria

Requests for the approval of a Conceptual Development Plan shall be reviewed to ensure consistency with the purposes of this Chapter, policies and density requirements of the Comprehensive Plan, and any other applicable policies and standards adopted by the City Council. The application shall demonstrate compatibility in the areas in "a," below, as applicable, and shall meet the Natural Resource and Natural Hazard criteria in "b," below:

a. **Compatibility Factors -**

1. Compensating benefits for the variations being requested;

2. Basic site design (the organization of Uses on a site and the Uses' relationships to neighboring properties);

3. Visual elements (scale, structural design and form, materials, etc.);

4. Noise attenuation;

5. Odors and emissions;

6. Lighting;

7. Signage;

8. Landscaping for buffering and screening;

9. Transportation facilities;

10. Traffic and off-site parking impacts;

11. Utility infrastructure;

12. Effects on air and water quality (note: a DEQ permit is not sufficient to meet this criterion);

13. Design equal to or in excess of the types of improvements required by the standards in Chapter 4.10 - Pedestrian Oriented Design Standards[1]; and

14. Preservation and/or protection of Significant Natural Features, consistent with Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions. Streets shall also be designed along contours, and structures shall be designed to fit the topography of the site to ensure compliance with these Code standards.

b. Natural Resources and Natural Hazards Factors -

1. Any proposed variation from a standard within Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, or Chapter 4.13 - Riparian Corridor and Wetland Provisions shall provide protections equal to or better than the specific standard requested for variation; and

2. Any proposed variation from a standard within Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, or Chapter 4.13 - Riparian Corridor and Wetland Provisions shall involve an alternative located on the same development site where the specific standard applies.

Section 2.5.50 - DETAILED DEVELOPMENT PLAN REVIEW PROCEDURES

2.5.50.04 - Review Criteria for Determining Compliance with Conceptual Development Plan

Request for approval of a Detailed Development Plan shall be reviewed to determine whether it is in compliance with the Conceptual Development Plan. The Detailed Development Plan shall be deemed to be in conformance with the Conceptual Development Plan and may be approved provided it is consistent with the review criteria in Section 2.5.40.04 above, provides a clear and objective set of development standards for residential Detailed Development Plans (considering the Detailed Development Plan proposal, required adherence to this Code, and Conditions of Approval), and does not involve any of the factors that constitute a major change in the Planned Development. See Section 2.5.60.02 - Thresholds that Separate a Minor Planned Development Modification from a Major Planned Development Modification.

---

1 Redevelopment and reconstruction of buildings in existence and permitted in zoning prior to December 31, 2006, are allowed pursuant to the requirements of Section 4.10.70.01 - Applicability, of Chapter 4.10 - Pedestrian Oriented Design Standards.

2.5.50.09 - Effective Period of Detailed Development Plan Approval

Detailed Development Plan approval shall be effective for a five-year period from the date of approval. The approval shall expire if the applicant has not, within the five-year period:

a. **Single-phase Development -**

1. Installed and/or bonded for all public improvements related to the project; or

2. Applied for and received foundation permits for at least one building approved as part of the project.

b. **Multi-phase Development -**

1. Installed and/or bonded for all public improvements related to at least the first phase of the project; or

2. Applied for and received foundation permits for at least one building approved as part of the project.

c. **An active Detailed Development Plan is defined as one that has -**

1. Not expired or been nullified;

2. A Final Subdivision or Land Partition Plat filed and recorded;

3. A Property Line Adjustment filed;

4. Any Building or Construction Permits issued; or

5. Any activities associated with Development as defined in Chapter 1.6 - Definitions.

2.5.50.10 - Review Criteria for Determining Compliance with a Detailed Development Plan

A Building Permit or other site development permit request shall be reviewed to determine whether the request is in compliance with the approved Detailed Development Plan. It shall be deemed to be in compliance if it is consistent with the review criteria in Section 2.5.40.04, does not involve any new modifications to this Code's development standards, and does not involve changes to any specific requirements established at the time of Detailed Development Plan approval. Specific requirements include Conditions of Approval, this Code's requirements, and all aspects of the applicant's proposal that were approved as part of the Detailed Development Plan.

LDC Chapter 2.6 - Annexations

Section 2.6.20 - PURPOSES

The procedures and review criteria for proposed Annexations are established for the following purposes:

a. Maximize citizen involvement in the Annexation review process;

b. Establish a methodology to evaluate need, serviceability, and the economic, environmental, and related social effects of proposed Annexations;

c. Provide adequate public information and sufficient time for public review before an Annexation election;

d. Ensure adequate time for City staff review; and

e. Allow for simultaneous review of multiple Annexation proposals.

Section 2.6.30 - PROCEDURES

An application filed for Annexation shall be reviewed in accordance with the following procedures:

2.6.30.01 - Determination of Annexation Type

The Director shall determine whether an application is for a Minor or Major Annexation as follows:

a. **Minor Annexation** - Intended to address situations where properties are proposed for Annexation and, by virtue of their size and development potential, have negligible impacts on surrounding properties and neighborhoods, and on the community as a whole. These Annexations are typically proposed to gain access to public services, such as sanitary sewer and water facilities, before actual Health Hazards are declared; to incorporate infill sites into the City; and/or to allow a limited level of urban development to occur on existing parcels. Minor Annexation provisions are not intended to provide for piecemeal Annexations whereby a property owner within the county partitions a small piece of land specifically to be classified as a Minor Annexation, and then continues to partition small sites and propose multiple Minor Annexations.

An Annexation shall be considered Minor if all of the following conditions exist:

1. No more than one parcel is involved;

2. For residential Annexations, the parcel is capable of providing not more than 10 dwelling units (at maximum allowed density per gross acre). For commercial and industrial Annexations, the parcel is no greater than one acre; and

3. City services are contiguous to the parcel.

When addressing the review criteria in Section 2.6.30.06.a and Section 2.6.30.06.b, a Minor Annexation proposal need not provide the same level of detail as a Major Annexation proposal. See Section 2.6.30.06 and Section 2.6.30.07 for specifics. All other submittal requirements and review criteria, however, are applicable.

b. **Major Annexation** - An Annexation shall be considered Major if it does not meet all three conditions for a Minor Annexation as outlined in "a", above.

2.6.30.02 - Application Filing Deadlines

Annexation elections are scheduled for May and November of each year and application deadlines are established accordingly as follows: applications for Minor and Major Annexations must be filed with the Community Development Department before 5:00 p.m. on the last working day in September for a ballot election in May, and on the last working day in March for a ballot election in November.

2.6.30.06 - Review Criteria

Requests for Annexations shall be reviewed to ensure consistency with the purposes of this Chapter, applicable policies of the Comprehensive Plan, particularly Article 14, and other applicable policies and standards adopted by the City Council and State of Oregon.

Annexations can only be referred to the voters when the proposed Annexation site is within the City's Urban Growth Boundary (UGB), and where the findings below are made. The criteria are highlighted in bold type.

a. The applicant has demonstrated a public need for the Annexation -

1. Minor Annexations - Factors to be considered in evaluating public need for Minor Annexations shall include, but are not limited to:

   a) Reason for the Annexation;

   b) Health issues;

   c) Adequate demonstration that the Annexation provides for the logical urbanization of land;

   d) Whether the site can be served with public facilities; and

   e) Discussion of the applicable livability indicators and benchmarks as specified in Section 2.6.30.07.c.

   Minor Annexation proposals need not include the calculations relative to a five-year supply of serviceable land that are required in "2," below, for Major Annexations.

2. Major Annexations - Factors to be considered in evaluating public need for Major Annexations shall include, but are not limited to:

   a) The five-year supply of serviceable land of the Annexation's land use category (single-family, multi-family, Commercial, or Industrial). Annexations of land designated as Public Institutional, Open Space-Conservation, or Open Space-Agriculture on the Comprehensive Plan Map are exempt from this criteria;

   b) Availability of sufficient land of this type (single-family, multi-family, Commercial, or Industrial) to ensure choices in the market place. Annexations of land designated as Public Institutional, Open Space-Conservation, or Open Space-Agriculture on the Comprehensive Plan Map are exempt from this criteria; and

   c) Compliance with adopted community-wide livability indicators and benchmarks relative to Major Annexations, as identified in Section 2.6.30.07.c.

   The City shall provide annually updated Citywide data for the applicant to use in calculating supply and demand for the major land use categories (single-family residential, multi-family residential, Commercial and Industrial). Residential land supply and demand data shall be calculated using housing units. Commercial and Industrial land supply and demand data shall be calculated using acres.

   The required data sources and methodologies for use in determining land supply and demand for Major Annexations, and the requirements for addressing community-wide benchmarks, are outlined below in Section 2.6.30.07.

b. The Annexation provides more advantages to the community than disadvantages - To provide guidance to applicants, examples of topics to address for the advantages versus disadvantages discussion are highlighted in Section 2.6.30.07.

1. Minor Annexations - Minor Annexation proposals shall include a general discussion regarding:

a) Advantages and disadvantages of the Annexation. Examples include the existence of a Health Hazard situation or the existence of Significant Natural Features addressed in Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.12 - Significant Vegetation Protection Provisions, and/or Chapter 4.13 - Riparian Corridor and Wetland Provisions. Also relevant is whether or not the Minimum Assured Development Area information from Chapter 4.11 - Minimum Assured Development Area (MADA) is applicable; and

b) Applicable livability indicators and benchmarks identified in Section 2.6.30.07.c.

2. Major Annexations - Major Annexation proposals shall include a discussion of advantages and disadvantages in terms of the methodologies outlined in Section 2.6.30.07. Applicants are required to document the methodologies and criteria used. The Director will review the applicant's arguments, but will not conduct independent research to verify or justify them.

c. **The site is capable of being served by urban services and facilities required with development** - The developer is required to provide urban services and facilities to and through the site. At minimum, both Minor and Major Annexations shall include consideration of the following:

1. Sanitary sewer facilities consistent with the City's Sanitary Sewer Master Plan and Chapter 4.0 - Improvements Required with Development;

2. Water facilities consistent with the City's Water Master Plan, Chapter 4.0 - Improvements Required with Development, and fire flow and hydrant placement;

3. Storm drainage facilities and drainageway corridors consistent with the City's Stormwater Master Plan, Chapter 4.0 - Improvements Required with Development, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions;

4. Transportation facilities consistent with the City's Transportation Plan and Chapter 4.0 - Improvements Required with Development; and

5. Park facilities consistent with the City's Parks Master Plan.

d. **If the Annexation proposal includes areas planned for open space, general community use, or public or semi-public ownerships, the Annexation request shall be accompanied by a Comprehensive Plan Map Amendment as outlined in "1," and "2," below -**

1. Areas planned for open spaces or future general community use, including planned parks, preserves, and general drainageway corridors, shall be re-designated on the Comprehensive Plan Map as Open Space-Conservation.

2. Existing, proposed, or planned areas of public or semi-public ownership, such as Oregon State University facilities or lands, school sites, City reservoirs, and portions of the Corvallis Municipal Airport, shall be re-designated on the Comprehensive Plan Map as Public Institutional.

Such required Comprehensive Plan Map Amendments shall be filed by the applicant concurrent with the Annexation request, in accordance with Chapter 2.1 - Comprehensive Plan Amendment Procedures.

e. **Compatibility** - The application shall demonstrate compatibility in the following areas, as applicable:

1. Basic site design - the organization of Uses on a site and its relationship to neighboring properties;

2. Visual elements (scale, structural design and form, materials, etc.);

3. Noise attenuation;

4. Odors and emissions;

5. Lighting;

6. Signage;

7. Landscaping for buffering and screening;

8. Transportation facilities;

9. Traffic and off-site parking impacts;

10. Utility infrastructure;

11. Effects on air and water quality (note: a DEQ permit is not sufficient to meet this criterion);

12. Consistency with the applicable development standards, including the applicable Pedestrian Oriented Design Standards;

13. Preservation and/or protection of Significant Natural Features, consistent with Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions. Streets shall also be designed along contours, and structures shall be designed to fit the topography of the site to ensure compliance with these Code standards.

2.6.30.07 - Methodologies for Some of the Review Criteria in Section 2.6.30.06

All of the provisions within this Section are required for Major Annexation proposals except for proposals or portions of proposals that include land with Comprehensive Plan designations of Public Institutional, Open Space-Conservation, or Open Space-Agriculture. Lands with these map designations are exempt from the provisions within "a," and "b," below. Minor Annexation proposals are subject only to the provisions within "c," below.

a. **Determining Five-Year Supply of Serviceable Land** - Serviceable land is land within the City limits capable of being served by public facilities.

When calculating a five-year supply of serviceable land, applicants shall refer to and follow the Council Policy addressing the five-year supply, as amended from time to time. This Policy outlines the accepted methodology and will result in more uniform application submittals.

b. **Providing information on land availability to ensure choices in the market place** - Comprehensive Plan Policy 14.3.6 states that "factors to be considered in evaluating public need for Annexation may include... the availability of sufficient land of this type to ensure choices in the market place." Minor Annexation applications are not required to include information on market choice. However, Major

Annexation applications shall provide this information. Appropriate and encouraged market choice topics include, but are not limited to:

1. Information regarding a housing/jobs balance;

2. Housing rental rates and prices;

3. Vacancy rates; and

4. A comparison of housing costs related to incomes, land prices, and land availability.

The City does not independently review and verify documentation of this nature. Therefore, an applicant's market choice arguments shall be developed by a recognized professional in the field. Additionally, the applicant shall identify the methodologies used and the sources of information.

The Director will summarize the applicant's arguments and methodologies in the staff report provided to the hearing authority, and identify them as the applicant's arguments. The hearing authority shall determine the validity of the arguments based on the information provided by the applicant and on public comments during the public hearing process. The hearing authority shall also determine to what extent these arguments affect the criteria in Section 2.6.30.06.b.

c. **Providing information on community-wide livability indicators and determining compliance with adopted community-wide benchmarks -**

1. The City has just begun the process of identifying livability indicators to ultimately assist in the development of community-wide benchmarks. Additionally, many of the community-wide livability indicators are not applicable to Annexation proposals.

2. Table 2.6-1- Livability Indicators and Benchmark Criteria provides interim direction to applicants in addressing livability indicator and benchmark criteria. As the community further develops these livability indicators and benchmarks, this Section of this Code shall be updated accordingly.

   a) The livability indicators and benchmarks in the following table are intended to be balanced and identified as advantages and disadvantages relative to an Annexation proposal. Compliance with all benchmarks is not required. However, when balanced and viewed in aggregate, the decision-makers need to find that the advantages to the community outweigh the disadvantages.

   b) The number of applicable livability indicators and benchmarks varies, depending on the Comprehensive Plan Map designation(s) of the property involved in the Annexation request, as well as whether the Annexation is categorized as a Minor Annexation or a Major Annexation.

   c) For those livability indicators and benchmarks that require distance measurements from an amenity to a proposed Annexation site, measurements shall be taken from the average point within the Annexation site.

Table 2.6 - 1 - Community-wide Livability Indicators and Benchmarks for Annexation Proposals

Note: The following livability indicators and benchmarks have been placed into the categories of the City's 2020 Vision Statement. As this categorization is a first attempt based upon the actual wording in the Vision Statement, there may need to be some re-categorization and/or other revisions with future updates of this Code.

LIVABILITY INDICATORS	DESCRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	LAND USE DESIGNATION	Minor Annex'n	Major Annex'n
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Where People Live"					
Annexation Density	Average density of proposed Annexation relative to the average density of land within the City that is developed and of the same type (single-family or multi-family).	Meet or exceed the average density of land within the City, developed, and of the same type as the proposed Annexation (single-family or multi-family). Note: Information regarding existing density within the City may be obtained from the City's annual Land Development Information Report.	Residential[1]		Applies
			Commercial/ Industrial[2]		
			Open Space[3]		
			Public Inst.		
Rural Development Potential	Type of county development that could occur if property not Annexed (depends on county land use policies in effect at time of proposed Annexation).	Development on land within the Urban Growth Boundary is done in a fashion that does not preclude urban-level development on the subject site and/or on adjacent properties within the UGB.	Residential[1]	Applies	Applies
			Commercial/ Industrial[2]	Applies	Applies
			Open Space[3]	Applies	Applies
			Public Inst.	Applies	Applies
Adjacency to City	Percentage of the perimeter of the Annexation site that is enclosed within the City limits.	It is considered an advantage if ≥ 50 percent of the perimeter of an Annexation site is enclosed within the City limits.	Residential[1]	Applies	Applies
			Commercial/ Industrial[2]	Applies	Applies
			Open Space[3]	Applies	Applies
			Public Inst.	Applies	Applies
Development Plans	Concurrent processing of Detailed Development Plan and/or Tentative Subdivision Plat with Annexation request.	It is not considered a disadvantage and may be considered an advantage if an Annexation request is processed concurrently with a Detailed Development Plan and/or Tentative Subdivision Plat, even though such land use decisions may be changed after Annexation.	Residential[1]	Applies	Applies
			Commercial/ Industrial[2]	Applies	Applies
			Open Space[3]	Applies	Applies
			Public Inst.	Applies	Applies

LIVABILITY INDICATORS	DESCRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	LAND USE DESIGNATION	Minor Annex'n	Major Annex'n
Distance to Bicycle and Pedestrian Access	Distance to bike lanes. Distance to sidewalk. Distance to multi-use path.	0.5-mile to bike lane. 0.25-mile to sidewalk. 0.5-mile to multi-use path.	Residential[1]		Applies
			Commercial/ Industrial[2]		Applies
			Open Space[3]		
			Public Inst.		Applies
Connectivity & Extension of Bicycle and Pedestrian Facilities	It is considered an advantage if improvements proposed as part of the Annexation request would connect to and extend existing bicycle and pedestrian facilities.	Connection to existing pedestrian facilities and extension of them by at least 350 ft.; or connection to existing pedestrian facilities and filling a gap between existing pedestrian facilities of at least 100 ft. Connection to existing bicycle facilities and extension of them by at least 350 ft.; or connection to existing bicycle facilities and filling a gap between existing bicycle facilities of at least 100 ft.	Residential[1]		Applies
			Commercial/ Industrial[2]		Applies
			Open Space[3]		
			Public Inst.		Applies
Planned Public Transportation Improvements	Type and extent of public transportation improvements (street, bicycle, pedestrian) that are listed in City master plans and would occur with urban-level development of Annexation site.	It is considered an advantage if public transportation improvements (street, bicycle, pedestrian) would be installed with the Annexation, are listed in City master plans, and would enable other sites within the Urban Growth Boundary to ultimately develop.	Residential[1]	Applies	Applies
			Commercial/ Industrial[2]	Applies	Applies
			Open Space[3]	Applies	Applies
			Public Inst.	Applies	Applies

LIVABILITY INDICATORS	DESCRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	LAND USE DESIGNATION	Minor Annex'n	Major Annex'n
Distance to Shopping	Distance from neighborhood shopping opportunities (both existing and planned).	Annexation site is within 0.5-mile of neighborhood shopping opportunities (existing or planned). More advantage associated with shorter distances from existing (as opposed to planned) shopping opportunities and/or location within 0.5-mile from existing shopping opportunities.	Residential[1]		Applies
			Commercial/ Industrial[2]		Applies
			Open Space[3]		
			Public Inst.		Applies
Affordable Housing	Housing Affordability.	It is considered an advantage if more than 50 percent of the proposed residential housing units are classified as Affordable Housing using the definition in Chapter 1.6 - Definitions. This benchmark to be refined with future update of this Code.	Residential[1]		Applies
			Commercial/ Industrial[2]		
			Open Space[3]		
			Public Inst.		
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Economic Vitality"					
Employment/ Housing	Balance of jobs and housing.	To be developed as part of a future update of this Code, and following completion of regional studies.	Residential[1]		Applies
			Commercial/ Industrial[2]		Applies
			Open Space[3]		
			Public Inst.		Applies

LIVABILITY INDICATORS	DESCRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	LAND USE DESIGNATION	Minor Annex'n	Major Annex'n
Economic Diversification	Diversity in type, scale, and location of professional, industrial, and commercial activities to maintain a low unemployment rate and to promote diversification of the local economy.	It is considered an advantage if the Annexation request supports diversity in type, scale, and location of professional, industrial, and commercial activities to maintain a low unemployment rate and to promote diversification of the local economy. To be refined as part of a future update of this Code.	Residential[1]		
			Commercial/ Industrial[2]		Applies
			Open Space[3]		
			Public Inst.		
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Protecting our Environment"					
Natural Features	Acres and percentage of Annexation site with Significant Natural Features.	Consistency with Significant Natural Feature protections specified by Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions. It is considered an advantage if Significant Natural Features are protected through Annexation, since they may be better protected within the City.	Residential[1]	Applies	Applies
			Commercial/ Industrial[2]	Applies	Applies
			Open Space[3]	Applies	Applies
			Public Inst.	Applies	Applies
Distance to Transit	Distance from an existing transit line and/or bus stop.	Annexation site is within 0.5-mile of an existing transit line and/or bus stop.	Residential[1]	Applies	Applies
			Commercial/ Industrial[2]	Applies	Applies
			Open Space[3]		

LIVABILITY INDICATORS	DESCRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	LAND USE DESIGNATION	Minor Annex'n	Major Annex'n
			Public Inst.	Applies	Applies
Distance to Major Street	Distance to nearest Collector and/or Arterial Street(s) that would serve the proposed Annexation site and is fully improved to City standards or is improved to City standards with regard to bicycle and pedestrian facilities.	Distance to nearest Collector and/or Arterial Street(s) that would serve the proposed Annexation site is ≤ 0.25-mile and is either fully improved to City standards or is improved to City standards with regard to bicycle and pedestrian facilities.	Residential[1]		Applies
			Commercial/ Industrial[2]		Applies
			Open Space[3]		Applies
			Public Inst.		Applies
Intersection Load	Levels of service for intersections of Arterial and/or Collector Streets, as determined by the City's Traffic Engineer, within a one-mile radius of the site.	Levels of service for intersections of Arterial and/or Collector Streets affected by the proposal, as determined by the City's Traffic Engineer, and generally within a one-mile radius of the site, will be a level of service "D" or better following urban level development of the Annexation site.	Residential[1]		Applies
			Commercial/ Industrial[2]		Applies
			Open Space[3]		
			Public Inst.		Applies

LIVABILITY INDICATORS	DESCRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	LAND USE DESIGNATION	Minor Annex'n	Major Annex'n
Truck Traffic Routes	Determination of truck traffic route(s).	Truck traffic associated with urban level development of the proposed Annexation will not result in primary travel routes on Local or Local Connector Streets through residential neighborhoods.	Residential[1]		
			Commercial/ Industrial[2]		Applies
			Open Space[3]		
			Public Inst.		Applies
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Education and Human Services"					
Local School Capacity/Travel Distance	Student enrollment, capacity, and average class size of public schools to serve the Annexation site. Distance to public elementary school.	Public schools that would serve the Annexation site are not overcrowded. Corvallis School District goals for average class sizes may vary among grades. 0.5-mile to public elementary school. School District policies, re: boundaries of closest schools or additional schools, factor into potential redefinition of school boundaries.	Residential[1]	Applies	Applies
			Commercial/ Industrial[2]		
			Open Space[3]		
			Public Inst.		Applies
Police Response Time	Number of police officers per 1,000 persons residing within City limits.	At least 1.2 officers per 1,000 persons residing within City limits.	Residential[1]	Applies	Applies
			Commercial/ Industrial[2]	Applies	Applies
			Open Space[3]		
			Public Inst.	Applies	Applies
Distance from Fire Station	Distance from an existing fire station.	All buildable portions of the Annexation site are within 1.5 miles of a fire station with an engine company.	Residential[1]	Applies	Applies
			Commercial/ Industrial[2]	Applies	Applies
			Open Space[3]		
			Public Inst.	Applies	Applies

LIVABILITY INDICATORS	DESCRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	LAND USE DESIGNATION	Minor Annex'n	Major Annex'n
Public Improvements	Type and extent of public improvements developed to City standards; and urban-level development, such as clustered housing, etc., existing on the proposed Annexation site.	Annexation of partially developed land within the Urban Growth Boundary (UGB) that already contains some public improvements developed to City standards, and urban-level development on part of the site, is considered more advantageous to the City than Annexation of undeveloped land.	Residential[1]	Applies	Applies
			Commercial/ Industrial[2]	Applies	Applies
			Open Space[3]	Applies	Applies
			Public Inst.	Applies	Applies
Distance to Sewer and Water	Distance to adequately sized public sanitary sewer and water lines needed to serve the site.	Sanitary sewer and water facilities are proximate to the Annexation site. After some monitoring, distances for this benchmark may be specified in a future update of this Code.	Residential[1]	Applies	Applies
			Commercial/ Industrial[2]	Applies	Applies
			Open Space[3]		
			Public Inst.	Applies	Applies
Planned Public Utilities	Types and extent of public utility improvements of sanitary sewer, water, and storm drainage, that are listed in City master plans, and would occur with urban-level development of the Annexation site.	It is considered an advantage if the installation of public utilities of sanitary sewer, water, and storm drainage, listed in City master plans, would enable other sites within the UGB to ultimately develop.	Residential[1]	Applies	Applies
			Commercial/ Industrial[2]	Applies	Applies
			Open Space[3]	Applies	Applies
			Public Inst.	Applies	Applies
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Cultural Enrichment and Recreation"					
Distance to Parks	Distance from an existing public park.	Annexation site is within 0.5-mile of an existing public park.	Residential[1]	Applies	Applies
			Commercial/ Industrial[2]		
			Open Space[3]		

LIVABILITY INDICATORS	DESCRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	LAND USE DESIGNATION	Minor Annex'n	Major Annex'n
			Public Inst.		Applies
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Central City"					
Distance to Downtown	Distance of the Annexation from the Central Business Zone intersection of SW Third Street and SW Monroe Avenue.	It is considered an advantage if an Annexation site is within 3.8 miles from the intersection of SW Third Street and SW Monroe Avenue, within the boundaries of the Central Business Zone.	Residential[1]	Applies	Applies
			Commercial/ Industrial[2]	Applies	Applies
			Open Space[3]		
			Public Inst.	Applies	Applies

1. Includes lands with a Comprehensive Plan Map designation of Low, Medium, Medium High, or High Density Residential; or Mixed Use Residential.

2. Includes lands with a Comprehensive Plan Map designation of Mixed Use Commercial, Professional Office, Central Business Zone, Limited Industrial, Limited Industrial-Office, Mixed Use Employment, General Industrial, Intensive Industrial, Mixed Use Transitional, or General Industrial - Office.

3. Includes lands with a Comprehensive Plan Map designation of Open Space-Conservation and Open Space-Agriculture.

LDC Chapter 3.33 - Residential Planned Development Overlay

Section 3.33.10 - PURPOSES

This Overlay is intended to:

a. Promote flexibility in design and permit diversification in location of structures;

b. Promote efficient use of land and energy and facilitate a more economical arrangement of buildings, circulation systems, land uses, and utilities;

c. Preserve to the greatest extent possible existing landscape features and amenities, and utilize such features in a harmonious fashion;

d. Provide for more usable and suitably located recreation facilities and other public and common facilities than would otherwise be provided under conventional land development procedures;

e. Combine and coordinate architectural styles, building forms and building relationship within the site with the Residential PD Overlay designation;

f. Provide the applicant with reasonable assurance of ultimate approval before expenditure of complete design monies, while providing the City with assurances that the project will retain the character envisioned at the time of approval;

g. Promote and encourage energy conservation; and

h. Provide greater compatibility with surrounding land uses than what may occur with a conventional project.

Section 3.33.30 - IMPLEMENTATION

Upon request by a property owner, property may be designated with a Residential PD Overlay in any of the following ways:

a. Upon Annexation in accordance with Chapter 2.6 - Annexation;

b. In conjunction with a Comprehensive Plan Map Amendment in accordance with Chapter 2.1 - Comprehensive Plan Amendment; or

c. In conjunction with a Zone Map Change in accordance with Chapter 2.2 - Zone Changes.

A Residential PD Overlay can also be applied through the use of the provisions in Chapter 2.5 - Planned Development, which allow such an Overlay in conjunction with approval of a Conceptual and/or Detailed Development Plan. However, Residential PD Overlay established in accordance with Chapter 2.5 only remain as long as there is an active Conceptual Development Plan on the site (active defined in Section 2.5.40.09) or an active Detailed Development Plan on the site (active defined in Section 2.5.50.09).

Section 3.33.40 - INITIATION

A Residential PD Overlay may only be initiated by an application filed by a property owner, on property(ies) with a residential land use designation(s). Such application must be in conjunction with an Annexation, Comprehensive Plan Map Amendment, or Zone Map Change; and under circumstances where the property owner states and the hearing authority finds that the applicable underlying zone standards are not adequate to address any of the following concerns:

a. Circulation or other common facilities issues;

b. Resolution of issues related to an unusual site configuration, steep topography, or Significant Natural Feature;

c. Assurance of comprehensive planning and coordinated development where the property is large and/or has mixed uses; or

d. Compatibility issues where it is desirable to locate more intensive land uses next to less intensive residential land uses.

LDC Chapter 4.0 - Improvements Required with Development

Section 4.0.20 - TIMING OF IMPROVEMENTS

a. **All improvements required by the standards in this Chapter shall be installed concurrently with development, as follows:**

1. Where a Land Division is proposed, each proposed lot shall have required public and franchise utility improvements installed or secured prior to approval of the Final Plat, in accordance with the provisions of Section 2.4.40.08 of Chapter 2.4 - Subdivisions and Major Replats.

2. Where a Land Division is not proposed, the site shall have required public and franchise utility improvements installed or secured prior to occupancy of structures, in accordance with the provisions of Section 2.4.40.12 of Chapter 2.4 - Subdivisions and Major Replats.

Section 4.0.30 - PEDESTRIAN REQUIREMENTS

a. Sidewalks shall be required along both sides of all streets, as follows:

1. Sidewalks on Local, Local Connector, and Cul-de-sac Streets - Sidewalks shall be a minimum of five ft. wide on Local, Local Connector, and Cul-de-sac Streets. The sidewalks shall be separated from curbs by a tree planting area that provides at least six ft. of separation between the sidewalk and curb, except that this separated tree planting area shall not be provided adjacent to sidewalks where they are allowed to be located within Natural Resource areas governed by Chapter 4.12 - Significant Vegetation Protection Provisions and Chapter 4.13 - Riparian Corridor and Wetland Provisions. This separated tree planting area shall also not be provided adjacent to sidewalks where they are allowed to be located within drainageway areas governed by regulations in Chapter 4.5 - Natural Hazard and Hillside Development Provisions.

2. Sidewalks on Arterial, Collector, and Neighborhood Collector Streets - Sidewalks along Arterial, Collector, and Neighborhood Collector Streets shall be separated from curbs by a planted area. The planted area shall be a minimum of 12 ft. wide and landscaped with trees and plant materials approved by the City. The sidewalks shall be a minimum of five ft. wide. An exception to these provisions is that this separated tree planting area shall not be provided adjacent to sidewalks where they are allowed to be located within Natural Resource areas governed by Chapter 4.12 - Significant Vegetation Protection Provisions and Chapter 4.13 - Riparian Corridor and Wetland Provisions. This separated tree planting area shall also not be provided adjacent to sidewalks where they are allowed to be located within drainageway areas governed by regulations in Chapter 4.5 - Natural Hazard and Hillside Development Provisions.

3. Sidewalk Installation Timing - The timing of the installation of sidewalks shall be as follows:

   a) Sidewalks and planted areas along Arterial, Collector, and Neighborhood Collector Streets shall be installed with street improvements.

   b) Except as noted in "c," below, construction of sidewalks along Local, Local Connector, and Cul-de-sac Streets may be deferred until development of the site and reviewed as a component of the Building Permit. However, in no case shall construction of the sidewalks be completed later than three years from the recording of the Final Plat. The obligation to complete sidewalk construction within three years will be outlined in a deed restriction on affected parcels and recorded concurrently with the Final Plat.

   c) Where sidewalks on Local, Local Connector, and Cul-de-sac Streets abut common areas, drainageways, or other publicly owned areas, or where off-site Local, Local Connector, and Cul-de-sac Street extensions are required and sufficient right-of-way exists, the sidewalks and planted areas shall be installed with street improvements.

b. Safe and Convenient Pedestrian Facilities - Safe and convenient pedestrian facilities that minimize travel distance to the greatest extent practicable shall be provided in conjunction with new development within and between new Subdivisions, Planned Developments, commercial developments, industrial areas, residential areas, transit stops, and neighborhood activity centers such as schools and parks, as follows:

1. For the purposes of this Section, safe and convenient means pedestrian facilities that are free from hazards and that provide a direct route of travel between destinations.

2. Pedestrian rights-of-way connecting Cul-de-sacs or passing through unusually long or oddly shaped blocks shall be a minimum of 15 ft. wide. When these connections are less than 220 ft. long, measuring both the on-site and the off-site portions of the path, or when they directly serve 10 or fewer on-site dwellings, the paved improvement shall be no less than five ft. wide. Connections that are either longer than 220 ft. or serve more than 10 on-site dwellings shall have wider paving widths as specified in Section 4.0.40.c. Maintenance of the paved improvement shall be the responsibility of

adjacent property owners. Additionally, a minimum of five ft. of landscaping shall be provided on either side of these pedestrian facilities, in accordance with Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting. Maintenance of the landscaping shall also be the responsibility of adjacent property owners.

3. Internal pedestrian circulation shall be encouraged in new developments by clustering buildings, constructing convenient pedestrian ways, and/or constructing skywalks where appropriate. Pedestrian walkways shall be provided in accordance with the following standards:

   a) To maximize direct pedestrian travel, the on-site pedestrian circulation system shall connect the sidewalk on each abutting street to the main entrance of the primary structure on the site.

   b) Walkways shall be provided to connect the on-site pedestrian circulation system with existing or planned pedestrian facilities that abut the site but are not adjacent to the streets abutting the site. When sidewalks or multi-use paths are provided, such as occurs through Cul-de-sacs or to provide pedestrian connections through areas where vehicles cannot travel, these facilities shall be bordered on both sides by a minimum of five ft. of landscaping. Additionally, solid fencing shall be limited to a maximum height of four ft. along these areas to increase visibility and public safety. Portions of fences above four ft. in height are allowed, provided they are designed and constructed of materials that are open a minimum of 50 percent.

   c) Walkways shall be as direct as possible and avoid unnecessary meandering.

   d) Walkway/driveway crossings shall be minimized, and internal parking lot circulation design shall maintain ease of access for pedestrians from abutting streets, pedestrian facilities, and transit stops.

   e) With the exception of walkway/driveway crossings, walkways shall be separated from vehicle parking or maneuvering areas by grade, different paving material, or landscaping. They shall be constructed in accordance with the sidewalk standards adopted by the City Engineer. This provision does not require a separated walkway system to collect drivers and passengers from cars that have parked on-site unless an unusual parking lot hazard exists.

c. Where a development site is traversed by or adjacent to a future trail linkage identified within either the Corvallis Transportation Plan or the Trails Master Plan, improvement of the trail linkage shall occur concurrently with development. Dedication of the trail to the City shall be provided in accordance with Section 4.0.100.d.

d. To provide for orderly development of an effective pedestrian network, pedestrian facilities installed concurrently with development of a site shall be extended through the site to the edge of adjacent property(ies).

e. To ensure improved access between a development site and an existing developed facility such as a commercial center, school, park, or trail system, the Planning Commission or Director may require off-site pedestrian facility improvements concurrently with development.

f. Prior to development, applicants shall perform a site inspection and identify any Contractor Sidewalk/street Stamps in existing sidewalks that will be impacted by the development. If such a Contractor Sidewalk/street Stamp exists, it shall either be left in its current state as part of the existing sidewalk, or incorporated into the new sidewalk for the development site, as close as possible to the original location and orientation.

g. Natural Hazards, Minimum Assured Development Area (MADA), and Natural Resources shall be addressed in accordance with Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions.

Section 4.0.40 - BICYCLE REQUIREMENTS

a. **On-street Bike Lanes** - On-street bike lanes shall be required on all Arterial, Collector, and Neighborhood Collector Streets and constructed at the time of street improvements.

b. **Safe and Convenient Bicycle Facilities** - Safe and convenient bicycle facilities that minimize travel distance to the greatest extent practicable shall be provided in conjunction with new development within and between new Subdivisions, Planned Developments, commercial developments, industrial areas, residential areas, transit stops, and neighborhood activity centers such as schools and parks, as follows:

1. For the purposes of this Section, safe and convenient means bicycle facilities that are free from hazards and provide a direct route of travel between destinations.

2. Bicycle/pedestrian rights-of-way connecting Cul-de-sacs or passing through unusually long or oddly shaped blocks shall be a minimum of 15 ft. wide. Maintenance of the paved improvement shall be the responsibility of adjacent property owners. Additionally, a minimum of five ft. of landscaping shall be provided on either side of these bicycle/pedestrian facilities, in accordance with Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting. Maintenance of the landscaping shall also be the responsibility of adjacent property owners.

c. **Widths for Pedestrian/Bicycle Facilities** - Adequate widths for pedestrian/bicycle facilities shall be provided in accordance with the following standards:

1. Where long term bicycle and pedestrian usage is expected to be relatively low, such as in a neighborhood rather than a community-wide facility, multi-use paths shall be eight ft. wide and aligned to ensure adequate sight distance.

2. The standard width for two-way multi-use paths shall be 10 ft.

3. In areas with projected high bicycle volumes or multiple use by bicyclists, pedestrians, and joggers, multi-use paths shall be 12 ft. wide.

d. To provide for orderly development of an effective bicycle network, bicycle facilities installed concurrently with development of a site shall be extended through the site to the edge of adjacent property(ies).

e. Natural Hazards, Minimum Assured Development Area (MADA), and Natural Resources shall be addressed in accordance with Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions.

Section 4.0.50 - TRANSIT REQUIREMENTS

a. Development sites located along existing or planned transit routes shall, where appropriate, incorporate transit stops and shelters into the site design. These improvements shall be installed in accordance with the guidelines and standards of the Corvallis Transit System.

b. Development sites at or near existing or planned transit stops shall provide safe, convenient access to the transit system, as follows:

1. All Commercial and Civic Use developments shall provide a prominent entrance oriented toward Arterial, Collector, and Neighborhood Collector Streets, with front setbacks reduced as much as possible to provide access for pedestrians, bicycles, and transit.

2. All developments shall provide safe, convenient pedestrian walkways between the buildings and the transit stop, in accordance with the provisions of Section 4.0.30.b.

c. Natural Hazards, Minimum Assured Development Area (MADA), and Natural Resources shall be addressed in accordance with Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions.

Section 4.0.60 - PUBLIC AND PRIVATE STREET REQUIREMENTS

a. **Traffic evaluations shall be required of all development proposals in accordance with the following:**

1. Any proposal generating 30 or more trips per hour shall include Level of Service (LOS) analyses for the affected intersections. A Traffic Impact Analysis (TIA) is required, if required by the City Engineer. The TIA shall be prepared by a registered professional engineer. The City Engineer shall define the scope of the traffic impact study based on established procedures. The TIA shall be submitted for review to the City Engineer. The proposed TIA shall reflect the magnitude of the project in accordance with accepted traffic engineering practices. The applicant shall complete the evaluation and present the results with an overall site development proposal.

2. If the traffic evaluation identifies Level of Service (LOS) conditions less than the minimum standard established in the Corvallis Transportation Plan, improvements and funding strategies mitigating the problem shall be considered concurrently with a development proposal.

b. Location of new Arterial, Collector, and Neighborhood Collector Streets shall conform to the Corvallis Transportation Plan.

e. **Development sites shall be provided with access from a public street or a private street that meets the criteria in "d," above, both improved to City standards in accordance with the following:**

1. Where a development site abuts an existing public street not improved to City standards, the abutting street shall be improved to City standards along the full frontage of the property concurrently with development. Where a development site abuts an existing private street not improved to City standards, and the private street is allowed per the criteria in "d", above, the abutting street shall meet all the criteria in "d", above and be improved to City standards along the full frontage of the property concurrently with development.

2. Half-width street improvements, as opposed to full-width improvements, are generally not acceptable. However, these may be approved by the Planning Commission or Director where essential to the reasonable development of the property. Approval for half-width street improvements may be allowed when other standards required for street improvements are met and when the Planning Commission or the Director finds that it will be possible to obtain the dedication and/or improvement of the remainder of the street when property on the other side of the half-width street is developed.

3. To ensure improved access to a development site consistent with policies on orderly urbanization and extension of public facilities, the Planning Commission or Director may require off-site street improvements concurrently with development.

f. **To provide for orderly development of adjacent properties, public streets and private streets that meet all the criteria in "d", above, shall be installed concurrently with development of a site and shall be extended through the site to the edge of the adjacent property(ies) in accordance with the following:**

1. Temporary dead-ends created by this requirement may be installed without turn-arounds, subject to the approval of the Fire Marshal.

2. Drainage facilities shall be provided to properly manage storm water run-off from temporary dead-ends.

g. The Planning Commission or Director may require the extension of public and private street improvements through a development site to provide for the logical extension of an existing street network or to connect a site with a nearby neighborhood activity center, such as a school or park. Where this creates a Land Division incidental to the development, a land partition shall be completed concurrently with the development, in accordance with Chapter 2.14 - Partitions, Minor Replats, and Property Line Adjustments.

k. Location, grades, alignments, and widths for all public and private streets shall be considered in relation to existing and planned streets, topographical conditions, public convenience and safety, and proposed land use. Where topographical conditions present special circumstances, exceptions to these standards may be granted by the City Engineer provided that the safety and capacity of the street network is not adversely effected. The following standards shall apply:

1. Grading plans are required and shall demonstrate that the proposal does not contain any grade changes (cuts or fills) that are inconsistent with the provisions of Chapter 4.5 - Natural Hazard and Hillside Development Provisions. Cut and fill is measured vertically from natural grade. The grading plan shall identify all proposed cuts and fills and the associated grade changes in ft. to demonstrate adherence to this provision. Streets shall be designed along natural contours.

2. Location of streets in a development shall not preclude development of adjacent properties. Streets shall conform to planned street extensions identified in the Corvallis Transportation Plan and/or provide for continuation of the existing street network in the surrounding area.

3. Grades shall not exceed six percent on Arterial Streets, 10 percent on Collector and Neighborhood Collector Streets, and 15 percent on Local, Local Connector, and Cul-de-sac Streets.

4. As far as practicable, Arterial, Collector, and Neighborhood Collector Streets shall be extended in alignment with existing streets by continuation of the street centerline. When staggered street alignments resulting in T intersections are unavoidable, they shall leave a minimum of 200 ft. between the nearest edges of the two rights-of-way.

5. Local street intersections shall be located a minimum of 125 ft. from any other street intersection.

6. Centerline radii of curves shall not be less than 500 ft. on Arterial Streets; 300 ft. on Collector and Neighborhood Collector Streets; and 100 ft. on Local, Local Connector, and Cul-de-sac Streets.

7. Streets shall be designed to intersect at angles as near as practicable to right angles and shall comply with the following:

   a) The intersection of an Arterial, Collector, or Neighborhood Collector Street with another Arterial, Collector, or Neighborhood Collector Street shall have a minimum of 100 ft. of straight (tangent) alignment perpendicular to the intersection;

   b) The intersection of a Local, Local Connector, or Cul-de-sac Street with another street shall have a minimum of 50 ft. of straight (tangent) alignment perpendicular to the intersection;

   c) Where right-angle intersections are not possible, exceptions may be granted by the City Engineer provided that intersections have a minimum corner radius of 20 ft. along the right-of-way lines of the acute angle; and

   d) All intersections shall have a minimum curb corner radius of 20 ft.

8. Right-of-way and improvement widths shall be as specified in the Transportation Plan and Table 4.0-1 - Street Functional Classification System.

9. Where streets must cross protected Natural Resources or Natural Hazards, street widths shall be minimized by providing no on-street parking and no planting strips between the curb and the sidewalk

on either side of the street. Parking bays may be allowed, provided they do not exceed one space per dwelling unit and provided they do not cause the development to exceed the amount of development allowed by the provisions of Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions.

I. Where standards do not exist to address unusual situations, the Planning Commission or Director may require special design standards recommended by the City Engineer as Conditions of development Approval.

Table 4.0-1- Street Functional Classification System[1]

	Arterial Highway	Arterial	Collector	Neighborhood Collector	Local Connector	Local
Auto amenities (lane widths)[2]	2-5 Lanes (11 - 14 ft.)	2-5 Lanes (12 ft.)	2-3 Lanes (11 ft.)	2 Lanes (10 ft.)	2 Lanes (10 ft.)	Shared Surface
Bike amenities[3]	2 Lanes (6 ft.)	2 Lanes (6 ft.)	2 Lanes (6 ft.)	2 Lanes (6 ft.)	Shared Surface	Shared Surface
Pedestrian amenities	2 Sidewalks (6 ft.) Ped. Islands	2 Sidewalks (5 ft.) Ped. Islands	2 Sidewalks (5 ft.)	2 Sidewalks (5 ft.)	2 Sidewalks (5 ft.)	2 Sidewalks (5 ft.)
Transit	Typical	Typical	Typical	Typical	Permissible/not typical	Permissible/not typical
Managed speed[4]	20 mph - 55 mph	25 mph - 45 mph	25 mph - 35 mph	25 mph	25 mph	15-20 mph
Curb-to-curb width[5] (two way)						
No on-street parking	34 ft - 84 ft.*	34 ft.-72 ft.	34 ft.-45 ft.	32 ft.	20 ft.*	20 ft.*
Parking one side	42 ft. - 84 ft.	NA	NA	40 ft.	28 ft.	25 ft.*
Parking both sides	50 ft. - 84 ft.	NA	NA	48 ft.	28-34 ft.	28 ft.
Traffic calming[6]		No	Permissible/ not typical	Typical	Permissible	Permissible
Preferred adjacent land use	High Intensity	High Intensity	Med. to High Intensity	Medium Intensity	Med. to Low Intensity	Low Intensity
Access control	Yes	Yes	Some	No	No	No
Turn lanes		Continuous and/or medians with ped. islands	Typical at intersections with Arterials or Collectors	Not typical	Not typical	Not typical
Planting strips[7&8]	Two - 12 ft. Except across areas of Natural Features	Two - 12 ft. Except across areas of Natural Features	Two - 12 ft. Except across areas of Natural Features	Two - 12 ft. Except across areas of Natural Features	Two - 6 ft. Except across areas of Natural Features	Two - 6 ft.[7] Except across areas of Natural Features[7&8]
Through-traffic connectivity		Primary function	Typical function	Typical function	Permissible function	Permissible function

1. These standards do not preclude the flexibility currently allowed through the Planned Development process in Chapter 2.5 - Planned Development.

2. Lane widths shown are the preferred construction standards that apply to existing routes adjacent to areas of new development, and to newly constructed routes. On Arterial and Collector roadways, an absolute minimum for safety concerns is 10 ft. Such minimums are expected to occur only in locations where existing development along an established sub-standard route or other severe physical constraints preclude construction of the preferred facility width.

3. An absolute minimum width for safety concerns is five ft., which is expected to occur only in locations where existing development along an established sub-standard route or other severe physical constraints preclude construction of the preferred facility width. Parallel multi-use paths in lieu of bike lanes are not appropriate along the Arterial-Collector system due to the multiple conflicts created for bicycles at driveway and sidewalk intersections. In rare instances, separated (but not adjacent) facilities may provide a proper function.

4. Arterial Highway speeds in the Central Business or other Commercial zones in urban areas may be 20-25 mph. Traffic calming techniques, signal timing, and other efforts will be used to keep traffic within the desired managed speed ranges. Design of a corridor's vertical and horizontal alignment will focus on providing an enhanced degree of safety for the managed speed.

5. Street design for each development shall provide for emergency and fire vehicle access. Street widths of less than 28 ft. shall be applied as a development condition through the Subdivision process in Chapter 2.4 - Subdivisions and Major Replats and/or the Planned Development process in Chapter 2.5 - Planned Development. The condition may require the developer to choose between improving the street to the 28-ft. standard or constructing the narrower streets with parking bays placed intermittently along the street length. The condition may require fire-suppressive sprinkler systems for any dwelling unit more than 150 ft. from a secondary access point. * To be applied in RS-9 and lesser zones.

6. Traffic calming includes such measures as bulbed intersections, speed humps, raised planted medians, mid-block curb extensions, traffic circles, signage, and varied paving materials and is addressed in the Transportation Plan.

7. Through the Planned Development Review Process, the planting strip along Local Streets and around the bulbs of Cul-de-sacs may be reduced or eliminated.

8. Where streets must cross protected Natural Features, street widths shall be minimized by providing no on-street parking and no planting strips between the curb and the sidewalk on either side of the street.

n. **Block Perimeter Standards** - The following Block Perimeter requirements apply to all development projects. Exceptions to these requirements may be approved for development that is smaller than one acre and situated in areas where the street patterns are established and do not require connections to the development.

1. Residential Standards -

a) Complete Blocks - Developments shall create a series of complete blocks bound by a connecting network of public or private streets with sidewalks. When necessary to minimize impacts to a designated wetland, to slopes greater than 15 percent, to parks dedicated to the public, and/or to Significant Natural Features, blocks may be bound by walkways without streets.

b) Maximum Block Perimeter - The maximum Block Perimeter shall be 1,200 ft. Block faces greater than 300 ft. shall have a through-block pedestrian connection.

c) Variations Allowed Outright - Variations of up to 30 percent to these block distances may be allowed outright to minimize impacts to a designated wetland, to slopes greater than 15 percent, to parks dedicated to the public, to Significant Natural Features, to existing street patterns, and/or to existing development.

Section 4.0.70 - PUBLIC UTILITY REQUIREMENTS (OR INSTALLATIONS)

a. All development sites shall be provided with public water, sanitary sewer, storm drainage, and street lights.

b. Where necessary to serve property as specified in "a" above, required public utility installations shall be constructed concurrently with development.

c. Off-site public utility extensions necessary to fully serve a development site and adjacent properties shall be constructed concurrently with development.

d. To provide for orderly development of adjacent properties, public utilities installed concurrently with development of a site shall be extended through the site to the edge of adjacent property(ies).

e. All required public utility installations shall conform to the City's adopted facilities master plans.

f. **Private on-site sanitary sewer and storm drainage facilities may be allowed, provided all the following conditions exist:**

1. Extension of a public facility through the site is not necessary for the future orderly development of adjacent properties;

2. The development site remains in one ownership and Land Division does not occur, with the exception of Land Divisions that may occur under the provisions of Section 4.0.60.d, above; and

3. The facilities are designed and constructed in accordance with the Uniform Plumbing Code and other applicable codes, and permits are obtained from the Development Assistance Center prior to commencement of work.

g. Natural Hazards, Minimum Assured Development Area (MADA), and Natural Resources shall be addressed in accordance with Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions.

Section 4.0.80 - PUBLIC IMPROVEMENT PROCEDURES

It is in the best interests of the community to ensure that public improvements installed in conjunction with development are constructed in accordance with all applicable City policies, standards, procedures, and ordinances. Therefore, before installing public water, sanitary sewer, storm drainage, streetlights, street, transit, bicycle, or pedestrian improvements, developers shall contact the City Engineer for information regarding adopted procedures governing plan submittal, plan review and approval, permit requirements, inspection and testing requirements, progress of the work, and provision of easements, dedications, and as-built drawings for installation of public improvements.

Whenever any work is done contrary to the provisions of this Code, the Director may order the work stopped via a written notice served on the persons performing the work or otherwise in charge of the work. The work shall stop until the Director authorizes that it proceed or authorizes corrective action to remedy existing substandard work.

Section 4.0.90 - FRANCHISE UTILITY INSTALLATIONS

These standards are intended to supplement, not replace or supersede, requirements contained within individual franchise agreements that the City has with providers of electrical power, telecommunication, cable television, and natural gas services, hereafter referred to as Franchise Utilities.

a. Where a Land Division is proposed, the developer shall provide Franchise Utilities to the development site. Each lot in a Subdivision shall have an individual service available or secured prior to approval of the Final Plat, in accordance with Section 2.4.40 of Chapter 2.4 - Subdivisions and Major Replats.

b. Where necessary and in the judgement of the Director, Franchise Utilities shall be extended through the site to the edge of adjacent property(ies) to provide for orderly development of adjacent properties.

c. **The developer shall have the option of choosing whether to provide natural gas or cable television service to the development site, provided that all of the following conditions exist:**

1. Extension of Franchise Utilities through the site is not necessary for the future orderly development of adjacent property(ies);

2. The development site remains in one ownership and Land Division does not occur, with the exception of Land Divisions that may occur under the provisions of Section 4.0.60.d, above; and

3. The development is nonresidential.

d. Where a Land Division is not proposed, the site shall be provided with Franchise Utilities prior to occupancy of structures as required by this Section and in accordance with the provisions of Section 2.4.40.12 of Chapter 2.4 - Subdivisions and Major Replats.

e. All Franchise Utility distribution facilities installed to serve new development shall be placed underground except as provided below.

1. Poles for traffic signals, pedestals for police and fire system communications and alarms, pad-mounted transformers, pedestals, pedestal-mounted terminal boxes and meter cabinets, concealed ducts, substations, or facilities used to carry voltage higher than 35,000 volts; and

2. Overhead utility distribution lines may be permitted upon approval of the City Engineer when unusual terrain, soil, or other conditions make underground installation impracticable. Location of such overhead utilities shall follow rear or side lot lines wherever feasible.

f. The developer shall be responsible for making necessary arrangements with Franchise Utility providers for provision of plans, timing of installation, and payment for services installed. Plans for Franchise Utility installations and plans for public improvements shall be submitted together to facilitate review by the City Engineer.

g. Natural Hazards, Minimum Assured Development Area (MADA), and Natural Resources shall be addressed in accordance with Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions.

Section 4.0.100 - LAND FOR PUBLIC PURPOSES

a. Easements for public sanitary sewer, water, storm drain, streetlight, transit, pedestrian and bicycle facilities shall be provided whenever these facilities are located outside a public right-of-way. The minimum easement width for a single utility is 15 ft. The minimum easement width for two adjacent utilities is 20 ft. The easement width shall be centered on the utility to the greatest extent practicable. Wider easements may be required for unusually deep facilities.

b. Utility easements with a minimum width of seven ft. shall be granted to the public adjacent to all street rights-of-way for franchise utility installations.

c. Where a development site is traversed by a drainageway or water course, improvements shall be in accordance with the Corvallis Storm Water Master Plan and the Natural Hazards, Minimum Assured Development Area (MADA), and Natural Resources provisions of Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions.

d. Where a development site is traversed by, or adjacent to, a future trail linkage identified in the Corvallis Transportation Plan or the Trails Master Plan, dedications of suitable width to accommodate the trail linkage shall be provided. This width shall be determined by the City Engineer, based on the appropriate standard for the type of trail facility involved.

e. Where street, trail, utility, or other rights-of-way and/or easements in or adjacent to development sites are nonexistent or of insufficient width, dedications may be required. The need for and widths of those dedications shall be determined by the City Engineer.

f. Easements or dedications required in conjunction with Land Divisions shall be recorded on the Final Plat. For developments not involving a Land Division, easements and/or dedications shall be recorded on standard forms provided by the City Engineer.

g. Environmental assessments shall be provided by the developer (grantor) for all lands to be dedicated to the public or City. An environmental assessment shall include information necessary for the City to evaluate potential liability for environmental hazards, contamination, or required waste cleanups related to the dedicated land. An environmental assessment shall be completed prior to the acceptance of dedicated lands, in accordance with the following:

1. The initial environmental assessment shall detail the history of ownership and general use of the land by past owners. Upon review of this information, as well as any site investigation by the City, the Director will determine if the risks of potential contamination warrant further investigation. If further site investigation is warranted, a Level I Environmental Assessment shall be provided by the grantor, as described in "2," below.

2. Level I Environmental Assessments shall include data collection, site reconnaissance, and report preparation. Data collection shall include review of Oregon Department of Environmental Quality records, City and County fire department records, interviews with agency personnel regarding citations or enforcement actions issued for the site or surrounding sites that may impact the site, review of available historic aerial photographs and maps, interviews with current and available past owners of the site, and other data as appropriate.

   Site reconnaissance shall include a walking reconnaissance of the site to check for physical evidence of potentially hazardous materials that may impact the site. Report preparation shall summarize data collection and site reconnaissance, assess existing and future potential for contamination of the site with hazardous materials, and recommend additional testing if there are indications of potential site contamination. Level I Environmental Assessment reports shall be signed by a registered professional engineer.

3. If a Level I Environmental Assessment concludes that additional environmental studies or site remediation are needed, no construction permits shall be issued until those studies are submitted and any required remediation is completed by the developer and/or owner. Additional environmental studies and/or required remediation shall be at the sole expense of the developer and/or owner. The City reserves the right to refuse acceptance of land identified for dedication to public purposes if risk of liability from previous contamination is found.

h. Natural Hazards, Minimum Assured Development Area (MADA), and Natural Resources shall be addressed in accordance with Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions.

STAFF USE ONLY

CASE: ANN10-00002 DATE FILED: 03.31.10 DATE COMPLETE:

☐ RESIDENTIAL ☐ COMMERCIAL ☐ MINOR REPLAT ☐ MINOR PARTITION

☒ ~~FEE~~ DEPOSIT PAID $100 RECEIPT # 455387

RECEIVED

MAR 31 2010

Community Development
Planning Division

CORVALLIS
ENHANCING COMMUNITY LIVABILITY

City of Corvallis - Planning Division
501 SW Madison Ave.
Corvallis, OR 97333
Telephone: (541) 766-6908
FAX: (541) 754-1792
Planning@ci.corvallis.or.us
www.corvallispermits.com

Minor Land Partition / Minor Replat Application

Location / Description of Subject Property(ies)

Street Address: 2650 SW 49th Street

Benton County Tax Assessor Map: 12-5-09CB Tax Lot(s) #: 801

Subdivision Name or Partition #: _____ (for Minor Replat Applications)

Zone: PD (RS-6) Size (acres): _____ Density Range: 4 du/ac - 6 du/ac

☐ Historic Overlay ☐ Natural Features ☐ Related Land Use Cases _____

49TH STREET

Applicant Information

Applicant(s) Name(s): 49th Street Annexation Partners
Last First M.I.

☐ Same as Property Owner

2022 SW 45th Street
Street Address

Corvallis OR 97333
City State Zip Code

Phone #: 541-760-1592 Email Address: _____

Contact preference ? ☐mail ☒phone ☐email

Property Owner Information (where different than Applicant)

Property Owner(s) Name(s): See attached
Last First M.I.

Street Address

City State Zip Code

Phone #: _____ Email Address: _____

Contact preference ? ☐mail ☐phone ☐email

Property Owner(s) Signature(s) Date
(If Legal Representative: provide supporting documentation)

Attachments (refer to the following pages)

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GENERAL APPLICATION

CORVALLIS
ENHANCING COMMUNITY LIVABILITY

Community Development Planning Division
501 SW Madison, P. O. Box 1083
Corvallis, OR 97339-1083
Phone:(541) 766-6908, Fax (541) 766-6936
email: planning@ci.corvallis.or.us

For staff use only

Case # ANN10-00002, ZDC10-00002, PLD10-00006, MLP10-00003

Date Filed _____

Fee _____ Receipt # _____ Planner _____

Please tell us about yourself and your request: Check the following item(s) that apply to your application.

X Annexation	____ Planned Development ___major___minor
____ Conditional Development	____ Planned Development (Conceptual)
____ Conditional Development Modification	X Planned Development (Detailed)
____ Comprehensive Plan Amendment	____ Planned Development (Nullification)
From ____ To ____	____ Plan Compatibility Review
X District Change	____ Hillside Density Transfer
From UR-5 To PD (RS-6)	____ Street Vacation
____ Subdivision (Tentative Plat)	____ Extension of Service
____ Subdivision (Tentative Plat) Modification	
____ Willamette River Greenway	

Please give us a brief summary of the action requested:
Approval of annexation request to annex 10.48 acres of privately owned land, with a zone change to PD (RS-6) and a detailed development plan.

Name of Project: 49th Street Annexation

Applicant's Name: 49th Street Annexation Partners Phone 541-760-1592

Address 2022 SW 45th Street, Corvallis, OR 97333

Signature _____ Date _____

Property Owner(s) Name: See attached Phone _____

Address _____

Signature _____ Date _____

Project Staff (name & address):

Developer _____ Phone _____

Engineer _____ Phone _____

Planner Devco Engineering, Inc. Phone 541-757-8991

Architect _____ Phone _____

Other _____ Phone _____

Please tell us about your site:

Location address (or general vicinity, side of street, distance to intersection)
2650 SW 49th Street, Corvallis

*Assessor's Map Number(s)
1. 12-5-09CB
2. _____

Related Tax Lot(s)
00600000, 00700000, 00801000, _____
_____, _____, _____, _____

*The Assessor's Map Number (Township, Section/Range) and the Tax Lot Number (parcel) can be found on your tax statement or at the Benton County Assessor's Office)

Lot Area 10.48
Development District (i.e. zone) RS-6
Comprehensive Plan Designation _____

Attachments: [X] Existing Site Map (Topography, Vegetation, etc.) [X] Site Plan (The Proposal) [X] Narrative [X] Vicinity Map

[X] Floor Plans [X] Elevations

[ ] Solar Easements and/or shadow studies

[ ] Other _____

(If drawings are larger than 8 ½ x 14", submit 7 copies.)

Please tell us about the surrounding area:

Direction	Zoning District	Existing Land use
North	UR-5	Rural residential
South	UR-5	Rural residential
East	RS-6	Single family residential
West	UR-5	Rural residential

NOTE: The attachments submitted should include sufficient information about adjacent lands to indicate the site's relationship with these lands (i.e. maps should indicate nearly structures, densities, road, bike, and pedestrian systems, etc.)

Please Tell Us More About The Proposed Development And Its Site:

1. On your plans, include the following: Site boundaries, points of access, topography (show contours), flood plains, water courses, significant vegetation, existing roads, utilities, pedestrian or bikeways, and any existing easements. Please note there are additional specific graphic and narrative requirements for each type of application.

2. Are there existing structures on site: G Yes G No If Yes, illustrate them on your plans and describe their current use, the type of structure, and the square footage.
Single family detached dwellings built to rural residential densities

3. For your project, please indicate the uses proposed and describe the intended activities:
Single family residential

4. Will the project be completed in phases: G Yes G No If Yes, please explain.

5. Proposed Uses 6. Site Cover

Use Type	# of acres or sq ft	Percent of site		Coverage Type	# of acres or sq ft	Percent of site
Residential	10.48			**Impervious** - Structure footprints - Parking & drives	TBD	
Commercial Industrial Open Space - Parks - Drainageways - Other				**Mostly non-impervious** Open Space - Parks - Drainageways - Other Green areas or yards, walks, patios, and landscape areas	TBD	
Total	10.48	100%		**Total**		100%

Description of other types (e.g. recreational facilities):

For Residential Development:

Type	# Units	# Bedrooms	Density (living units per acre)
TBD			

7. How will open space, common areas and recreational facilities be maintained?
By home owners association

8. For proposed residential developments, are there any existing structures or trees on adjacent land which will reduce solar access to your site between 9 a.m. and 3 p.m. on November 21? G Yes (G No) If Yes, please illustrate these locations and their shadow impacts on your site map.

Please identify any citizen outreach efforts that you have undertaken prior to submitting this application:

- ☒ Mailed information regarding the proposed development to adjacent property owners/residents.
- ☒ Held one or more neighborhood meeting(s) or open houses.
- ☐ Held a project design workshop.
- ☐ Met individually and/or conferred over the phone with citizens.
- ☐ Made site plans available for review.
- ☐ Canvassed the neighborhood.
- ☐ Posted the project site with information about the proposal, and where to go for more information.
- ☐ Other (please describe):

Were changes made to the proposal as a result of citizen input? If so, what were they?

Authorization for Staff and Decision Maker to Enter Land

City staff, Planning Commissioners and City Councilors are encouraged to visit the sites of proposed developments as part of their review of specific land use applications. Decision maker site visits are disclosed through the public hearing process. Please indicate below whether you authorize City staff and decision makers to enter onto the property(-ies) associated with this application as part of their site visits.

- ☒ I authorize City staff and decision makers to enter onto the property(-ies) associated with this application.
- ☐ I do not authorize City decision makers to enter onto the property(-ies) associated with this application.

Public Notice Signs

The applicant is responsible for posting public notice signs in at least one conspicuous place along each street frontage of a site 20 days prior to the public hearing date. Staff will prepare the signs and will let you know when the signs are ready to be picked up from City Hall.

Please indicate who will be responsible for posting any required signs:

Name: Devco Engineering, Inc.
Phone: 541-757-8991

Property Owners – 49th St. Annexation

RECEIVED

APR - 9 2010

Community Development
Planning Division

Tax Lot 600 and 700

Crenshaw, Russell D.
2745 SW 53rd Street
Corvallis, Oregon 97333

Russell D Crenshaw
Signature

3/30/2010
Date

Tax Lot 801

Ellingson, Joe M and Jean F
2650 SW 49th Street
Corvallis, Oregon 97333

Joe M Ellingson Jean F. Ellingson
Signature

3-25-10
Date

49th Street Annexation
(ANN10-0002 ZDC10-0002)
Exhibit III.120

RECORD OF SURVEY

LOCATED IN LOTS 6 AND 9 OF "PLEASANT VIEW FRUIT FARMS", LOCATED IN THE GEORGE W. BETHERS D.L.C. No. 49, AND IN THE SOUTHWEST 1/4 OF SECTION 9, TOWNSHIP 12 SOUTH, RANGE 5 WEST OF THE WILLAMETTE MERIDIAN, BENTON COUNTY, OREGON

FOR: APPLEGATE DEVELOPMENT GROUP, LLC, RUSSELL D. CRENSHAW, AND JOE M. AND JEAN F. ELLINGSON

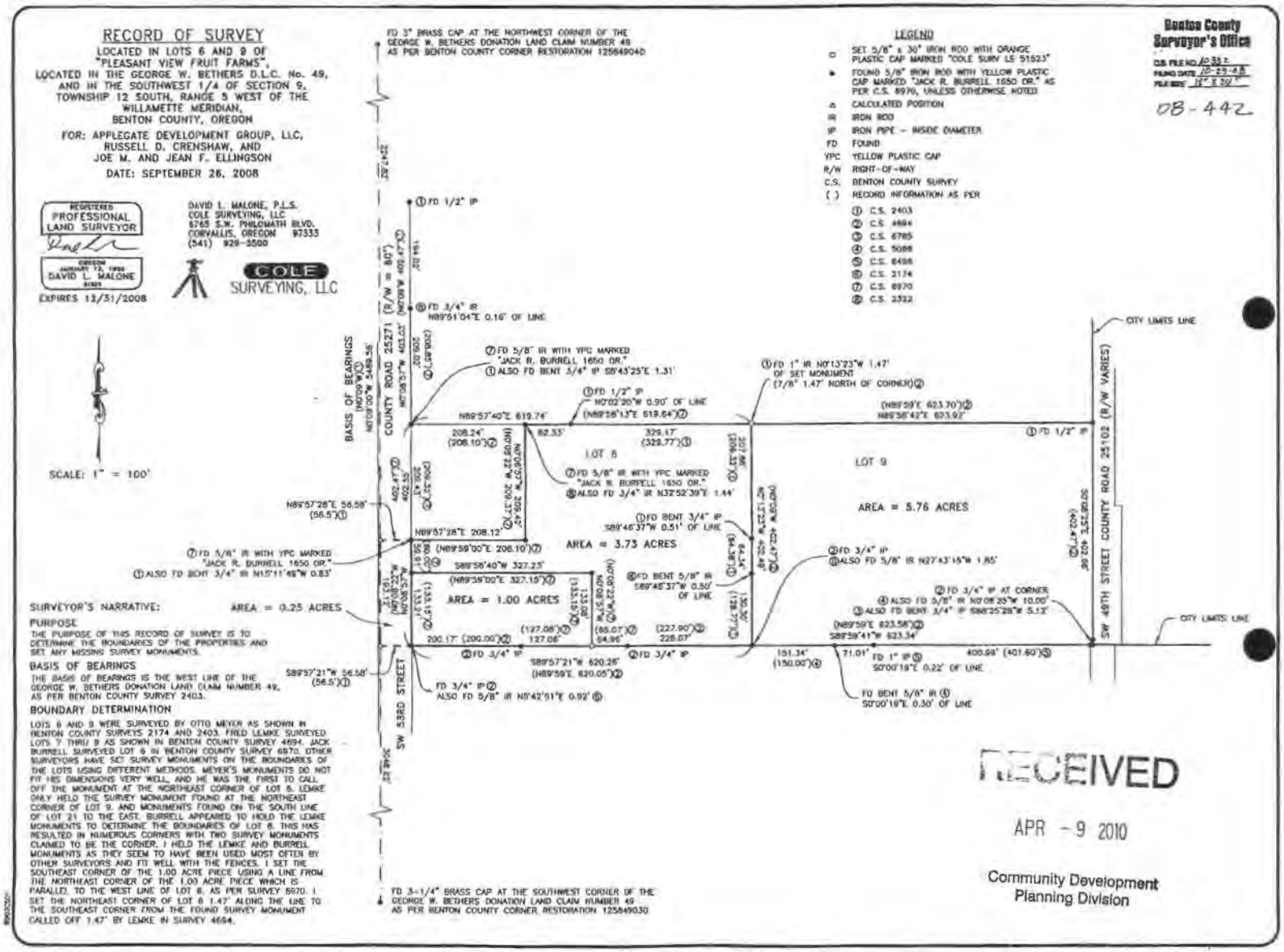
DATE: SEPTEMBER 26, 2008

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON JANUARY 12, 1990 DAVID L. MALONE 8765
EXPIRES 12/31/2008

DAVID L. MALONE, P.L.S.
COLE SURVEYING, LLC
6765 S.W. PHILOMATH BLVD.
CORVALLIS, OREGON 97333
(541) 929-3500

COLE SURVEYING, LLC

SCALE: 1" = 100'



SURVEYOR'S NARRATIVE:

PURPOSE

THE PURPOSE OF THIS RECORD OF SURVEY IS TO DETERMINE THE BOUNDARIES OF THE PROPERTIES AND SET ANY MISSING SURVEY MONUMENTS.

BASIS OF BEARINGS

THE BASIS OF BEARINGS IS THE WEST LINE OF THE GEORGE W. BETHERS DONATION LAND CLAIM NUMBER 49, AS PER BENTON COUNTY SURVEY 2403.

BOUNDARY DETERMINATION

LOTS 6 AND 9 WERE SURVEYED BY OTTO MEYER AS SHOWN IN BENTON COUNTY SURVEYS 2174 AND 2403. FRED LEMKE SURVEYED LOTS 7 THRU 9 AS SHOWN IN BENTON COUNTY SURVEY 4694. JACK BURRELL SURVEYED LOT 6 IN BENTON COUNTY SURVEY 6970. OTHER SURVEYORS HAVE SET SURVEY MONUMENTS ON THE BOUNDARIES OF THE LOTS USING DIFFERENT METHODS. MEYER'S MONUMENTS DO NOT FIT HIS DIMENSIONS VERY WELL, AND HE WAS THE FIRST TO CALL OFF THE MONUMENT AT THE NORTHEAST CORNER OF LOT 6. LEMKE ONLY HELD THE SURVEY MONUMENT FOUND AT THE NORTHEAST CORNER OF LOT 9, AND MONUMENTS FOUND ON THE SOUTH LINE OF LOT 21 TO THE EAST. BURRELL APPEARED TO HOLD THE LEMKE MONUMENTS TO DETERMINE THE BOUNDARIES OF LOT 6. THIS HAS RESULTED IN NUMEROUS CORNERS WITH TWO SURVEY MONUMENTS CLAIMED TO BE THE CORNER. I HOLD THE LEMKE AND BURRELL MONUMENTS AS THEY SEEM TO HAVE BEEN USED MOST OFTEN BY OTHER SURVEYORS AND FIT WELL WITH THE FENCES. I SET THE SOUTHEAST CORNER OF THE 1.00 ACRE PIECE USING A LINE FROM THE NORTHEAST CORNER OF THE 1.00 ACRE PIECE WHICH IS PARALLEL TO THE WEST LINE OF LOT 6, AS PER SURVEY 6970. I SET THE NORTHEAST CORNER OF LOT 6 1.47' ALONG THE LINE TO THE SOUTHEAST CORNER FROM THE FOUND SURVEY MONUMENT CALLED OFF 1.47' BY LEMKE IN SURVEY 4694.

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APR - 9 2010
Community Development
Planning Division

49th Street Annexation

An Application for
An Annexation, Zone Change,
Conceptual and Detailed Development Plan

Submitted to:

CORVALLIS
ENHANCING COMMUNITY LIVABILITY

The City of Corvallis
501 SW Madison Avenue
Corvallis, Oregon 97333

Submitted by:

49th St. Annexation Partners
2022 SW 45th Street
Corvallis, Oregon 97333

March 31, 2010
(Revised April 26, 2010)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.122

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.9

TABLE OF CONTENTS

Narrative
Introduction
Annexation
Zone Change
Conceptual and Detailed Development

Graphics
Attachment "A" .....Public Notice Map
Attachment "B" .....Existing Zoning Designations
Attachment "C" .....Existing Comprehensive Plan Designations
Attachment "D".....Surrounding Uses
Attachment "E".....Natural Features – Significant Vegetation
Attachment "F" .....Natural Features – Protected Riparian Area
Attachment "F-1" .....Natural Features – Delineated Wetland Area
Attachment "G".....Natural Features – 100 Year Flood Protection Area
Attachment "H".....Natural Features – Slopes
Attachment "I".....Natural Features – Landslide Area
Attachment "J".....Vicinity Map
Attachment "K" .....General Land Use/Conceptual Development Plan
Attachment "K-1" .....Detailed Development Phasing Plan
Attachment "L".....Existing Conditions Map
Attachment "M" .....Proposed Grading Plan and Typical Street Sections
Attachment "N".....Proposed Utilities Plan
Attachment "O".....Enlarged Utilities Plan
Attachment "P" .....Boundary Survey

Appendix
- ..... Legal Description of Property
- ..... Tax Assessor's Map
- ..... Waterline, Sanitary Sewer, and Stormwater Calculations
- ..... Traffic Impact Study
- ..... Letter from Benton County Public Works Department
- ..... Corvallis Gazette-Times Article dated July 10, 2007

49th Street Annexation
April 26, 2010

Narrative

- Introduction
- Annexation
- Zone Change
- Conceptual and Detailed Development

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.124

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.125

Introduction

INTRODUCTION

This project is primarily an application for the subject property to be annexed into the Corvallis city limits. However, due to various and conflicting process requirements of the City and State, largely based on traffic issues, additional applications are included along with the annexation request: Zone Change, Conceptual, and Detailed Development Plan. The reasons and purposes of these additional applications are explained below.

All properties that are within the City of Corvallis Urban Fringe are given Comprehensive Plan Designations that are consistent with the proposed land use that would occur upon annexation to the City. For that reason, no Comprehensive Plan Amendment is required with annexation applications. However, the properties in the Urban Fringe are all zoned for Benton County Land Use, as is appropriate while they are under the purview of the County. Therefore, all annexation applications need to be accompanied by a Zone Change application, to revise the zoning of the property from County type to City type upon annexation; in this case: from UR-5 to PD(RS-6).

All land use applications are submitted to ODOT for their review and comment. Upon reviewing this annexation and zone change application, ODOT determined that, in their judgment, it is appropriate to apply the State Transportation Planning Rule (TPR). The TPR would require that mitigation be provided by the applicant as a result of any negative impact on state highway traffic levels; in this case, on the intersection of SW 53rd Street and OR Highway 20/34 (Philomath Blvd).

The TPR language is written such that any transportation system improvements required to provide the mitigation to offset traffic impacts on the state highway must be addressed at the time of a change in zoning &/or comprehensive plan designations, rather than being associated with a specific development proposal; in this case it would be the change in zoning from UR-5 to PD(RS-6). When evaluating zone change applications that are submitted absent a complete development proposal, the TPR analyses considers worst case scenarios when evaluating the potential for transportation impacts, and requires that the mitigation provided be reflective of that. The traffic impact study and recommended mitigation for this annexation and zone change application were prepared for said worst case scenario for the property's impact on state highway traffic, and have been accepted by ODOT as witnessed by the attached letter.

However, there exists a conflict between the TPR and the Land Development Code (LDC). The typical mechanism available for the City to ensure that traffic mitigation will occur is by placing a condition of approval on an application requiring transportation system improvements be completed as part of the proposed development. Corvallis has been reluctant to place conditions on rule changes such as Comprehensive Plan Amendments and Zone Changes, where it is not possible to assess the rough proportionality of a transportation system improvement in relation to an actual development proposal on the property in question. As such, the City of Corvallis does not place conditions of approval on either annexation or zone change applications; only on development applications. If annexation and zone change applications for a property are submitted without an

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.13

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.126

associated Detailed Development Plan, the City cannot condition the application to comply with the TPR .

Consequently, the applicant is also at this time submitting a concurrent Conceptual and Detailed Development Plan for an initial portion of the development. The initial portion of the development does not exceed that development which would currently be allowed under the present County zoning. It is anticipated that the Detailed Development Plan will be conditioned by the City such that any mitigation required under the provisions of the TPR shall be constructed prior to the issuance of any building permits under any subsequent Detailed Development Plan application.

In order to assure the Detailed Development Plan approval does not expire, as allowed under present City Land Development Code provisions, or that the Planned Development Overlay is not removed under the State's "Needed Housing" statue, the applicant proposes the following actions which would, under the City's Land Development Code provisions , fix the Detailed Development Plan approval and conditions to the property in perpetuity, or make the Detailed Development Plan "active" in perpetuity:

- Provide financial security for all public improvements related to the project (LDC 2.5.50.09.a.1)

The applicant recognizes that the typical timing of presenting a financial security for public improvements, and the filing of a partition plat must be modified for this application process. The applicant also recognizes that control of these processes must be entirely in the hands of City staff prior to City Council approving these annexations to go before the voters. To that end, the applicant proposes to complete prior to the City Council hearing the following, to be submitted to City staff:

- Design of the public improvements, design approval by City Engineer, construction cost estimates, and financial security for said improvements.

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.14

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.127

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.128

Annexation

ANNEXATION APPLICATION
(Updated April 26, 2010)

A. Applicant's Request

Approval to send the voters a request to annex approximately 10.48 acres of privately owned land into the Corvallis City Limits. The private property proposed to be annexed is designated as Tax Lots 600, 700, and 801 on Map 12-5-09BC. The Comprehensive Plan Designation for the property is Low-Density Residential. The proposed Zoning is PD(RS-6).

B. Site Description

The site consists of 3 tax lots, comprising 10.48 acres. The site is bordered on the east by City limits, on the north, south, and west by rural residential development. The site is gently sloped from the southern central area, generally to the north and east. The site contains no significant vegetation, wetlands, riparian corridors or floodplains.

The General Land Use/Conceptual Development Plan proposes 57 dwelling units, for a density of 5.4 units/acre. The plan proposes a new neighborhood collector street to be built along the northern property boundary, from SW 49th Street on the east to the eastern boundary of Tax Lot 500. This new neighborhood collector is included in the Corvallis Transportation Master Plan.

The dwelling units are arranged in rectangular blocks with a continuous network of intersecting local streets serving them, along with the neighborhood collector street. A local street is proposed to be developed from SW 49th Street on the east to SW 53rd Street on the west, so emergency vehicles will have access to the site from two points.

Slightly more than 45% of the dwelling units are proposed to be attached dwellings on individual lots; these are, for the most part, clustered at the east and west ends of the site to be nearer to SW 49th Street on the east to SW 53rd Street on the west. Given the strictures imposed by the LDC and the constraints in place by the slopes, it is highly unlikely that subsequent Detailed Development Plan applications will vary significantly from the General Land Use/Conceptual Development Plan.

C. Submission Requirements

2.6.60.03 - Application Requirements

When the Director deems any requirement below unnecessary for proper evaluation of a proposed application, it may be waived.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.129

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.16

Prior to formal submittal of an application, the applicant is encouraged to participate in an informal pre-application conference with Community Development Department staff to discuss the proposal, the applicant's requirements, and the applicant's materials developed in response to this Code's applicable requirements.

Applications shall be made on forms provided by the Director and shall be accompanied by:

a. Location and description of the subject property(ies), including all of the following, as relevant: address; tax assessor map and tax lot number; parcel number; written description of the boundaries of the proposal; and one set of assessor's maps of the subject site and surrounding area, with the subject site outlined in red;

b. Signed consent by the subject property's owner(s) and/or the owner's legal representative(s). If a legal representative is used as a signatory, written proof of ability to be a signatory shall be furnished to the City. The owner's name(s) and address(es), and the applicant's name, address, and signature shall also be provided;

c. Fifteen copies of the narrative, on 8.5 by 11 in. sheets, and 15 copies of graphics at an 8.5 by 11 in. size. The Director may request additional copies of the narrative and/or graphics for routing purposes, if needed. Related names/numbers must be legible on the graphics. The Director may also require some or all graphics at an 11 by 17 in. size if, for legibility purposes, such a size would be helpful;

d. Six sets of full-scaled black line or blueprint drawings of the graphic(s), with sheet size not to exceed 24 by 36 in. Where necessary, an overall plan with additional detail sheets may be submitted;

e. An electronic version of these documents (both text and graphics, as applicable) if an applicant has produced part or all of an application in an electronic format. The applicant shall coordinate with the City regarding compatible electronic formats, to the greatest extent practicable.

f. Boundary survey of the property to be annexed, certified by a registered surveyor; and a legal description of the property and associated rights-of-way to be Annexed that includes the road or street right-of-way adjacent to the property. Copies of the legal description shall be provided in both written and electronic format.

g. If the Annexation proposal includes areas planned for open space, general community use, or public or semi-public ownerships, the Annexation request

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.130

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.17

shall be accompanied by a Comprehensive Map Amendment request consistent with Section 2.6.30.06.d and Chapter 2.1 – Comprehensive Plan Amendment Procedures.

Response: The application form (signed by the owners of the property) and appropriate copies of the graphics are being submitted with this Narrative.

h. Graphic Requirements Graphics shall include the following information where applicable:

1. Public Notice Map - Typically a street map at one in. = 800 ft. as per the City's public notice format;

Response: Attachment "A," Public Notice Map..

2. Zoning Map - Typically one in. = 400 ft., but up to one in. = 800 ft., depending on the size of the site, with a key that identifies each zone on the site and within 1,000 ft. of the site as per City format;

Response: Attachment "B," Existing Zoning Designations.

3. Comprehensive Plan Map - Typically one in. = 800 ft. with a key that identifies each and use designation on the site and within 1,000 ft. of the site as per City format;

Response: Attachment "C," Existing Comprehensive Plan Designations

4. Existing Land Use Map - Typically a topographic map that extends at least 1,000 ft. beyond the site. The map shall include building footprints and distinguish between single-family, multi-family, Commercial, and Industrial Uses, as well as other significant features such as roads, parks, schools, and Significant Natural Features identified by Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions;

Response: Attachment "D," Surrounding Uses.

5. Significant Natural Features Map(s) - Maps shall identify Significant Natural Features of the site, including but not limited to:

a) All information and preservation plans required by Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 -

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.131

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.18

Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions, as applicable;

Response: *Attachments "E" through "I". There are no significant natural features, landslide hazards, or floodplains on the site. The site does contain some steep slopes, which are indicated on Attachment "H".*

b) **All Jurisdictional Wetlands not already shown as part of "a," above. While not all Jurisdictional Wetlands are locally regulated by Chapter 4.13 - Riparian Corridor and Wetland Provisions, they need to be shown so that the City can route the application to the appropriate state and federal agencies for comment; and**

Response: *Not applicable. There are no jurisdictional wetlands located on the site.*

c) **Archaeological sites recorded by the State Historic Preservation Office (SHPO).**

Response: *There are no recorded archeological sites on the applicant's property.*

6. **Graphics for Annexation applications shall be drawn to scale and shall contain a sheet title, date, north arrow, and legend placed in the same location on each sheet and contain the following information:**

a) **<u>Vicinity Map</u> – A map of the area to be annexed that shows adjacent City and county territory at least 300 ft. beyond the boundaries of the Annexation site for Minor Annexations, and at least 1,200 ft. beyond the boundaries of the site for Major Annexations. The map shall include features such as existing streets and parcel boundaries; existing structures; driveways; utilities; Significant Natural Features regulated by Chapter 4.2 – Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 – Natural Hazard and Hillside Development Provisions, Chapter 4.12 – Significant Vegetation Protection Provisions; and Chapter 4.13 – Riparian Corridor and Wetland Provisions; Minimum Assured Development Area information from Chapter 4.11 - Minimum Assured Development Area (MADA), if applicable; and any other information that, in the Director's opinion, would assist in providing a context for the proposed Annexation. The map shall be 8.5- by 11-in. size for Minor Annexations, and both 8.5- by 11-in. and 24- by 36-in size for Major Annexations. The Director may require an area greater than 1,200 ft. beyond the site if such maps would be helpful, such as in cases where adjacent property is large and a view of the whole parcel would be helpful, or when existing infrastructure is far away from the site.**

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.132

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.19

Response: *Attachment "J," Vicinity Map.*

b) **<u>General Land Use Plan</u> – A map that illustrates the following, at a minimum, in sufficient detail to apply the review criteria in Section 2.6.30.06:**

1) **Proposed land use zones and densities;**

2) **Transportation corridors and functional classifications of streets within and surrounding the Annexation area;**

3) **Site utilities within and surrounding the Annexation area;**

4) **Significant Natural Features covered in 2.6.30.03.h.5, above;**

5) **Topographic contours at two-ft. intervals and identification of grades governed by Chapter 4.5 – Natural Hazard and Hillside Development Provisions; and**

6) **Information on land areas within at least 300 ft. of the subject property, indicating the relationship of the Annexation area to adjacent land uses. The Director may require an applicant's General Land Use Plan to include information on lands in excess of 300 ft. from an Annexation site, as in cases where an adjacent property is large and a view of the whole parcel would be helpful. The General Land Use Plan shall identify land uses, lot lines, existing buildings, driveways, transportation connections, utilities, and Significant Natural Features covered in "5" above. Illustrative cross-sections of potential streets shall also be provided. An aerial photo may be used as the base for the General Land Use Plan. Ortho photos are available at City Hall.**

Response: *Attachment "K," General Land Use/Conceptual Development Plan.*

c) **The applicant may provide a more detailed General Land Use Plan and may consolidate the Annexation proposal with other applications such as a Tentative Subdivision Plat. However, a Detailed Development Plan is not required at the Annexation phase. If the applicant chooses to consolidate land use applications, all of the submittal requirements as stated in other chapters of this Code shall be met.**

Response: *Complies. All submittal requirements for Conceptual and Detailed Development Plan applications are met.*

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.133

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.20

i. **Narrative Requirements**

A written statement shall include the following information:

1. **Statement of availability, capacity, and status of existing water, sewer, storm drainage, transportation, park, and school facilities; and franchise utilities. The franchise utility companies shall provide a written statement confirming the ability to serve the site. The applicant shall obtain information from the affected service and utility providers using GIS base maps where available;**

Response: *SW 49th Street is a City neighborhood collector street that is currently improved to County Standards. SW 53rd Street is a County street that is currently improved to county standards, with bike lanes on both sides. All franchise utilities are available in both SW 49th Street and SW 53rd Street adjacent to the site. First level water service is available to the site in 49th Street. This is a dead end 8" main line. Sanitary sewer service is available in SW 49th Street to the east of the site and at the intersection of SW Country Club Road and SW 53rd Street. Storm drainage will be accomplished by constructing a new sewer main discharging to the west to the existing county ditch in SW 53rd Street, and to the east by extending the existing storm sewer located in SW 49th Street south to the site. Sunset Park and Starker Arts Park are less than 1 mile from the Annexation site. Adams Elementary School, Linus Pauling Middle School, and Corvallis High School all have sufficient capacity to support the Annexation site at full urban development.*

2. **Statement of increased demand for the facilities that will be generated by the proposed Annexation. The applicant shall refer to the criteria of the City's facility master plans, available via the City Engineer, to determine the methodology used to estimate public facility demands. Information related to an actual development proposal may be included for informational purposes. At minimum, the demand calculations associated with the full range of development potential (min. to max.) under proposed land uses designations shall be addressed in the analysis;**

Response:

Water

Portions of the annexed property are located in both the first and second level water service areas. The Corvallis Water Distribution System Plan calls for future second level distribution improvements in the vicinity of the property. These improvements include a 16" distribution line in 53rd Street, looped to a 24"

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.134

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.21

distribution line in Nash Avenue and connecting to the existing 24" waterline at the intersection of 45th and Nash, plus a new second level pump station located in the vicinity of this property.

Water service to the site is proposed to include three components:

1) Constructing a 16-inch distribution line in SW 53rd Street consistent with the Water Master Plan improvements, beginning at the intersection of SW Country Club Road and SW 53rd Street and designing a loop connection between the existing 8-inch dead end line in SW 49th Street and the new proposed 16-inch distribution line in SW 53rd Street. These new lines sized as required to accommodate future Master Plan improvements.

2) Local distribution piping required to serve the site, with required isolation between first and second levels.

3) A second level pump station sited on the annexed property, with water supply coming from the first level distribution system described above. The pump station support systems would be constructed to accommodate future full build-out of the contiguous second level service area, with the actual pumps sized to accommodate incremental increases as the area develops.

Calculations along with existing flow and pressure information, supporting the premises above, are included in the Appendix of this application.

An alternate water service design could involve the extension of the 24" water line currently located in SW Nash Avenue, with the construction of a new water line in SW 49th Street. The above mentioned calculations support the viability of this alternate design, as well.

The peak hour demand for a single family residence is 1.4 gallons per minute, for the maximum possible 63 residences the total peak hour demand is 90 gallons per minute.

Sanitary Sewer

The annexed property is located in the "Country Club" basin. The City's Wastewater Utility Master Plan shows no backbone collection system improvements are needed in this basin until the population of the City exceeds 80,000. The Master Plan anticipates only the extension of local collection piping as needed to serve development in the Basin. The improvements anticipated in the Master Plan for the Brooklane Pump Station have been completed.

The peak daily unit flow rate per equivalent dwelling unit is 2.3 times 193 gallons per capita per day plus 4,000 gallons per acre per day. For the maximum units

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.135

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.22

allowable for 10.48 acres, 63 units anticipated for this property. The total inflow rate would be 69,886 gallons per day. This represents approximately 19.3% of the peak flow capacity of a 8" pipe at minimum grade in the existing line in SW 49th Street. If we compare the area of this development to the area of the approximate basin discharging to the sanitary line in SW 49th Street, this percentage is approximately 18.9%. Proposed design incorporates discharging approximately 7.28 acres of this development to 49th Street with the remainder of the site to discharge to a new line in SW 53rd Street. This new line will be connected at the existing sanitary line in SW Country Club Road at the intersection of SW 53rd Street. This new line will be an 8-inch line constructed at minimum design grade.

Calculations for storm water and sanitary sewer are included in the Appendix.

3. **Statement of additional facilities required to meet the increased demand and phasing of such facilities in accordance with projected demand. The applicant shall review adopted public facility plans, master plans, and capital improvement programs, and state whether additional facilities are planned or programmed for the Annexation area. Information related to an actual development proposal may be included for informational purposes. At minimum, the demand calculations associated with the full range of development potential (min. to max.) under proposed land uses designations shall be addressed in the analysis;**

Response:

Water

Portions of the annexed property are located in both the first and second level water service areas. The Corvallis Water Distribution System Plan calls for future second level distribution improvements in the vicinity of the property. These improvements include a 16" distribution line in 53rd Street, looped to a 24" distribution line in Nash Avenue and connecting to the existing 24" waterline at the intersection of 45th and Nash, plus a new second level pump station located in the vicinity of this property.

Water service to the site is proposed to include three components:

1) Constructing a 16-inch distribution line in SW 53rd Street consistent with the Water Master Plan improvements, beginning at the intersection of SW Country Club Road and SW 53rd Street and designing a loop connection between the existing 8-inch dead end line in SW 49th Street and the new proposed 16-inch distribution line in SW 53rd Street. These new lines sized as required to accommodate future Master Plan improvements.

49th Street Annexation
(ANN10-0002 ZDC10-0002)
Exhibit III.136

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.23

2) Local distribution piping required to serve the site, with required isolation between first and second levels.

3) A second level pump station sited on the annexed property, with water supply coming from the first level distribution system described above. The pump station support systems would be constructed to accommodate future full build-out of the contiguous second level service area, with the actual pumps sized to accommodate incremental increases as the area develops.

Calculations along with existing flow and pressure information, supporting the premises above, are included in the Appendix of this application.

An alternate water service design could involve the extension of the 24" water line currently located in SW Nash Avenue, with the construction of a new water line in SW 49th Street. The above mentioned calculations support the viability of this alternate design, as well.

The peak hour demand for a single family residence is 1.4 gallons per minute, for the maximum possible 63 residences the total peak hour demand is 90 gallons per minute.

Sanitary Sewer

The annexed property is located in the "Country Club" basin. The City's Wastewater Utility Master Plan shows no backbone collection system improvements are needed in this basin until the population of the City exceeds 80,000. The Master Plan anticipates only the extension of local collection piping as needed to serve development in the Basin. The improvements anticipated in the Master Plan for the Brooklane Pump Station have been completed.

The peak daily unit flow rate per equivalent dwelling unit is 2.3 times 193 gallons per capita per day plus 4,000 gallons per acre per day. For the maximum units allowable for 10.48 acres, 63 units anticipated for this property. The total inflow rate would be 69,886 gallons per day. This represents approximately 19.3% of the peak flow capacity of a 8" pipe at minimum grade in the existing line in SW 49th Street. If we compare the area of this development to the area of the approximate basin discharging to the sanitary line in SW 49th Street, this percentage is approximately 18.9%. Proposed design incorporates discharging approximately 7.28 acres of this development to 49th Street with the remainder of the site to discharge to a new line in SW 53rd Street. This new line will be connected at the existing sanitary line in SW Country Club Road at the intersection of SW 53rd Street. This new line will be an 8-inch line constructed at minimum design grade.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.137

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.24

4. **Traffic impact study, if required by the City Engineer. The City Engineer shall define the scope of the traffic impact study based on established procedures. Information related to an actual development proposal may be included for informational purposes. At minimum, the traffic calculations associated with the full range of development potential (min. to max.) under proposed land uses designations shall be addressed in the analysis. See also Section 4.0.60.a;**

Response: *A traffic impact study is included with this application. The results of the study indicate that, as defined by the ODOT Transportation Planning Rule (TPR), the proposed annexation will have a "significant effect" on traffic. One of the study intersections, SW 53rd Street at Philomath Blvd, are forecast to operate below acceptable standards. (It should be noted that the intersection is forecast to operate below standards even without the annexation.)*

Installing a northbound right-turn lane at the SW 53rd Street/Philomath Blvd intersection would mitigate the impact of the annexation. The applicant is willing to enter into an agreement to pay a proportionate share of the cost of these mitigations.

5. **Statement outlining the method and source of financing required to provide additional facilities;**

Response: *The applicant assumes all financial responsibility for the provision of additional facilities.*

6. **Discussion demonstrating the public need for the Annexation. To provide consistency in reviewing Annexations, the applicant shall use the information sources and methodology described in Section 2.6.30.07; and**

Response: *As discussed in greater detail below, we anticipate that in five years time the available practicably serviceable quantity of RS-6 land in the City is anticipated to be between 350.94 and 421.17 acres. While this may appear to be a sufficient amount of buildable low density land, the reality of the situation is that the majority of the land is held privately by a very small number of owners, who prefer for reasons of their own to keep the land undeveloped. This is evidenced by the fact that, during the recent housing boom that was experienced by the rest of the country, the quantity of new housing stock in Corvallis remained relatively stable.*

As a result, the stock of existing available houses and vacant lots for sale in Corvallis severely limit the choices available to potential purchasers, especially those in the income range of 50-90% of median income. The public would be greatly served by the addition of approximately 57 lots

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.138

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.25

developed to RS-6 standards, as the smaller size and/or detached housing featured on many of these houses would serve to expand the market choices of an underserved segment.

7. **Comprehensive narrative of potential positive and negative effects of the proposed Annexation related to "a," through "c," below. For properties containing a Natural Resource and/or Natural Hazard Overlay, the narrative shall include a discussion of the applicable provisions of Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions.**

   a) **Issues of need, serviceability, economics, environmental, and related social effects of the proposed Annexation on the community as a whole;**

   b) **Issues of need, serviceability, economics, environmental, and related social effects of the proposed Annexation on the comprehensive neighborhood of which the Annexation will become a part;**

   c) **Proposed actions to mitigate negative effects/impacts.**

Response: *Annexation and subsequent development of this site will provide approximately 57 new dwelling units into the City, the need for which is amply demonstrated by the discussion in 2.6.30.07-b below. The site is readily serviceable by a major street with bicycle lanes, and a nearby multi-purpose path. Additional social amenities in the immediate vicinity include an existing public park. Economically, the subdivision will contain at least 45% attached housing units, which will be more affordable to low-income home buyers than detached housing units typically are, and is a housing type currently not well represented in the real estate market.*

The negative impact associated with increased traffic would be mitigated by the developer providing any necessary upgrades to nearby intersections as recommended by the TIA to maintain acceptable level of service. The City's adopted storm water master plan and adopted standards for water quality mitigate any potential negative impacts from any changes in storm water runoff onto adjacent properties.

The site contains no significant vegetation, wetlands, riparian corridors, floodplains, or landslide hazards. It does contain some steep slopes. All future development in the sloped areas would be performed in conformance with the provisions of LDC Chapter 4.5, which affords greater protections than currently exist. Therefore, annexation would have

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.139

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.26

a positive impact on the only significant natural features located on the site.

The information provided by the applicant shall be used to assist in weighing the advantages and disadvantages of the proposed Annexation. The information shall address all aspects of the review criteria in Section 2.6.30.06, and the advantages and disadvantages shall be discussed in terms of those listed in review criteria and further detailed in Section 2.6.30.07.

2.6.30.06 – Review Criteria

Requests for Annexations shall be reviewed to ensure consistency with the purposes of this Chapter, applicable policies of the Comprehensive Plan, particularly Article 14, and other applicable policies and standards adopted by the City Council and State of Oregon

Annexations can only be referred to the voters when the proposed Annexation site is within the City's Urban Growth Boundary (UGB), and where the findings below are made. The criteria are highlighted in bold type.

a. The applicant has demonstrated a public need for the Annexation -

1. Minor Annexations – Factors to be considered in evaluating public need for Minor Annexations shall include, but are not limited to:

a) Reason for the Annexation;

b) Health issues;

c) Adequate demonstration that the Annexation provides for the logical urbanization of land;

d) Whether the site can be served with public facilities; and

e) Discussion of the applicable livability indicators and benchmarks as specified in Section 2.6.30.07.c.

Minor Annexation proposals need not include the calculations relative to a five-year supply of serviceable land that are required in "2," below for Major Annexations.

Response: *Not applicable.*

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.27

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.140

2. <u>Major Annexations</u> – **Factors to be considered in evaluating public need for Major Annexations shall include, but are not limited to:**

a) **The five-year supply of serviceable land of the Annexation's land use category (single-family, multi-family, Commercial, or Industrial). Annexations of land designated as Public Institutional, Open Space-Conservation, or Open Space-Agriculture on the Comprehensive Plan Map are exempt from the criteria;**

Response: *As no Council Policy actually exists, it is difficult to calculate a five-year supply of serviceable land based on any uniform standards. At this time, the City's 2006-2008 LDIR lists the quantity of vacant land that is zoned Low-Density Residential (RS-3.5, RS-5, and RS-6) as 552.37 acres, with 350.94 of those acres unconstrained by natural features. Given the worst case scenario of MADA application, 17,500 sq. ft./acre of each of the 50.05 constrained acres of RS-3.5 land could be developed for 20.11 additional acres, 15,250 sq. ft./acre of each of the 95.73 constrained acres of RS-5 land could be developed for 33.51 additional acres, and 13,000 sq. ft./acre of each of the 55.66 constrained acres of RS-6 land could be developed for 16.61 additional acres. The maximum total additional vacant acreage to be made available by the provision of MADA standards is therefore 70.23 acres. This leads to a conclusion that there is at this time between 350.94 and 421.17 acres of vacant low-density residential land in the City of Corvallis.*

b) **Availability of sufficient land of this type (single-family, multi-family, Commercial, or Industrial) to ensure choices in the market place. Annexations of land designated as Public Institutional, Open Space-Conservation, or Open Space-Agriculture on the Comprehensive Plan Map are exempt from the criteria; and**

Response: *As discussed in 2.6.30.07-b below, the market in Corvallis is extremely limited in the choices it offers the people who work here, especially those who work at jobs that are not exceptionally high-paying. The annexation of this site would provide approximately 57 additional housing units. As these units would be developed to RS-6 standards, many of them will be on smaller lot sizes and/or be attached housing types, which will provide more choices to an area of the market that is currently underserved.*

c) **Compliance with adopted community-wide livability indicators and benchmarks relative to Major Annexations, as identified in Section 2.6.30.07.c.**

Response: *See Table 2.6-1 below for a tabulation of the community-wide livability indicators and benchmarks which are met by this proposal.*

49th Street Annexation
(ANN10-0002 ZDC10-0002)
Exhibit III.141

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.28

The City shall provide annually updated Citywide data for the applicant to use in calculating supply and demand for the major land use categories (single-family residential, multi-family residential, Commercial, and Industrial). Residential land supply and demand data shall be calculated using housing units. Commercial and Industrial land supply and demand data shall be calculated using acres.

The required data sources and methodologies for use in determining land supply and demand for Major Annexations, and the requirements for addressing community-wide benchmarks, are outlined below in Section 2.6.30.07.

b. The annexation provides more advantages to the community than disadvantages – To provide guidance to applicants examples of topics to address for the advantages versus disadvantages discussion are highlighted in Section 2.6.30.07.

1. Minor Annexations – Minor Annexation proposals shall include a general discussion regarding:

a) Advantages and disadvantages of the Annexation. Examples include the existence of a Health Hazard situation or the existence of Significant Natural Features addressed in Chapter 4.2 – Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 – Natural Hazard and Hillside Development Provisions, Chapter 4.12 – Significant Vegetation Protection Provisions; and Chapter 4.13 – Riparian Corridor and Wetland Provisions. Also relevant is whether or not the Minimum Assured Development Area information from Chapter 4.11 - Minimum Assured Development Area (MADA) is applicable; and

b) Applicable livability indicators and benchmarks identified in Section 2.6.30.07.c.

Response: *Not applicable.*

2. Major Annexations – Major Annexation proposals shall include a discussion of advantages and disadvantages in terms of the methodologies outlined in Section 2.6.30.07. Applicants are required to document the methodologies and criteria used. The Director will review the applicant's arguments, but will not conduct independent research to verify or justify them.

Response: *The following table outlines the advantages versus the disadvantages of annexing the property. As can be seen, the advantages strongly outweigh the disadvantages.*

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.142

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.29

Criterion	Advantages	Disadvantages	Neutral	Discussion
Annexation Density, Rural Development Potential	RS-6 development will exceed City's average, preclude development to County standards	No disadvantages to this.	No neutral aspects of this.	As the proposed gross density for the proposed land use plan, is 5.4 dwelling units/acre, and the average net density of land within the City is 3.6 dwelling units/acre, development of this site to RS-6 standards will result in increase to the City's average density, which results in a more compact & efficient use of land. Current county standards could allow development of aggregate mining operation or manufactured home park, both of which are less desirable.
Planned Public Transportation Improvements	Builds new neighborhood collector street per City's Transportation Plan	No disadvantages to this.	No neutral aspects of this.	Addition of new neighborhood collector street extending from SW 49th Street to SW 53rd Street will greatly enhance automobile, bicycle, and pedestrian connectivity in Southwest Corvallis.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.143

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.30

Criterion	Advantages	Disadvantages	Neutral	Discussion
Development Plans	Detailed Development Plan submitted as part of application.	No disadvantages to this.	No neutral aspects of this.	Though immediate development is limited to Phase 1 of the Detailed Development Plan, the strictness of the LDC means that little variation from the proposed General Land Use/Conceptual Development Plan is likely or even possible in the future.
Adjacency to City	No advantages to this.	Site is not adjacent to City limits for over 50% of its perimeter.	No neutral aspects of this.	Does not assist in the orderly expansion of the City boundary.
Distance to bicycle and pedestrian access, shopping, transit, major street, local school, fire station, parks, and/or downtown.	Location is close to major street, transit stop, and bike lanes. Also close to downtown and an existing park .	Location is not close to shopping, existing sidewalk, fire station, or elementary school.	Location is not far from existing multi-use path. Existing police force has close to optimal level of staffing for City's population.	See Table 2.6-1 for numerical tabulations of distances to existing facilities and amenities.
Connectivity & extension of existing pedestrian facilities.	New sidewalk and proposed multi-use path abutting SW 53rd Street will assist other properties in UGB to develop.	No connectivity to existing sidewalk(s).	No neutral aspects of this.	When other properties in the City or the UGB wish to develop, the sidewalk facilities installed under this project will be available for connection.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.144

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.31

Criterion	Advantages	Disadvantages	Neutral	Discussion
Affordable Housing	46% of units will be attached, therefore likely to be affordable to low-income buyers.	No guarantee that attached units will be affordable.	54% of lots will be detached single-family, selling at market rate.	Attached housing tends to sell for less money than detached in Corvallis. Low-income families, defined as being at 80% of median-income or lower (<$54,400/year) will likely find attached units to be within their means where detaches is not.
Distance to sewer and water	Sanitary Sewer service is available adjacent to the site. This development will begin some of the second level water system improvements anticipated in the City's Water Master Plan.	Water service will need to be extended from the corner of SW 53rd Street and SW Country Club Drive. Storm Sewer service will need to be extended from north of the site	No neutral aspects of this.	Utilities are essentially readily available. The extension of the utilities will be done by the developer, and are anticipated in the respective utility system master plans.
Natural Features	The site contains steep slopes, which will be afforded greater protection if annexed.	No disadvantages to this.	No neutral aspects of this.	The site contains steep slopes, which will be protected under the hillside development standards of LDC Chapter 4.5.
Public Improvements	All new development will be to current LDC standards.	No disadvantages to this.	No existing urban development on site at this time.	All urban development on site will be new with this proposal, and developed to current LDC standards.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.145

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.32

Criterion	Advantages	Disadvantages	Neutral	Discussion
Intersection	All adjacent intersections will be upgraded as required to achieve LOS "D" or greater.	Development of site will increase traffic on SW 49th Street and SW 53rd Street.	No neutral aspects of this.	Increase in traffic will occur with development. However, developer will perform any necessary upgrades to nearby intersections, as indicated by traffic study to be necessary to maintain acceptable level of service.

c. The site is capable of being served by urban services and facilities required with development – The developer is required to provide urban services and facilities to and through the site. At minimum, both Minor and Major Annexations shall include consideration of the following:

1. Sanitary sewer facilities consistent with the City's Sanitary Sewer Master Plan and Chapter 4.0 – Improvements Required with Development;

Response: *Sanitary sewer facilities of sufficient capacity are available to the east of the Annexation site, in SW 49th Street, and at the corner of SW 53rd Street, at SW Country Club Drive.*

2. Water facilities consistent with the City's Water Master Plan, Chapter 4.0 – Improvements Required with Development, and fire flow and hydrant placement;

Response:

Water

Portions of the annexed property are located in both the first and second level water service areas. The Corvallis Water Distribution System Plan calls for future second level distribution improvements in the vicinity of the property. These improvements include a 16" distribution line in 53rd Street, looped to a 24" distribution line in Nash Avenue and connecting to the existing 24" waterline at the intersection of 45th and Nash, plus a new second level pump station located in the vicinity of this property.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.146

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.33

Water service to the site is proposed to include three components:

1) Constructing a 16-inch distribution line in SW 53rd Street consistent with the Water Master Plan improvements, beginning at the intersection of SW Country Club Road and SW 53rd Street and designing a loop connection between the existing 8-inch dead end line in SW 49th Street and the new proposed 16-inch distribution line in SW 53rd Street. These new lines sized as required to accommodate future Master Plan improvements.

2) Local distribution piping required to serve the site, with required isolation between first and second levels.

3) A second level pump station sited on the annexed property, with water supply coming from the first level distribution system described above. The pump station support systems would be constructed to accommodate future full build-out of the contiguous second level service area, with the actual pumps sized to accommodate incremental increases as the area develops.

Calculations along with existing flow and pressure information, supporting the premises above, are included in the Appendix of this application.

An alternate water service design could involve the extension of the 24" water line currently located in SW Nash Avenue, with the construction of a new water line in SW 49th Street. The above mentioned calculations support the viability of this alternate design, as well.

The peak hour demand for a single family residence is 1.4 gallons per minute, for the maximum possible 63 residences the total peak hour demand is 90 gallons per minute.

3. Storm drainage facilities and drainageway corridors consistent with the City's Stormwater Master Plan, Chapter 4.0 – Improvements Required with Development, Chapter 4.5 – Natural Hazard and Hillside Development Provisions, and Chapter 4.13 – Riparian Corridor and Wetland Provisions;

Response: *Storm drainage will be accomplished by constructing a new storm sewer main discharging to the west to the existing county ditch in SW 53rd Street, and to the east by extending the existing storm sewer located in SW 49th Street south to the site. Any lot where storm drainage cannot gravity feed to a weephole in the curb will be provided with either a private storm line that will drain into the public system or individual pumps which will pump the storm water up to the public system.*

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.34

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.147

4. **Transportation facilities consistent with the City's Transportation Plan and Chapter 4.0 – Improvements Required with Development; and**

Response: *Full-street improvements are required for both SW 49th Street and SW 53rd Street. However, neither of these streets have sufficient right-of-way available at this time to accommodate the full planter strip and sidewalks required on the opposite side of the street from the site. Therefore, half-street improvements, including curb and gutter on both sides of SW 49th Street, will be installed with the development of the annexation site. A new neighborhood collector street will be constructed from SW 49th Street to Tax Lot 500, per the City's Transportation Master Plan. The applicant will provide pre-payment to Benton County as required for future half-street developments for SW 53rd Street. Please see accompanying letter from Benton County Public Works affirming that this is the appropriate plan of action for this location.*

5. **Park facilities consistent with the City's Parks Master Plan.**

Response: *Sunset Park and Starker Arts Park are located approximately ¾ of a mile from the annexation site.*

d. **If the Annexation proposal includes areas planned for open space, general community use, or public or semi-public ownerships, the Annexation request shall be accompanied by a Comprehensive Plan Map Amendment as outlined in "1," and "2," below –**

Response: *Not applicable.*

e. **Compatibility – The application shall demonstrate compatibility in the following areas, as applicable:**

1. **Basic site design (the organization of Uses on a site and the Uses' relationships to neighboring properties);**

Response: *The site that is proposed to be annexed is to be zoned PD(RS-6), per LDC Section 3.3.10, and will be developed according to the requirements of LDC Chapter 3.3. As it is larger than 10 acres, it will be developed with a mix of housing types per LDC Section 4.9.80-a.3, that is: at least three housing or building types, with each building or housing type being at least 20 percent of the total units. As all neighboring properties are also designated as Low-Density Residential and are presently zoned RS-6 or will be zoned RS-6 when annexed into the City, this development will be compatible with neighboring properties.*

2. **Visual elements (scale, structural design and form, materials, etc.);**

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.35

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.148

Response: *The site is proposed to be developed to RS-6 development standards, including all applicable PODS standards. The nearby urban subdivision, Stonybrook, is developed to RS-6 and RS-9 standards, so the RS-6 development standards will be compatible with that existing neighborhood. The immediate adjacent properties are all built to urban residential densities, so low density residential development will be compatible with them as well. All buildings will be built within the maximum height allowances, and attached housing units are limited to three dwelling units each. While the structural design, form, and materials will be ultimately decided by the builder(s) of each lot, adherence to the PODS standards will require a certain minimum standard of attention to streetscape visuals.*

3. Noise attenuation;

Response: *No special measures have been considered for noise attenuation, nor will this project create any noises greater than or not typical of the surrounding residential and street uses.*

4. Odors and emissions;

Response: *Odors on the site are anticipated to be similar to those permitted on adjacent residential lands. Individual trash and recycling pickup service will be provided at each unit.*

Corvallis is currently in compliance with State and Federal air and water quality standards. It is anticipated that any emissions resulting from this development will be minimal. This project is not expected to affect the City's compliance with these State and Federal standards.

5. Lighting;

Response: *All new exterior lighting for the project will be shielded so as not to produce glare onto adjacent properties.*

6. Signage;

Response: *All signage associated with the development will be in compliance with the City's sign regulations and vision clearance requirements.*

7. Landscaping for buffering and screening;

Response: *The landscaping required for screening and buffering is proposed to be in compliance with LDC 4.20.40 and 4.2.50.*

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.149

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.36

8. Transportation facilities;

Response: *The development site is adjacent to SW 49th Street, which is designated as a neighborhood collector street, and SW 53rd Street, which is designated an arterial street. Their capacity is adequate to handle the quantity of additional traffic to be generated by the development. Existing bicycle lanes are readily accessible to the site, at SW 53rd Street to the west.*

9. Traffic and off-site parking impacts;

Response: *Following is a trip generation summary for the project:*

Trip Generation Summary			
	Entering Trips	Exiting Trips	Total Trips
63 Single-family Detached (ITE Land Use Code – Residential Single-Family Detached Housing)			
AM Peak Hour	12	35	47
PM Peak Hour	40	24	64

As the development site will generate more than 30/trips per hour, a LOS analysis for the adjacent intersection(s) is to be performed. The LOS analysis is included as part of this application and is summarized above.

10. Utility infrastructure;

Response: *New utility infrastructure to be provided will include new water service provided via a new second level pump station as indicated on the City's Utility Master Plan, and a new storm sewer main discharging to the west to the existing county ditch in SW 53rd Street, and to the east by extending the existing storm sewer located in SW 49th Street south to the site. A new sewer main will be tapped off the existing sewer main located adjacent to the property in SW 49th Street. A new sanitary sewer line will be extended in SW 53rd Street from the existing mainline in SW Country Club Road at the intersection of SW 53rd. New water mains will be tapped off the existing water main located adjacent to the property in SW 49th Street, as well as constructing a new 16-inch water main at the intersection of SW Country Club Road and SW 53rd Street along the frontage of the proposed annexation. A new water main will loop the waterlines in SW 53rd Street and SW 49th Street. New storm water quality and detention facilities will be constructed as part of this development. Biofilitration water quality swales in the street planter area will be used as the water quality facilities and shall be designed consistent with the City's adopted standard of the King County Washington Surface Water Design*

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.150

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.37

Manual, as design parameters allow. (In the event that water quality swales cannot be designed to meet City design criteria, approved underground mechanical water quality structures will be used.) The detention facilities will be detention ponds as shown on the Proposed Utilities Plan and shall be designed to be consistent with the City's adopted standard of the King County Washington Surface Water Design Manual. The sewer mains are sized adequately to support the development and no compatibility conflicts are anticipated. The new sidewalk and streetlights are to be installed per City requirements and are not anticipated to generate any conflicts.

11. Effects on air and water quality (note: a DEQ permit is not sufficient to meet this criterion);

Response: *This project does not create any air or water quality impacts which would be inconsistent with or in excess of the residential zoning or the adjacent residential uses.*

Stormwater quantity and quality measures will be made consistent with the City's adopted Master Plan and Design Standards.

12. Consistency with the applicable development standards, including the applicable Pedestrian Oriented Design Standards;

Response: *The development of the Annexation site is proposed to be in compliance with Chapter 4.10 – PODS. The General Land Use/Conceptual Development Plan indicates an example of how this might be possible.*

13. Preservation and/or protection of Significant Natural Features addressed in Chapter 4.2 – Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 – Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 – Significant Vegetation Protection Provisions; and Chapter 4.13 – Riparian Corridor and Wetland Provisions. Streets shall also be designed along contours, and structures shall be designed to fit the topography of the site to ensure compliance with these Code standards.

Response: *There are no existing Significant Natural Features on the site, though there are some steep slopes. All future development activities will be accomplished in accordance with Chapter 4.5 – Natural Hazard and Hillside Development Provisions.*

APPLICABLE COMPREHENSIVE PLAN POLICIES

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.38

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.151

- **Comprehensive Plan Policy 14.2.4 – Upon annexation, all lands shall be districted in a manner consistent with Comprehensive Plan designations.**

Response: *Complies. An application is included for a zone district change to PD(RS-6), which is consistent with the Comprehensive Plan designation of Low Density Residential.*

- **Comprehensive Plan Policy 14.2.5 - Upon annexation, residential lands on hillside areas shall be developed in accordance with Policy 4.6.6.**

  Comprehensive Plan Policy 4.4.6 – On tree-covered hills, the design of dwellings and their placement shall be planned to retain a sufficient number of trees to preserve a green, tree-covered hillside appearance.

Response: *Not applicable. The hillsides on the annexation site are not tree-covered.*

- **Comprehensive Plan Policy 14.3.2 – Conversion of urbanizable land to urban uses shall be based on orderly, economic provision of public utilities, facilities, and services.**

Response: *Complies. Public utilities, facilities, and services can be provided in an orderly economic fashion as described above and as detailed in the City's Facility Master Plans.*

- **Comprehensive Plan Policy 14.3.4 – Urbanization shall be contained within the Urban Growth Boundary, and shall occur incrementally through the annexation process.**

Response: *Complies. The proposed annexation site is within the Urban Growth Boundary and would be annexed incrementally to the adjacent properties.*

- **Comprehensive Plan Policy 14.3.5 - Annexations can only be recommended to the voters where the following findings are made:**

  A. There is a demonstrated public need for the annexation.

Response: *Complies. The public need for the annexation is demonstrated in the response to LDC Section 2.6.30.07 below.*

  B. The advantages to the community resulting from the annexation shall outweigh the disadvantages.

Response: *Complies. The advantages to the community compared to the disadvantages are discussed in the response to LDC Section 2.6.30.06-b.2 above.*

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.152

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.39

C. **The City and other jurisdictions are capable of providing urban services and facilities required by the annexed area, when developed.**

Response: *Complies. The site is capable of being served by urban services and facilities, as discussed in the response to LDC Section 2.6.30.07 below.*

- **Comprehensive Plan Policy 14.3.6- Factors to be considered in evaluating the public need for annexation may include, but are not limited to the following:**

  A. **The 5-year supply of serviceable land of this type to meet projected demand.**

  B. **The availability of sufficient land of this type to ensure choices in the marketplace; and**

  C. **Other factors, including livability benchmarks, as delineated in the Land Development Code.**

Response: *Complies. These factors are discussed in the response to LDC Section 2.6.30.07 below.*

2.6.30.07 – Methodologies for Some of the Review Criteria in Section 2.6.30.06

All of the provisions within this Section are required for Major Annexation proposals except for proposals or portions of proposals that include land with Comprehensive Plan designations of Public Institutional, Open Space-Conservation, or Open Space-Agriculture. Lands with these map designations are exempt from the provisions within "a" and "b" below. Minor Annexation proposals are subject only to the provisions within "c," below.

a. **Determining Five-year Supply of Serviceable Land – Serviceable land is land within the City limits capable of being served by public facilities.**

When calculating a five-year supply of serviceable land, applicants shall refer to and follow the Council Policy addressing the five-year supply, as amended from time to time. This policy outlines the accepted methodology and will result in more uniform application submittals.

Response: *As no Council Policy actually exists, it is difficult to calculate a five-year supply of serviceable land based on any uniform standards. At this time, the City's 2006-2008 LDIR lists the quantity of vacant land that is zoned Low-Density Residential (RS-3.5, RS-5, and RS-6) as 552.37 acres, with 350.94 of those acres unconstrained by natural features. Given the worst case scenario of MADA application, 17,500 sq. ft./acre of each of the 50.05 constrained acres*

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.153

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.40

of RS-3.5 land could be developed for 20.11 additional acres, 15,250 sq. ft./acre of each of the 95.73 constrained acres of RS-5 land could be developed for 33.51 additional acres, and 13,000 sq. ft./acre of each of the 55.66 constrained acres of RS-6 land could be developed for 16.61 additional acres. The maximum total additional vacant acreage to be made available by the provision of MADA standards is therefore 70.23 acres. This leads to a conclusion that there is at this time between 350.94 and 421.17 acres of vacant low-density residential land in the City of Corvallis.

b. **Providing information on land availability to ensure choices in the market place – Comprehensive Plan Policy 14.3.6 states that "factors to be considered in evaluating public need for Annexation may include...the availability of sufficient land of this type to ensure choices in the market place." Minor Annexation applications are not required to include information on market choice. However, Major Annexation applications shall provide this information. Appropriate and encouraged market choice topics include, but are not limited to:**

1. **Information regarding a housing/jobs balance;**

Response: *The most current housing data from the City shows that, as of 2008, the City of Corvallis housing stock consists of 23,396 housing units.*[1] *The most current employment figures are for Benton County, which indicate that in February of 2010, total non-farm employment amounted to 36,420 jobs.*[2] *There is no current data that indicate the percentage of those jobs that are located in Corvallis.*

The most detailed data on employment is from a 2003 report by the Oregon Employment Department (OED),[3] *and shows that 39,194 people were employed in Benton County, 8550 of which commuted from other counties; 6000 of these were from Linn County.*[4] *Of the workers employed in Benton County, approximately 31,532 were employed in Corvallis. During that same year, the City of Corvallis housing stock consisted of 22,238 housing units.*[5]

Assuming that, a straight linear extrapolation of the above data will yield a result that is reasonably close to the actual existing situation, it can be assumed that in 2010, there are 29,300 jobs in Corvallis, and that the present housing stock amounts to approximately 23,859 units.

[1] City of Corvallis 2006-2008 Land Development Information Report
[2] Oregon Employment Department – Oregon Labor Market Information System
[3] Oregon Employment Department LMI Handout - Commuting in Oregon
[4] Though this information is from 2003, a representative from OED confirmed in a 2007 interview that the commuting numbers remained consistent throughout the decade.
[5] City of Corvallis 2004-2005 Land Development Information Report

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.41

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.154

This would result in a housing/job ratio of 1 housing unit for every 1.2 workers. However, it does not take into account the number of housing units occupied by full-time students, retirees, stay-at-home parents, or other non-employed persons. The resulting practical balance would actually be somewhat lower than this number, though it is difficult to objectively quantify without more demographic information. When one considers the fact that many households are inhabited by more than one wage earner, it can easily be concluded that the existing balance is inadequate to support the employment level of Corvallis. The fact that over ¼ of all Benton County workers commute from out of county supports this.

1. Housing rental rates and prices;

Response: *Current data for the U.S. Housing & Urban Development Department (HUD) Fair Market Rents[6] are as follows:*

Size	*Monthly Rent*
1 Bedroom:	*$601/month*
2 Bedroom:	*$752/month*
3 Bedroom:	*$1067/month*

According to HUD, the median home price for Corvallis in 2008 was approximately $262,000[7]. The Willamette Valley Multiple Listing Service (WVMLS) real estate listing service currently shows approximately 153 residential housing units for sale in Corvallis listed at or below the median price. Typical approximate price breakdowns for these houses are as follows:

Listed Price	*Monthly Payment**	*Available[8]*
$60K-$149K	*<$625/mo*	*22 listings*
$150K-$199K	*$625/mo-$900/mo*	*50 listings*
$200K-$259K	*$900/mo-$1230/mo*	*81 listings*

*Calculated at 30 year fixed mortgage, 20% down payment, 6.0% interest

2. Vacancy rates; and

Response: *According to the most recent census data from 2000[9], the homeowner vacancy rate in Corvallis is 2.2%, while the rental vacancy rate is 7.1%.*

[6] http://www.universallivingwage.org/fmrtables_2008/OR.FMR2008.htm
[7] Source: http://www.city-data.com/city/Corvallis-Oregon.html
[8] http://www.wvlms.com, April 2010
[9] U.S. Census Bureau Table DP-1: Corvallis, Oregon

49th Street Annexation
(ANN10-0002 ZDC10-0002)
Exhibit III.155

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.42

3. A comparison of housing costs related to incomes, land prices, and land availability.

Response: *Housing costs and affordability as related to income are calculated based on monthly housing payments compared to gross monthly income. When a household's monthly housing payment exceeds 30% of their gross monthly income, that household is considered by HUD to be "cost burdened". For purposes of the following discussion concerning what income levels are necessary for households to be able to afford a house, that standard is used.*

Following is a breakdown of the full-time hourly wage(s) necessary for a household to earn in order to afford a house in each price range:

Listed Price	*Hourly wage for affordability**
$90K-$150K	*$13/hr-$19/hr*
$150K-$200K	*$19/hr-$25/hr*
$200K-$250K	*$25/hr-$30/hr*

*Calculated at 30 year fixed mortgage, 20% down payment, 6.0% interest

As the median house price in Corvallis is $262,000, over ½ of the houses for sale are only affordable to households that earn a total wage of more than $30/hour. Working class jobs typically do not earn more than $15/hour. From this, it is clear that the majority of residential units for sale in Corvallis are well out of the price range of households with working class incomes, even when there is more than one wage earner in the household.

Furthermore, when compared to neighboring communities, housing costs are significantly more expensive. The following table compares typical real estate listings for detached single family residences and bare lots in 3 central Willamette Valley Communities.[10]

Community	# Listings	Typ. $250K	Typ. $200K	Typ. $150K	<1 acre lot, cost
Corvallis	153	**1344 sf, 3BR, 2BA, 0.2 acre**	1040 sf, 3BR, 1BA, 0.13 acre	984 sf, 2BR, 2BA, condo	26 avail., $55K-$495K
Albany	374	2715sf, 4BR, 3BA, .34 acre	1520 sf, 3BR, 2BA, .2 acre	**1389 sf, 3BR, 2BA, .2 acre**	86 avail., $18-$150K
Lebanon	194	1850 sf, 3BR, 2BA, .81 acre	2338 sf, 3BR, 2BA, .38 acre	**1452 sf, 3BR, 2BA, .25 acre**	12 avail., $40-$130K

[10] http://www.wvlms.com, April 2010

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.43

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.156

This chart demonstrates that for a comparable house in terms of square footage and lot size, prospective buyers can expect to pay approximately $100,000 more to live in Corvallis than in Albany or Lebanon. Not only are the prices higher, but the quantity of houses to choose from is lower, especially in the lower range of affordability. As a result, over ¼ of the Benton County workforce commutes in from other counties, taking a toll on the environment in terms of gas consumption and carbon dioxide emissions.

The net result of all this data concerning jobs, vacancy rates, housing availability, income, and housing prices is that the market in Corvallis is extremely limited in the choices it offers the people who work here, especially those who work at jobs that are not exceptionally high-paying. The annexation of this site would provide approximately 57 additional housing units. As these units would be developed to RS-6 standards, many of them will be on smaller lot sizes and/or be attached housing types, which will provide more choices to an area of the market that is currently underserved.

The City does not independently review and verify documentation of this nature. Therefore, and applicant's market choice arguments shall be developed by a recognized professional in the field. Additionally, the applicant shall identify the methodologies used and the sources of information.

The Director will summarize the applicant's arguments and methodologies in the staff report provided to the hearing authority, and identify them as the applicant's arguments. The hearing authority shall determine the validity of the arguments based on the information provided by the applicant and on public comments during the public hearing process. The hearing authority shall also determine to what extent these arguments affect the criteria in Section 2.6.30.06.b.

c. **Providing information on community-wide livability indicators and determining compliance with adopted community-wide benchmarks –**

1. **The City has just begun the process of identifying livability indicators to ultimately assist in the development of community-wide benchmarks. Additionally, many of the community-wide livability indicators are not applicable to Annexation proposals.**

2. **Table 2.6-1-Livability Indicators and Benchmark Criteria provides interim direction to applicants in addressing livability indicator and benchmark criteria. As the community further develops these livability indicators and benchmarks, this Section of this Code shall be updated accordingly.**

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.157

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.44

a) The livability indicators and benchmarks in the following table are intended to be balanced and identified as advantages and disadvantages relative to an Annexation proposal. Compliance with all benchmarks is not required. However, when balanced and viewed in aggregate, the decision-makers need to find that the advantages to the community outweigh the disadvantages.

b) The number of applicable livability indicators and benchmarks varies, depending on the Comprehensive Plan Map request, as well as whether the Annexation is categorized as a Minor Annexation or a Major Annexation.

c) For those livability indicators and benchmarks that require distance measurements from an amenity to a proposed Annexation site, measurements shall be taken from the average point within the Annexation site.

Response: *See Table Below.*

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.158

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.45

Table 2.6-1 – Community-wide Livability Indicators and Benchmarks for Annexation Proposals

LIVABILITY INDICATORS	DESRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	COMPLIES
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Where People Live"			
Annexation Density	Average density of proposed Annexation relative to the average density of land within the City that is developed and of the same type (single-family or multi-family).	Meet or exceed the average density of land with the City, developed, and of the same type as the proposed annexation (single-family or multi-family).	**Complies. The proposed gross density for the proposed General Land Use/Conceptual Development Plan is 5.4 dwelling units/acre. The average net density of land within the City is 3.6 dwelling units/acre.**
Rural Development Potential	Type of county development that could occur if property not Annexed (depends on county land use policies in effect at time of proposed Annexation).	Development on land within the Urban Growth Boundary is done in a fashion that does not preclude urban-level development on the subject site and/or on adjacent properties within the UGB.	**Complies. Current county standards allow development of Manufactured Home Park , or Mining Operation, which preclude urban-level development on subject site.**

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.46

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.159

LIVABILITY INDICATORS	DESRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	COMPLIES
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Where People Live"			
Adjacent to City	Percentage of the perimeter of the Annexation that is enclosed within the City limits.	It is considered an advantage if >= 50% of the perimeter of an Annexation site is enclosed within the City limits.	Less than 50% of the perimeter is adjacent to existing City limits.
Development Plans	Concurrent processing of Detailed Development Plan and/or Tentative Subdivision Plat with Annexation request.	It is not considered a disadvantage and may be considered an advantage if an Annexation request is processed concurrently with a Detailed Development Plan and/or Tentative Subdivision Plat, even though such land use decisions may be changed after Annexation.	**Complies. Concurrent application for a Detailed Development Plan approval is submitted with Annexation application.**
Distance to Bicycle and Pedestrian Access	Distance to bike lanes. Distance to sidewalk. Distance to multi-use path.	0.5-mile to bike lane. 0.25-mile to sidewalk. 0.5-mile to multi-use path.	**Complies. Less than 0.25 mile to existing bike lane and sidewalk. Less than .5 mile to multi-use path.**

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.47

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.160

LIVABILITY INDICATORS	DESRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	COMPLIES
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Where People Live"			
Connectivity & Extension of Bicycle and Pedestrian Facilities	It is considered an advantage if improvements proposed as part of the Annexation request would connect to and extend existing bicycle and pedestrian facilities.	Connection to existing pedestrian facilities and extension of them by at least 350'; or connection to existing pedestrian facilities and filling a gap between existing pedestrian facilities of at least 100'. Connection to existing bicycle facilities and extension of them by at least 350'; or connection to existing bicycle facilities and filling a gap between existing pedestrian facilities of at least 100'.	New pedestrian and bicycle facilities do not connect to existing facilities, as SW 49th Street and SW 53rd Street are not developed to City standards adjacent to the annexation site.

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.48

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.161

LIVABILITY INDICATORS	DESRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	COMPLIES
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Where People Live"			
Planned Public Transportation Improvements	Type and Extent of public transportation improvements (street, bicycle, pedestrian) that are listed in City master plans and would occur with urban-level development of Annexation site.	It is considered an advantage if public transportation improvements (street, bicycle, pedestrian) would be installed with the Annexation, are listed in City master plans, and would enable other sites within the Urban Growth Boundary to ultimately develop.	**Complies. New pedestrian facilities on the west side of SW 49th Street will enable other properties in the UGB to ultimately develop. The new neighborhood collector street is included on the City's Master Plan and will enable other properties to the south to ultimately develop.**
Distance to Shopping	Distance from neighborhood shopping opportunities (both existing and planned).	Annexation site is within 0.5-mile of neighborhood shopping opportunities (existing or planned). More advantage associated with shorter distances from existing (as opposed to planned) shopping opportunities and/or location within 0.5-mile from existing shopping opportunities.	Annexation site is approximately 0.68 mile from nearest neighborhood shopping opportunities.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.162

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.49

LIVABILITY INDICATORS	DESRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	COMPLIES
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Where People Live"			
Affordable Housing	Housing Affordability.	It is considered an advantage if more than 50 percent of the proposed residential housing units are classified as Affordable Housing using the definition of Chapter 1.6 – Definitions. This benchmark will be refined with future update to this code.	Less than 50 percent of the proposed residential units will be classified as Affordable Housing.
LIVABILITY INDICATORS	**DESRIPTION OF LIVABILITY INDICATORS**	**BENCHMARKS**	**COMPLIES**
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Economic Vitality"			
Employment/Housing	Balance of jobs and housing.	To be developed as part of a future update of this Code, and following completion of regional studies.	**Not Applicable.**

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.50

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.163

LIVABILITY INDICATORS	DESRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	COMPLIES
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Protecting our Environment"			
Natural Features	Acres and percentage of Annexation site with Significant Natural Features	Consistency with Significant Natural Feature protections specified by Chapter 4.2 – Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 – Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 – Significant Vegetation Protection Provisions; and Chapter 4.13 – Riparian Corridor and Wetland Provisions. It is considered an advantage if Significant Natural Features are protected through Annexation, since they may be better protected within the City.	**Complies. The site contains steep slopes, which will be afforded better protection under the LDC than currently apply.**
Distance to Transit	Distance from an existing transit line and/or bus stop.	Annexation site is within 0.5-mile of an existing transit line and/or bus stop.	**Complies Annexation site is approximately 0.4 miles from nearest transit stop, at Stoneybrook and Country Club Dr.**

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.164

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.51

LIVABILITY INDICATORS	DESRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	COMPLIES
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Protecting our Environment"			
Distance to Major Street	Distance to nearest Collector and/or Arterial Street(s) that would serve the proposed annexation site and is fully improved to City standards or is improved to City standards with regard to bicycle and pedestrian facilities.	Distance to nearest Collector and/or Arterial Street(s) that would serve the proposed annexation site is <= 0.25-mile and is fully improved to City standards or is improved to City standards with regard to bicycle and pedestrian facilities.	Does not comply. Annexation Site is approximately 0.38 miles from SW Country Club Drive, which is the nearest Collector or Arterial fully improved to City Standards.
Intersection	Levels of service for intersections of Arterial and/or Collector Streets, as determined by the City's Traffic Engineer, within a one-mile radius of the site.	Levels of service for intersections of Arterial and/or Collector Streets affected by the proposal, as determined by the City's Traffic Engineer, and generally within a one-mile radius of the site, will be a level of service "D" or better following urban level development of the Annexation site.	**Complies. Level of service for intersections of Arterial and/or Collector streets will be "D" or greater. Intersection improvements such as signaling will be provided as required to meet this standard.**

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.52

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.165

LIVABILITY INDICATORS	DESRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	COMPLIES
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of			
Local School Capacity/Travel Distance	Student enrollment, capacity, and average class size of public schools to serve the Annexation site. Distance to public elementary school.	Public schools that would serve the Annexation site are not overcrowded. Corvallis School District goals for average class sizes may vary among grades. 0.5-mile to public elementary school. School District policies, re: boundaries of closest schools or additional schools, factor into potential redefinition of school boundaries.	The nearest public elementary school is Adams Elementary, which is approximately 1.5 miles. There is sufficient capacity at all public schools that would serve the annexation site.
Police Response Time	Number of police officers per 1,000 persons residing within City limits.	At least 1.2 officers per 1,000 persons residing within City limits.	56 officers/54,000 people = 1.04/1,000 persons
Distance from Fire Station	Distance from an existing fire station.	All buildable portions of the Annexation site are within 1.5 miles of a fire station with an engine company.	The Annexation site is approximately 2.3 miles from the nearest fire station.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.166

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.53

LIVABILITY INDICATORS	DESRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	COMPLIES
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of			
Public Improvements	Type and extent of public improvements developed to City standards; and urban-level development, such as clustered housing, etc., existing on the proposed Annexation site.	Annexation of partially developed land within the Urban Growth Boundary (UGB) that already contains some public improvements developed to City standards, and urban-level development on part of the site, is considered more advantageous to the City than Annexation of undeveloped land.	The Annexation site is undeveloped at this time.
Distance to Sewer and Water	Distance to adequately sized public sanitary sewer and water lines needed to serve the site.	Sanitary sewer and water facilities are proximate to the Annexation site. After some monitoring, distances for this benchmark may be specified in a future update of this Code.	**Complies. Sanitary sewer and water facilities are proximate to the Annexation Site.**

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.167

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.54

LIVABILITY INDICATORS	DESRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	COMPLIES
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of			
Planned Public Utilities	Types and extent of public utility improvements of sanitary sewer, water, and storm drainage, that are listed in City master plans, and would occur with urban-level development of the Annexation site.	It is considered an advantage if the installation of public utilities of sanitary sewer, water, and storm drainage, listed in City master plans, would enable other sites within the UGB to ultimately develop.	**Complies. Development of site will include the installation of the Southwest 2nd Level Water Pump Station listed in the City Utility master plan, as well as the extension of a 16" water main in SW 53rd Street.**
Distance to Parks	Distance from an existing public park.	Annexation site is within 0.5-mile of an existing public park.	The Annexation site is approximately 0.58 miles from Sunset Park.
LIVABILITY INDICATORS	**DESRIPTION OF LIVABILITY INDICATORS**	**BENCHMARKS**	**COMPLIES**
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Central City"			
Distance to Downtown	Distance of the Annexation from the Central Business Zone intersection of SW Third Street and SW Monroe Avenue	It is considered an advantage if an Annexation site is within 3.8 miles from the intersection of SW Third Street and SW Monroe Avenue, within the boundaries of the Central Business Zone.	**Complies. The Annexation site is approximately 3.6 miles from the intersection of SW 3rd and SW Monroe.**

Analysis:

The livability benchmarks are grouped according to various goals that are listed in the Corvallis 2020 Vision Statement: Where People Live, Protecting the Environment, Education/Human Services, and Central City. This analysis will discuss the benchmarks within each goal, and the

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.55

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.168

goals as they compare to each other for this annexation site. Note: the goal "Economic Vitality" is not included in this analysis as the City of Corvallis has not yet defined a specific benchmark to which an annexation can be compared.

Where We Live

The annexation meets approximately half of the livability benchmarks in this category: Annexation Density, Development Plans, Rural Development Potential, Distance to Bicycle and Pedestrian Access, Planned Public Transportation Improvements. The benchmarks that are not met include Adjacent to City, Connectivity & Extension of Bicycle and Pedestrian Facilities, Distance to Shopping, and Affordable Housing. One of these benchmarks, Distance to Shopping, requires that the site be 0.5 miles or less to said amenity. As the actual distance from the site to amenities is 0.68 miles to the corner of SW 53rd Street and SW Philomath Blvd., the benchmark is not met. However, it is close enough that the disadvantage associated with this benchmarks not being met is minimal.

While no units are designated as being set aside as affordable units, it is unlikely that any annexation would meet this benchmark, unless the applicant is a developer devoted specifically to affordable housing and the project is subsidized as such. That being, said, the mixture of lot sizes and housing types on the site indicate that many of the units would be available at costs lower than typically found in the Corvallis area market. This is discussed in greater detail above under Section 2.6.30.07-b.

In conclusion, as the number of benchmarks met under this category exceeds the numbers not met, it would appear the advantages outweigh the disadvantages for the annexation application at this time, under the category "Where We Live."

Protecting the Environment

The application meets all but one of the benchmarks under Protecting the Environment: Natural Features, Intersection, Distance to Transit and Distance to Major Street. The site contains steep slopes, which will be afforded greater protection from development if the subject site is annexed. Level of service for intersections of Arterial and/or Collector streets will be "D" or greater. Intersection improvements such as signaling will be provided as required to meet this standard. The distance from the site to the nearest transit stop is 0.4 miles. The site fronts SW 53rd Street, which is classified as an arterial street.

The applicable benchmark that is not met is Distance to Major Street. This benchmark requires that the site be 0.5 miles or less to said amenity. As the actual distance from the site to amenities is 0.68 miles to the corner of SW53rd Street and SW Philomath Blvd., the benchmark is not met. However, it is close enough that the disadvantage associated with this benchmarks not being met is minimal. Furthermore, the site fronts SW 53rd Street, which is classified as an arterial and will, eventually, be developed to City Standards, at which point the benchmark will be met.

In conclusion, it would appear that the application advantages strongly outweigh the disadvantages in the category of "Protecting the Environment."

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.56

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.169

Education/Human Services

While the application meets two of the livability benchmarks for this group (Distance to Water and Sewer and Planned Public Utilities), it does not meet any of the other benchmarks for this category. The disadvantages to annexation outweigh the advantages under the category "Education/Human Services."

Central City

The application meets the only benchmark in this category, "Distance to Downtown".

Conclusion

The application confers more advantages than disadvantages in three of the four categories under analysis. Overall, the benchmarks that it meets or nearly meets include: Annexation Density, Rural Development Potential, Distance to Bike, Sidewalk, & Multi-use Path, Planned Public Transportation Improvements, , Distance to Transit, Intersection, Distance to Water and Sewer, Planned Public Utilities, and Distance to Downtown. These represent a wide variety of advantages and diversity in opportunities to assist in the orderly growth and urbanization of the associated area. Furthermore, many of the benchmarks that are not met could be remedied in time, as SW 53rd Street gets developed to City Standards, additional school facilities are constructed, and City police staffing is expanded. In conclusion, over all the advantages of the annexation outweigh the disadvantages, in terms of livability benchmarks.

49th Street Annexation
(ANN10-0002 ZDC10-0002)
Exhibit III.170

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.57

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.171

Zone Change

ZONE CHANGE APPLICATION

(Revised 26 April 2010)

A. Applicant's Request

Approval to apply a zoning designation of PD(RS-6) to Tax Lots 600, 700, and 801 on Map 12-5-09BC, pending annexation.

B. Site Description

The site consists of 3 tax lots, comprising 10.48 acres. The site is bordered on the east by City limits, on the north, south, and west by rural residential development. The site is gently sloped from the southern central area, generally to the north and east. The site contains no significant vegetation, wetlands, riparian corridors or floodplains.

C. Submission Requirements

2.2.40.02 - Application Requirements

When the Director deems any requirement below unnecessary for proper evaluation of a proposed application, it may be waived.

Prior to formal submittal of an application, the applicant is encouraged to participate in an informal pre-application conference with Community Development Department staff to discuss the proposal, the applicant's requirements, and the applicant's materials developed in response to this Code's applicable requirements.

Applications shall be made on forms provided by the Director and shall be accompanied by:

a. General Requirements

1. Location and description of the subject property(ies), including all of the following, as relevant: address; tax assessor map and tax lot number; parcel number; written description of the boundaries of the proposal; and one set of assessor's maps of the subject site and surrounding area, with the subject site outlined in red;

2. Signed consent by the subject property's owner(s) and/or the owner's legal representative(s). If a legal representative is used as a signatory, written proof of ability to be a signatory shall be furnished to the City. The owner's name(s)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.172

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.59

and address(es), and the applicant's name, address, and signature shall also be provided;

3. Fifteen copies of the narrative, on 8.5 by 11 in. sheets, and 15 copies of graphics at an 8.5 by 11 in. size. The Director may request additional copies of the narrative and/or graphics for routing purposes, if needed. Related names/numbers must be legible on the graphics. The Director may also require some or all graphics at an 11 by 17 in. size if, for legibility purposes, such a size would be helpful;

4. Six sets of full-scaled black line or blueprint drawings of the graphic(s), with sheet size not to exceed 24 by 36 in. Where necessary, an overall plan with additional detail sheets may be submitted;

5. An electronic version of these documents (both text and graphics, as applicable) if an applicant has produced part or all of an application in an electronic format. The applicant shall coordinate with the City regarding compatible electronic formats, to the greatest extent practicable.

Response: The application form (signed by the owners of the property) and appropriate copies of the graphics are being submitted with this Narrative.

6. Graphic Requirements Graphics shall include the following information where applicable:

   a) Public Notice Map - Typically a street map at one in. = 800 ft. as per the City's public notice format;

Response: Attachment "A," Public Notice Map..

   b) Zoning Map – Existing and proposed Zoning MapsTypically one in. = 400 ft., but up to one in. = 800 ft., depending on the size of the site, with a key that identifies each zone on the site and within 1,000 ft. of the site as per City format;

Response: Attachment "B," Existing Zoning Designations.

   c) Comprehensive Plan Map - Typically one in. = 800 ft. with a key that identifies each and use designation on the site and within 1,000 ft. of the site as per City format;

Response: Attachment "C," Existing Comprehensive Plan Designations

   d) Existing Land Use Map - Typically a topographic map that extends at least 1,000 ft. beyond the site. The map shall include building footprints

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.60

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.173

and distinguish between single-family, multi-family, Commercial, and Industrial Uses, as well as other significant features such as roads, parks, schools, and Significant Natural Features identified by Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions;

Response: *Attachment "D," Surrounding Uses.*

e) **Significant Natural Features Map(s) - Maps shall identify Significant Natural Features of the site, including but not limited to:**

1) **All information and preservation plans required by Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions, as applicable;**

Response: *Attachments "E" through "I". There are no significant natural features, landslide hazards, or floodplains on the site. The site does contain some steep slopes, which are indicated on Attachment "H".*

2) **All Jurisdictional Wetlands not already shown as part of "a," above. While not all Jurisdictional Wetlands are locally regulated by Chapter 4.13 - Riparian Corridor and Wetland Provisions, they need to be shown so that the City can route the application to the appropriate state and federal agencies for comment; and**

Response: *Not applicable. There are no jurisdictional wetlands located on the site.*

3) **Archaeological sites recorded by the State Historic Preservation Office (SHPO).**

Response: *There are no recorded archeological sites on the applicant's property.*

7. **A legible Vicinity Map identifying the area to be amended that shows adjacent City and county territory at least 300 ft. beyond the boundaries of the subject site. The map shall include features such as existing streets and parcel boundaries; existing structures; driveways; utilities; Significant Natural Features regulated by Chapter 4.2 – Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 – Natural Hazard and Hillside Development Provisions, Chapter 4.12 – Significant Vegetation Protection**

49th Street Annexation
(ANN10-0002 ZDC10-0002)
Exhibit III.174

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.61

Provisions; and Chapter 4.13 – Riparian Corridor and Wetland Provisions; Minimum Assured Development Area information from Chapter 4.11 - Minimum Assured Development Area (MADA), if applicable; and any other information that, in the Director's opinion, would assist in providing a context for the proposed Zone Change. The Director may require an area greater than 300 ft. beyond the subject site, such as in cases where adjacent property is large and a view of the whole parcel would be helpful, or when existing infrastructure is far away from the site.

Response: *Attachment "J," Vicinity Map.*

8. **Statement of availability, capacity, and status of existing water, sewer, storm drainage, transportation, park, and school facilities. The applicant shall obtain information from the affected service and utility providers using GIS base maps where available;**

Response: *SW 49th Street is a City neighborhood collector street that is currently improved to County Standards. SW 53rd Street is a County street that is currently improved to county standards, with bike lanes on both sides. First level water service is available to the site in 49th Street. This is a dead end 8" main line. Sanitary sewer service is available in SW 49th Street to the east of the site. Storm drainage will be accomplished by constructing a new sewer main discharging to the west to the existing county ditch in SW 53rd Street, and to the east by extending the existing storm sewer located in SW 49th Street south to the site. Sunset Park and Starker Arts Park are both less than 1 mile from the Annexation site. Adams Elementary School, Linus Pauling Middle School, and Corvallis High School all have sufficient capacity to support the subject site at full urban development.*

9. **Statement of increased demand for the facilities that will be generated by the proposed Annexation. The applicant shall refer to the criteria of the City's facility master plans, available via the City Engineer, to determine the methodology used to estimate public facility demands. Information related to an actual development proposal may be included for informational purposes. At minimum, the demand calculations associated with the full range of development potential (min. to max.) under proposed land uses designations shall be addressed in the analysis;**

Response:

Water

Portions of the annexed property are located in both the first and second level water service areas. The Corvallis Water Distribution System Plan calls for future second level distribution improvements in the vicinity of the

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.175

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.62

property. These improvements include a 16" distribution line in 53rd Street, looped to a 24" distribution line in Nash Avenue and connecting to the existing 24" waterline at the intersection of 45th and Nash, plus a new second level pump station located in the vicinity of this property.

Water service to the site is proposed to include three components:

1) Constructing a 16-inch distribution line in SW 53rd Street consistent with the Water Master Plan improvements, beginning at the intersection of SW Country Club Road and SW 53rd Street and designing a loop connection between the existing 8-inch dead end line in SW 49th Street and the new proposed 16-inch distribution line in SW 53rd Street. These new lines sized as required to accommodate future Master Plan improvements.

2) Local distribution piping required to serve the site, with required isolation between first and second levels.

3) A second level pump station sited on the annexed property, with water supply coming from the first level distribution system described above. The pump station support systems would be constructed to accommodate future full build-out of the contiguous second level service area, with the actual pumps sized to accommodate incremental increases as the area develops.

Calculations along with existing flow and pressure information, supporting the premises above, are included in the Appendix of this application.

An alternate water service design could involve the extension of the 24" water line currently located in SW Nash Avenue, with the construction of a new water line in SW 49th Street. The above mentioned calculations support the viability of this alternate design, as well.

The peak hour demand for a single family residence is 1.4 gallons per minute, for the maximum possible 63 residences the total peak hour demand is 90 gallons per minute.

Sanitary Sewer

The annexed property is located in the "Country Club" basin. The City's Wastewater Utility Master Plan shows no backbone collection system improvements are needed in this basin until the population of the City exceeds 80,000. The Master Plan anticipates only the extension of local collection piping as needed to serve development in the Basin. The

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.63

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.176

improvements anticipated in the Master Plan for the Brooklane Pump Station have been completed.

The peak daily unit flow rate per equivalent dwelling unit is 2.3 times 193 gallons per capita per day plus 4,000 gallons per acre per day. For the maximum units allowable for 10.49 acres, 63 units anticipated for this property. The total inflow rate would be 69,886 gallons per day. This represents approximately 19.3% of the peak flow capacity of a 8" pipe at minimum grade in the existing line in SW 49th Street. If we compare the area of this development to the area of the approximate basin discharging to the sanitary line in SW 49th Street, this percentage is approximately 18.9%. Proposed design incorporates discharging approximately 7.28 acres of this development to 49th Street with the remainder of the site to discharge to a new line in SW 53rd Street. This new line will be connected at the existing sanitary line in SW Country Club Road at the intersection of SW 53rd Street. This new line will be an 8-inch line constructed at minimum design grade.

10. Statement of additional facilities required to meet the increased demand and phasing of such facilities in accordance with projected demand. The applicant shall review adopted public facility plans, master plans, and capital improvement programs, and state whether additional facilities are planned or programmed for the Annexation area. Information related to an actual development proposal may be included for informational purposes. At minimum, the demand calculations associated with the full range of development potential (min. to max.) under proposed land uses designations shall be addressed in the analysis;

Response:

Water

Portions of the annexed property are located in both the first and second level water service areas. The Corvallis Water Distribution System Plan calls for future second level distribution improvements in the vicinity of the property. These improvements include a 16" distribution line in 53rd Street, looped to a 24" distribution line in Nash Avenue and connecting to the existing 24" waterline at the intersection of 45th and Nash, plus a new second level pump station located in the vicinity of this property.

Water service to the site is proposed to include three components:

1) Constructing a 16-inch distribution line in SW 53rd Street consistent with the Water Master Plan improvements, beginning at the intersection of SW Country Club Road and SW 53rd Street and designing a

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.64

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.177

loop connection between the existing 8-inch dead end line in SW 49th Street and the new proposed 16-inch distribution line in SW 53rd Street. These new lines sized as required to accommodate future Master Plan improvements.

2) Local distribution piping required to serve the site, with required isolation between first and second levels.

3) A second level pump station sited on the annexed property, with water supply coming from the first level distribution system described above. The pump station support systems would be constructed to accommodate future full build-out of the contiguous second level service area, with the actual pumps sized to accommodate incremental increases as the area develops.

Calculations along with existing flow and pressure information, supporting the premises above, are included in the Appendix of this application.

An alternate water service design could involve the extension of the 24" water line currently located in SW Nash Avenue, with the construction of a new water line in SW 49th Street. The above mentioned calculations support the viability of this alternate design, as well.

The peak hour demand for a single family residence is 1.4 gallons per minute, for the maximum possible 63 residences the total peak hour demand is 90 gallons per minute.

Sanitary Sewer

The annexed property is located in the "Country Club" basin. The City's Wastewater Utility Master Plan shows no backbone collection system improvements are needed in this basin until the population of the City exceeds 80,000. The Master Plan anticipates only the extension of local collection piping as needed to serve development in the Basin. The improvements anticipated in the Master Plan for the Brooklane Pump Station have been completed.

The peak daily unit flow rate per equivalent dwelling unit is 2.3 times 193 gallons per capita per day plus 4,000 gallons per acre per day. For the maximum units allowable for 10.49 acres, 63 units anticipated for this property. The total inflow rate would be 69,886 gallons per day. This represents approximately 19.3% of the peak flow capacity of a 8" pipe at minimum grade in the existing line in SW 49th Street. If we compare the area of this development to the area of the approximate basin discharging to the sanitary line in SW 49th Street, this percentage is approximately

49th Street Annexation
(ANN10-0002 ZDC10-0002)
Exhibit III.178

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.65

18.9%. Proposed design incorporates discharging approximately 7.28 acres of this development to 49th Street with the remainder of the site to discharge to a new line in SW 53rd Street. This new line will be connected at the existing sanitary line in SW Country Club Road at the intersection of SW 53rd Street. This new line will be an 8-inch line constructed at minimum design grade.

11. Traffic impact study, if required by the City Engineer. The City Engineer shall define the scope of the traffic impact study based on established procedures. Information related to an actual development proposal may be included for informational purposes. At minimum, the traffic calculations associated with the full range of development potential (min. to max.) under proposed land uses designations shall be addressed in the analysis. See also Section 4.0.60.a;

Response: *A traffic impact study will be submitted under separate cover.*

12. Statement of the reasons for the Change, and how the proposal meets the review criteria in Section 2.2.40.05.

Response: *Upon annexation, the existing county zone designation of UR-5 would become inappropriate. The required zone designation for all new Low Density Residential lands is to be RS-6, per LDC 3.3.10, which states "The RS-6 zone shall be applies to … all future Low Density Residential Lands."*

2.2.40.05 – Review Criteria

a. Review Criteria for Zone Changes, Except Those Requesting to Apply or Remove a Historic Preservation Overlay

Quasi-judicial Zone Changes shall be reviewed to determine how they affect City facilities and services, and to ensure consistency with the purposes of this Chapter, policies of the Comprehensive Plan, and any other applicable policies and standards adopted by the City Council. The application shall demonstrate compatibility in the following areas, as applicable:

1. Basic site design (the organization of Uses on a site and the Uses' relationships to neighboring properties);

Response: *The site that is proposed to be annexed is to be zoned PD(RS-6), per LDC Section 3.3.10, and will be developed according to the requirements of LDC Chapter 3.3. As it is larger than 10 acres, it will be developed with a mix of housing types per LDC Section 4.9.80-a.3, that is: at least three housing or building types, with each building or housing type being at least 20 percent of*

49th Street Annexation
(ANN10-0002 ZDC10-0002)
Exhibit III.179

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.66

the total units. As all neighboring properties are also designated as Low-Density Residential and are presently zoned RS-6 or will be zoned RS-6 when annexed into the City, this development will be compatible with neighboring properties.

2. Visual elements (scale, structural design and form, materials, etc.);

Response: *The site is proposed to be developed to RS-6 development standards, including all applicable PODS standards. The nearby urban subdivision, Stonybrook, is developed to RS-6 and RS-9 standards, so the RS-6 development standards will be compatible with that existing neighborhood. The immediate adjacent properties are all built to urban residential densities, so low density residential development will be compatible with them as well. All buildings will be built within the maximum height allowances, and attached housing units are limited to three dwelling units each. While the structural design, form, and materials will be ultimately decided by the builder(s) of each lot, adherence to the PODS standards will require a certain minimum standard of attention to streetscape visuals.*

3. Noise attenuation;

Response: *No special measures have been considered for noise attenuation, nor will this project create any noises greater than or not typical of the surrounding residential and street uses.*

4. Odors and emissions;

Response: *Odors on the site are anticipated to be similar to those permitted on adjacent residential lands. Individual trash and recycling pickup service will be provided at each unit.*

Corvallis is currently in compliance with State and Federal air and water quality standards. It is anticipated that any emissions resulting from this development will be minimal. This project is not expected to affect the City's compliance with these State and Federal standards.

5. Lighting;

Response: *All new exterior lighting for the project will be shielded so as not to produce glare onto adjacent properties.*

6. Signage;

Response: *All signage associated with the development will be in compliance with the City's sign regulations and vision clearance requirements.*

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.67

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.180

7. **Landscaping for buffering and screening;**

Response: *The proposed screening and buffering is proposed to be in compliance with LDC 4.20.40 and 4.2.50.*

8. **Transportation facilities;**

Response: *The development site is adjacent to SW 49th Street, which is designated as a neighborhood collector street, and SW 53rd Street, which is designated an arterial street. Their capacity is adequate to handle the quantity of additional traffic to be generated by the development. Existing bicycle lanes are readily accessible to the site, at SW 53rd Street to the west.*

9. **Traffic and off-site parking impacts;**

Response: *Following is a trip generation summary for the project:*

Trip Generation Summary			
	Entering Trips	Exiting Trips	Total Trips
63 Single-family Detached (ITE Land Use Code – Residential Single-Family Detached Housing)			
AM Peak Hour	12	35	47
PM Peak Hour	40	24	64

As the development site will generate more than 30/trips per hour, a LOS analysis for the adjacent intersection(s) is required to be performed. The LOS analysis is included as part of this application, and discussed in more detail in the Annexation application narrative.

10. **Utility infrastructure;**

Response: *New utility infrastructure to be provided will include new water service provided via a new second level pump station as indicated on the City's Utility Master Plan, and a new storm sewer main discharging to the west to the existing county ditch in SW 53rd Street, and to the east by extending the existing storm sewer located in SW 49th Street south to the site. A new sewer main will be tapped off the existing sewer main located adjacent to the property in SW 49th Street. A new sanitary sewer line will be extended in SW 53rd Street from the existing mainline in SW Country Club Road at the intersection of SW 53rd. New water mains will be tapped off the existing water main located adjacent to the property in SW 49th Street, as well as constructing a new 16-inch water main at the intersection of SW Country Club Road and*

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.181

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.68

SW 53rd Street along the frontage of the proposed annexation. A new water main will loop the waterlines in SW 53rd Street and SW 49th Street. New storm water quality and detention facilities will be constructed as part of this development. Biofiltration water quality swales in the street planter area will be used as the water quality facilities and shall be designed consistent with the City's adopted standard of the King County Washington Surface Water Design Manual, as design parameters allow. (In the event that water quality swales cannot be designed to meet City design criteria, approved underground mechanical water quality structures will be used.) The detention facilities will be detention ponds as shown on the Proposed Utilities Plan and shall be designed to be consistent with the City's adopted standard of the King County Washington Surface Water Design Manual. The sewer mains are sized adequately to support the development and no compatibility conflicts are anticipated. The new sidewalk and streetlights are to be installed per City requirements and are not anticipated to generate any conflicts.

11. Effects on air and water quality (note: a DEQ permit is not sufficient to meet this criterion);

Response: *This project does not create any air or water quality impacts which would be inconsistent with or in excess of the residential zoning or the adjacent residential uses.*

Stormwater quantity and quality measures will be made consistent with the City's adopted Master Plan and Design Standards.

12. Consistency with the applicable development standards, including the applicable Pedestrian Oriented Design Standards;

Response: *The development of the subject site is proposed to be in compliance with Chapter 4.10 – PODS. The General Land Use/Conceptual Development Plan indicates an example of how this might be possible.*

13. Preservation and/or protection of Significant Natural Features addressed in Chapter 4.2 – Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 – Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 – Significant Vegetation Protection Provisions; and Chapter 4.13 – Riparian Corridor and Wetland Provisions. Streets shall also be designed along contours, and structures shall be designed to fit the topography of the site to ensure compliance with these Code standards.

Response: *There are no existing Significant Natural Features on the site, though there are some steep slopes. All future development activities will be accomplished in*

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.69

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.182

accordance with Chapter 4.5 – Natural Hazard and Hillside Development Provisions.

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.70

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.183

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.184

Conceptual and Detailed Development

CONCEPTUAL AND DETAILED DEVELOPMENT PLAN
(Updated April 26, 2010)

A. Applicant's Request

The applicant is seeking approval of a Conceptual and Detailed Development Plan.

B. Description of the Project

The site is bordered on the east by City limits, on the north, south, and west by rural residential development. The site is gently sloped from the southern central area, generally to the north and east. The site contains no significant vegetation, wetlands, riparian corridors or floodplains. No new dwelling units are proposed at this time.

The first phase of the detailed development plan proposes to extend an existing public storm drain in SW 49th Street, and to construct the westerly intersection improvements of the new neighborhood collector street and existing SW 49th Street, as proposed on the General Land Use/Conceptual Development Plan. This work is consistent with LDC development requirements for public infrastructure, and begins the improvement of the "curb appeal" of the applicant's property, to help promote future development opportunities. Future phases of the detailed development plan will be submitted as additional applications at some later date, and will be consistent with the conceptual development plan.

C. Purpose of Planned Development

Section 2.5.20 – PURPOSES

Planned Development review procedures are established in this Chapter for the following purposes:

a. Promote flexibility in design and permit diversification in location of structures;

b. Promote efficient use of land and energy, and facilitate a more economical arrangement of buildings, circulations systems, land uses, and utilities;

<...>

h. Provide benefits within the development site that compensate for the variations from development standards such that the intent of the development standards is still met.

Though the first phase of the Detailed Development Plan does not request any variations from development standards, it is anticipated that future Detailed Development Plans will likely request variances and offer compensating benefits accordingly. Given that the site is larger than five acres and, as such, the development standards require variation in housing types, it is anticipated that variances to the RS-6 development standards for attached housing will be requested in order to provide more efficient use of land and circulation systems.

D. Conceptual Development Plan Review Procedures

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.72

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.185

1. *Submission Requirements*

Section 2.5.40 - CONCEPTUAL DEVELOPMENT PLAN REVIEW PROCEDURES

An application filed for a Conceptual Development Plan shall be reviewed in accordance with the following procedures.

2.5.40.01 - Application Requirements

When the Director deems any requirement below unnecessary for proper evaluation of a proposed application, it may be waived.

Prior to formal submittal of an application, the applicant is encouraged to participate in an informal pre-application conference with Community Development Department staff to discuss the proposal, the applicant's requirements, and the applicant's materials developed in response to this Code's applicable requirements.

Applications shall be made on forms provided by the Director and shall be accompanied by:

a. **Location and description of the subject property(ies), including all of the following, as relevant: address; tax assessor map and tax lot number; parcel number; written description of the boundaries of the proposal; and one set of assessor's maps of the subject site and surrounding area, with the subject site outlined in red;**

b. **Signed consent by the subject property's owner(s) and/or the owner's legal representative(s). If a legal representative is used as a signatory, written proof of ability to be a signatory shall be furnished to the City. The owner's name(s) and address(es), and the applicant's name, address, and signature shall also be provided;**

c. **Fifteen copies of the narrative, on 8.5 by 11 in. sheets, and 15 copies of graphics at an 8.5 by 11 in. size. The Director may request additional copies of the narrative and/or graphics for routing purposes, if needed. Related names/numbers must be legible on the graphics. The Director may also require some or all graphics at an 11 by 17 in. size if, for legibility purposes, such a size would be helpful;**

d. **Six sets of full-scaled black line or blueprint drawings of the graphic(s), with sheet size not to exceed 24 by 36 in. Where necessary, an overall plan with additional detail sheets may be submitted;**

e. **An electronic version of these documents (both text and graphics, as applicable) if an applicant has produced part or all of an application in an electronic format. The applicant shall coordinate with the City regarding compatible electronic formats, to the greatest extent practicable.**

Response: *The application form (signed by the owners of the property) and appropriate copies of the graphics are being submitted with this Narrative.*

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.73

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.186

2. *Submission Graphic Requirements*

f. **Graphic Requirements Graphics shall include the following information where applicable:**

1. **Public Notice Map - Typically a street map at one in. = 800 ft. as per the City's public notice format;**

Response: *Attachment "A," Public Notice Map / Vicinity Map.*

2. **Zoning Map - Typically one in. = 400 ft., but up to one in. = 800 ft., depending on the size of the site, with a key that identifies each zone on the site and within 1,000 ft. of the site as per City format;**

Response: *Attachment "B," Existing Zoning Designations.*

3. **Comprehensive Plan Map - Typically one in. = 800 ft. with a key that identifies each and use designation on the site and within 1,000 ft. of the site as per City format;**

Response: *Attachment "C," Existing Comprehensive Plan Designations*

4. **Existing Land Use Map - Typically a topographic map that extends at least 1,000 ft. beyond the site. The map shall include building footprints and distinguish between single-family, multi-family, Commercial, and Industrial Uses, as well as other significant features such as roads, parks, schools, and Significant Natural Features identified by Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions;**

Response: *Attachment "D," Surrounding Uses.*

5. **Significant Natural Features Map(s) - Maps shall identify Significant Natural Features of the site, including but not limited to:**

a) **All information and preservation plans required by Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions, as applicable;**

Response: *Attachments "E" through "I". There are no inventoried significant natural features or natural hazards on the site. The site does contain steep slopes, which are indicated on Attachment "H".*

b) **All Jurisdictional Wetlands not already shown as part of "a," above. While not all Jurisdictional Wetlands are locally regulated by Chapter 4.13 - Riparian Corridor and Wetland Provisions, they need to be shown so that the City can route the application to the appropriate state and federal agencies for comment; and**

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.187

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.74

Response: *Not applicable.*

c) **Archaeological sites recorded by the State Historic Preservation Office (SHPO).**

Response: *There are no recorded archeological sites on the applicant's property.*

6. **Site Plan(s) and Other Graphics -**

a) **Site plan(s) and other graphics shall be drawn to scale and shall contain a sheet title, date, north arrow, and legend placed in the same location on each sheet and contain the information listed in this Section and "b," below.**

Graphics shall include features within a minimum 150-ft. radius of the site, such as existing streets and parcel boundaries; existing structures; driveways; utilities; Significant Natural Features regulated by Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions; Minimum Assured Development Area information from Chapter 4.11 - Minimum Assured Development Area (MADA), if applicable; and any other information that, in the Director's opinion, would assist in providing a context for the proposed development. The Director may require that an applicant's graphics include information on lands in excess of 150 ft. from a development site (e.g., such as in cases where an adjacent property is large and a view of the whole parcel would be helpful, or when existing infrastructure is far away from the site).

b) **The site plan and related graphics shall also include:**

1) **Boundary of the proposed development site and any interior boundaries related to proposed development phases or Land Divisions;**

Response: *Attachments "K", General Land Use/Conceptual Development Plan and "K-1", Detailed Development Phasing Plan.*

2) **Number of lots and their dimensions, including frontage, depth, and area in sq. ft., as applicable;**

Response: *Not applicable. The Conceptual Development Plan does not indicate any proposed land division(s), and Phase 1 of the Detailed Development Plan is limited in scope to land dedicated to the public right-of-way. Any land division proposed for the site will be included under future development application(s). Existing lots and dimensions are shown on Attachment "P", Boundary Survey.*

3) **General location and floor area of existing and proposed structures and other improvements, including maximum building heights, Building Types, and gross density per acre for residential developments; and location of fire**

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.75

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.188

hydrants, overhead lines in the abutting right-of-way, easements, fences, walls, parking calculations, and walkways; and any proposed Use restrictions. Where required by the applicable zone, lot coverage and Green Area calculations shall be provided. An indication of approximate building envelopes may be required to evaluate building relationships;

Response: *Attachment "K-1", Detailed Development Phasing Plan.*

4) **General location and dimensions of areas to be conveyed, dedicated, or reserved as common open spaces, common Green Area, public parks, recreational areas, school sites, and similar public and semi-public uses;**

Response: *Not Applicable.*

5) **Existing and proposed circulation system plan and dimensions including streets, driveways, bikeways, sidewalks, multi-use paths, off-street parking areas, service areas (including refuse), loading areas, direction of traffic flow, and major points of access to public rights-of-way. Illustrative cross-sections of streets shall be provided. Notations of proposed ownership (public or private) should be included where appropriate;**

Response: *Attachments "K", General Land Use/Conceptual Development Plan and "K-1", Detailed Development Phasing Plan.*

6) **Existing and proposed general pedestrian circulation system, including its interrelationship and connectivity with the existing and proposed vehicular, bicycle, and pedestrian circulation systems, and indicating proposed treatments for points of conflict;**

Response: *Attachments "K", General Land Use/Conceptual Development Plan and "K-1", Detailed Development Phasing Plan.*

7) **Utilities plan indicating existing and proposed utility systems and their function, including sanitary sewer, storm sewer, and drainage and water systems;**

Response: *Attachments "K-1", Detailed Development Phasing Plan, "N", Proposed Utility Plan, and "O", Enlarged Utility Plan.*

8) **Identification of Significant Natural Features that were included on the Significant Natural Features map(s) required in Section 2.4.30.01.f.5, above, to indicate the relationship of the proposal to the site's Significant Natural Features;**

Response: *Attachments "E" through "I", Natural Features Maps.*

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.76

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.189

9) **Existing and proposed topographic contours at two-ft. intervals. Where the grade of any part of the development site exceeds 10 percent and where the development site abuts existing developed lots, a conceptual grading plan shall be required. The grading plan shall contain adequate information to evaluate impacts to the site and adjacent areas, consistent with Chapter 4.5 - Natural Hazard and Hillside Development Provisions. If a grading plan is required, it shall indicate how these objectives are met, how runoff or surface water from the development will be managed, and how the development's surface waters will be disposed;**

Response: *Attachment "L", Existing Conditions Map.*

10) **Conceptual landscape plan drawn to scale and showing the location of existing trees and vegetation proposed to be removed from or to be retained on the site, the location and conceptual design for landscaped areas (types of plant materials as basic as trees, shrubs, and groundcover/lawn areas), and other conceptual landscape features including walls and fences;**

Response: *No new landscaping is proposed under Phase 1 of the Detailed Development Plan. (A) Conceptual Landscape Plan(s) for the site itself will be submitted with future application(s) for land divisions and improvements. It is anticipated that all landscaping will be installed in accordance with LDC Chapter 4.2. Therefore, the applicant requests that the director waive the requirement for a full Conceptual Landscape Plan to be submitted for the entire site at this time.*

11) **For residential development, existing structures and trees located on land adjacent to the development that, between 10 a.m. and 3 p.m. on November 21, will reduce Solar Access to the subject Property;**

Response: *Not applicable. There are no existing structures or trees located on land adjacent to the development that will reduce Solar Access to the property.*

12) **For residential development, indication of which buildings will have Solar Access protection, and appropriate documentation to verify how Solar Access will be protected;**

Response: *Not applicable. No new buildings are being proposed at this time.*

g. **Narrative Requirements**

A written statement shall include the following information:

1. **Statement of planning objectives to be achieved by the Detailed Development Plan. This statement shall include a description of the proposed development, the rationale behind the assumptions and choices made, and a discussion of how the application meets the review criteria in 2.5.40.04 below, including the development standards required by this Code;**

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.77

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.190

Response: *The planning objectives to be achieved by the Conceptual Development Plan include compact and efficient use of land, variety in housing types, and a pedestrian- and bike-friendly walkable neighborhood.*

Under Phase 1 of the detailed development plan, the applicant proposes to extend an existing public storm drain in SW 49th Street, and to construct an the westerly intersection improvements of the new neighborhood collector street and existing SW 49th Street on land dedicated to public right-of-way. The planning objective met by this phase of development is the orderly expansion of utilities and transportation facilities.

2. Quantitative data for the following where appropriate:

a) Total number and type of dwelling units;

Response: *Attachment "L", Existing Conditions Map. No new dwelling units are being proposed at this time. Detailed information concerning proposed dwelling units will be included in future development application(s) for the site.*

b) Square footages of all structures;

Response: *Attachment "L", Existing Conditions Map. No new structures are being proposed at this time. Detailed information concerning proposed structures will be included in future development application(s) for the site.*

c) Parcel sizes;

Response: *Attachment "P", Boundary Survey. No new land divisions are being proposed at this time. Detailed information concerning proposed land divisions will be included in future development application(s) for the site.*

d) Proposed lot coverage of buildings and structures, where known;

Response: *Not applicable. No new structures are being proposed at this time. Detailed information concerning proposed structures will be included in future development application(s) for the site.*

e) Gross densities per acre;

Response: *Attachment "K", General Land Use/Conceptual Development Plan.*

f) Total square footage of Green Area; and

Response: *Not applicable. No new structures are being proposed at this time. Detailed information concerning proposed structures will be included in future development application(s) for the site.*

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.78

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.191

g) **Total number of parking spaces (compact, standard, handicapped, bicycle) and breakdown of how parking is consistent with this Code's requirements; and**

Response: *Not applicable. No new structures are being proposed at this time. Detailed information concerning proposed structures will be included in future development application(s) for the site.*

h) **Total square footage of nonresidential construction;**

Response: *Not applicable.*

3. **General statement outlining timing, responsibilities, and financial assurances for all public and non-public improvements such as irrigation, private roads and drives, landscape, and maintenance.**

Response: *All public improvements will be constructed at the applicant's expense. The first phase of public improvements is to be constructed under Phase 1 of the Detailed Development Plan, financial security for which will be provided to City staff prior to the City Council Hearing on the application, for purposes of activating the Detailed Development Plan.*

Subsequent phases of public improvements will be constructed as associated with future land development application(s), consistent with the Conceptual Development Plan.

4. **Statement describing phases of project, if proposed. Phases shall be:**

d) **Substantially and functionally self-contained and self-sustaining with regard to access, parking, utilities, Green Areas, and similar physical features; and capable of substantial occupancy, operation, and maintenance upon completion of construction and development;**

Response: *The first phase of the detailed development plan proposes to extend an existing public storm drain in SW 49th Street past the proposed intersection improvements, and to construct the westerly intersection improvements of the new neighborhood collector street and existing SW 49th Street, as proposed on the General Land Use/Conceptual Development Plan. Both the public storm drain and the street intersection improvements will be self-contained and self-sustaining upon completion of construction.*

Future phase(s) of development throughout the rest of the site will be included in future development application(s), consistent with the Conceptual Development Plan. It is anticipated that all future phase(s) will be in compliance with this standard.

b) **Arranged to avoid conflicts between higher and lower density development;**

Response: *Not applicable.*

c) **Properly related to other services of the community as a whole and to those facilities and services yet to be provided; and**

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.79

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.192

Response: *The public improvements proposed under Phase 1 of the Detailed Development Plan are directly associated with existing SW 49th Street. Subsequent phase(s) will be submitted under future application(s), but will be in accordance with the existing and conceptual facilities that are indicated on the plans. Connectivity to the public improvements constructed under the first phase will be accomplished with construction of the new neighborhood collector street, as indicated on Attachment "K-1", Detailed Development Phasing Plan.*

d) Provided with such temporary or permanent transitional features, buffers, or protective areas as may be required to prevent damage or detriment to any completed phases and to adjoining properties not in the Planned Development;

Response: *Not applicable to the first phase of the project. It is anticipated that subsequent phase(s) will be in compliance with this standard where applicable.*

5. Traffic impact study, if required by the City Engineer. The City Engineer shall define the scope of the traffic impact study based on established procedures. See Section 4.0.60.a; and

Response: *A complete Traffic Impact Study (TIS) is included as part of this application. See Annexation Narrative portion of the application for a more thorough discussion of the results of the TIS.*

6. For residential development, a statement or map describing existing and proposed buildings with protected Solar Access consistent with Chapter 4.6 - Solar Access.

Response: *Not applicable. No new structures are being proposed at this time. Detailed information concerning proposed structures will be included in future development application(s) for the site.*

7. Information required by Chapter 4.5 – Natural Hazard and Hillside Development Provisions, Chapter 4.11 – Minimum Assured Development Area (MADA), Chapter 4.12 – Significant Vegetation Protection Provisions, and Chapter 4.13 – Riparian Corridor and Wetland Provisions, as applicable.

Response: *Attachments "E" through "I", Natural Features Maps.*

1. Approval Criterion

2.5.40.04 - Review Criteria

Requests for the approval of a Conceptual Development Plan shall be reviewed to ensure consistency with the purposes of this Chapter, policies and density requirements of the Comprehensive Plan, and any other applicable policies and standards adopted by the City Council. The application shall demonstrate compatibility in the areas in "a," below, as applicable, and shall meet the Natural Resource and Natural Hazard criteria in "b," below:

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.80

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.193

Response: *The applicant's proposal is intended to be in compliance with the standards referenced above.*

a. Compatibility Factors -

2. Approval Criterion

1. Compensating benefits for the variations being requested;

Response: *Not applicable. No variances are being requested at this time. Variances proposed for future development on the site will be included as part of future application(s), along with associated compensating benefits.*

3. Approval Criterion

2. Basic site design (the organization of Uses on a site and the Uses' relationships to neighboring properties);

Response: *Future development on the site will be Low-Density Residential in use. Neighboring properties are all Low-Density residential in use, and therefore are inherently compatible with the use proposed for the lot.*

4. Approval Criterion

3. Visual elements (scale, structural design and form, materials, etc.);

Response: *As no dwellings are proposed at this time, the visual landscape of the private lots will remain unchanged. The addition of the westerly intersection improvements of the new neighborhood collector street and existing SW 49th Street will improve the appearance of the western frontage of existing SW 49th Street. Future dwellings will all be constructed to RS-6 development standards, out of typical residential construction materials, and so are anticipated to be similar in scale, form and materials to neighboring development. Detailed information concerning proposed dwellings will be included in future development application(s) for the site.*

5. Approval Criterion

4. Noise attenuation;

Response: *No special measures have been considered for noise attenuation, nor will this project create any noises greater than or not typical of the surrounding residential and street uses.*

6. Approval Criterion

5. Odors and emissions;

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.81

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.194

Response: *Odors on the site are anticipated to be similar to those permitted on adjacent residential lands. Individual trash and recycling pickup service will be provided at each unit.*

Corvallis is currently in compliance with State and Federal air and water quality standards. It is anticipated that any emissions resulting from this development will be minimal. This project is not expected to affect the City's compliance with these State and Federal standards.

7. Approval Criterion

6. Lighting;

Response: *All new exterior lighting for the project will be shielded so as not to produce glare onto adjacent properties.*

8. Approval Criterion

7. Signage;

Response: *It is anticipated that all future proposed signage will be in compliance with the standards of LDC Chapter 4.7.*

9. Approval Criterion

8. Landscaping for buffering and screening;

Response: *It is anticipated that all future proposed landscaping for buffering and screening, if required, will be in compliance with the standards of LDC Chapter 4.2.*

10. Approval Criterion

9. Transportation facilities;

Response: *The potential impact on transportation facilities of the site as a whole is discussed in detail in the Annexation Narrative portion of the application. The public improvements proposed under Phase 1 of the Detailed Development Plan will have no impact on Transportation facilities, as no additional traffic will be generated.*

11. Approval Criterion

10. Traffic and off-site parking impacts;

Response: *The potential impact on traffic of the site as a whole is discussed in detail in the Annexation Narrative portion of the application. It is anticipated that future development of the site will be in compliance with all requirements of LDC Section 4.1 for off-site parking. The public improvements proposed under Phase 1 of the Detailed Development Plan will have no impact on traffic or off-site parking.*

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.82

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.195

12. Approval Criterion

11. Utility infrastructure;

Response: *The availability of utility infrastructure for the site as a whole is discussed in detail in the Annexation Narrative portion of the application. New utility infrastructure to be provided for Phase 1 of the Detailed Development Plan will include extension of an existing public storm drain in SW 49th Street.*

13. Approval Criterion

12. Effects on air and water quality (note: a DEQ permit is not sufficient to meet this criterion);

Response: *This project does not create any air or water quality impacts which would be inconsistent with or in excess of the residential zoning or the surrounding residential uses.*

Proposed stormwater quality measures for the site as a whole are discussed in detail in the Annexation Narrative portion of the application. New stormwater quality measures for Phase 1 of the Detailed Development Plan are not required as the quantity of new pollution generating impervious surfaces does not exceed the minimum threshold requirement.

14. Approval Criterion

13. Design equal to or in excess of the types of improvements required by the standards in Chapter 4.10 - Pedestrian Oriented Design Standards; and

Response: *It is anticipated that future development of the site will be in compliance with the requirements of LDC Chapter 4.10. No new dwellings or structures proposed under Phase 1 of the Detailed Development Plan.*

15. Approval Criterion

5. Preservation and/or protection of Significant Natural Features, consistent with Chapter 4.2 – Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 – Natural Hazard and Hillside Development Provisions, Chapter 4.11 – Minimum Assured Development Area (MADA), Chapter 4.12 – Significant Vegetation Protection Provisions, and Chapter 4.13 – Riparian Corridor and Wetland Provisions. Streets shall also be designed along contours, and structures shall be designed to fit the topography of the site to ensure compliance with these Code Standards;

Response: *There are no inventoried Significant Natural Resources on the lot.*

E. Detailed Development Plan Review Procedures

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.83

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.196

An application for approval of a Detailed Development Plan must contain the information and follow the procedures described in LDC 2.5.40.01 and 2.5.50.01. Compliance with those procedures, and the information required to be submitted by those procedures, is discussed as follows:

1. Application Requirements

An application filed for a Detailed Development Plan shall follow the requirements specified for a Conceptual Development Plan in Section 2.5.40 and shall also include the following:

a. Graphic Requirements

In addition to the graphic requirements specified for a Conceptual Development Plan in Section 2.5.40.01, a Detailed Development Plan shall include:

1. **Location and floor area of existing and proposed structures and other improvements, including maximum heights, Building Types, and gross density per acre for residential developments; and location of fire hydrants, overhead lines in the abutting right of way, easements, fences, walls, parking calculations, and walkways. Where required by the applicable zone, Lot Coverage and Green Area calculations shall be provided. Parking calculations shall also be provided;**

Response: *Not applicable. No new buildings or structures are being proposed at this time.*

2. **Typical elevations and floor plans of buildings and structures (which may be submitted on additional sheets) sufficient to indicate the architectural intent and character of the proposed development, indicate the entrance and exit points, and permit computations of parking, design, and yard requirements. The elevations shall specify building materials to be used, specifications as to type, color, and texture of proposed exterior surfaces, and information demonstrating compliance with Chapter 4.10 - Pedestrian Oriented Design Standards;**

Response: *Not applicable. No new buildings or structures are being proposed at this time.*

3. **For residential development, the Housing Types within the development that satisfy the Housing Type variation provisions within the underlying zone. When a Subdivision is processed concurrently with a Detailed Development Plan, the developer shall note, on individual lots on the Subdivision Plat, the Housing Types within the development that satisfy the Housing Type variation provisions within the underlying zone. Single-family Detached housing need not be identified;**

Response: *Not applicable.*

4. **Conceptual landscape plan drawn to scale and showing the location of existing trees and vegetation proposed to be removed from or to be retained on the site, the location and conceptual design for landscaped areas (types of plant materials as basic as trees, shrubs, and groundcover/lawn areas), other conceptual landscape**

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.84

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.197

features including walls and fences, and irrigation systems required to maintain plant materials;

Response: *Attachment "K-1," Detailed Development Phasing Plan.*

5. **Detailed utilities plan indicating existing and proposed utility systems and their function, including sanitary sewer, storm sewer, and drainage and water systems;**

Response: *Attachment "K-1", Detailed Development Phasing Plan.*

6. **Existing and proposed circulation system plan and dimensions including streets, driveways, bikeways, sidewalks, multi-use paths, off-street parking areas, service areas (including refuse), loading areas, direction of traffic flow, and major points of access to public rights-of-way. Illustrative cross-sections of streets shall be provided. Notations of proposed ownership (public or private) should be included where appropriate;**

Response: *Attachment "K-1," Detailed Development Phasing Plan.*

7. **Location and dimensions of all areas to be conveyed, dedicated, or reserved as common open spaces, Green Area, public parks, recreational areas, school sites, and similar public and semi-public uses;**

Response: *Not applicable.*

8. **Exterior lighting plan indicating the location, size, height, typical design, material, color, method, and direction of illumination;**

Response: *Not applicable. No new lighting is included in this proposal.*

9. **For residential development, location of existing and proposed structures and trees on the site that could reduce solar access to any buildable area within the development. The application shall indicate the type and location of trees to be preserved or planted, and the shadow patterns of the trees at their mature height between 9 a.m. and 3 p.m. on November 21; and**

Response: *Not applicable.*

10. **For residential development, the location of solar collectors on land adjacent to the development for which Solar Access permits have been granted.**

Response: *Not applicable.*

b. Narrative Requirements

In addition to the narrative requirements specified for a Conceptual Development Plan in Section 2.5.40.01 above, the Detailed Development Plan shall include:

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.85

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.198

1. **Proposals for setbacks or building envelopes, lot areas where Land Division is anticipated, and number of parking spaces to be provided (per gross floor area or per number of units);**

Response: *Not applicable. No new building envelopes, land division, or parking spaces are proposed to be provided at this time.*

2. **Detailed statement outlining timing, responsibilities, and assurances for all public and non-public improvements such as irrigation, private roads and drives, landscape, and maintenance;**

Response: *All public improvements included under Phase 1 of the Detailed Development Plan will be constructed in a single phase at the applicant's expense.*

3. **Proposed methods of energy conservation; and**

Response: *Not applicable. No new building construction is being proposed at this time.* .

4. **Statement addressing compatibility of proposed development to adjacent land uses relating to such items as architectural character, building type, and height of proposed structures.**

Response: *The proposed development is compatible to adjacent land uses, as the Conceptual Development indicates development to RS-6 standards. The new westerly intersection improvements of the proposed neighborhood collector street and existing SW 49th Street is to be constructed according to City standards. All neighboring properties are zoned for low-density residential development, either to City or County standards, and as such development to City standards is inherently compatible.*

16. Approval Criterion

2.5.50.04 - Review Criteria for Determining Compliance with Conceptual Development Plan

Request for approval of a Detailed Development Plan shall be reviewed to determine whether it is in compliance with the Conceptual Development Plan. The Detailed Development Plan shall be deemed to be in conformance with the Conceptual Development Plan and may be approved provided it is consistent with the review criteria in Section 2.5.40.04 above, provides a clear and objective set of development standards for residential Detailed Development Plans (considering the Detailed Development Plan proposal, required adherence to this Code, and Conditions of Approval), and does not involve any of the factors that constitute a major change in the Planned Development. See Section 2.5.60.02 - Thresholds that Separate a Minor Planned Development Modification from a Major Planned Development Modification.

Response: *The review criteria per Section 2.5.40.04 are annotated above.*

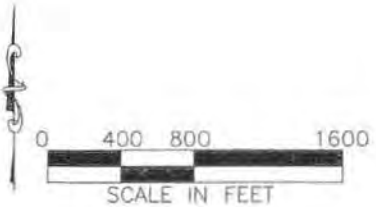
49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.199

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.86

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.201

Graphics

- Attachments "A" – "P"

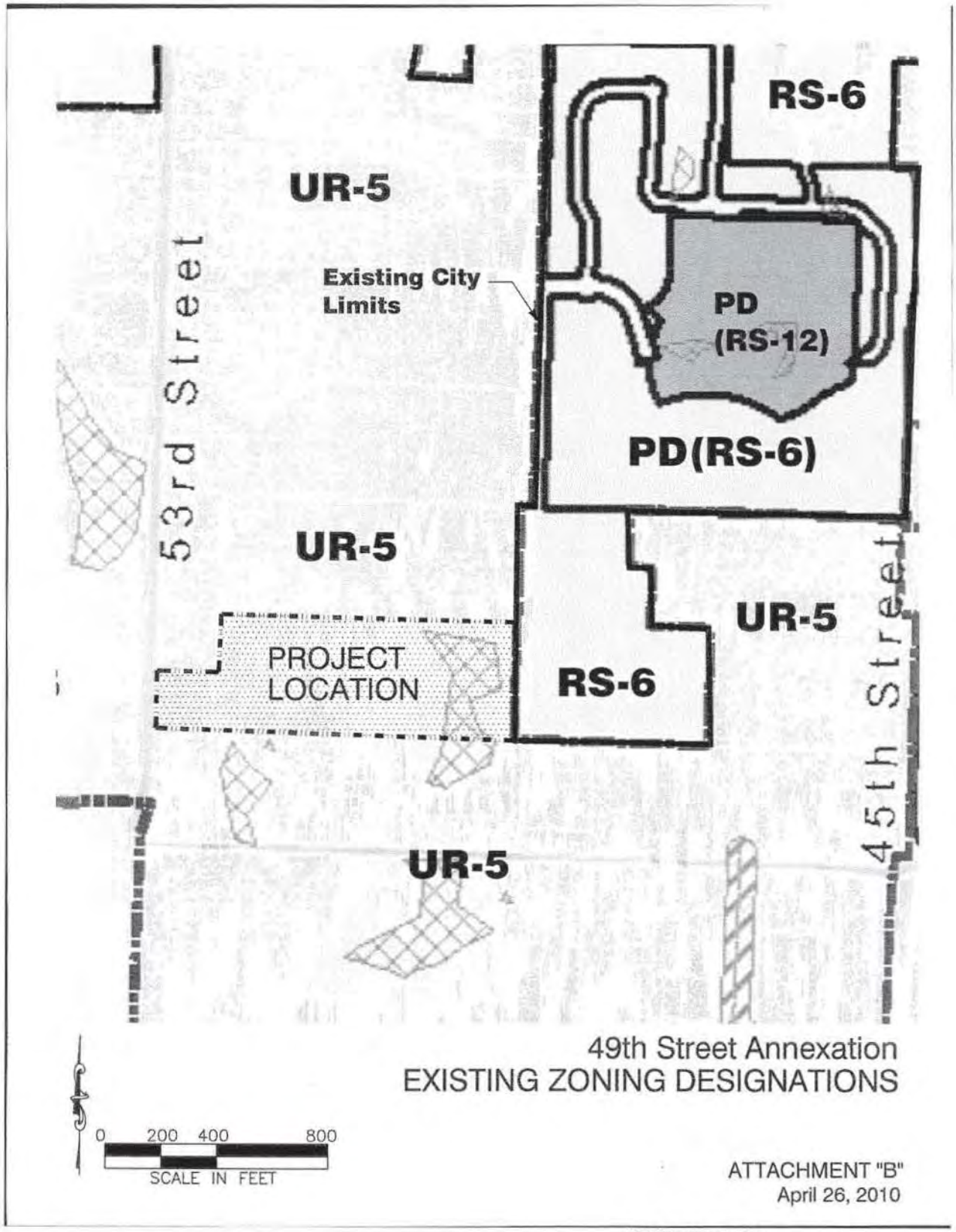


49th Street Annexation
PUBLIC NOTICE MAP

ATTACHMENT "A"
April 26, 2010

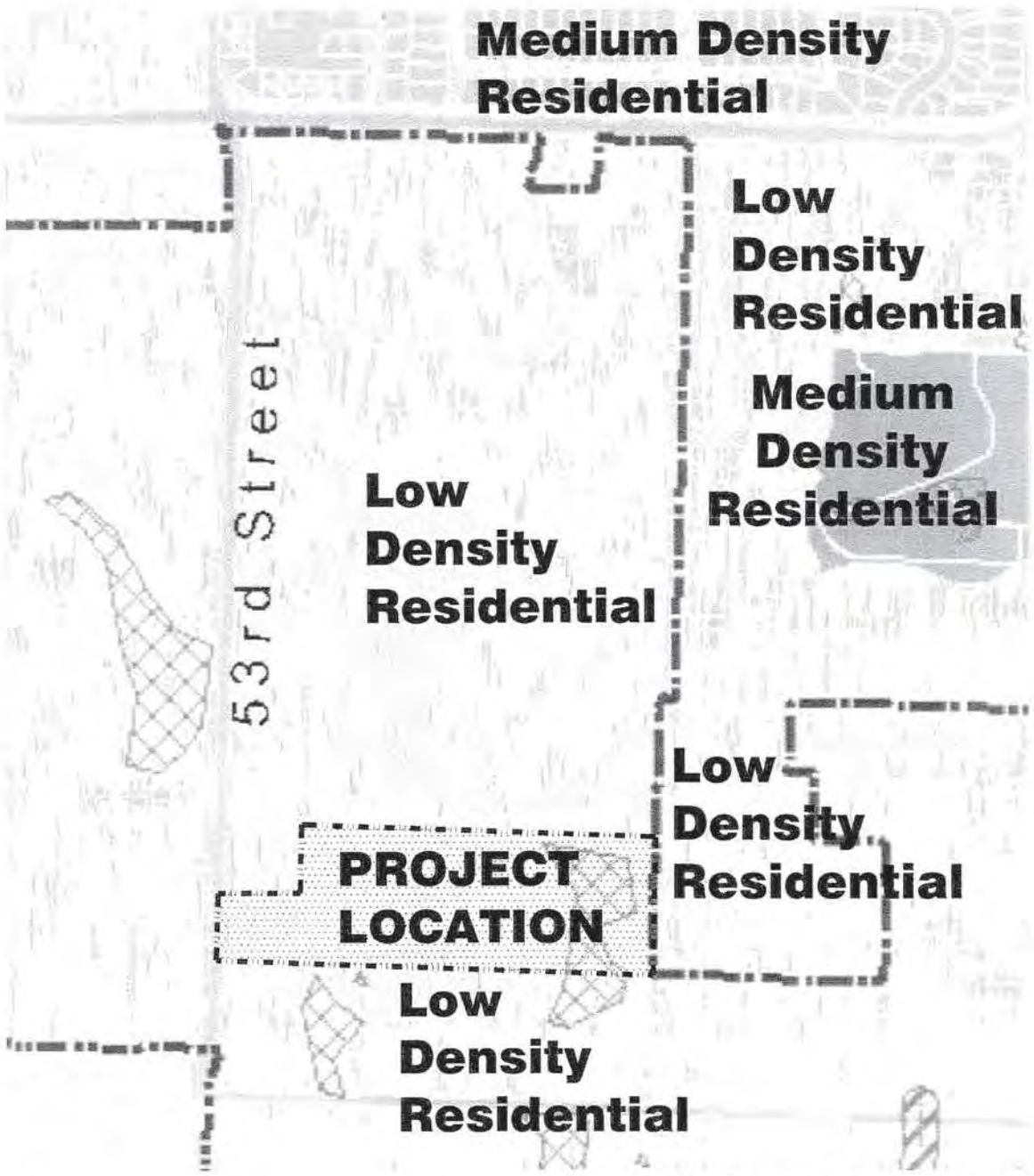
49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.89

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.202



49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.90

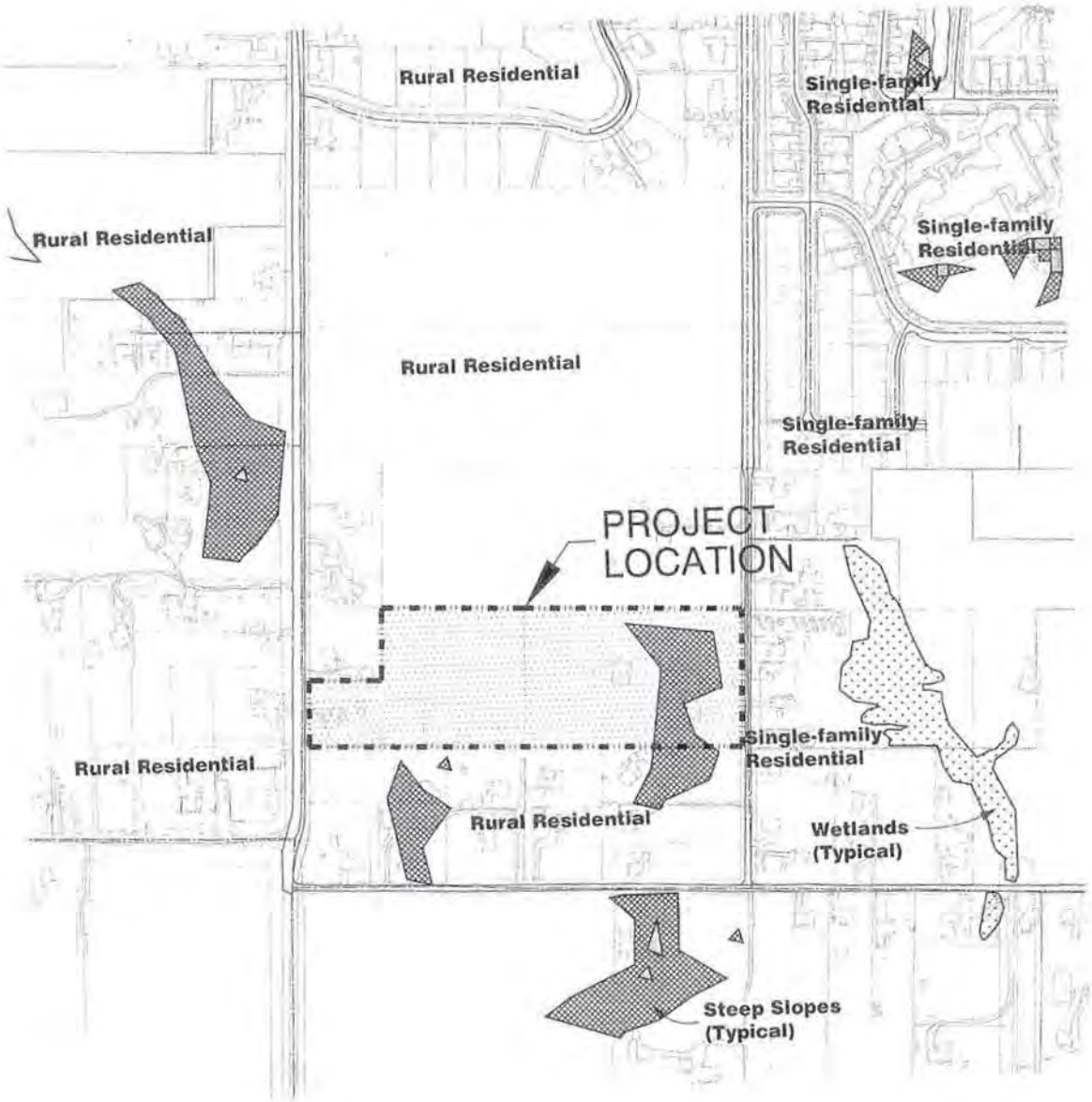
49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.203

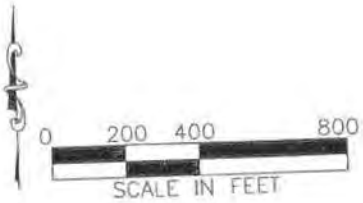


49th Street Annexation
COMPREHENSIVE PLAN DESIGNATIONS

0 200 400 800
SCALE IN FEET

ATTACHMENT "C"
April 26, 2010

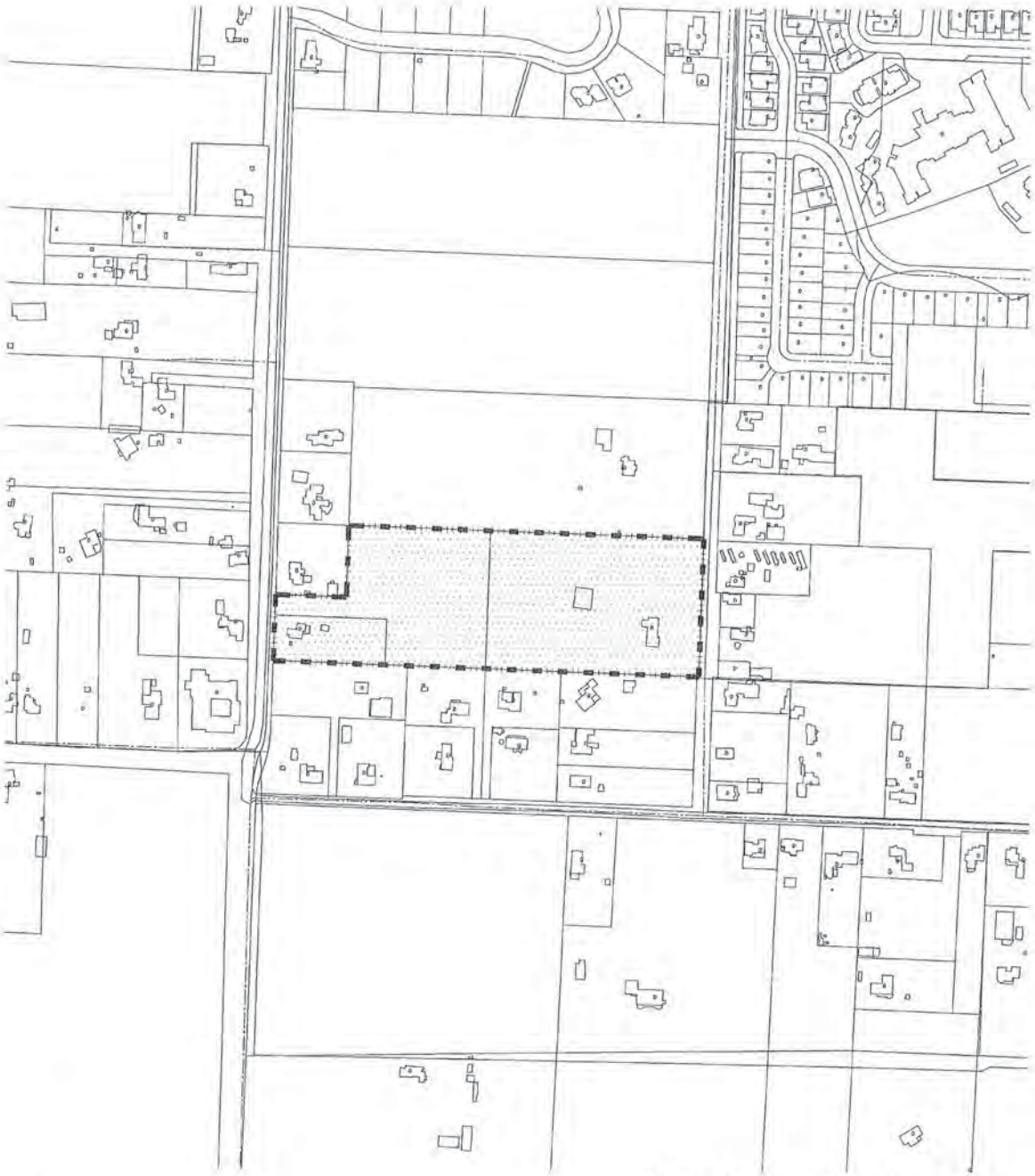


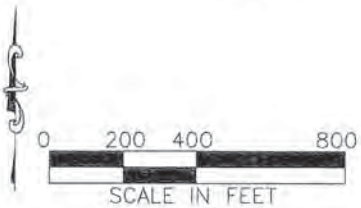


49th Street Annexation
SURROUNDING USES

ATTACHMENT "D"
April 26, 2010

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.92

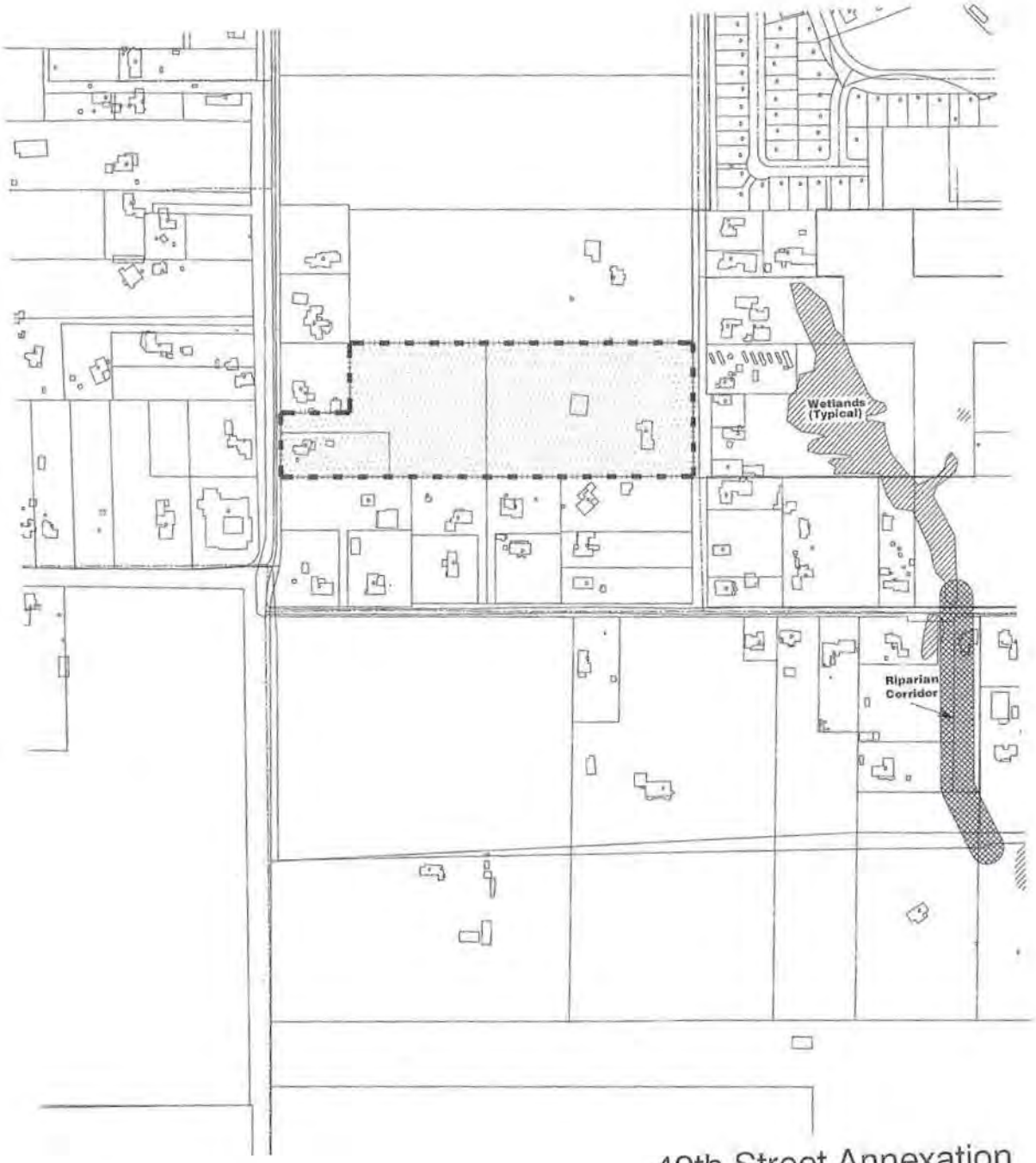


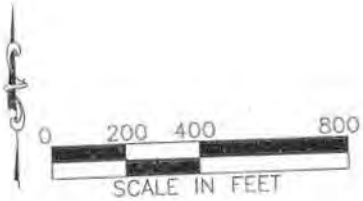


49th Street Annexation
NATURAL FEATURES
SIGNIFICANT VEGETATION

ATTACHMENT "E"
April 26, 2010

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.93

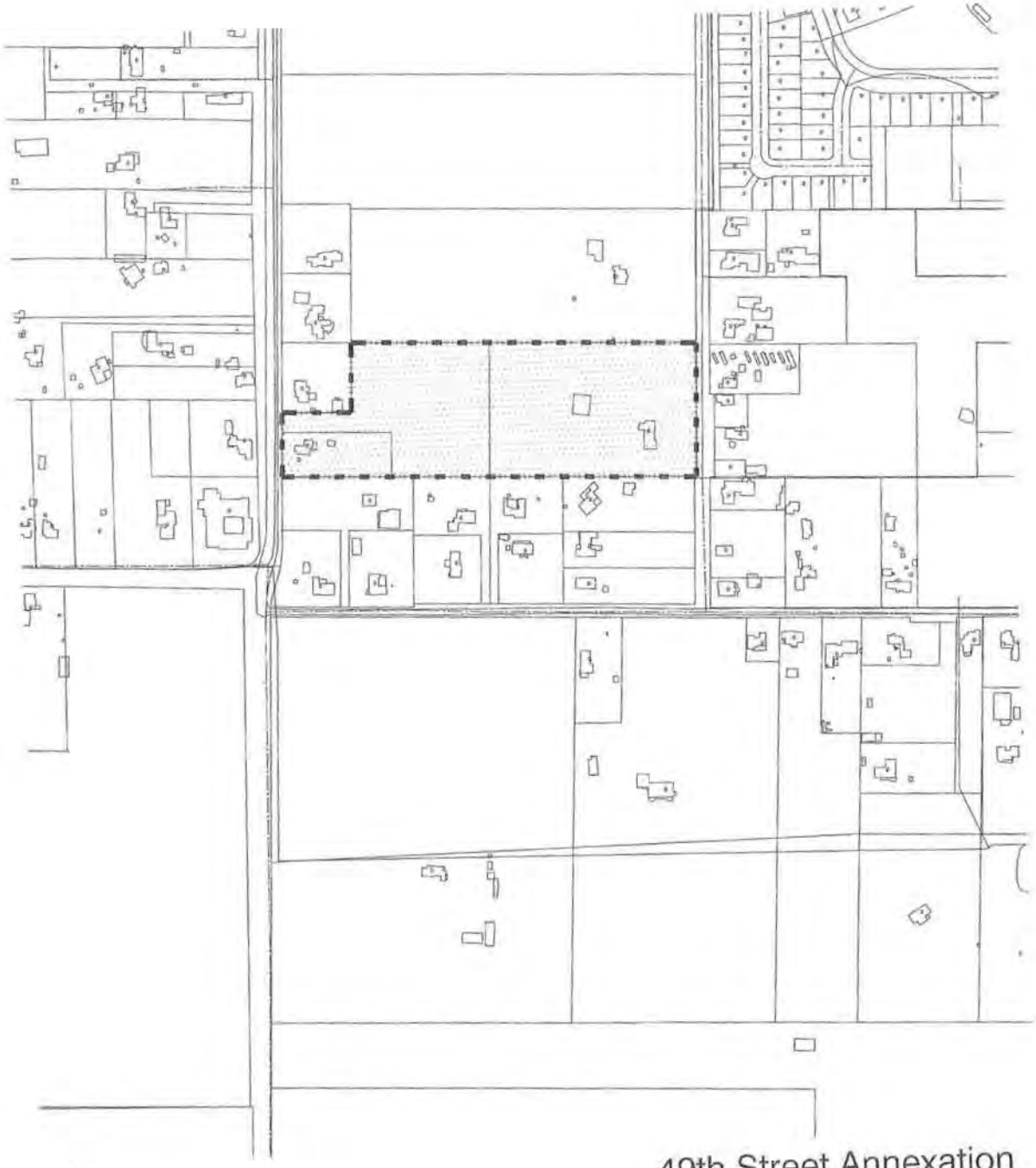


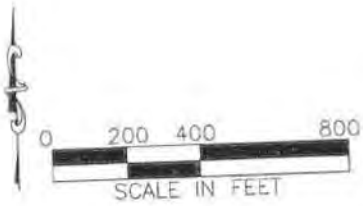


49th Street Annexation
NATURAL FEATURES
PROTECTED RIPARIAN

ATTACHMENT "F
April 26, 2010

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.94

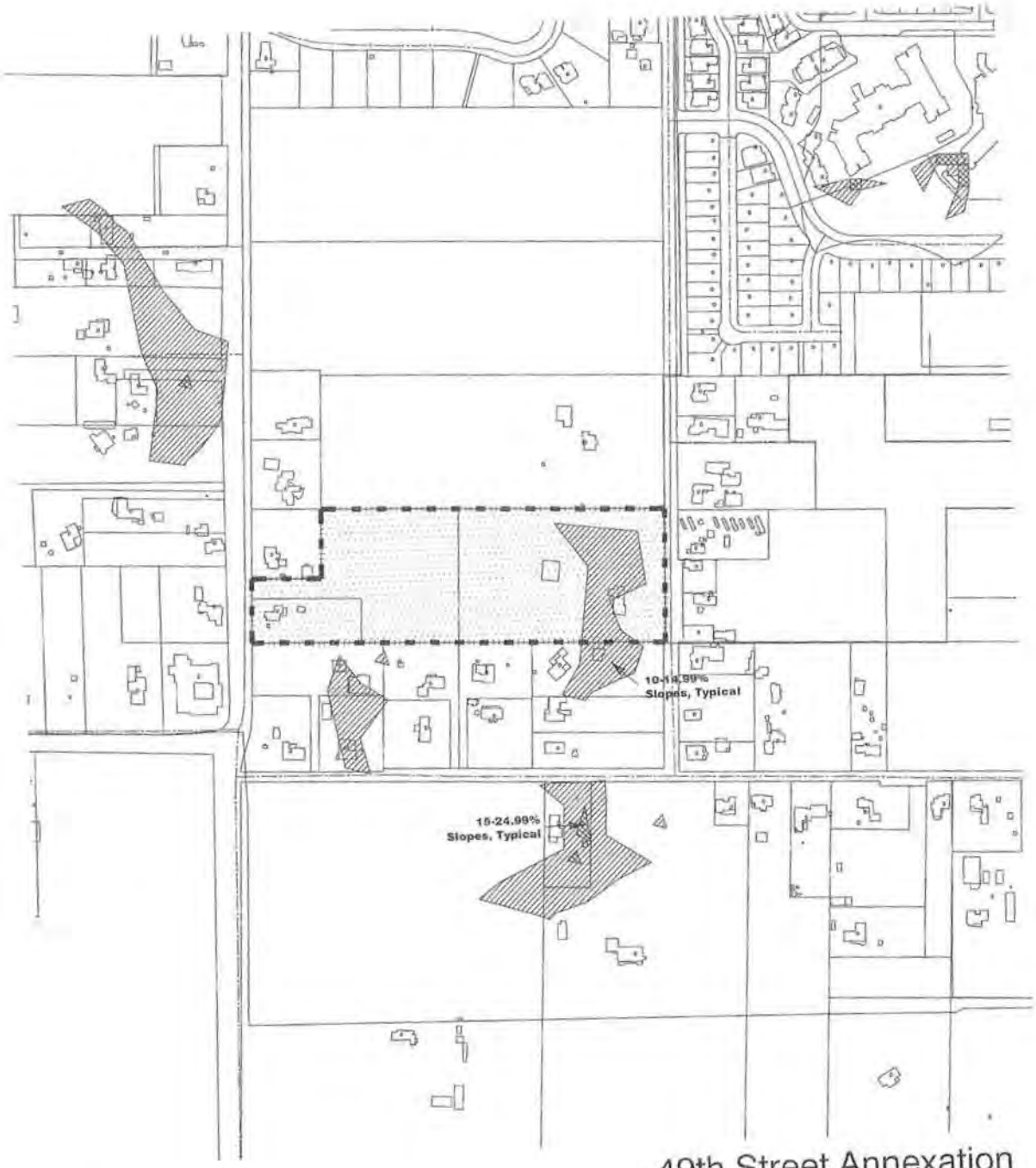




49th Street Annexation
NATURAL FEATURES
100-YEAR FLOODPLAIN

ATTACHMENT "G"
April 26, 2010

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.95

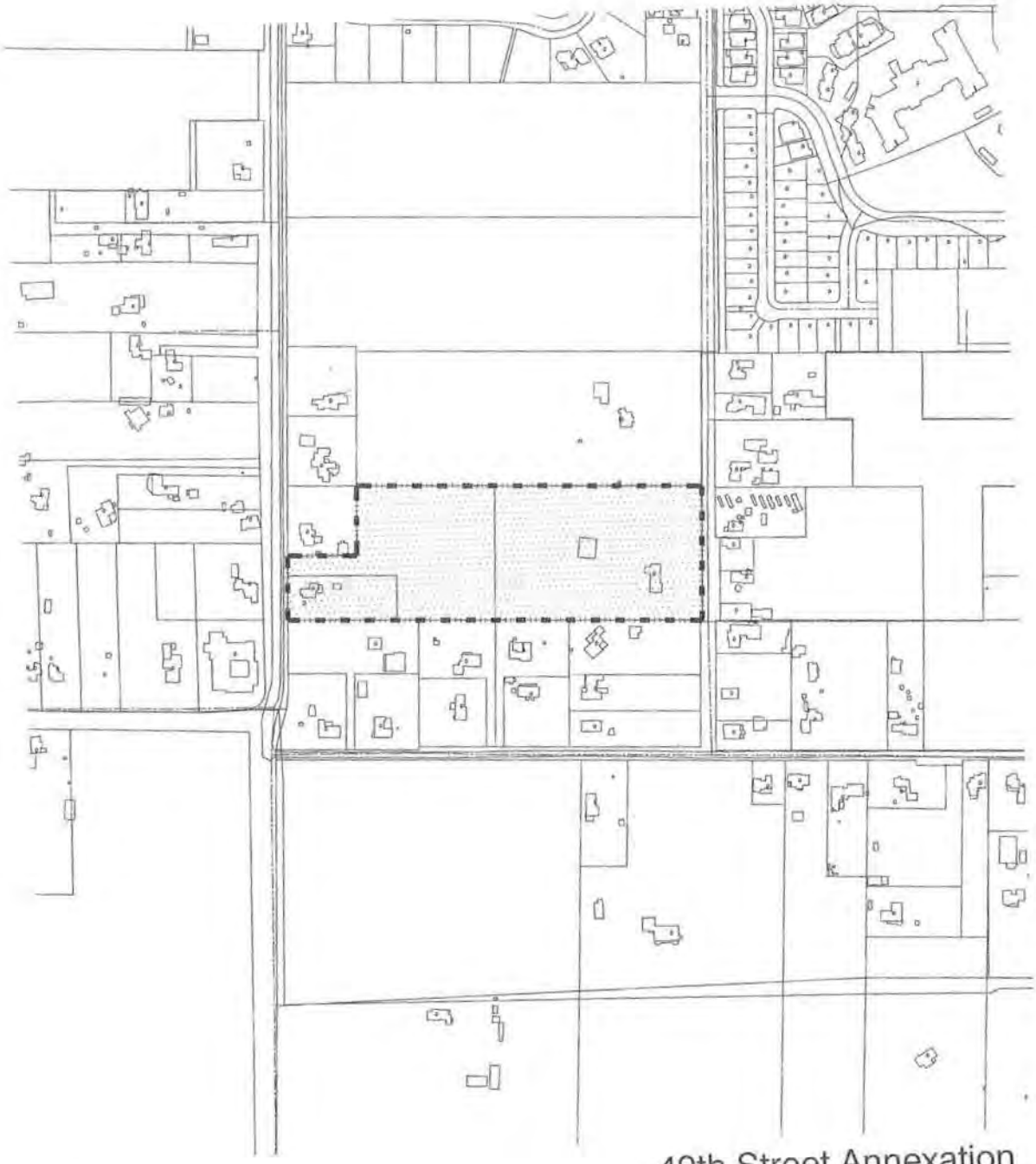


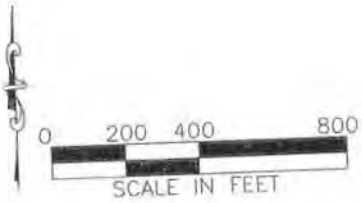
49th Street Annexation
NATURAL FEATURES
STEEP SLOPES

ATTACHMENT "H"
April 26, 2010

0 200 400 800
SCALE IN FEET

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.96

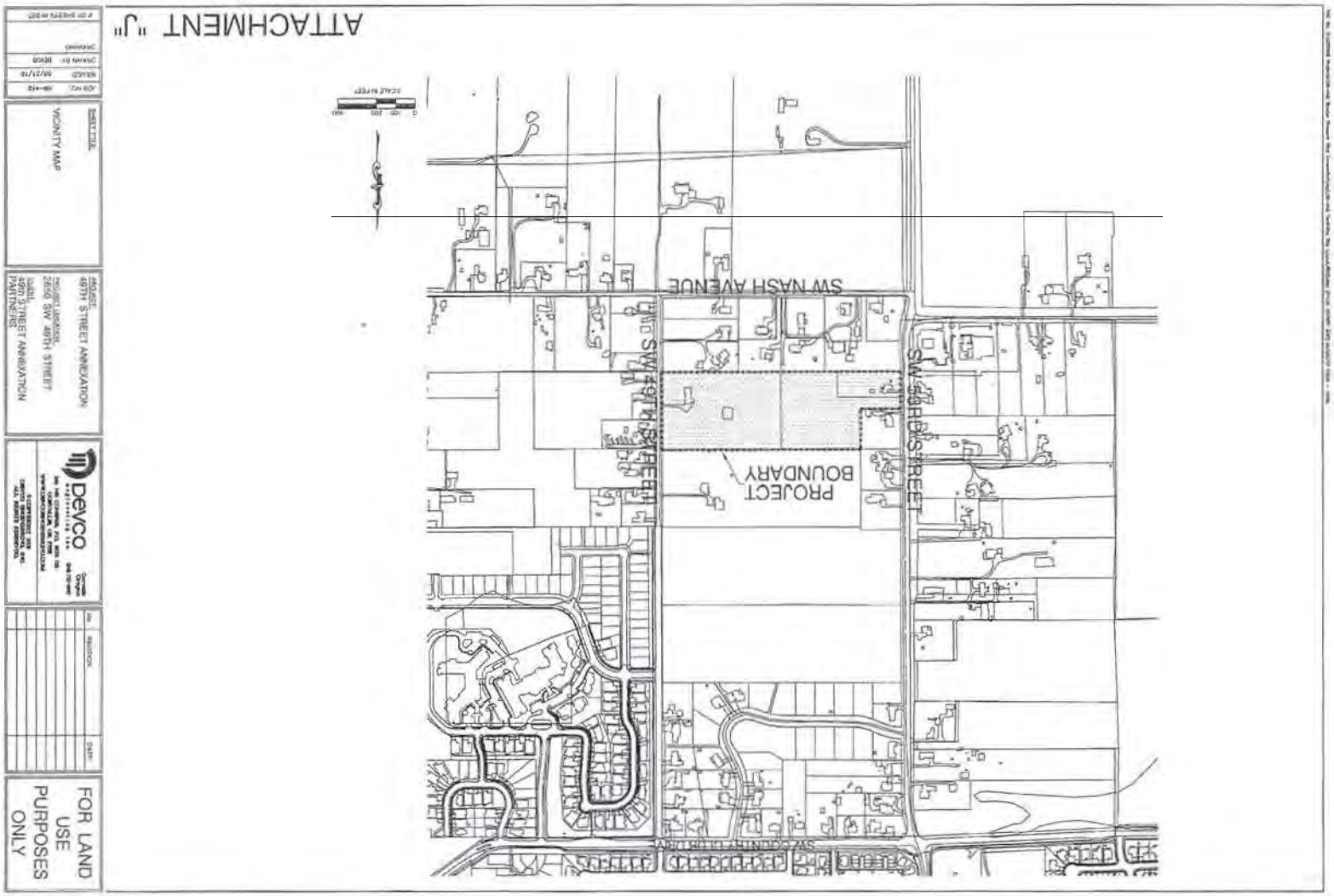




49th Street Annexation
NATURAL FEATURES
LANDSLIDES

ATTACHMENT "I"
April 26, 2010

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.97



49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.98

ATTACHMENT "K"

FOR LAND USE PURPOSES ONLY

No.	REVISION	DATE
1	REVISED PER EDR COMMENTS	04/26/10

DEVCO

PROJECT: 49TH STREET ANNEXATION

PROJECT LOCATION: 2600 SW 49TH STREET

CLIENT: 49th STREET ANNEXATION PARTNERS

SHEET TITLE: GENERAL LAND USE/ CONCEPTUAL DEVELOPMENT PLAN

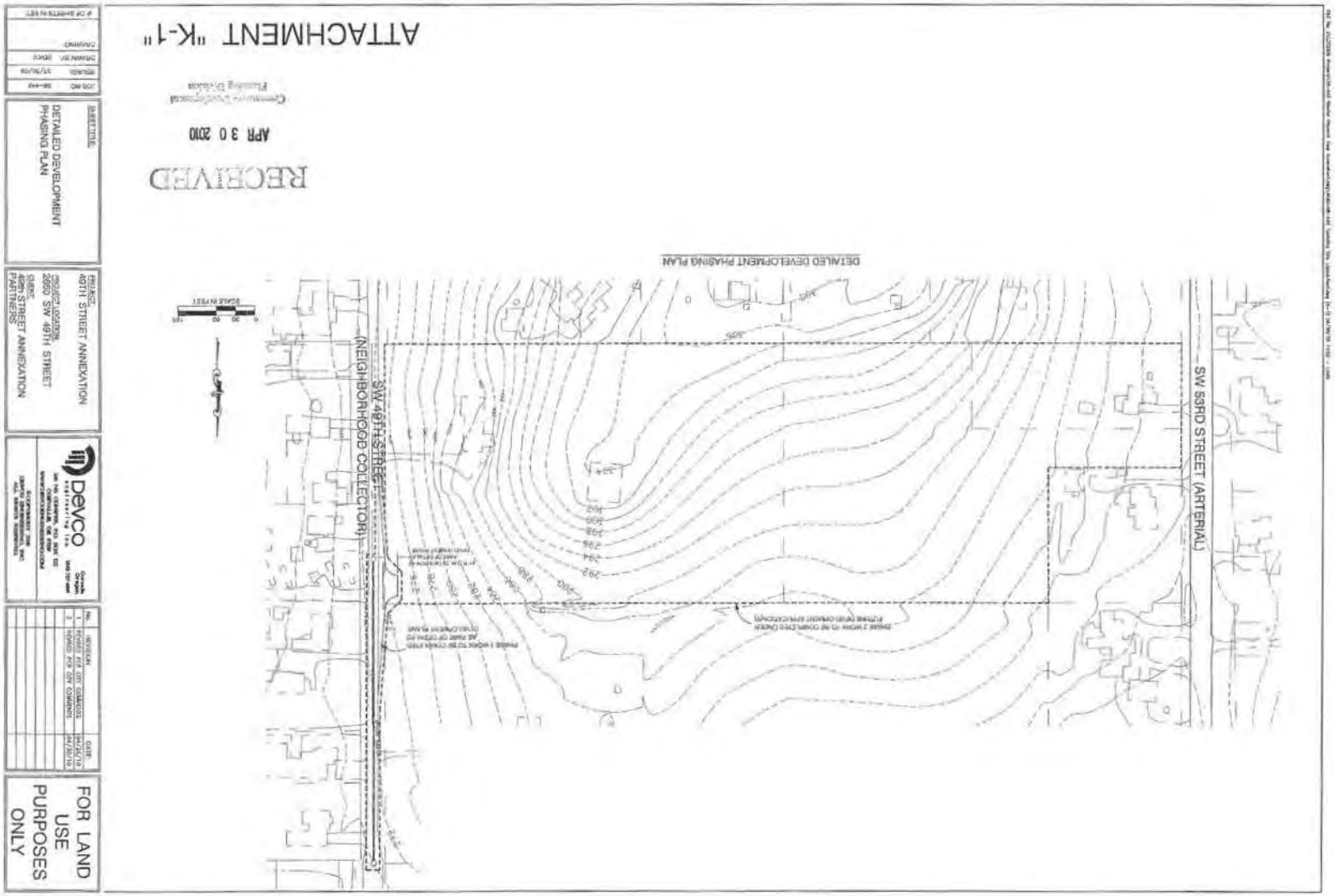
JOB NO. 09-443

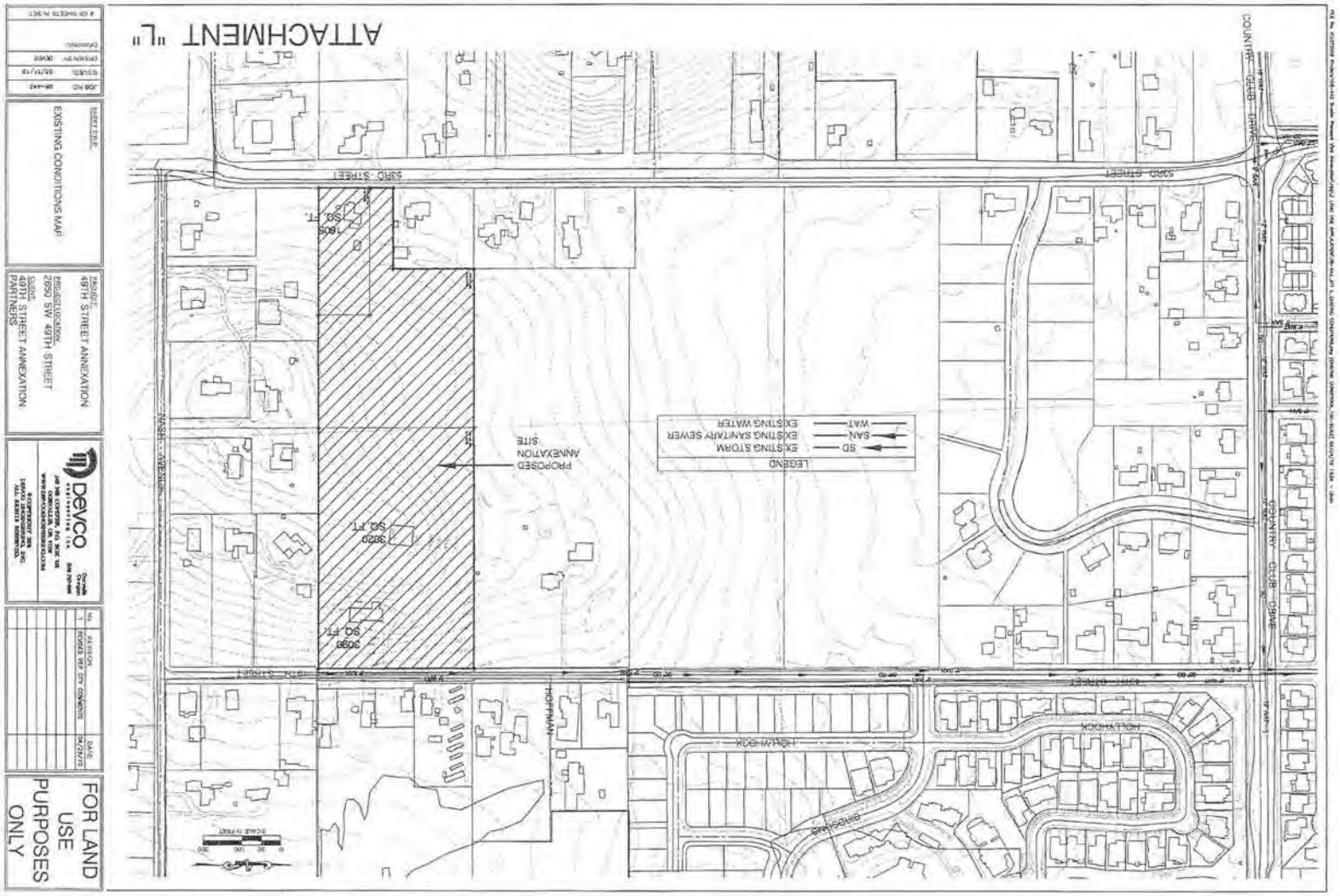
ISSUED 03/30/09

DRAWN BY DEVCO

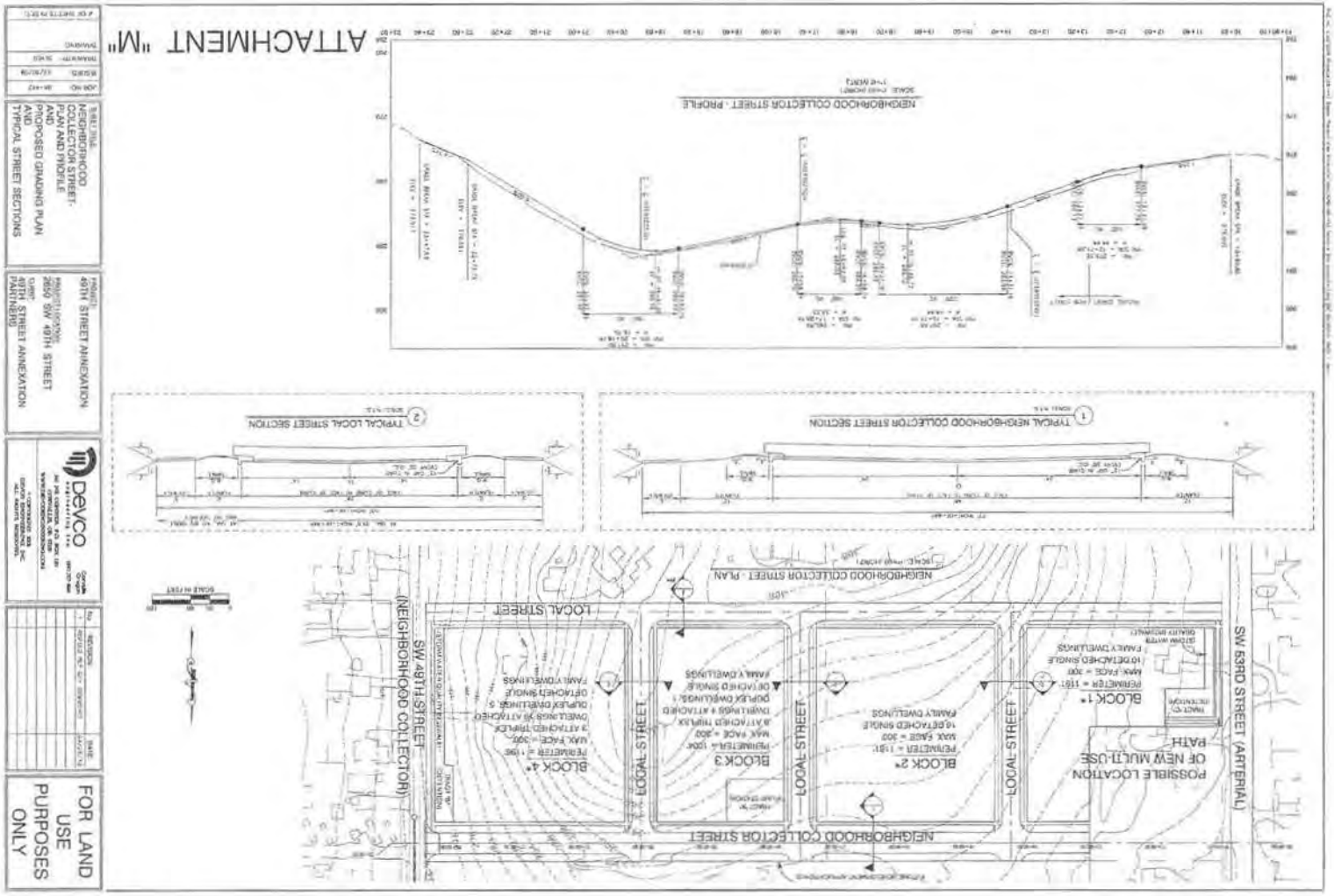
DRAWING

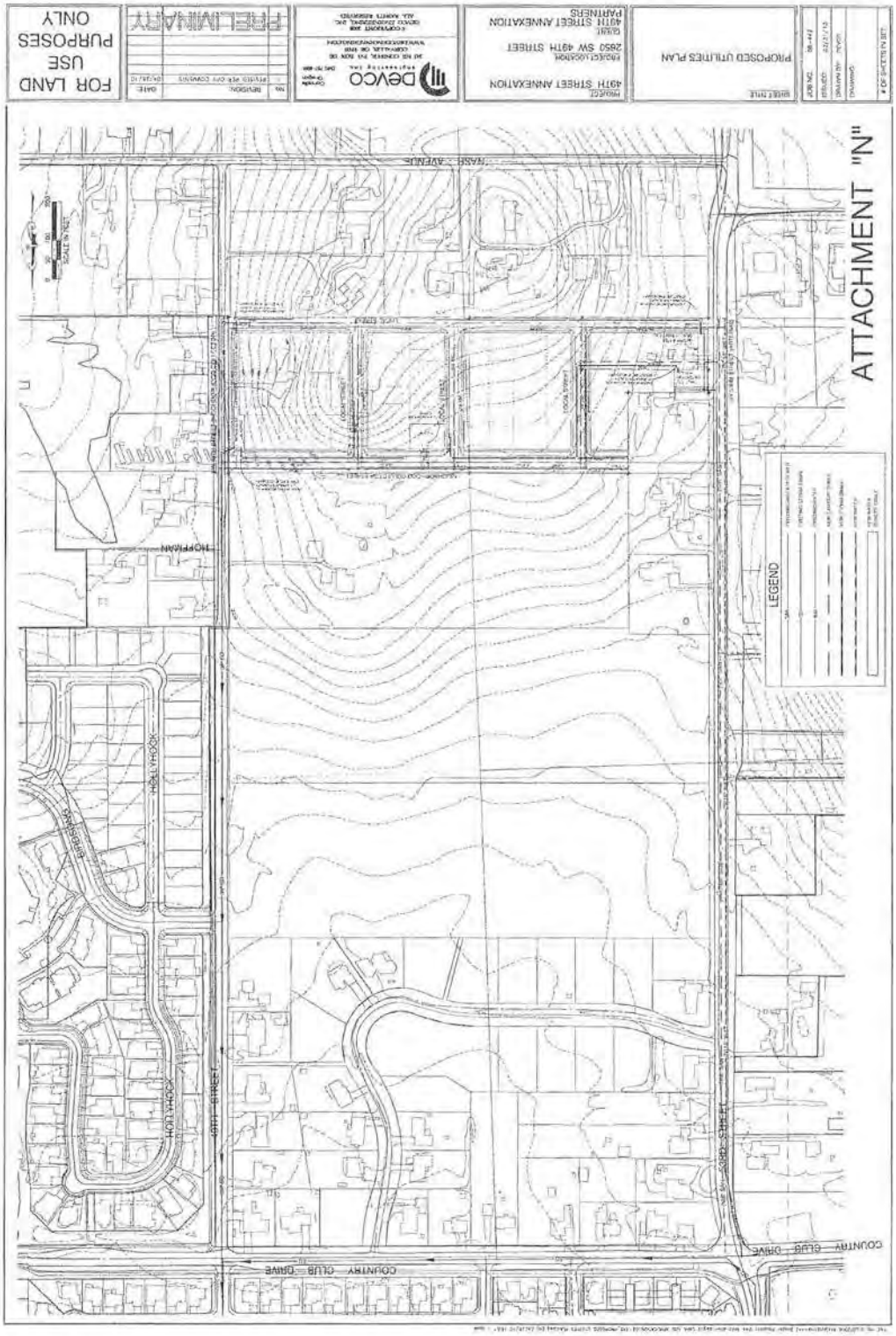
OF SHEETS IN SET


SW 53RD STREET (ARTERIAL)
SW 49TH STREET
(NEIGHBORHOOD COLLECTOR)
DETAILED DEVELOPMENT PHASING PLAN
SCALE IN FEET
0 30 60 120
PHASE 3 (NOW TO BE CONSTRUCTED AS PART OF TRACT 10 DETAILED PLAN)
PHASE 1 (NOW TO BE CONSTRUCTED AS PART OF TRACT 10 DETAILED PLAN)
PHASE 2 (NOW TO BE CONSTRUCTED FUTURE DEVELOPMENT PLAN)
ATTACHMENT "K-1"
RECEIVED
APR 30 2010
Community Development
Planning Division
SHEET TITLE
DETAILED DEVELOPMENT PHASING PLAN
PROJECT
49TH STREET ANNEXATION
PROJECT LOCATION
2600 SW 49TH STREET
CLIENT
49th STREET ANNEXATION PARTNERS
DEVCO
ENGINEERING INC.
Corvallis Oregon
541 757-1881
FOR LAND USE PURPOSES ONLY
REVISIONS
DATE
04/26/10
04/30/10
SUBMITTED FOR CITY COMMENTS
REVISED FOR CITY COMMENTS
JOB NO.
DRAWN BY
DRAWING NO.
OF SHEETS IN SET

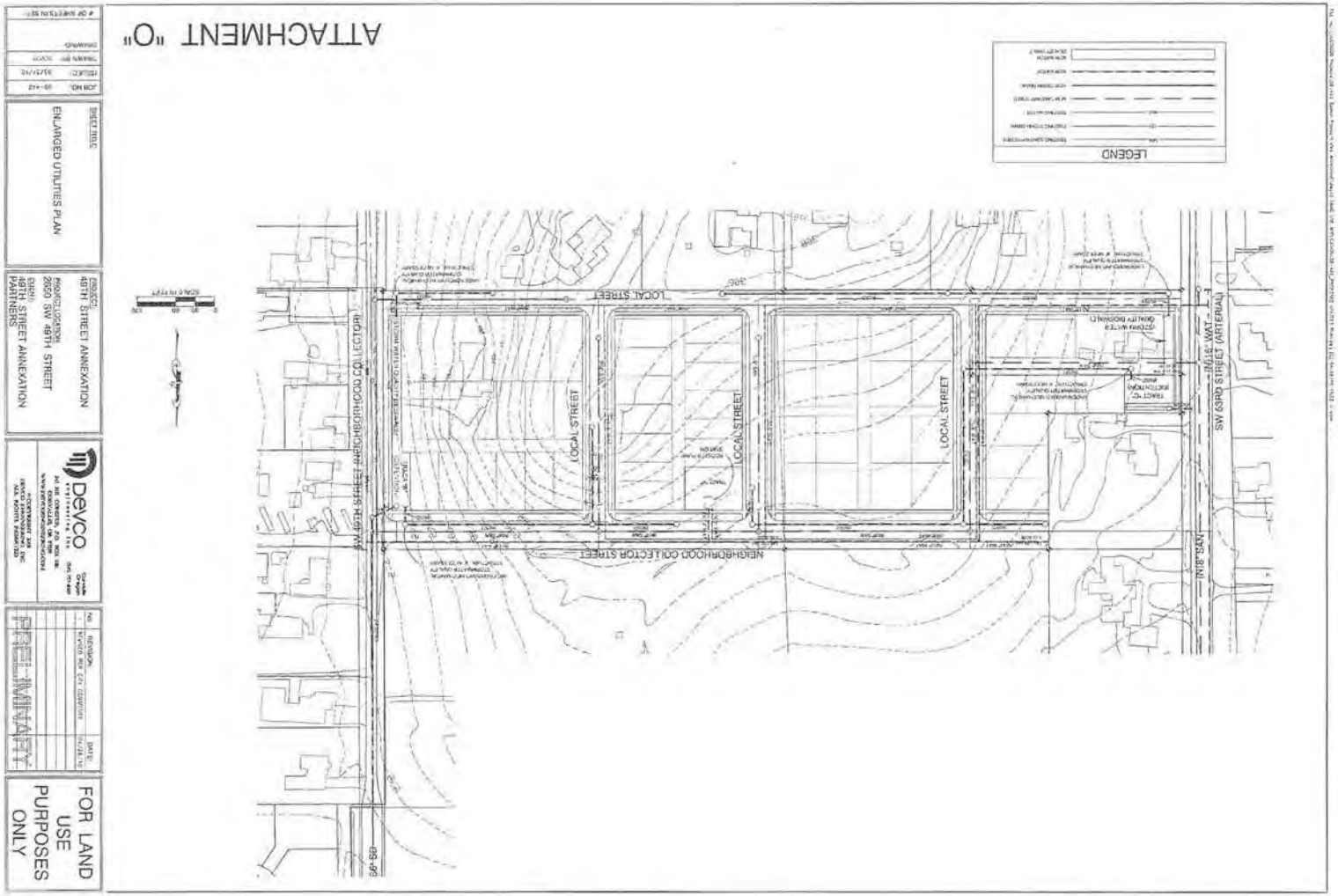


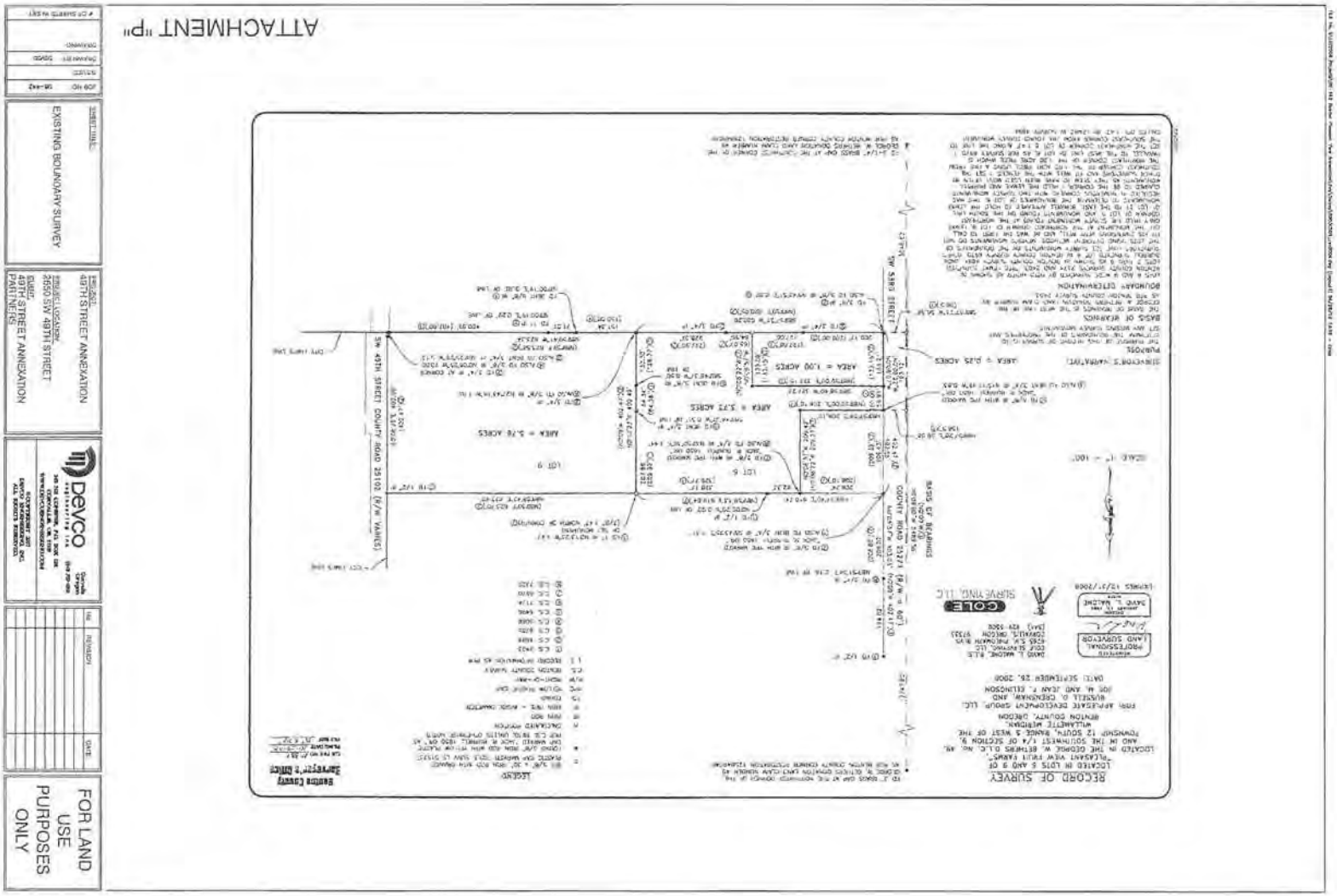
49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.101


ATTACHMENT "M"
NEIGHBORHOOD COLLECTOR STREET - PROFILE
TYPICAL NEIGHBORHOOD COLLECTOR STREET SECTION
TYPICAL LOCAL STREET SECTION
NEIGHBORHOOD COLLECTOR STREET - PLAN
SW 49TH STREET (NEIGHBORHOOD COLLECTOR)
LOCAL STREET
LOCAL STREET
LOCAL STREET
NEIGHBORHOOD COLLECTOR STREET
SW 53RD STREET (ARTERIAL)
POSSIBLE LOCATION OF NEW MULTI-USE PATH
BLOCK 1*
BLOCK 2*
BLOCK 3
BLOCK 4*
FOR LAND USE PURPOSES ONLY
49TH STREET ANNEXATION
NEIGHBORHOOD COLLECTOR STREET - PLAN AND PROFILE
PROPOSED GRADING PLAN AND TYPICAL STREET SECTIONS
devco



49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.103


ATTACHMENT "O"
LEGEND
LOCAL STREET
LOCAL STREET
LOCAL STREET
LOCAL STREET
NEIGHBORHOOD COLLECTOR STREET
49TH STREET NEIGHBORHOOD COLLECTOR
SW 65RD STREET (ARTERIAL)
SW 49TH
IN 18" SAN
SCALE IN FEET
FOR LAND USE PURPOSES ONLY
PRELIMINARY
DEVCO
49TH STREET ANNEXATION
ENLARGED UTILITIES PLAN


ATTACHMENT "P"
FOR LAND USE PURPOSES ONLY
EXISTING BOUNDARY SURVEY
49TH STREET ANNEXATION
2550 SW 49TH STREET
49TH STREET ANNEXATION PARTNERS
DEVCO
SW 49TH STREET COUNTY ROAD 25102 (R/W VARIES)
AREA = 5.78 ACRES
AREA = 3.73 ACRES
AREA = 1.00 ACRES
AREA = 0.25 ACRES
RECORD OF SURVEY
BENTON COUNTY, OREGON
MULTNOMAH MERIDIAN
COLE
SURVEYING, LLC

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.219

Appendix

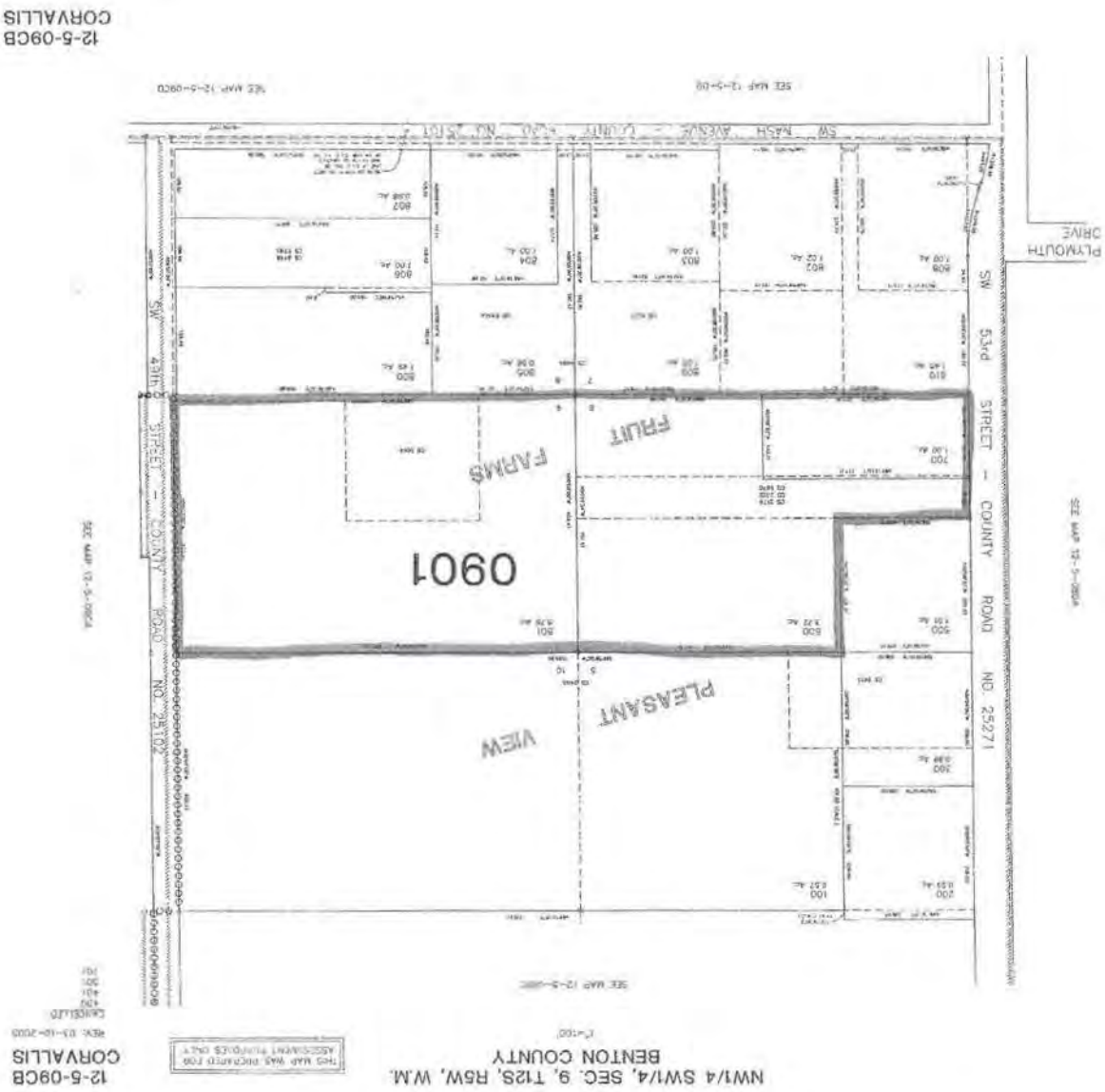
- Legal Description of Property
- Tax Assessor's Map
- Waterline, Sanitary Sewer, and Stormwater Calculations
- Traffic Impact Study
- Letter from Benton County Public Works Department
- Corvallis Gazette-Times Article dated July 10, 2007

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.106

Legal Description of Property
Tax Assessor's Map

Description of Annexation Area

Beginning at a 3/4 inch iron pipe located at the Southeast corner of Lot 9 of "Pleasant View Fruit Farms", a subdivision plat of record in the Southwest Quarter of Section 9, Township 12 South, Range 5 West of the Willamette Meridian, Benton County, Oregon; thence South 89°59'41" West 623.34 feet to a 3/4 inch iron pipe at the Southwest corner of said Lot 9, also being the Southeast corner of Lot 6 of said "Pleasant View Fruit Farms"; thence South 89°57'21" West 620.26 feet to a 3/4 inch iron pipe at the Southwest corner of said Lot 6, also being on the East right-of-way line of SW 53rd Street (County Road 25271 – a 60 foot wide right-of-way); thence continuing South 89°57'21" West 56.58 feet to a point on the West line of the George W. Bethers Donation Land Claim Number 49 in said Township 12 South, Range 5 West of the Willamette Meridian; thence along said Bethers West line North 0°09'00" West 193.12 feet; thence leaving said Bethers West line North 89°57'28" East 56.58 feet to a 5/8 inch iron rod on the aforementioned East right-of-way line of SW 53rd Street, also being the Southwest corner of "Parcel A" of Minor Land Partition recorded as M-9131-79 in the Benton County Deed Records; thence continuing North 89°57'28" East 208.12 feet to a 5/8 inch iron rod at the Southeast corner of said "Parcel A"; thence North 0°06'57" West 209.42 feet to a 5/8 inch iron rod at the Northeast corner of said "Parcel A", also being on the North line of the aforementioned Lot 6; thence North 89°57'40" East 411.50 feet to a 5/8 inch iron rod at the Northeast corner of said Lot 6, also being the Northwest corner of the aforementioned Lot 9; thence North 89°58'42" East 623.92 feet to a 1/2 inch iron pipe at the Northeast corner of said Lot 9; thence South 0°08'25" East 402.66 feet to the point of beginning, and containing 10.74 acres of land, more or less.



49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.109

49th Street Annexation
April 26, 2010

Waterline, Sanitary Sewer, and Stormwater Calculations

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.110

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.223

DEVCO engineering inc.

REGISTERED PROFESSIONAL ENGINEER
56483PE
OREGON
JAN. 15, 2002
STEVEN C. P. HATTORI
EXPIRES: 6/30/11

Waterline, Sanitary Sewer, and Stormwater
Calculations for

49th Street Annexation
For
49th Street Annexation Partners

Devco Job #08-442
April 2010

Table of Contents

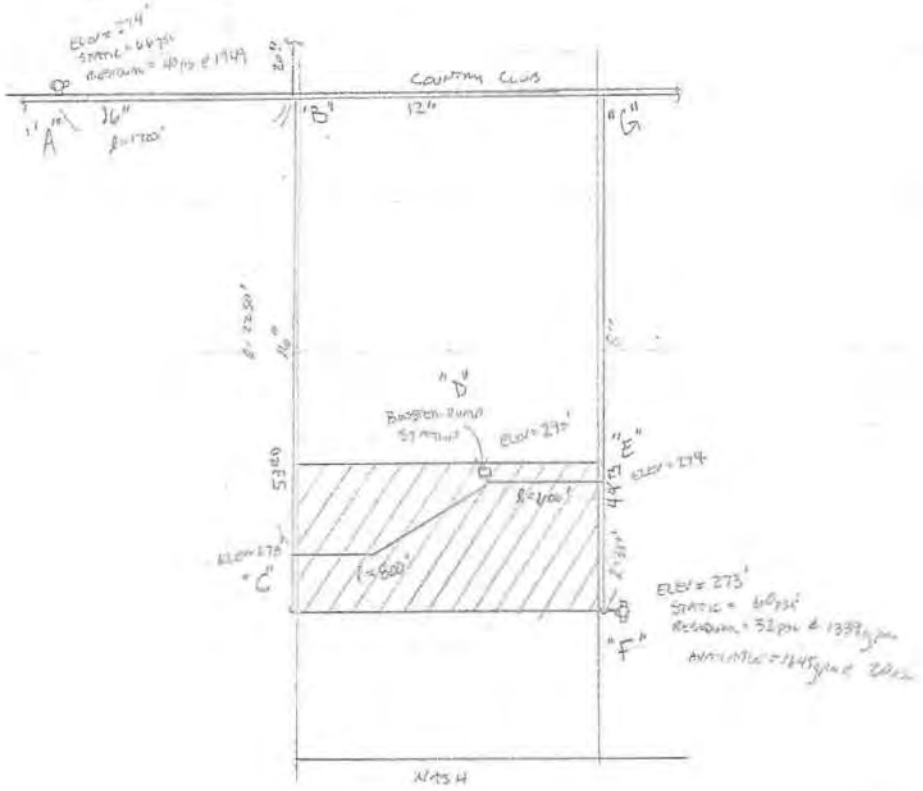
Subject	No. of Pages
• Waterline Calculations	10
• Sanitary Sewer Calculations	4
• Stormwater Calculations	58

Waterline Calculations

DEVCO engineering inc.
245 NE Conifer, P.O. Box 1211
Corvallis, OR 97339
Fax: (541) 757-9885
(541) 757-8991

PROJECT: 49th STREET ANNEXATION	PROJECT NO: 08-442	DESIGN: SH	DATE: 10/08

WATERLINE CALCULATION



* CALCULATE MAXIMUM WATER DEMANDS = MAXIMUM DAY DEMANDS + FIRE FLOWS

& FIRE FLOWS = 1500 gpm @ 20 psi FOR RESIDENCE
w/o FIRE SPRINKLER

PAGE / OF

DEVCO engineering inc.

245 NE Conifer, P.O. Box 1211
Corvallis, OR 97339
Fax: (541) 757-9885

(541) 757-8991

PROJECT: 49th STREET ANNEXATION	PROJECT NO: 08-414L	DESIGN: SH	DATE: 10/08

CALCULATIONS FOR PROPOSED ANNEXATION

63 UNITS

AVE DEMAND = (76 gpcd)(63 UNITS)(2.3 PERSONS/UNIT)

= 11,012 gal/day = 7.65 gpm

PEAK DAY DEMAND = 7.65 gpm (4) = 30.6 gpm

PEAK HOURLY DEMAND = 7.65 gpm (11.75) = 89.9 gpm

CALCULATION FOR AREA IN 2ND LEVEL PLUS PROPOSED ANNEXATION

AREA = 10.49 Ac + 11.90 Ac = 22.39 Ac

DWELLING UNITS = 22.39 Ac (6 UNITS / Ac) = 134.3 UNITS

= 135 UNITS

AVE DEMAND = 135 UNITS (76 gpcd)(2.3 PERS/UNIT)

= 23,598 gal/day = 16.39 gpm

PEAK DAY DEMAND = 16.39 gpm (4) = 65.6 gpm

PEAK HOURLY DEMAND = 16.39 gpm (11.75) = 192.6 gpm

PAGE 2 OF

DEVCO engineering inc.

245 NE Conifer, P.O. Box 1211
Corvallis, OR 97339
Fax: (541) 757-9885

(541) 757-8991

PROJECT: 49th STREET ANNEXATION	PROJECT NO: 08-442	DESIGN: SH	DATE: 10/08

MAXIMUM WATER DEMAND = 1500gpm + 200gpm

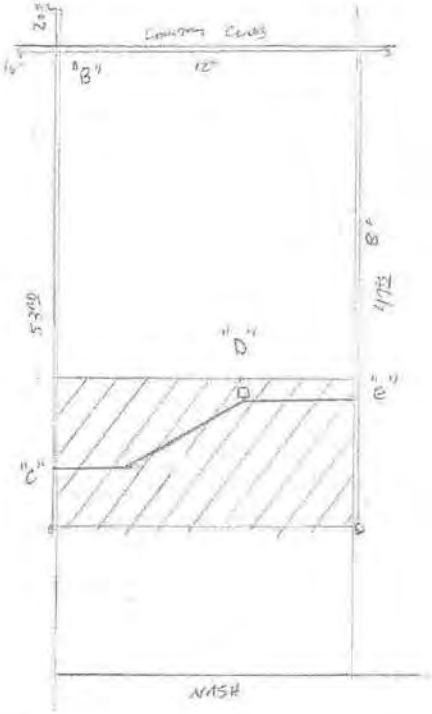
= 1700gpm

* TO SIMPLIFY CALCULATION AND TO BE CONSERVATIVE:

1) HYDRANT DATA @ "A" = "B" "B" NEAR 20" MAINLINE

2) HYDRANT DATA @ "F" WILL NOT BE USED. NOT ENOUGH TO SUPPLY 1700gpm @ 20psi

3) ANALYSIS TO ASSUME WATER FED FROM SINGLE DIRECTION.



PAGE 3 OF

DEVCO engineering inc.

245 NE Conifer, P.O. Box 1211
Corvallis, OR 97339
Fax: (541) 757-9885

(541) 757-8991

PROJECT: 49th STREET ANNEXATION	PROJECT NO:	DESIGN:	DATE:

• MAX WATER DEMAND @ "D" = 1,700 gpm

REQUIREMENT: NEED POSITIVE PRESSURE AT "D" FOR BOOSTER PUMP STATION. RESIDUAL PRESSURE NEEDS TO BE CONSTANT [illegible]. IS THE ADEQUATE WATER TO SUPPLY BOOSTER PUMP?

SOLUTION:

$$H_{OUT} = H_{RESIDUAL} - h_{L_e} - h_{f_{BC}} - h_{f_{CD}}$$

where h_{L_e} = ELEVATION LOSS

h_f = PIPE FRICTION LOSSES

* IGNORE MINOR LOSSES

* FROM INFORMATION, RESIDUAL PRESSURE AT "B" IS 45 psi @ 1,700 gpm

$$h_f = \frac{(10.44)(L)(Q)^{1.85}}{(C)^{1.85}(d)^{4.87}}$$

WHERE, L = LENGTH OF PIPE (ft)
Q = FLOW (gal) = 1,700 gpm
C = [illegible] FOR DI
d = [illegible]

DEVCO engineering inc.

245 NE Conifer, P.O. Box 1211
Corvallis, OR 97339
Fax: (541) 757-9885

(541) 757-8991

PROJECT: 49th Street Annexation	PROJECT NO:	DESIGN:	DATE:

The 12" pipe in annexation, 16" in 5th

$H_{avail} @ 20psi = 46.2'$; $H_{available} @ 45psi = 103.95'$

$$H_{loss\,AB} = 103.95' - (270' - 274') - \left[\frac{10.44\,(2250)(1200)^{1.85}}{(100)^{1.85}\,(16)^{4.8655}}\right] - \left[\frac{10.44\,(800)(1200)^{1.85}}{(100)^{1.85}\,(12)^{4.8655}}\right]$$

$H_{avail\,AB} = 72.9' = 31.6psi > 20psi$ OK

Summary

- Construct 16" waterline in 5th St from the current dead end to annexation boundary.
- Construct 12" waterline [illegible] Lane to [illegible] 16" [illegible] in 5th St.

PAGE 5 OF 5

Water Flow Test Summary

CORVALLIS FIRE DEPARTMENT

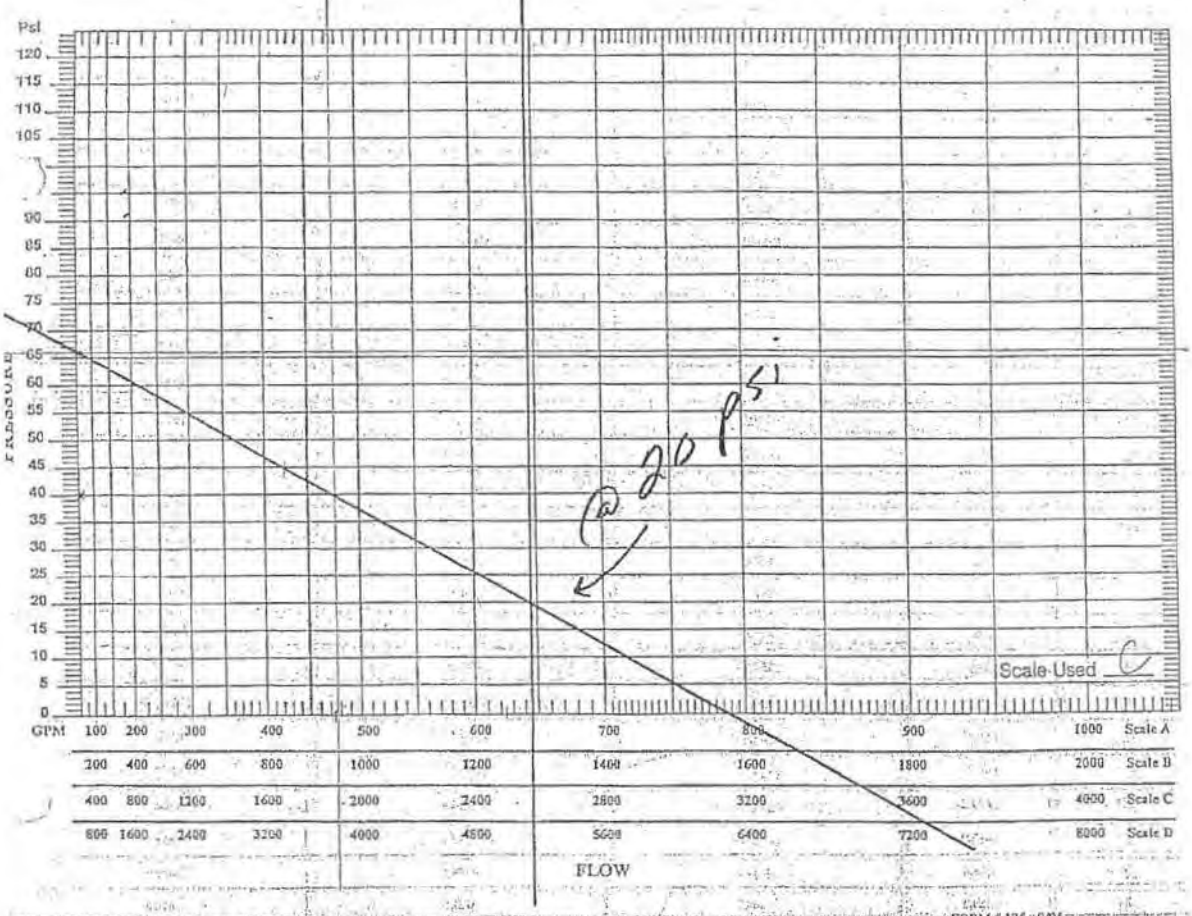
Conducted by: PATTON/LEE Date: 1/2/98

Location: COUNTRY CLUB DR. & BARLEY HILL DRIVE

Time: 1330 Static psi: 66 Residual psi: 40 Location: #1486 COUNTRY CLUB WEST OF BARLEY HILL DR.

Hydrant #	Outlet Diameter	Pitot psi.	Observed Flow	Hydrant Coef.	Total Observed Flow	Available gpm @ 20 psi
1485	2½	6	457	.9	411	
	2½	6	457	.9	411	1949	2580
	4	10	1509	.9 (.83)	1127	

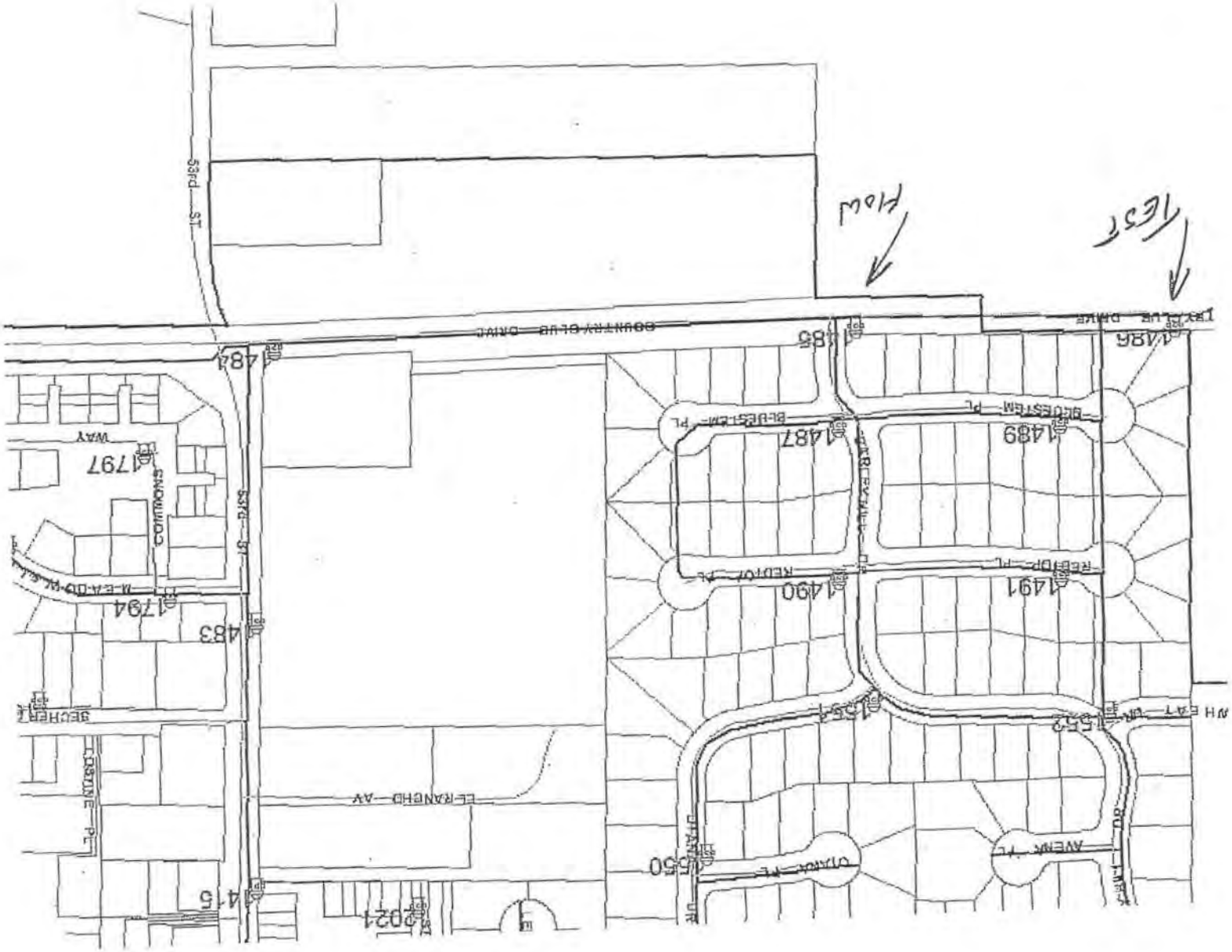
NOTES:



FORM #125 9/95

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.118

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.231


49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.119
West
Plow
COUNTRY CLUB DRIVE
49TH ST
LE RANCHO AV
COMMONS
WAY
1797
1794
483
484
415
2021
1485
1486
1487
1489
1490
1491
1550
1551
1552

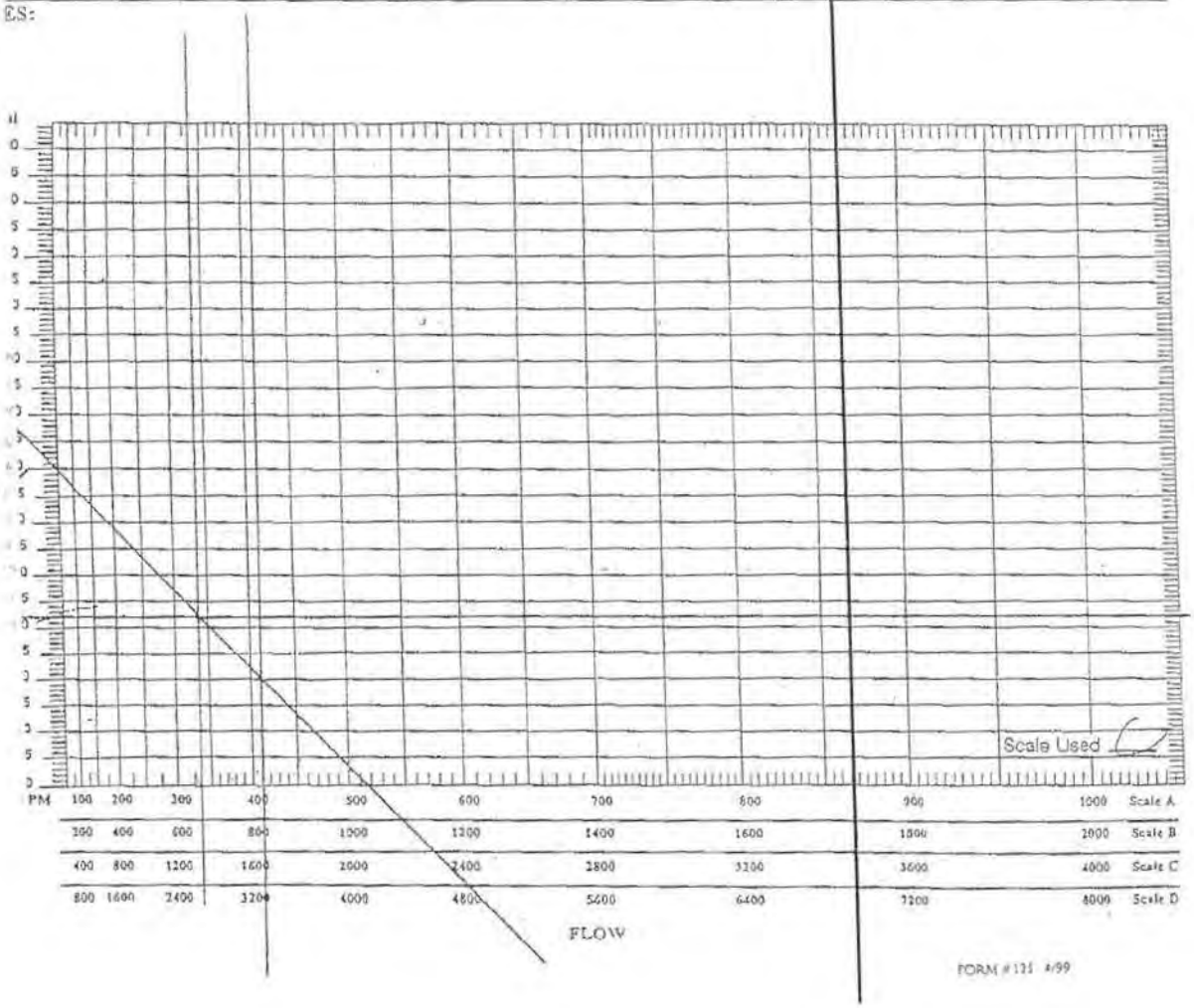
Conducted by FALLON / WEIR Date 9/17/08

Location - Street Address S. END OF 49th Project

Test Pressure Hydrant # 1870 Static psi 60 Residual psi 32 Time 1145

w Hydrant #	Outlet Diameter	Pitot psi.	Observed Flow	Hydrant Coef.	Total Observed Flow		Available gpm @ 20 psi
1871	2 1/2	18	791	.9	711	1339	1645
	2 1/2	14	698	.9	628		

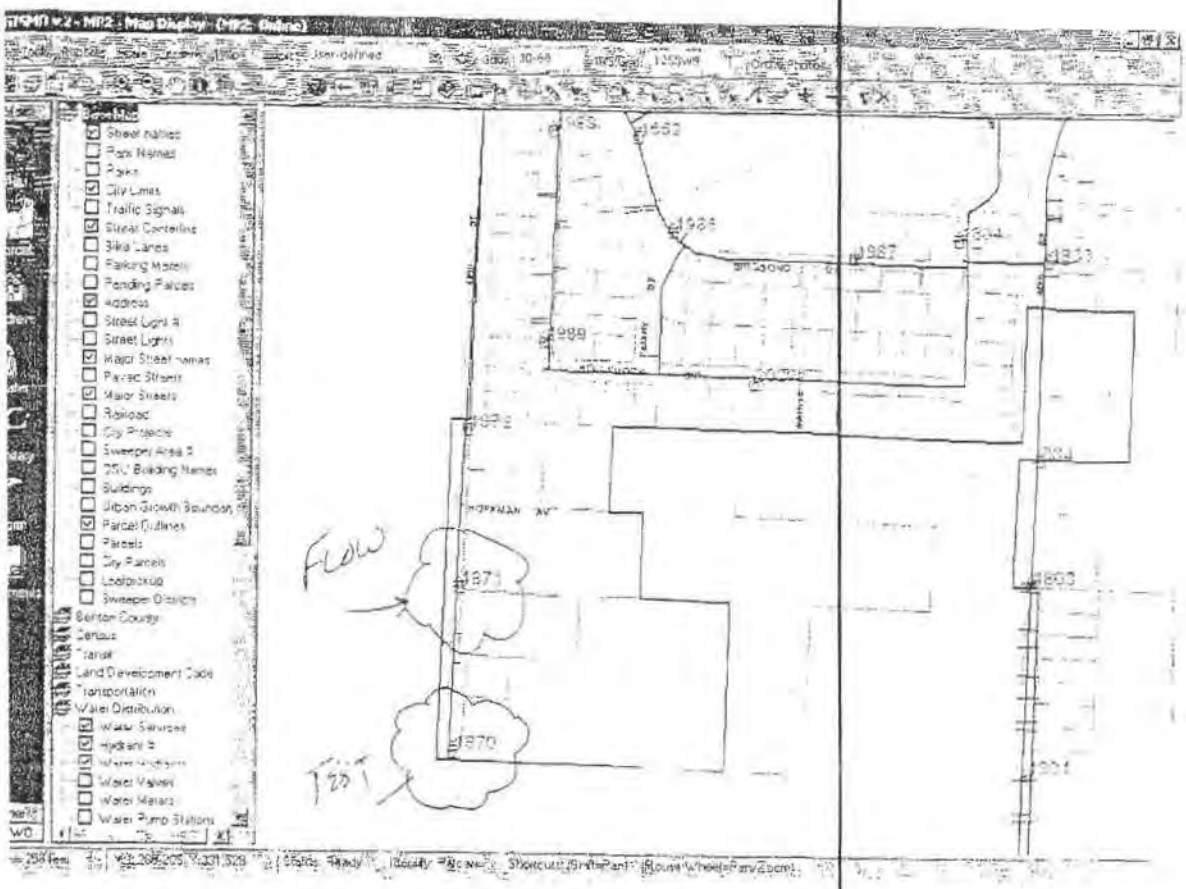
ES:



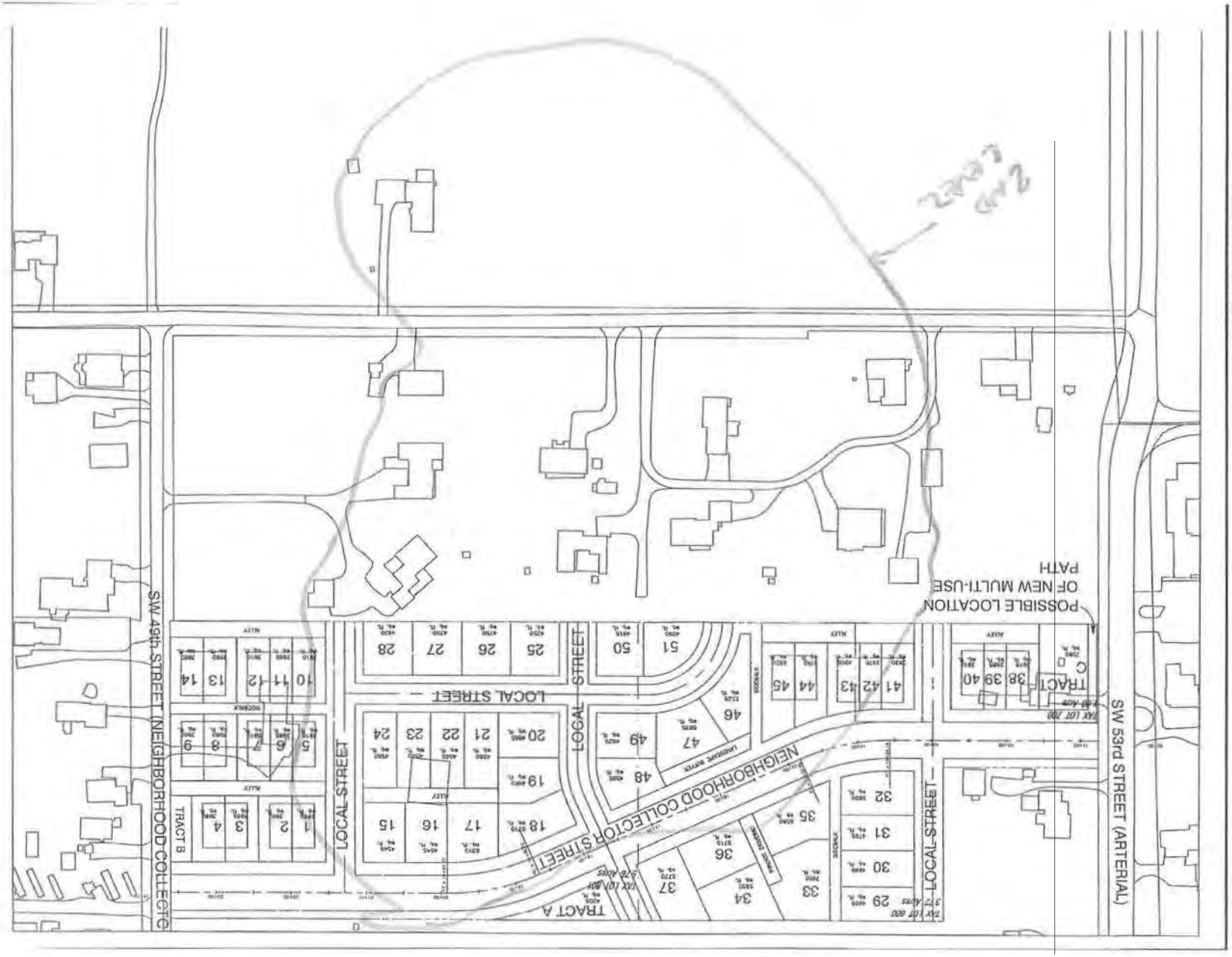
FORM #131 4/99

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.120

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.233



Tuesday, Sep 17, 2008 07:50 AM



49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.122

Sanitary Sewer Calculations

DEVCO engineering inc.

245 NE Conifer, P.O. Box 1211
Corvallis, OR 97339
Fax: (541) 757-9885

(541) 757-8991

PROJECT: 49th STREET ANNEXATION	PROJECT NO: 08-442	DESIGN: SA	DATE: 10/08

SANITARY SEWER CALCULATIONS

DISCHARGE TO 49th STREET MAINLINE

* GROSS BASIN AREA = ~55.5Ac

* ZONING = RS6 = 6 units/acre

OF DWELLING UNITS = (6 units/acre)(55.5Ac)

= 333 units

DESIGN FLOW = 193 gpcd + 4000 gal/Ac/day for I&I

Q_{avg} = 193 gpcd (333 units)(2.3 persons/unit) + 4000 gal/Ac/day (55.5Ac)

= 369,819 gal/day = 0.57 cfs = 0.57 cfs

Q_{PIPE} = 0.1164 cfs > 0.62 cfs OKAY!

PROPOSED 8" PVC

MIN SLOPE = 0.004 ft/ft

* PROPOSED ANNEXATION AREA = 10.48Ac = 63 units

% AREA = 10.48Ac / 55.5Ac = ~18.9%

$Q_{DESIGN\ ANNEX}$ = 193 gpcd (63 units)(2.3 persons/unit) + 4000 gal/Ac/day (10.48Ac)

= 69,886 gal/day = 0.11 cfs

PAGE 1 OF

DEVCO engineering inc.

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PROJECT: 49th STREET ANNEXATION	PROJECT NO: 08-442	DESIGN: SA	DATE: 10/08

* IF ALL PROPOSED ANNEXATION AREA DISCHARGED TO 49TH STREET, PERCENTAGE OF CAPACITY USED

$$\% \text{ CAPACITY} = \frac{0.11 \text{ cfs}}{0.57 \text{ cfs}} = \sim 19.3\% \quad \text{CLOSE, LESS THAN 1\%}$$

* BASED UPON EXISTING TOPOGRAPHY AND POSSIBLE DESIGN SCENARIOS, ONLY 7.28 Ac WILL DISCHARGE EAST TO 49TH STREET MAINLINE.

$$Q_{\text{DESIGN EAST}} = 193 \text{ gpcd } (44 \text{ units})(2.3 \text{ persons/unit}) + 4000 \text{ gal/Ac/day } (7.28 \text{ Ac})$$

$$= 48{,}652 \text{ gal/day} = 0.08 \text{ cfs}$$

$$\% \text{ CAPACITY} = \frac{0.08 \text{ cfs}}{0.57 \text{ cfs}} = \underline{\underline{\sim 14.0\% < 15.9\% \text{ Acc!}}}$$

PAGE 2 OF

TABLE 5

CIRCULAR PIPE FLOW CAPACITY
Full Flow (cubic feet per second)

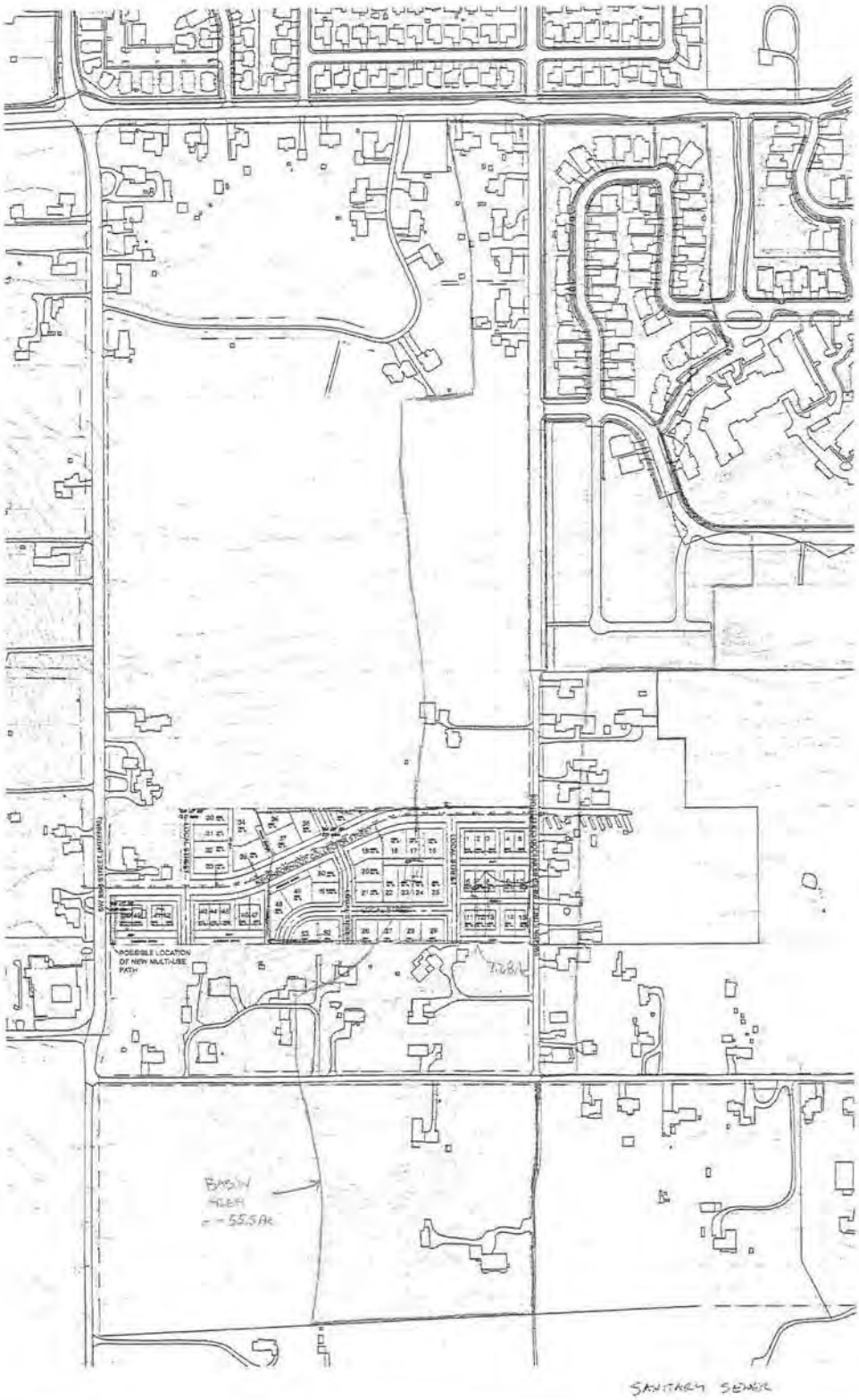
Mannings "n"= 0.013

Dia. (in.)	‡Conv. Factor	% Slope (feet per 100 feet) 0.02	0.05	0.10	0.20	0.35	0.50	0.75	1.00	1.25	1.50	1.75	2.0	2.5	5.0	10.0	20.0
									(c.f.s.)								
3	0.884	0.012	0.020	0.028	0.040	0.052	0.062	0.077	0.088	0.099	0.11	0.12	0.12	0.14	0.20	0.28	0.40
4	1.903	0.027	0.043	0.060	0.085	0.113	0.135	0.165	0.190	0.213	0.23	0.25	0.27	0.30	0.43	0.60	0.85
5	3.451	0.049	0.077	0.109	0.154	0.204	0.244	0.299	0.345	0.386	0.42	0.46	0.49	0.55	0.77	1.09	1.54
6	5.611	0.079	0.125	0.177	0.251	0.332	0.397	0.486	0.561	0.627	0.69	0.74	0.79	0.89	1.25	1.77	2.51
→ 8	12.084	0.171	0.270	0.382	0.540	0.715	0.854	1.047	1.208	1.351	1.48	1.60	1.71	1.91	2.70	3.82	5.40
						@ 0.004FT/FT = 0.764CFS											
10	21.91	0.31	0.49	0.69	0.98	1.30	1.55	1.90	2.19	2.45	2.68	2.90	3.10	3.46	4.90	6.93	9.80
12	35.63	0.50	0.80	1.13	1.59	2.11	2.52	3.09	3.56	3.98	4.36	4.71	5.04	5.63	7.97	11.27	15.93
15	64.60	0.91	1.44	2.04	2.89	3.82	4.57	5.59	6.46	7.22	7.91	8.55	9.14	10.21	14.44	20.43	28.89
18	105.04	1.49	2.35	3.32	4.70	6.21	7.43	9.10	10.50	11.74	12.87	13.90	14.86	16.61	23.49	33.22	46.98
21	158.45	2.24	3.54	5.01	7.09	9.37	11.20	13.72	15.85	17.72	19.41	20.96	22.41	25.05	35.43	50.11	70.86
24	226.22	3.20	5.06	7.15	10.12	13.38	16.00	19.59	22.62	25.29	27.71	29.93	31.99	35.77	50.59	71.54	101.17
27	309.70	4.38	6.93	9.79	13.85	18.32	21.90	26.82	30.97	34.63	37.93	40.97	43.80	48.97	69.3	97.9	138.5
30	410.17	5.80	9.17	12.97	18.34	24.27	29.00	35.52	41.02	45.86	50.24	54.26	58.01	64.85	91.7	129.7	183.4
36	666.98	9.43	14.91	21.09	29.83	39.46	47.16	57.76	66.70	74.57	81.69	88.23	94.33	105.46	149.1	210.9	298.3
42	1006.1	14.23	22.50	31.82	44.99	59.5	71.1	87.1	100.6	112.5	123.2	133.1	142.3	159.1	225.0	318.2	449.9
48	1436.4	20.31	32.12	45.42	64.24	85.0	101.6	124.4	143.6	160.6	175.9	190.0	203.1	227.1	321.2	454.2	642.4

‡ Conveyance Factor = ~~(1.486 x R2/3 x A) / n~~

$= A \cdot \frac{1.486}{n} \cdot R^{2/3}$

$Q = A \frac{1.486}{n} R^{2/3} S^{1/2}$



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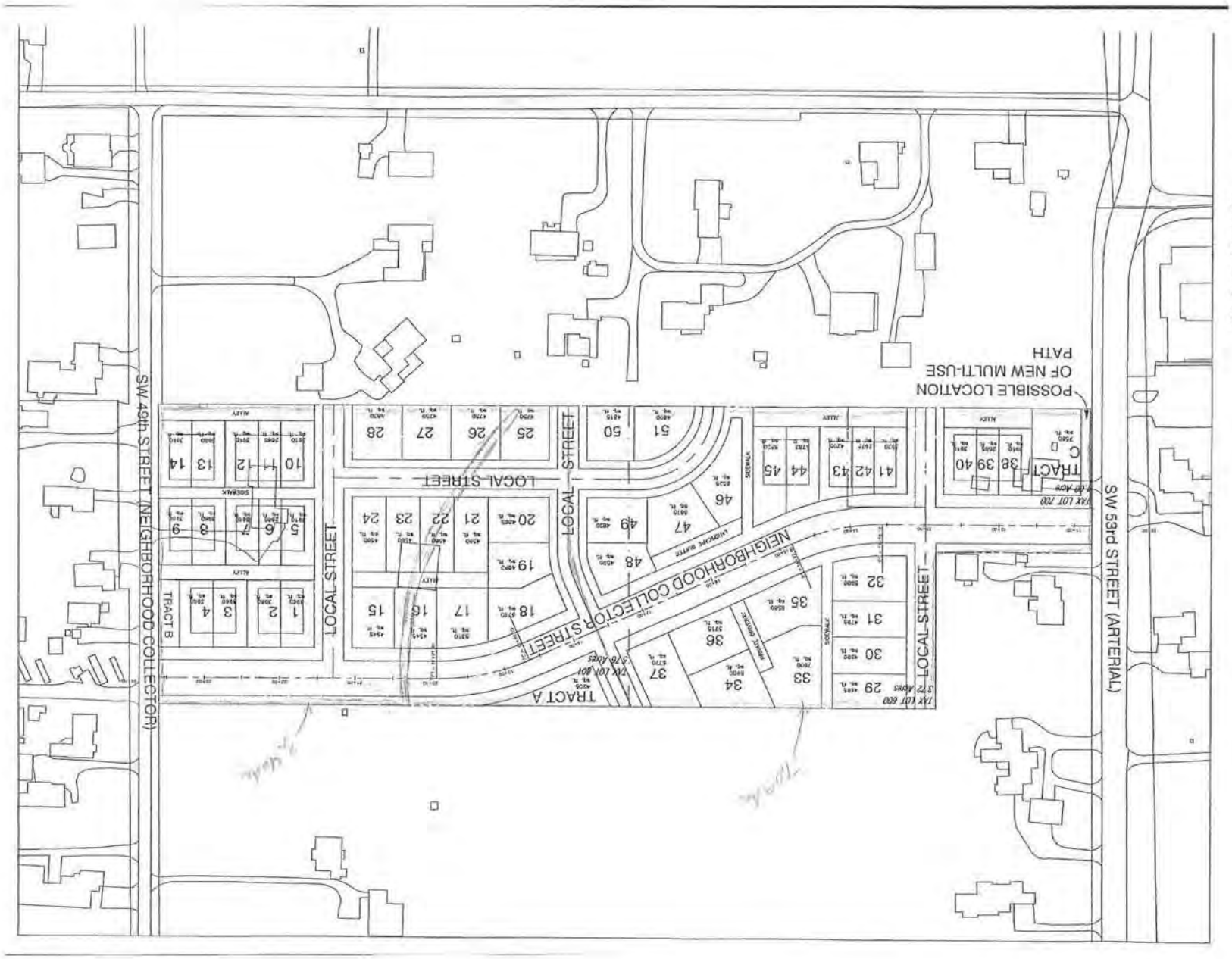
(ANN10-00002 ZDC10-00002)
Exhibit III.240

Stormwater Calculations



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Worksheet 2: Runoff curve number and runoff

Project	By	Date
49TH STREET ANNEXATION	SCRH	10/08
Location	**Checked**	**Date**
WEST AREA		

Check one: ☑ Present ☐ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Figure 2-3	CN 1/ Figure 2-4	Area ☐ acres ☐ mi² ☐ %	Product of CN x area
SAUVIE SILT LOAM 2 TO 8% SLOPE, C	MEADOW	71			6.65	472.15
WILLAMETTE SILT LOAM, 0 TO 3% SLOPE, B	MEADOW	58			0.43	24.94

1/ Use only one CN source per line

Totals ➡ 7.08 | 497.09

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{497.09}{7.08} = 70.21$; **Use CN** ➡ 70

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr	2	5	10
Rainfall, P (24-hour)	in	2.5	2.9	3.6
Runoff, Q	in	0.46	0.66	1.07

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.130

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.243

Table 2-2c Runoff curve numbers for other agricultural lands [1]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. [2]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. [3]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 [4]	48	65	73
Woods—grass combination (orchard or tree farm). [5]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. [6]	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 [4]	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

1 Average runoff condition, and $I_a = 0.2S$.
2 *Poor:* <50%) ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: > 75% ground cover and lightly or only occasionally grazed.
3 *Poor:* <50% ground cover.
Fair: 50 to 75% ground cover.
Good: >75% ground cover.
4 Actual curve number is less than 30; use CN = 30 for runoff computations.
5 CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.
6 *Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.131

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.244

Worksheet 3: Time of Concentration (T_c) or travel time (T_t)

Project	By	Date
49th STREET ANNEXATION	SCPM	10/08
Location	**Checked**	**Date**
WEST AREA		

Check one: ☑ Present ☐ Developed

Check one: ☑ T_c ☐ T_t through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet. Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only)

	Segment ID			
		FIRST 300'		
1. Surface description (table 3-1)		DENSE GRASS		
2. Manning's roughness coefficient, n (table 3-1)		0.24		
3. Flow length, L (total L † 300 ft) ft		300		
4. Two-year 24-hour rainfall, P_2 in		2.5		
5. Land slope, s ft/ft		0.055		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{\ 0.5}\ s^{0.4}}$ Compute T_t hr		0.43	+	= 0.43

Shallow concentrated flow

	Segment ID			
		REMAINDER		
7. Surface description (paved or unpaved)		UNPAVED		
8. Flow length, L ft		2.00		
9. Watercourse slope, s ft/ft		0.038		
10. Average velocity, V (figure 3-1) ft/s		3.2		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t hr		0.02	+	= 0.02

Channel flow

	Segment ID			
12. Cross sectional flow area, a ft^2				
13. Wetted perimeter, p_w ft				
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r ft				
15 Channel slope, s ft/ft				
16. Manning's roughness coefficient, n				
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V ft/s				
18. Flow length, L ft				
19. $T_t = \frac{L}{3600\ V}$ Compute T_t hr			+	= —
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) Hr				0.45

Sheet flow

Sheet flow is flow over plane surfaces. It usually occurs in the headwater of streams. With sheet flow, the friction value (Manning's n) is an effective roughness coefficient that includes the effect of raindrop impact; drag over the plane surface; obstacles such as litter, crop ridges, and rocks; and erosion and transportation of sediment. These n values are for very shallow flow depths of about 0.1 foot or so. Table 3-1 gives Manning's n values for sheet flow for various surface conditions.

Table 3-1 Roughness coefficients (Manning's n) for sheet flow

Surface description	n [1]
Smooth surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils:	
Residue cover ≤20%	0.06
Residue cover >20%	0.17
Grass:	
Short grass prairie	0.15
Dense grasses [2]	0.24
Bermudagrass	0.41
Range (natural)	0.13
Woods:[3]	
Light underbrush	0.40
Dense underbrush	0.80

[1] The n values are a composite of information compiled by Engman (1986).
[2] Includes species such as weeping lovegrass, bluegrass, buffalo grass, blue grama grass, and native grass mixtures.
[3] When selecting n, consider cover to a height of about 0.1 ft. This is the only part of the plant cover that will obstruct sheet flow.

For sheet flow of less than 300 feet, use Manning's kinematic solution (Overtop and Meadows 1976) to compute T_t:

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}} \qquad \text{[eq. 3-3]}$$

where:

T_t = travel time (hr),
n = Manning's roughness coefficient (table 3-1)
L = flow length (ft)
P_2 = 2-year, 24-hour rainfall (in)
s = slope of hydraulic grade line (land slope, ft/ft)

This simplified form of the Manning's kinematic solution is based on the following: (1) shallow steady uniform flow, (2) constant intensity of rainfall excess (that part of a rain available for runoff), (3) rainfall duration of 24 hours, and (4) minor effect of infiltration on travel time. Rainfall depth can be obtained from appendix B.

Shallow concentrated flow

After a maximum of 300 feet, sheet flow usually becomes shallow concentrated flow. The average velocity for this flow can be determined from figure 3-1, in which average velocity is a function of watercourse slope and type of channel. For slopes less than 0.005 ft/ft, use equations given in appendix F for figure 3-1. Tillage can affect the direction of shallow concentrated flow. Flow may not always be directly down the watershed slope if tillage runs across the slope.

After determining average velocity in figure 3-1, use equation 3-1 to estimate travel time for the shallow concentrated flow segment.

Open channels

Open channels are assumed to begin where surveyed cross section information has been obtained, where channels are visible on aerial photographs, or where blue lines (indicating streams) appear on United States Geological Survey (USGS) quadrangle sheets. Manning's equation or water surface profile information can be used to estimate average flow velocity. Average flow velocity is usually determined for bankfull elevation.

49th Street Annexation
(ANN10-0002 ZDC10-0002)
Exhibit III.246

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
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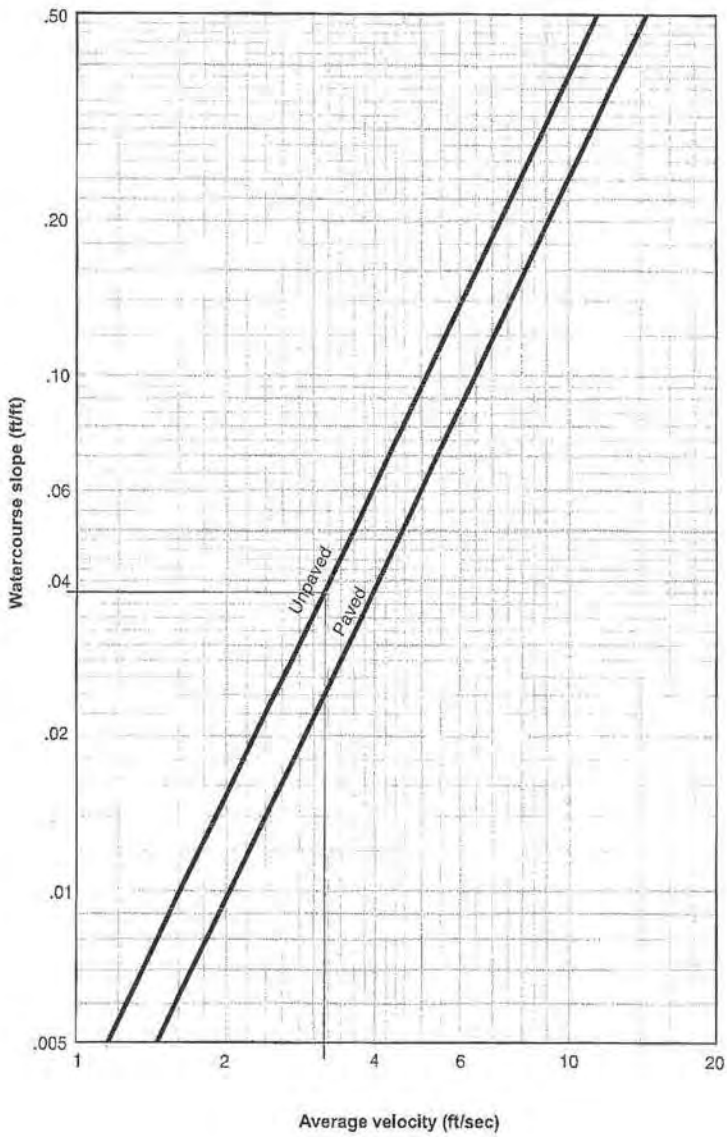
Figure 3-1 Average velocities for estimating travel time for shallow concentrated flow



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(ANN10-0002 ZDC10-0002 PLD10-0006)
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49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.247

Worksheet 4: Graphical Peak Discharge method

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
WEST AREA		

Check one: ☑ Present ☐ Developed

1. Data

Drainage area ..... A_m = 7.08/640 = 0.011 mi² (acres/640)

Runoff curve number ..... CN = 70 (From worksheet 2)

Time of concentration ..... T_c = 0.45 hr (From worksheet 3)

Rainfall distribution ..... = IA (I, IA, II III)

Pond and swamp areas sprea throughout watershed ..... = 0 percent of A_m (0 acres or mi² covered)

		Storm #1	Storm #2	Storm #3
2. Frequency	yr	2	5	10
3. Rainfall, P (24-hour)	in	2.5	2.9	3.6
4. Initial abstraction, I_a (Use CN with table 4-1)	in	0.857	0.857	0.857
5. Compute I_a/P		0.343	0.296	0.238
6. Unit peak discharge, q_u (Use T_c and I_a/P with exhibit 4– IA)	csm/in	60	63	88
7. Runoff, Q (From worksheet 2) Figure 2-6	in	0.46	0.66	1.07
8. Pond and swamp adjustment factor, F_p (Use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond ans swamp area.)		1.0	1.0	1.0
9. Peak discharge, q_p	ft³/s	0.305	0.460	1.042

(Where $q_p = q_u A_m Q F_p$)

Chapter 4 Graphical Peak Discharge Method

This chapter presents the Graphical Peak Discharge method for computing peak discharge from rural and urban areas. The Graphical method was developed from hydrograph analyses using TR-20, "Computer Program for Project Formulation—Hydrology" (SCS 1983). The peak discharge equation used is:

$$q_p = q_u A_m Q F_p \qquad \text{[eq. 4-1]}$$

where:

q_p = peak discharge (cfs)
q_u = unit peak discharge (csm/in)
A_m = drainage area (mi²)
Q = runoff (in)
F_p = pond and swamp adjustment factor

The input requirements for the Graphical method are as follows: (1) T_c (hr), (2) drainage area (mi²), (3) appropriate rainfall distribution (I, IA, II, or III), (4) 24-hour rainfall (in), and (5) CN. If pond and swamp areas are spread throughout the watershed and are not considered in the T_c computation, an adjustment for pond and swamp areas is also needed.

Peak discharge computation

For a selected rainfall frequency, the 24-hour rainfall (P) is obtained from appendix B or more detailed local precipitation maps. CN and total runoff (Q) for the watershed are computed according to the methods outlined in chapter 2. The CN is used to determine the initial abstraction (I_a) from table 4-1. I_a / P is then computed.

If the computed I_a / P ratio is outside the range in exhibit 4 (4-I, 4-IA, 4-II, and 4-III) for the rainfall distribution of interest, then the limiting value should be used. If the ratio falls between the limiting values, use linear interpolation. Figure 4-1 illustrates the sensitivity of I_a / P to CN and P.

Peak discharge per square mile per inch of runoff (q_u) is obtained from exhibit 4-I, 4-IA, 4-II, or 4-III by using T_c (chapter 3), rainfall distribution type, and I_a / P ratio. The pond and swamp adjustment factor is obtained from table 4-2 (rounded to the nearest table value). Use worksheet 4 in appendix D to aid in computing the peak discharge using the Graphical method.

Figure 4-1 Variation of I_a / P for P and CN

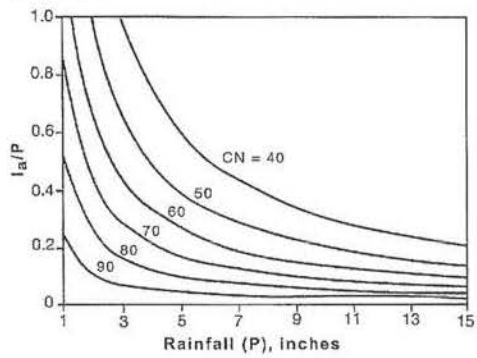

Table 4-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	70	0.857
41	2.878	71	0.817
42	2.762	72	0.778
43	2.651	73	0.740
44	2.545	74	0.703
45	2.444	75	0.667
46	2.348	76	0.632
47	2.255	77	0.597
48	2.167	78	0.564
49	2.082	79	0.532
50	2.000	80	0.500
51	1.922	81	0.469
52	1.846	82	0.439
53	1.774	83	0.410
54	1.704	84	0.381
55	1.636	85	0.353
56	1.571	86	0.326
57	1.509	87	0.299
58	1.448	88	0.273
59	1.390	89	0.247
60	1.333	90	0.222
61	1.279	91	0.198
62	1.226	92	0.174
63	1.175	93	0.151
64	1.125	94	0.128
65	1.077	95	0.105
66	1.030	96	0.083
67	0.985	97	0.062
68	0.941	98	0.041
69	0.899		

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.249

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
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Exhibit 4-IA Unit peak discharge (q_u) for NRCS (SCS) type IA rainfall distribution

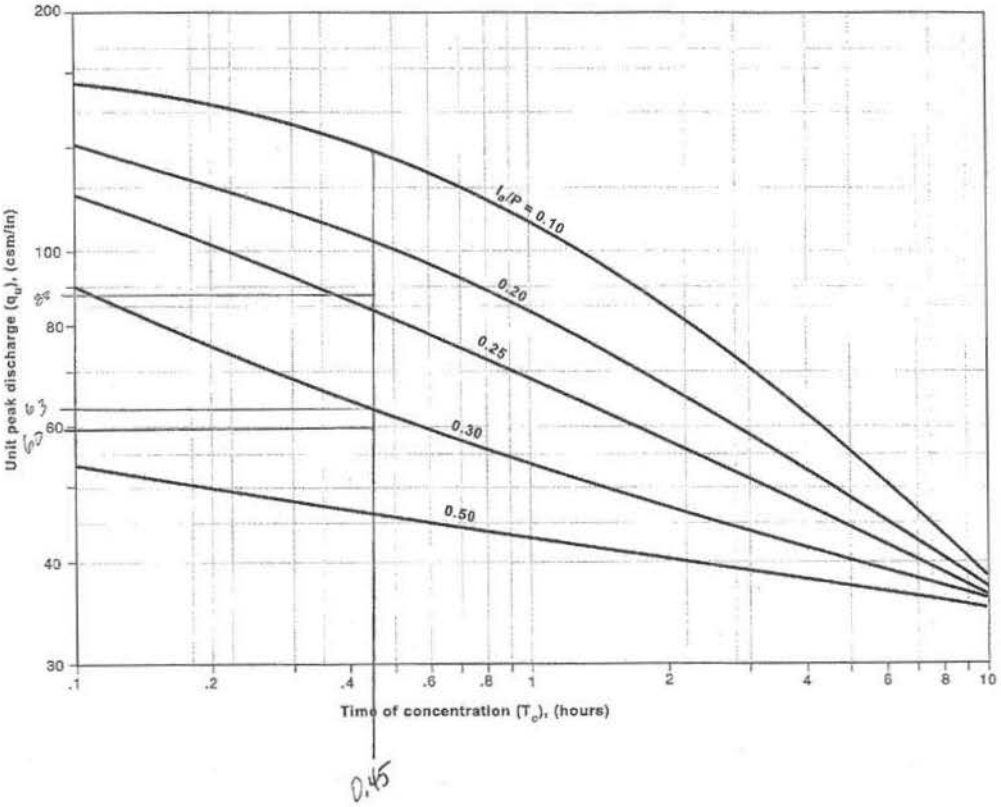

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Exhibit III.250

Worksheet 2: Runoff curve number and runoff

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
WEST AREA		

Check one: ☐ Present ☑ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Figure 2-3	CN 1/ Figure 2-4	Area ☐ acres ☐ mi² ☐ %	Product of CN x area
SANTIAM SILT LOAM 2 TO 8% SLOPE, C	RESIDENTIAL DISTRICT 1/8 ACRE	90			4.86	437.40
VILLAMETTE SILT LOAM, 0 TO 3% SLOPE, B	RESIDENTIAL DISTRICT 1/8 ACRE	85			0.43	36.55
					Totals ➡	5.29	473.95

1/ Use only one CN source per line

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{473.95}{5.29} = 89.59$; **Use CN** ➡ 90

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr	2	5	10
Rainfall, P (24-hour)	in	2.5	2.9	3.6
Runoff, Q (Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)	in	1.53	1.89	2.54

Table 2-2a Runoff curve numbers for urban areas [1]

Cover description: Cover type and hydrologic condition	Average percent impervious area [2]	Curve numbers for hydrologic soil group: A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

[1] Average runoff condition, and $I_a = 0.2S$.
[2] The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.
[3] CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.
[4] Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.
[5] Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

49th Street Annexation
(ANN10-0002 ZDC10-0002)
Exhibit III.252

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.139

Worksheet 3: Time of Concentration (T_c) or travel time (T_t)

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
EAST AREA		

Check one: ☐ Present ☑ Developed

Check one: ☑ T_c ☐ T_t through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet. Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only)

	Segment ID		
1. Surface description (table 3-1)			
2. Manning's roughness coefficient, n (table 3-1)			
3. Flow length, L (total L † 300 ft) ..... ft			
4. Two-year 24-hour rainfall, P_2 ..... in			
5. Land slope, s ..... ft/ft			
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t ..... hr		+	=

Shallow concentrated flow

	Segment ID		
7. Surface description (paved or unpaved)			
8. Flow length, L ..... ft			
9. Watercourse slope, s ..... ft/ft			
10. Average velocity, V (figure 3-1) ..... ft/s			
11. $T_t = \frac{L}{3600\ V}$ Compute T_t ..... hr		+	=

Channel flow

	Segment ID		
12. Cross sectional flow area, a ..... ft^2			
13. Wetted perimeter, p_w ..... ft			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r ..... ft			
15 Channel slope, s ..... ft/ft			
16. Manning's roughness coefficient, n			
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V .....ft/s			
18. Flow length, L ..... ft			
19. $T_t = \frac{L}{3600\ V}$ Compute T_t ..... hr		+	=
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) ..... Hr			0.10

BY INSPECTION t_c < 0.10 HRS

(210-VI-TR-55, Second Ed., June 1986) D-3

Worksheet 4: Graphical Peak Discharge method

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
WEST AREA		

Check one: ☐ Present ☑ Developed

1. Data

Drainage area ..... A_m = $\frac{5.29}{640}$ = 0.008 mi² (acres/640)

Runoff curve number ..... CN = 90 (From worksheet 2)

Time of concentration ..... T_c = 0.10 hr (From worksheet 3)

Rainfall distribution ..... = IA (I, IA, II III)

Pond and swamp areas sprea throughout watershed ..... = 0 percent of A_m (0 acres or mi² covered)

		Storm #1	Storm #2	Storm #3
2. Frequency	yr	2	5	10
3. Rainfall, P (24-hour)	in	2.5	2.9	3.6
4. Initial abstraction, I_a (Use CN with table 4-1)	in	0.222	0.222	0.222
5. Compute I_a/P		0.089	0.077	0.062
6. Unit peak discharge, q_u (Use T_c and I_a/P with exhibit 4– IA)	csm/in	161	161	161
7. Runoff, Q (From worksheet 2) Figure 2-6	in	1.53	1.89	2.54
8. Pond and swamp adjustment factor, F_p (Use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond ans swamp area.)		1.0	1.0	1.0
9. Peak discharge, q_p	ft³/s	2.036	2.515	3.380

(Where $q_p = q_u A_m Q F_p$)

Chapter 4 Graphical Peak Discharge Method

This chapter presents the Graphical Peak Discharge method for computing peak discharge from rural and urban areas. The Graphical method was developed from hydrograph analyses using TR-20, "Computer Program for Project Formulation—Hydrology" (SCS 1983). The peak discharge equation used is:

$$q_p = q_u A_m Q F_p \qquad \text{[eq. 4-1]}$$

where:

q_p = peak discharge (cfs)
q_u = unit peak discharge (csm/in)
A_m = drainage area (mi²)
Q = runoff (in)
F_p = pond and swamp adjustment factor

The input requirements for the Graphical method are as follows: (1) T_c (hr), (2) drainage area (mi²), (3) appropriate rainfall distribution (I, IA, II, or III), (4) 24-hour rainfall (in), and (5) CN. If pond and swamp areas are spread throughout the watershed and are not considered in the T_c computation, an adjustment for pond and swamp areas is also needed.

Peak discharge computation

For a selected rainfall frequency, the 24-hour rainfall (P) is obtained from appendix B or more detailed local precipitation maps. CN and total runoff (Q) for the watershed are computed according to the methods outlined in chapter 2. The CN is used to determine the initial abstraction (I_a) from table 4-1. I_a / P is then computed.

If the computed I_a / P ratio is outside the range in exhibit 4 (4-I, 4-IA, 4-II, and 4-III) for the rainfall distribution of interest, then the limiting value should be used. If the ratio falls between the limiting values, use linear interpolation. Figure 4-1 illustrates the sensitivity of I_a / P to CN and P.

Peak discharge per square mile per inch of runoff (q_u) is obtained from exhibit 4-I, 4-IA, 4-II, or 4-III by using T_c (chapter 3), rainfall distribution type, and I_a / P ratio. The pond and swamp adjustment factor is obtained from table 4-2 (rounded to the nearest table value). Use worksheet 4 in appendix D to aid in computing the peak discharge using the Graphical method.

Figure 4-1 Variation of I_a / P for P and CN

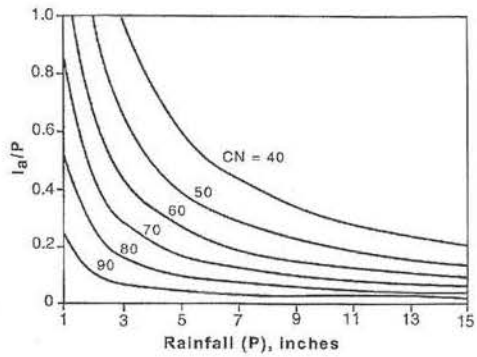


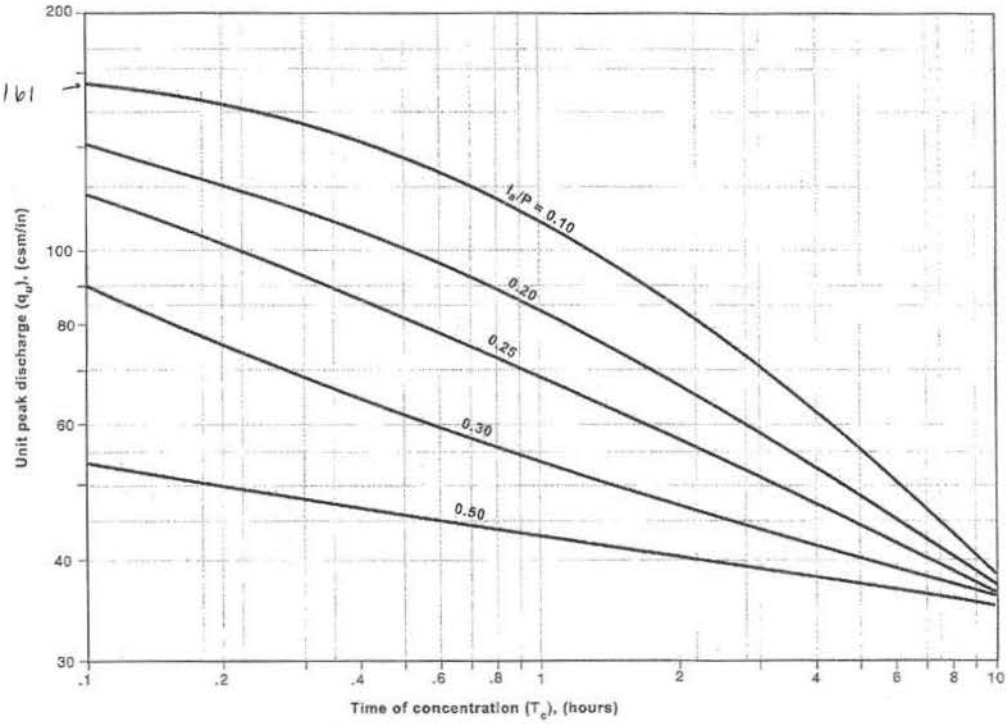
Table 4-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	70	0.857
41	2.878	71	0.817
42	2.762	72	0.778
43	2.651	73	0.740
44	2.545	74	0.703
45	2.444	75	0.667
46	2.348	76	0.632
47	2.255	77	0.597
48	2.167	78	0.564
49	2.082	79	0.532
50	2.000	80	0.500
51	1.922	81	0.469
52	1.846	82	0.439
53	1.774	83	0.410
54	1.704	84	0.381
55	1.636	85	0.353
56	1.571	86	0.326
57	1.509	87	0.299
58	1.448	88	0.273
59	1.390	89	0.247
60	1.333	90	0.222
61	1.279	91	0.198
62	1.226	92	0.174
63	1.175	93	0.151
64	1.125	94	0.128
65	1.077	95	0.105
66	1.030	96	0.083
67	0.985	97	0.062
68	0.941	98	0.041
69	0.899		

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.255

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.142

Exhibit 4-IA Unit peak discharge (q_u) for NRCS (SCS) type IA rainfall distribution



49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.143

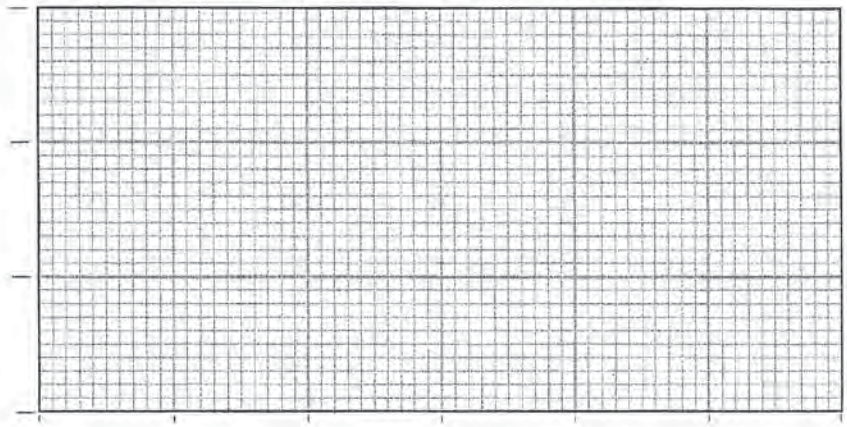
49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.256

Worksheet 6a: Detention basin storage, peak outflow discharge (q_o) known

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
WEST AREA		

Check one: ☐ Present ☑ Developed

☐ Elevation or ☐ stage



Detention basin storage (acre feet)

1. Data:
   Drainage area ..... A_m = 5.25/640 = 0.008 mi²
   Rainfall distribution type (I, IA, II, III) = IA

	1st Stage	2nd Stage
2. Frequency ..... yr	2	5
3. Peak inflow discharge q_i ..... ft³/s (from worksheet 4 or 5b)	2.036	2.515
4. Peak outflow discharge q_o ..... ft³/s 1/	0.305	0.460
5. Compute $\frac{q_o}{q_i}$	0.15	0.18
6. $\frac{V_s}{V_r}$ ..... (Use $\frac{q_o}{q_i}$ with figure 6-1)	0.44	0.47
7. Runoff, Q ..... in (From worksheet 2)	1.53	1.89
8. Runoff volume V_r..... ac ft ($V_r = QA_m$ 53.33)	0.674	0.833
9. Storage volume, V_s ..... ac-ft ($V_s = V_r (\frac{V_s}{V_r})$)	0.297	0.333
	12,926 cf	14,516 cf
10. Maximum storage E_{max} (from plot)		

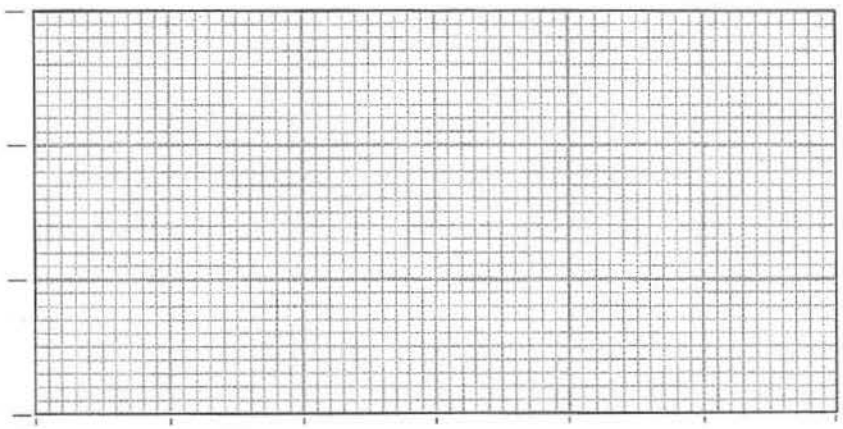
1/ 2nd stage q_o includes 1st stage q_o.

Worksheet 6a: Detention basin storage, peak outflow discharge (q_o) known

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**

Check one: ☐ Present ☑ Developed

☐ Elevation or ☐ stage



Detention basin storage (acre feet)

1. Data:
   Drainage area ..... A_m = 5.25 / 640 = 0.008 mi²
   Rainfall distribution type (I, IA, II, III) = IA

	1st Stage	2nd Stage
2. Frequency ..... yr	10	
3. Peak inflow discharge q_i ..... ft³/s (from worksheet 4 or 5b)	3,380	
4. Peak outflow discharge q_o ..... ft³/s	1.042 1/	
5. Compute $\frac{q_o}{q_i}$	0.31	
6. $\frac{V_s}{V_r}$ ..... (Use $\frac{q_o}{q_i}$ with figure 6-1)	0.29	
7. Runoff, Q ..... in (From worksheet 2)	2.54	
8. Runoff volume V_r..... ac ft ($V_r = QA_m$ 53.33)	1.120	
9. Storage volume, V_s ..... ac-ft ($V_s = V_r (\frac{V_s}{V_r})$)	0.325 14,143 CF	
10. Maximum storage E_{max} (from plot)		

1/ 2nd stage q_o includes 1st stage q_o.

Input requirements and procedures

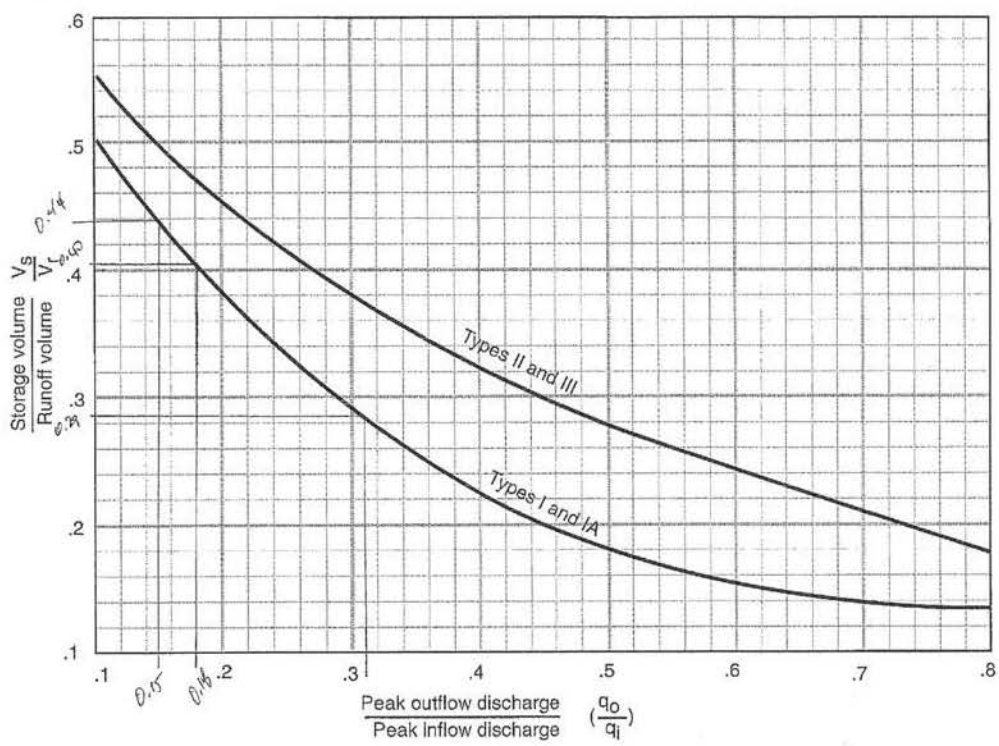
Use figure 6-1 estimate storage volume (V_s) required or peak outflow discharge (q_o). The most frequent application is to estimate V_s, for which the required inputs are runoff volume (V_r), q_o, and peak inflow discharge (q_i). To estimate q_o, the required inputs are V_r, V_s, and q_i.

Estimating V_s

Use worksheet 6a to estimate V_s, storage volume required, by the following procedure.

1. Determine q_o. Many factors may dictate the selection of peak outflow discharge. The most common is to limit downstream discharges to a desired level, such as predevelopment discharge. Another factor may be that the outflow device has already been selected.
2. Estimate q_i by procedures in chapters 4 or 5. Do not use peak discharges developed by other procedure. When using the Tabular Hydrograph method to estimate q_i for a subarea, only use peak discharge associated with $T_t = 0$.

Figure 6-1 Approximate detention basin routing for rainfall types I, IA, II, and III



49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.259

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.146

Worksheet 2: Runoff curve number and runoff

Project: 49th STREET ANNEXATION	By: SLPH	Date: 10/08
Location: EAST AREA	Checked	Date

Check one: ☑ Present ☐ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1/] Table 2-2	CN [1/] Figure 2-3	CN [1/] Figure 2-4	Area ☑ acres ☐ mi² ☐ %	Product of CN x area
SANTIAM SILT LOAM 2 TO 8 % SLOPE, C	MEADOW	71			2.41	171.11
WILLAMETTE SILT LOAM 3 TO 12% SLOPE, B	MEADOW	58			1.00	58.00
				Totals ➡	3.41	229.11

[1/] Use only one CN source per line

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{229.11}{3.41} = 67.18$; Use CN ➡ 67

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr	2	5	10
Rainfall, P (24-hour)	in	2.5	2.9	3.6
Runoff, Q (Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)	in	0.36	0.54	0.91

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.260

WEST AREA PRESENT

Table 2-2c Runoff curve numbers for other agricultural lands [1]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. [2]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. [3]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 [4]	48	65	73
Woods—grass combination (orchard or tree farm). [5]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. [6]	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 [4]	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

1 Average runoff condition, and $I_a = 0.2S$.
2 *Poor:* <50%) ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: > 75% ground cover and lightly or only occasionally grazed.
3 *Poor:* <50% ground cover.
Fair: 50 to 75% ground cover.
Good: >75% ground cover.
4 Actual curve number is less than 30; use CN = 30 for runoff computations.
5 CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.
6 *Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.148

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.261

Worksheet 3: Time of Concentration (T_c) or travel time (T_t)

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
EAST AREA		

Check one: ☒ Present ☐ Developed

Check one: ☒ T_c ☐ T_t through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet.
Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only)

	Segment ID			
		FIRST 300'		
1. Surface description (table 3-1)		DENSE GRASS		
2. Manning's roughness coefficient, n (table 3-1)		0.24		
3. Flow length, L (total L † 300 ft) ft		300		
4. Two-year 24-hour rainfall, P_2 in		2.5		
5. Land slope, s ft/ft		0.06		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{\ 0.5}\ s^{0.4}}$ Compute T_t hr		0.42	+	= 0.42

Shallow concentrated flow

	Segment ID			
		REMAINDER TO 49th		
7. Surface description (paved or unpaved)		UNPAVED		
8. Flow length, L ft		160		
9. Watercourse slope, s ft/ft		0.08		
10. Average velocity, V (figure 3-1) ft/s		4.6		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t hr		0.01	+	= 0.01

Channel flow

	Segment ID			
12. Cross sectional flow area, a ft^2				
13. Wetted perimeter, p_w ft				
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r ft				
15 Channel slope, s ft/ft				
16. Manning's roughness coefficient, n				
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V ft/s				
18. Flow length, L ft				
19. $T_t = \frac{L}{3600\ V}$ Compute T_t hr			+	= —

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) Hr 0.43

Sheet flow

Sheet flow is flow over plane surfaces. It usually occurs in the headwater of streams. With sheet flow, the friction value (Manning's n) is an effective roughness coefficient that includes the effect of raindrop impact; drag over the plane surface; obstacles such as litter, crop ridges, and rocks; and erosion and transportation of sediment. These n values are for very shallow flow depths of about 0.1 foot or so. Table 3-1 gives Manning's n values for sheet flow for various surface conditions.

Table 3-1 Roughness coefficients (Manning's n) for sheet flow

Surface description	n [1]
Smooth surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils:	
Residue cover ≤20%	0.06
Residue cover >20%	0.17
Grass:	
Short grass prairie	0.15
Dense grasses [2]	0.24
Bermudagrass	0.41
Range (natural)	0.13
Woods:[3]	
Light underbrush	0.40
Dense underbrush	0.80

[1] The n values are a composite of information compiled by Engman (1986).
[2] Includes species such as weeping lovegrass, bluegrass, buffalo grass, blue grama grass, and native grass mixtures.
[3] When selecting n, consider cover to a height of about 0.1 ft. This is the only part of the plant cover that will obstruct sheet flow.

For sheet flow of less than 300 feet, use Manning's kinematic solution (Overtop and Meadows 1976) to compute T_t:

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}} \qquad \text{[eq. 3-3]}$$

where:

T_t = travel time (hr),
n = Manning's roughness coefficient (table 3-1)
L = flow length (ft)
P_2 = 2-year, 24-hour rainfall (in)
s = slope of hydraulic grade line (land slope, ft/ft)

This simplified form of the Manning's kinematic solution is based on the following: (1) shallow steady uniform flow, (2) constant intensity of rainfall excess (that part of a rain available for runoff), (3) rainfall duration of 24 hours, and (4) minor effect of infiltration on travel time. Rainfall depth can be obtained from appendix B.

Shallow concentrated flow

After a maximum of 300 feet, sheet flow usually becomes shallow concentrated flow. The average velocity for this flow can be determined from figure 3-1, in which average velocity is a function of watercourse slope and type of channel. For slopes less than 0.005 ft/ft, use equations given in appendix F for figure 3-1. Tillage can affect the direction of shallow concentrated flow. Flow may not always be directly down the watershed slope if tillage runs across the slope.

After determining average velocity in figure 3-1, use equation 3-1 to estimate travel time for the shallow concentrated flow segment.

Open channels

Open channels are assumed to begin where surveyed cross section information has been obtained, where channels are visible on aerial photographs, or where blue lines (indicating streams) appear on United States Geological Survey (USGS) quadrangle sheets. Manning's equation or water surface profile information can be used to estimate average flow velocity. Average flow velocity is usually determined for bankfull elevation.

49th Street Annexation
(ANN10-0002 ZDC10-0002)
Exhibit III.263

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
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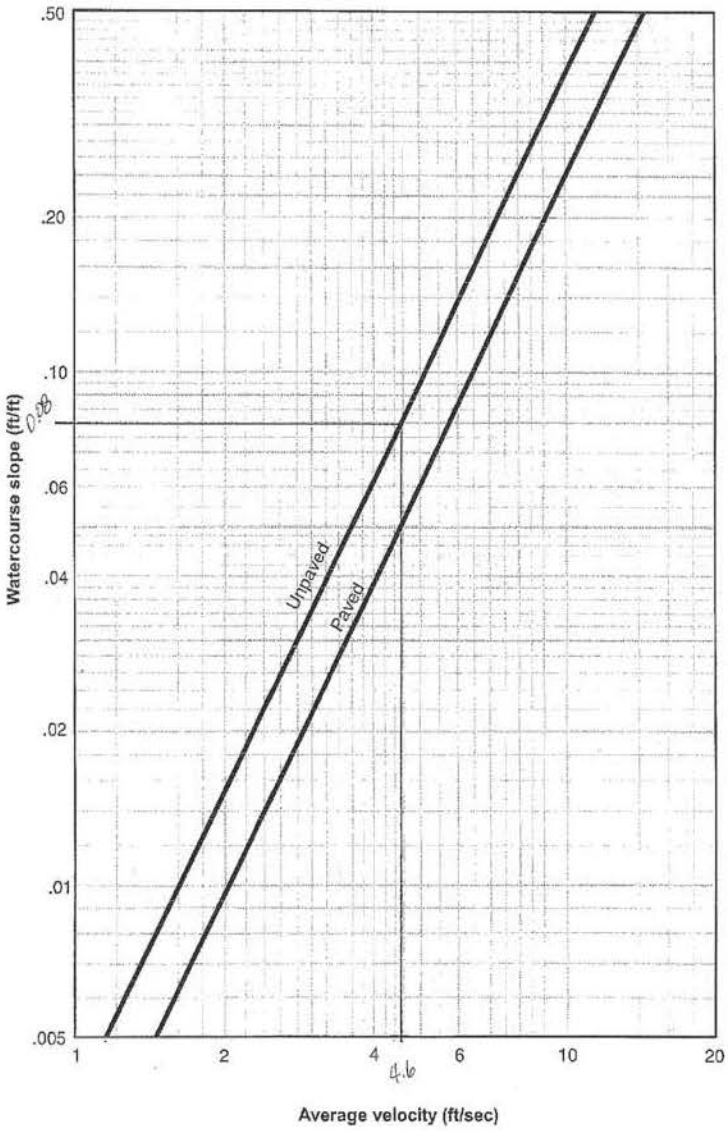
Figure 3-1 Average velocities for estimating travel time for shallow concentrated flow



49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.264

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.151

Worksheet 4: Graphical Peak Discharge method

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
EAST AREA		

Check one: ☑ Present ☐ Developed

1. Data

Drainage area ..... A_m = 3.41/640 = 0.005 mi² (acres/640)

Runoff curve number ..... CN = 69 (From worksheet 2)

Time of concentration ..... T_c = 0.43 hr (From worksheet 3)

Rainfall distribution ..... = IA (I, IA, II III)

Pond and swamp areas sprea throughout watershed ..... = 0 percent of A_m (0 acres or mi² covered)

		Storm #1	Storm #2	Storm #3
2. Frequency	yr	2	5	10
3. Rainfall, P (24-hour)	in	2.5	2.9	3.6
4. Initial abstraction, I_a (Use CN with table 4-1)	in	0.899	0.899	0.899
5. Compute I_a/P		0.360	0.310	0.250
6. Unit peak discharge, q_u (Use T_c and I_a/P with exhibit 4– IA)	csm/in	58	62	85
7. Runoff, Q (From worksheet 2) Figure 2-6	in	0.36	0.54	0.91
8. Pond and swamp adjustment factor, F_p (Use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond ans swamp area.)		1.0	1.0	1.0
9. Peak discharge, q_p	ft³/s	0.111	0.178	0.412

(Where $q_p = q_u A_m Q F_p$)

Chapter 4 Graphical Peak Discharge Method

This chapter presents the Graphical Peak Discharge method for computing peak discharge from rural and urban areas. The Graphical method was developed from hydrograph analyses using TR-20, "Computer Program for Project Formulation—Hydrology" (SCS 1983). The peak discharge equation used is:

$$q_p = q_u A_m Q F_p \qquad \text{[eq. 4-1]}$$

where:

q_p = peak discharge (cfs)
q_u = unit peak discharge (csm/in)
A_m = drainage area (mi^2)
Q = runoff (in)
F_p = pond and swamp adjustment factor

The input requirements for the Graphical method are as follows: (1) T_c (hr), (2) drainage area (mi^2), (3) appropriate rainfall distribution (I, IA, II, or III), (4) 24-hour rainfall (in), and (5) CN. If pond and swamp areas are spread throughout the watershed and are not considered in the T_c computation, an adjustment for pond and swamp areas is also needed.

Peak discharge computation

For a selected rainfall frequency, the 24-hour rainfall (P) is obtained from appendix B or more detailed local precipitation maps. CN and total runoff (Q) for the watershed are computed according to the methods outlined in chapter 2. The CN is used to determine the initial abstraction (I_a) from table 4-1. I_a / P is then computed.

If the computed I_a / P ratio is outside the range in exhibit 4 (4-I, 4-IA, 4-II, and 4-III) for the rainfall distribution of interest, then the limiting value should be used. If the ratio falls between the limiting values, use linear interpolation. Figure 4-1 illustrates the sensitivity of I_a / P to CN and P.

Peak discharge per square mile per inch of runoff (q_u) is obtained from exhibit 4-I, 4-IA, 4-II, or 4-III by using T_c (chapter 3), rainfall distribution type, and I_a / P ratio. The pond and swamp adjustment factor is obtained from table 4-2 (rounded to the nearest table value). Use worksheet 4 in appendix D to aid in computing the peak discharge using the Graphical method.

Figure 4-1 Variation of I_a / P for P and CN

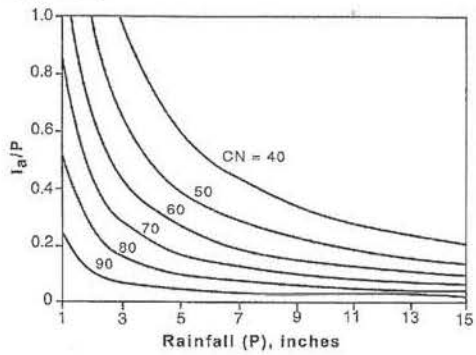


Table 4-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	70	0.857
41	2.878	71	0.817
42	2.762	72	0.778
43	2.651	73	0.740
44	2.545	74	0.703
45	2.444	75	0.667
46	2.348	76	0.632
47	2.255	77	0.597
48	2.167	78	0.564
49	2.082	79	0.532
50	2.000	80	0.500
51	1.922	81	0.469
52	1.846	82	0.439
53	1.774	83	0.410
54	1.704	84	0.381
55	1.636	85	0.353
56	1.571	86	0.326
57	1.509	87	0.299
58	1.448	88	0.273
59	1.390	89	0.247
60	1.333	90	0.222
61	1.279	91	0.198
62	1.226	92	0.174
63	1.175	93	0.151
64	1.125	94	0.128
65	1.077	95	0.105
66	1.030	96	0.083
67	0.985	97	0.062
68	0.941	98	0.041
69	0.899		

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.266

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.153

Exhibit 4-IA Unit peak discharge (q_u) for NRCS (SCS) type IA rainfall distribution

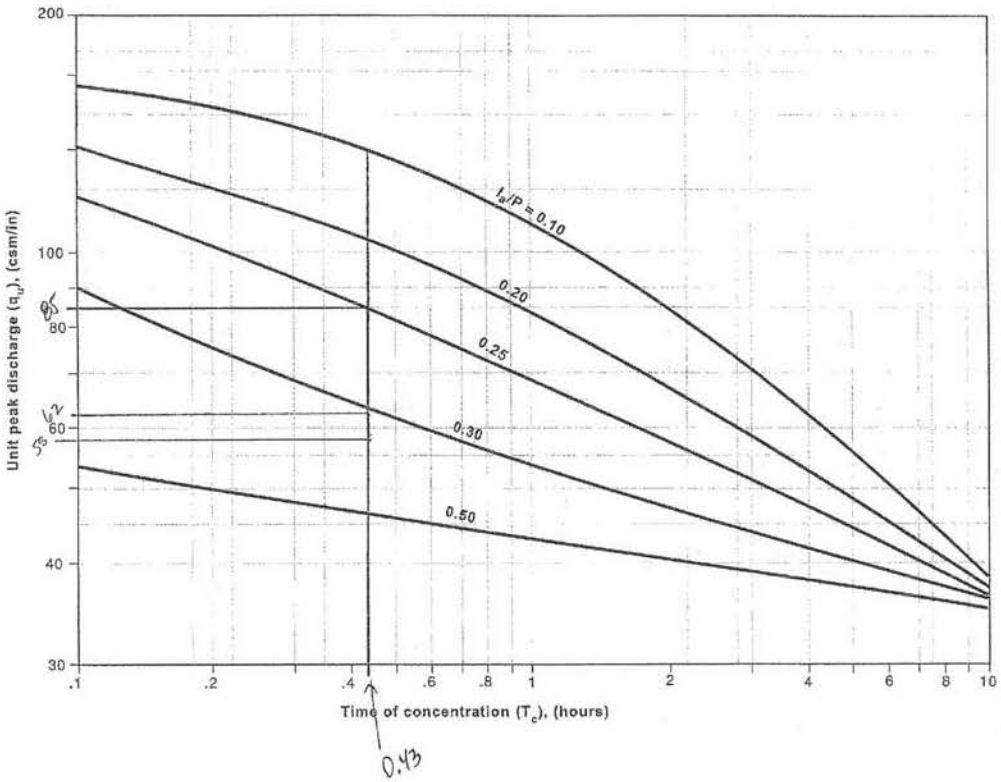


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Exhibit III.267

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.154

Worksheet 2: Runoff curve number and runoff

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
EAST AREA		

Check one: ☐ Present ☑ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Figure 2-3	CN [1] Figure 2-4	Area ☑ acres ☐ mi² ☐ %	Product of CN x area
SAVITIAN SILT LOAM 2 TO 8% SLOPE, C	RESIDENTIAL DISTRICT 1/8 ACRE	90			4.20	378.00
WILLAMETTE SILT LOAM, 3 TO 12% SLOPE, B	RESIDENTIAL DISTRICT 1/8 ACRE	85			1.00	85.00
				Totals ➡	5.20	463.00

[1] Use only one CN source per line

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{463.00}{5.20} = 89.04 \; ; \quad \textbf{Use CN} \Rightarrow \boxed{89}$$

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr	2	5	10
Rainfall, P (24-hour)	in	2.5	2.9	3.6
Runoff, Q	in	1.45	1.81	2.45

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

Table 2-2a Runoff curve numbers for urban areas [1]

Cover description: Cover type and hydrologic condition	Average percent impervious area [2]	Curve numbers for hydrologic soil group: A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

[1] Average runoff condition, and $I_a = 0.2S$.
[2] The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.
[3] CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.
[4] Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.
[5] Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.269

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.156

Worksheet 3: Time of Concentration (T_c) or travel time (T_t)

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
EAST AREA		

Check one: ☐ Present ☑ Developed

Check one: ☑ T_c ☐ T_t through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet.
Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only)

	Segment ID		
1. Surface description (table 3-1)			
2. Manning's roughness coefficient, n (table 3-1)			
3. Flow length, L (total L † 300 ft) ft			
4. Two-year 24-hour rainfall, P_2 in			
5. Land slope, s ft/ft			
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{\ 0.5}\ s^{0.4}}$ Compute T_t hr		+	=

Shallow concentrated flow

	Segment ID		
7. Surface description (paved or unpaved)			
8. Flow length, L ft			
9. Watercourse slope, s ft/ft			
10. Average velocity, V (figure 3-1) ft/s			
11. $T_t = \frac{L}{3600\ V}$ Compute T_t hr		+	=

Channel flow

	Segment ID		
12. Cross sectional flow area, a ft^2			
13. Wetted perimeter, p_w ft			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r ft			
15 Channel slope, s ft/ft			
16. Manning's roughness coefficient, n			
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V ft/s			
18. Flow length, L ft			
19. $T_t = \frac{L}{3600\ V}$ Compute T_t hr		+	=
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) Hr			0.10

BY INSPECTION t_c < 0.10 HRS

Worksheet 4: Graphical Peak Discharge method

Project	By	Date
49th STREET	SCPH	10/08
Location	**Checked**	**Date**
EAST AREA		

Check one: ☐ Present ☑ Developed

1. Data

Drainage area ..... A_m = $\frac{5.20}{640}$ = 0.0081 mi² (acres/640)

Runoff curve number ..... CN = 89 (From worksheet 2)

Time of concentration ..... T_c = 0.10 hr (From worksheet 3)

Rainfall distribution ..... = IA (I, IA, II III)

Pond and swamp areas sprea throughout watershed ..... = 0 percent of A_m (0 acres or mi² covered)

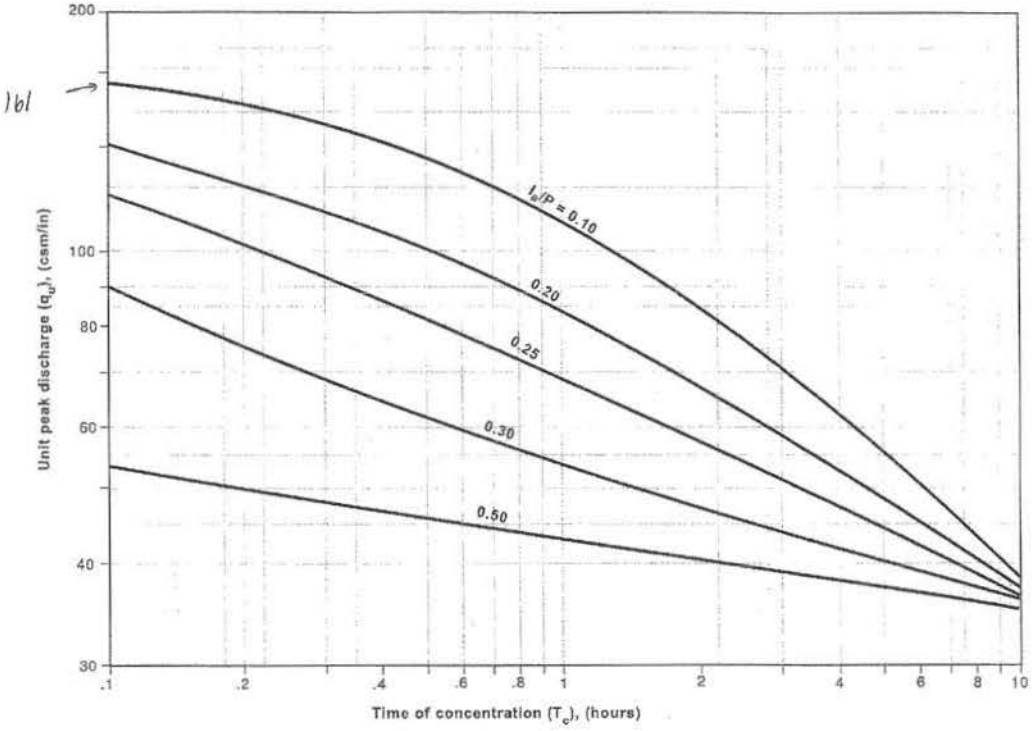
		Storm #1	Storm #2	Storm #3
2. Frequency	yr	2	5	10
3. Rainfall, P (24-hour)	in	2.5	2.9	3.6
4. Initial abstraction, I_a (Use CN with table 4-1)	in	0.247	0.247	0.247
5. Compute I_a/P		0.099	0.085	0.069
6. Unit peak discharge, q_u (Use T_c and I_a/P with exhibit 4– IA)	csm/in	161	161	161
7. Runoff, Q (From worksheet 2) Figure 2-6	in	1.45	1.81	2.45
8. Pond and swamp adjustment factor, F_p (Use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond ans swamp area.)		1.0	1.0	1.0
9. Peak discharge, q_p	ft³/s	1.897	2.368	3.205

(Where $q_p = q_u A_m Q F_p$)

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.158

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.271

Exhibit 4-IA Unit peak discharge (q_u) for NRCS (SCS) type IA rainfall distribution



49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.159

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.272

Chapter 4 Graphical Peak Discharge Method

This chapter presents the Graphical Peak Discharge method for computing peak discharge from rural and urban areas. The Graphical method was developed from hydrograph analyses using TR-20, "Computer Program for Project Formulation—Hydrology" (SCS 1983). The peak discharge equation used is:

$$q_p = q_u A_m Q F_p \qquad \text{[eq. 4-1]}$$

where:

q_p = peak discharge (cfs)
q_u = unit peak discharge (csm/in)
A_m = drainage area (mi²)
Q = runoff (in)
F_p = pond and swamp adjustment factor

The input requirements for the Graphical method are as follows: (1) T_c (hr), (2) drainage area (mi²), (3) appropriate rainfall distribution (I, IA, II, or III), (4) 24-hour rainfall (in), and (5) CN. If pond and swamp areas are spread throughout the watershed and are not considered in the T_c computation, an adjustment for pond and swamp areas is also needed.

Peak discharge computation

For a selected rainfall frequency, the 24-hour rainfall (P) is obtained from appendix B or more detailed local precipitation maps. CN and total runoff (Q) for the watershed are computed according to the methods outlined in chapter 2. The CN is used to determine the initial abstraction (I_a) from table 4-1. I_a / P is then computed.

If the computed I_a / P ratio is outside the range in exhibit 4 (4-I, 4-IA, 4-II, and 4-III) for the rainfall distribution of interest, then the limiting value should be used. If the ratio falls between the limiting values, use linear interpolation. Figure 4-1 illustrates the sensitivity of I_a / P to CN and P.

Peak discharge per square mile per inch of runoff (q_u) is obtained from exhibit 4-I, 4-IA, 4-II, or 4-III by using T_c (chapter 3), rainfall distribution type, and I_a / P ratio. The pond and swamp adjustment factor is obtained from table 4-2 (rounded to the nearest table value). Use worksheet 4 in appendix D to aid in computing the peak discharge using the Graphical method.

Figure 4-1 Variation of I_a / P for P and CN

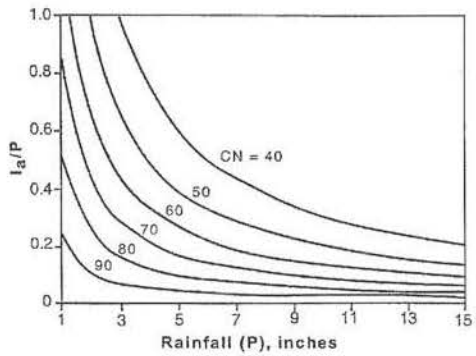


Table 4-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	70	0.857
41	2.878	71	0.817
42	2.762	72	0.778
43	2.651	73	0.740
44	2.545	74	0.703
45	2.444	75	0.667
46	2.348	76	0.632
47	2.255	77	0.597
48	2.167	78	0.564
49	2.082	79	0.532
50	2.000	80	0.500
51	1.922	81	0.469
52	1.846	82	0.439
53	1.774	83	0.410
54	1.704	84	0.381
55	1.636	85	0.353
56	1.571	86	0.326
57	1.509	87	0.299
58	1.448	88	0.273
59	1.390	89	0.247
60	1.333	90	0.222
61	1.279	91	0.198
62	1.226	92	0.174
63	1.175	93	0.151
64	1.125	94	0.128
65	1.077	95	0.105
66	1.030	96	0.083
67	0.985	97	0.062
68	0.941	98	0.041
69	0.899		

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.273

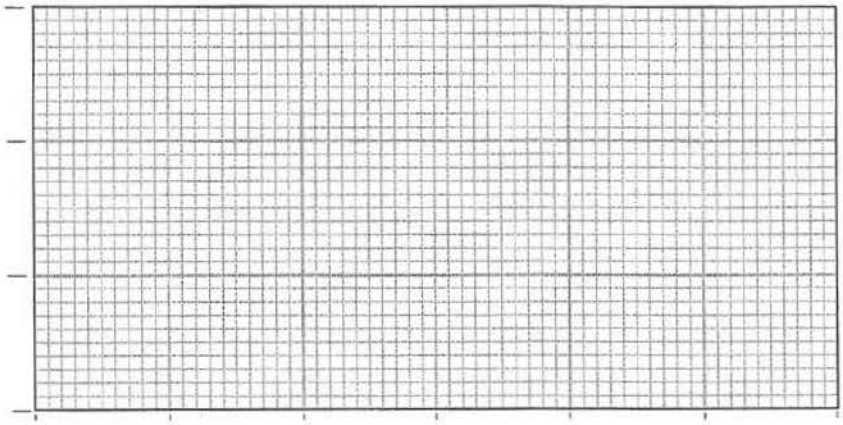
49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.160

Worksheet 6a: Detention basin storage, peak outflow discharge (q_o) known

Project	By	Date
49TH STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
EAST AREA		

Check one: ☐ Present ☑ Developed

☐ Elevation or ☐ stage



Detention basin storage (acre feet)

1. Data:
   Drainage area ..... A_m = 5.20/640 = 0.008 mi²
   Rainfall distribution type (I, IA, II, III) = IA

	1st Stage	2nd Stage
2. Frequency ..... yr	2	5
3. Peak inflow discharge q_i ..... ft³/s (from worksheet 4 or 5b)	1.897	2.368
4. Peak outflow discharge q_o ..... ft³/s	0.111	0.178 1/
5. Compute $\frac{q_o}{q_i}$	0.06	0.08
6. $\frac{V_s}{V_r}$ ..... (Use $\frac{q_o}{q_i}$ with figure 6-1)	0.50	0.50
7. Runoff, Q ..... in (From worksheet 2)	1.45	1.81
8. Runoff volume V_r..... ac ft ($V_r = QA_m$ 53.33)	0.628	0.784
9. Storage volume, V_s ..... ac-ft ($V_s = V_r (\frac{V_s}{V_r})$)	0.314 13,684cf	0.392 17,082cf
10. Maximum storage E_{max} (from plot)		

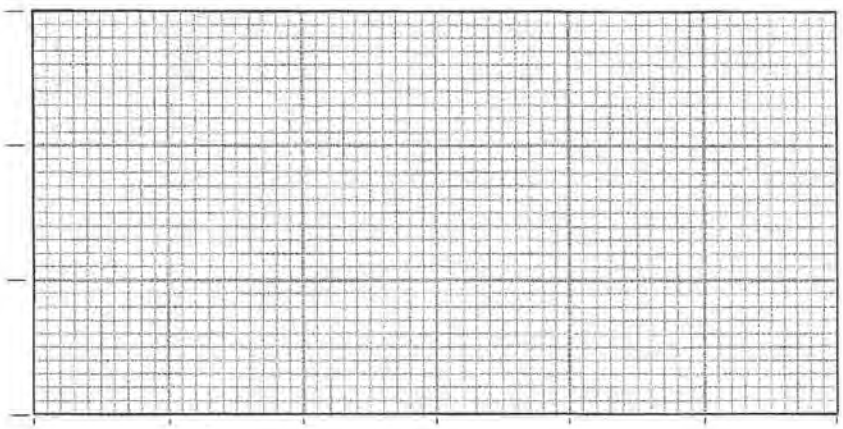
1/ 2nd stage q_o includes 1st stage q_o.

Worksheet 6a: Detention basin storage, peak outflow discharge (q_o) known

Project	By	Date
Location	Checked	Date

Check one: ☐ Present ☐ Developed

☐ Elevation or ☐ stage



Detention basin storage (acre feet)

1. Data:
   Drainage area ..... A_m = 0.008 mi^2
   Rainfall distribution type (I, IA, II, III) = IA

	1st Stage	2nd Stage
2. Frequency ..... yr	10	
3. Peak inflow discharge q_i ..... ft^3/s (from worksheet 4 or 5b)	3.205	
4. Peak outflow discharge q_o ..... ft^3/s 1/	0.412	
5. Compute $\frac{q_o}{q_i}$	0.13	
6. $\frac{V_s}{V_r}$ ..... (Use $\frac{q_o}{q_i}$ with figure 6-1)	0.46	
7. Runoff, Q ..... in (From worksheet 2)	2.45	
8. Runoff volume V_r..... ac ft ($V_r = QA_m$ 53.33)	1.06	
9. Storage volume, V_s ..... ac-ft ($V_s = V_r (\frac{V_s}{V_r})$)	0.488 21,272 cf	
10. Maximum storage E_{max} (from plot)		

1/ 2nd stage q_o includes 1st stage q_o.

Input requirements and procedures

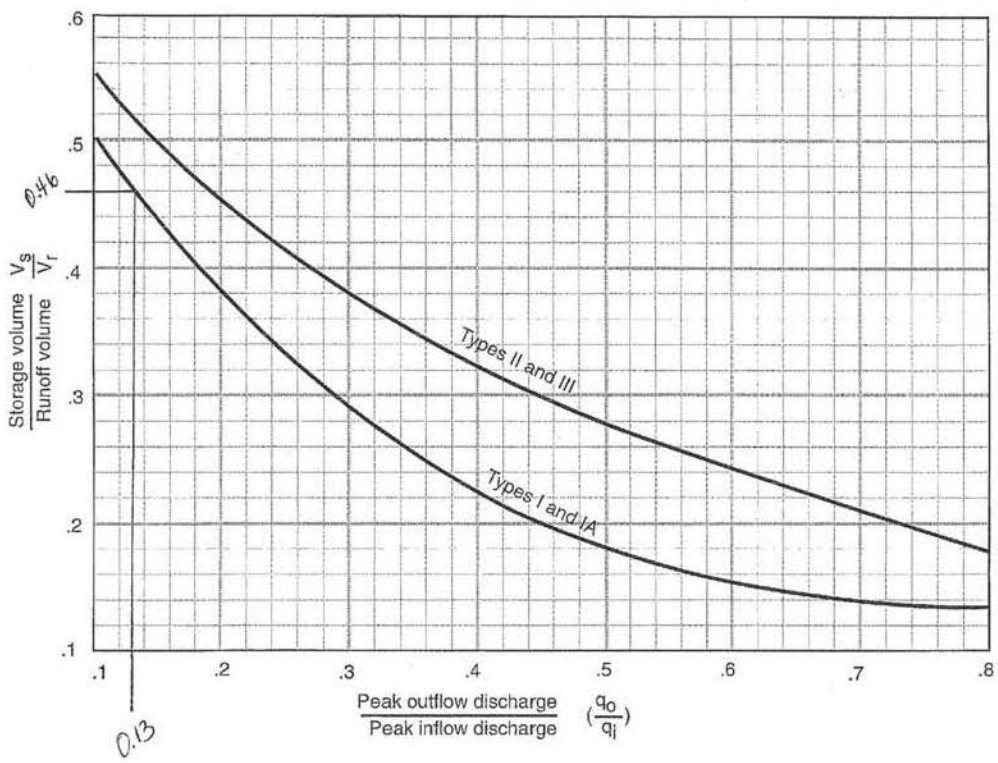
Use figure 6-1 estimate storage volume (V_s) required or peak outflow discharge (q_o). The most frequent application is to estimate V_s, for which the required inputs are runoff volume (V_r), q_o, and peak inflow discharge (q_i). To estimate q_o, the required inputs are V_r, V_s, and q_i.

Estimating V_s

Use worksheet 6a to estimate V_s, storage volume required, by the following procedure.

1. Determine q_o. Many factors may dictate the selection of peak outflow discharge. The most common is to limit downstream discharges to a desired level, such as predevelopment discharge. Another factor may be that the outflow device has already been selected.
2. Estimate q_i by procedures in chapters 4 or 5. Do not use peak discharges developed by other procedure. When using the Tabular Hydrograph method to estimate q_i for a subarea, only use peak discharge associated with $T_t = 0$.

Figure 6-1 Approximate detention basin routing for rainfall types I, IA, II, and III



49th Street Annexation
(ANN10-0002 ZDC10-0002)
Exhibit III.276

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.163

WQ CALCS

Worksheet 2: Runoff curve number and runoff

Project	By	Date
49TH STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
COLLEGION STREET WQ SWALE		

Check one: ☐ Present ☑ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Figure 2-3	CN [1] Figure 2-4	Area ☑ acres ☐ mi² ☐ %	Product of CN x area
	IMPERVIOUS PAVEMENT (48'/2)(100') = 2400 SF	98			0.055	5.39
					Totals ➡ 0.055	5.39

[1] Use only one CN source per line

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{5.39}{0.055} = 98$; Use CN ➡ 98

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr	WQ		
Rainfall, P (24-hour)	in	0.9		
Runoff, Q	in	0.69		

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

Worksheet 3: Time of Concentration (T_c) or travel time (T_t)

Project	By	Date
49th STREET ANNEXATION	SCPH	10/05
Location	**Checked**	**Date**
COLLECTOR STREET WB SWALE		

Check one: ☐ Present ☑ Developed

Check one: ☑ T_c ☐ T_t through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet. Include a map, schematic, or description of flow segments.

Sheet flow (300 ft max)

	Segment ID		
1. Surface description (table 3-1)			
2. Manning's roughness coefficient, n (table 3-1)			
3. Flow length, L (total L † 300 ft) ft			
4. Two-year 24-hour rainfall, P_2 in			
5. Land slope, s ft/ft			
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{\ 0.5}\ s^{0.4}}$ Compute T_t hr		+	=

Shallow concentrated flow

	Segment ID		
7. Surface description (paved or unpaved)			
8. Flow length, L ft			
9. Watercourse slope, s ft/ft			
10. Average velocity, V (figure 3-1) ft/s			
11. $T_t = \frac{L}{3600\ V}$ Compute T_t hr		+	=

Open channel flow

	Segment ID		
12. Cross sectional flow area, a ft^2			
13. Wetted perimeter, p_w ft			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r ft			
15 Channel slope, s ft/ft			
16. Manning's roughness coefficient, n			
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V ft/s			
18. Flow length, L ft			
19. $T_t = \frac{L}{3600\ V}$ Compute T_t hr		+	=
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) Hr			0.15

MINIMUM

9 MIN DURATION

DMG

Worksheet 4: Graphical Peak Discharge method

Project	By	Date
49th STREET ANNEXATION	SLPH	10/08
Location	**Checked**	**Date**
COLLECTOR STREET WQ SWALE		

Check one: ☐ Present ☑ Developed

1. Data

Drainage area ..... A_m = $\frac{0.055}{640}$ = 0.000086 mi² (acres/640)

Runoff curve number ..... CN = 98 (From worksheet 2)

Time of concentration ..... T_c = 0.15 hr (From worksheet 3)

Rainfall distribution ..... = 1A (I, IA, II III)

Pond and swamp areas sprea throughout watershed ..... = 0 percent of A_m (0 acres or mi² covered)

		Storm #1	Storm #2	Storm #3
2. Frequency	yr	WQ		
3. Rainfall, P (24-hour)	in	0.9		
4. Initial abstraction, I_a (Use CN with table 4-1)	in	0.041		
5. Compute I_a/P		0.046		
6. Unit peak discharge, q_u (Use T_c and I_a/P with exhibit 4– 1A)	csm/in	160		
7. Runoff, Q (From worksheet 2) Figure 2-6	in	0.69		
8. Pond and swamp adjustment factor, F_p (Use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond ans swamp area.)		1.0		
9. Peak discharge, q_p	ft³/s	0.01		

(Where $q_p = q_u A_m Q F_p$)

Chapter 4 Graphical Peak Discharge Method

This chapter presents the Graphical Peak Discharge method for computing peak discharge from rural and urban areas. The Graphical method was developed from hydrograph analyses using TR-20, "Computer Program for Project Formulation—Hydrology" (SCS 1983). The peak discharge equation used is:

$$q_p = q_u A_m Q F_p \qquad \text{[eq. 4-1]}$$

where:

q_p = peak discharge (cfs)
q_u = unit peak discharge (csm/in)
A_m = drainage area (mi²)
Q = runoff (in)
F_p = pond and swamp adjustment factor

The input requirements for the Graphical method are as follows: (1) T_c (hr), (2) drainage area (mi²), (3) appropriate rainfall distribution (I, IA, II, or III), (4) 24-hour rainfall (in), and (5) CN. If pond and swamp areas are spread throughout the watershed and are not considered in the T_c computation, an adjustment for pond and swamp areas is also needed.

Peak discharge computation

For a selected rainfall frequency, the 24-hour rainfall (P) is obtained from appendix B or more detailed local precipitation maps. CN and total runoff (Q) for the watershed are computed according to the methods outlined in chapter 2. The CN is used to determine the initial abstraction (I_a) from table 4-1. I_a / P is then computed.

If the computed I_a / P ratio is outside the range in exhibit 4 (4-I, 4-IA, 4-II, and 4-III) for the rainfall distribution of interest, then the limiting value should be used. If the ratio falls between the limiting values, use linear interpolation. Figure 4-1 illustrates the sensitivity of I_a / P to CN and P.

Peak discharge per square mile per inch of runoff (q_u) is obtained from exhibit 4-I, 4-IA, 4-II, or 4-III by using T_c (chapter 3), rainfall distribution type, and I_a / P ratio. The pond and swamp adjustment factor is obtained from table 4-2 (rounded to the nearest table value). Use worksheet 4 in appendix D to aid in computing the peak discharge using the Graphical method.

Figure 4-1 Variation of I_a / P for P and CN

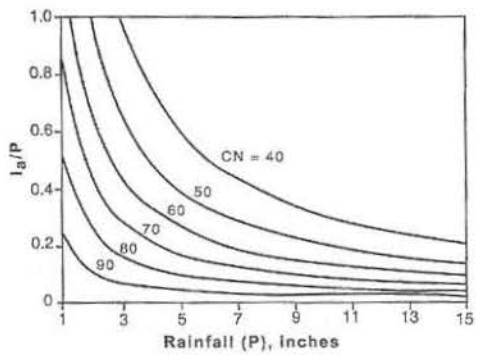


Table 4-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	70	0.857
41	2.878	71	0.817
42	2.762	72	0.778
43	2.651	73	0.740
44	2.545	74	0.703
45	2.444	75	0.667
46	2.348	76	0.632
47	2.255	77	0.597
48	2.167	78	0.564
49	2.082	79	0.532
50	2.000	80	0.500
51	1.922	81	0.469
52	1.846	82	0.439
53	1.774	83	0.410
54	1.704	84	0.381
55	1.636	85	0.353
56	1.571	86	0.326
57	1.509	87	0.299
58	1.448	88	0.273
59	1.390	89	0.247
60	1.333	90	0.222
61	1.279	91	0.198
62	1.226	92	0.174
63	1.175	93	0.151
64	1.125	94	0.128
65	1.077	95	0.105
66	1.030	96	0.083
67	0.985	97	0.062
68	0.941	98	0.041
69	0.899		

49th Street Annexation
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Exhibit III.280

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.167

Exhibit 4-IA Unit peak discharge (q_u) for NRCS (SCS) type IA rainfall distribution

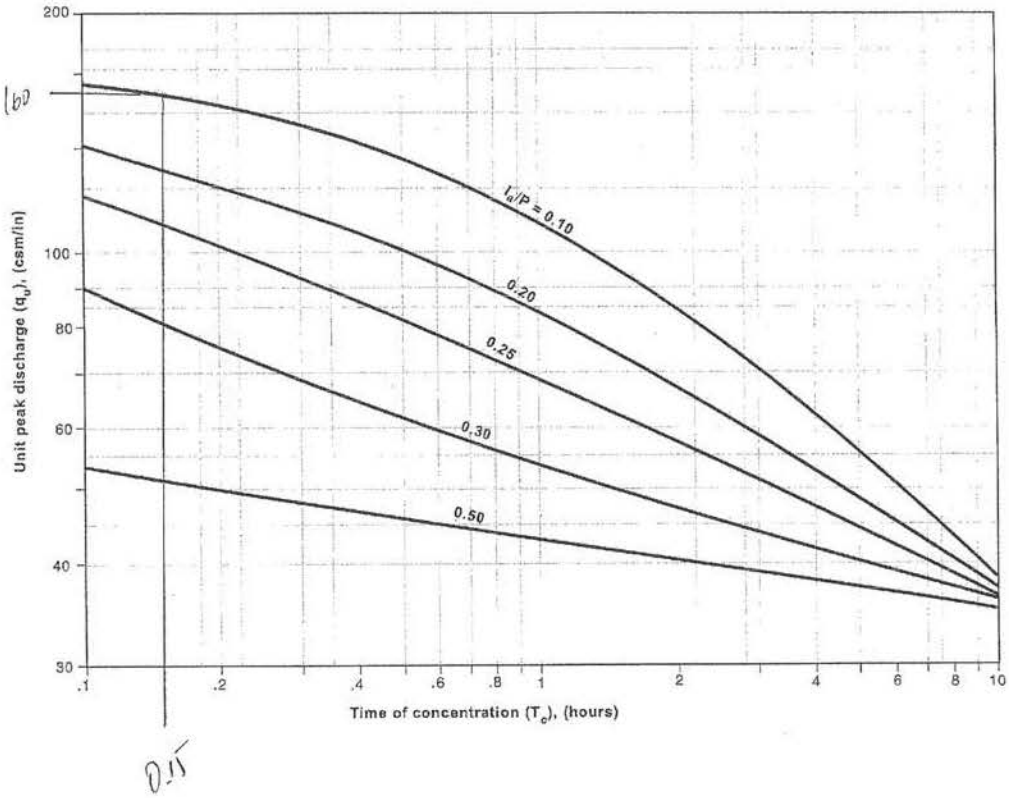

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Exhibit III.281

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PROJECT: 49th STREET ANNEXATION	PROJECT NO: 08-442	DESIGN: SBT	DATE: 10/08

STORM WATER QUALITY CALCULATIONS (KING COUNTY STANDARDS)

- WQ SWALE (NEIGHBORHOOD COLLECTOR)

→ CALCULATIONS BASED ON MINIMUM DESIGN PARAMETERS
- LENGTH = 100'
- DETENTION TIME = 9 min

→ DRAINAGE AREA = 24' (100') = 2400 SF = 0.055 Ac

→ WATER QUALITY STORM = 0.9" FOR 24-hr PERIOD

→ FOR TR-55

$Q_{WQ} = 0.01$ CFS

→ BIOSWALE DESIGN

- CHECK BOTTOM WIDTH:

$$b = \frac{Q_{WQ}\, n_{WQ}}{1.49\, y^{1.67}\, S^{0.5}}$$

$n_{WQ} = 0.20$ $S = 0.06$ ASSUME WORST CASE
$y = 1/12 = 0.08'$

$$b = \frac{(0.01)(0.20)}{1.49\,(0.08)^{1.67}(0.06)^{0.5}} = 0.37' \quad \text{USE } 2' \text{ BOTTOM}$$

PAGE OF

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PROJECT: 49th STREET ANNEXATION	PROJECT NO: 08-142	DESIGN: SH	DATE: 10/08

- CHECK DEPTH

$$y = \left(\frac{Q_{WQ}\, n_{WQ}}{1.49\, S^{0.5}\, b} \right)^{3/5}$$

$$= \left(\frac{(0.01)(0.20)}{1.49\,(0.06)^{0.5}\,(2)} \right)^{3/5} = 0.03' = 0.36''$$

- CHECK VELOCITY

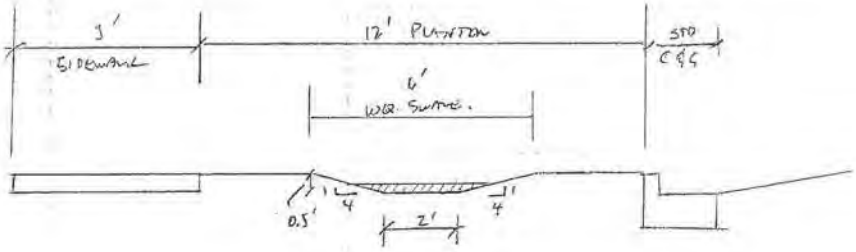
$$V_{WQ} = \frac{Q_{WQ}}{A_{WQ}} \qquad A_{WQ} = by + Zy^2 \qquad Z = \text{SIDE SLOPES}$$

$$= 2(0.03) + 4(0.03)^2 = 0.0636\ SF$$

$$V_{WQ} = \frac{0.01\ CFS}{0.0636\ SF} = 0.157\ FT/SEC$$

- CHECK LENGTH

$$L = 540\, V_{WQ} = 540\,(0.157) = 84.9' < 100' \quad \text{GOOD.}$$



PAGE OF

Worksheet 2: Runoff curve number and runoff

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
LOCAL STREET WQ SWALE		

Check one: ☐ Present ☑ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1/] Table 2-2	CN [1/] Figure 2-3	CN [1/] Figure 2-4	Area ☐ acres ☐ mi² ☐ %	Product of CN x area
	IMPERVIOUS PAVEMENT $\left(\frac{28'}{2}\right)(100') = 1400\ SF$	98			0.032	3.15
					Totals ➡	0.032 / 3.15

[1/] Use only one CN source per line

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{3.15}{0.032} = 98$; **Use CN** ➡ 98

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr	WQ		
Rainfall, P (24-hour)	in	0.9		
Runoff, Q	in	0.65		

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

Table 2-2a Runoff curve numbers for urban areas [1]

Cover description: Cover type and hydrologic condition	Average percent impervious area [2]	Curve numbers for hydrologic soil group: A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

[1] Average runoff condition, and $I_a = 0.2S$.
[2] The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.
[3] CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.
[4] Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.
[5] Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

49th Street Annexation
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49th Street Annexation
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Exhibit III.285

Worksheet 3: Time of Concentration (T_c) or travel time (T_t)

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
LOCAL STREET WQ SWALE		

Check one: ☐ Present ☑ Developed

Check one: ☑ T_c ☐ T_t through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet. Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only)

	Segment ID		
1. Surface description (table 3-1)			
2. Manning's roughness coefficient, n (table 3-1)			
3. Flow length, L (total L † 300 ft) ..... ft			
4. Two-year 24-hour rainfall, P_2 ..... in			
5. Land slope, s ..... ft/ft			
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{\ 0.5}\ s^{0.4}}$ Compute T_t ..... hr		+	=

Shallow concentrated flow

	Segment ID		
7. Surface description (paved or unpaved)			
8. Flow length, L ..... ft			
9. Watercourse slope, s ..... ft/ft			
10. Average velocity, V (figure 3-1) ..... ft/s			
11. $T_t = \frac{L}{3600\ V}$ Compute T_t ..... hr		+	=

Channel flow

	Segment ID		
12. Cross sectional flow area, a ..... ft^2			
13. Wetted perimeter, p_w ..... ft			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r ..... ft			
15 Channel slope, s ..... ft/ft			
16. Manning's roughness coefficient, n			
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V .....ft/s			
18. Flow length, L ..... ft			
19. $T_t = \frac{L}{3600\ V}$ Compute T_t ..... hr		+	=
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) ..... Hr			0.15

9 MIN DETENTION TIME

(210-VI-TR-55, Second Ed., June 1986)

D-3

Worksheet 4: Graphical Peak Discharge method

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
LOCAL STREET WQ SWALE		

Check one: ☐ Present ☑ Developed

1. Data

Drainage area ..... A_m = 0.032/640 = 0.000050 mi² (acres/640)

Runoff curve number ..... CN = 98 (From worksheet 2)

Time of concentration ..... T_c = 0.15 hr (From worksheet 3)

Rainfall distribution ..... = IA (I, IA, II III)

Pond and swamp areas sprea throughout watershed ..... = 0 percent of A_m (0 acres or mi² covered)

		Storm #1	Storm #2	Storm #3
2. Frequency	yr	WQ		
3. Rainfall, P (24-hour)	in	0.9		
4. Initial abstraction, I_a (Use CN with table 4-1)	in	0.041		
5. Compute I_a/P		0.046		
6. Unit peak discharge, q_u (Use T_c and I_a/P with exhibit 4– IA)	csm/in	160		
7. Runoff, Q (From worksheet 2) Figure 2-6	in	0.69		
8. Pond and swamp adjustment factor, F_p (Use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond ans swamp area.)		1.0		
9. Peak discharge, q_p	ft³/s	0.006		

(Where $q_p = q_u A_m Q F_p$)

Chapter 4 Graphical Peak Discharge Method

This chapter presents the Graphical Peak Discharge method for computing peak discharge from rural and urban areas. The Graphical method was developed from hydrograph analyses using TR-20, "Computer Program for Project Formulation—Hydrology" (SCS 1983). The peak discharge equation used is:

$$q_p = q_u A_m Q F_p \qquad \text{[eq. 4-1]}$$

where:

q_p = peak discharge (cfs)
q_u = unit peak discharge (csm/in)
A_m = drainage area (mi²)
Q = runoff (in)
F_p = pond and swamp adjustment factor

The input requirements for the Graphical method are as follows: (1) T_c (hr), (2) drainage area (mi²), (3) appropriate rainfall distribution (I, IA, II, or III), (4) 24-hour rainfall (in), and (5) CN. If pond and swamp areas are spread throughout the watershed and are not considered in the T_c computation, an adjustment for pond and swamp areas is also needed.

Peak discharge computation

For a selected rainfall frequency, the 24-hour rainfall (P) is obtained from appendix B or more detailed local precipitation maps. CN and total runoff (Q) for the watershed are computed according to the methods outlined in chapter 2. The CN is used to determine the initial abstraction (I_a) from table 4-1. I_a / P is then computed.

If the computed I_a / P ratio is outside the range in exhibit 4 (4-I, 4-IA, 4-II, and 4-III) for the rainfall distribution of interest, then the limiting value should be used. If the ratio falls between the limiting values, use linear interpolation. Figure 4-1 illustrates the sensitivity of I_a / P to CN and P.

Peak discharge per square mile per inch of runoff (q_u) is obtained from exhibit 4-I, 4-IA, 4-II, or 4-III by using T_c (chapter 3), rainfall distribution type, and I_a / P ratio. The pond and swamp adjustment factor is obtained from table 4-2 (rounded to the nearest table value). Use worksheet 4 in appendix D to aid in computing the peak discharge using the Graphical method.

Figure 4-1 Variation of I_a / P for P and CN

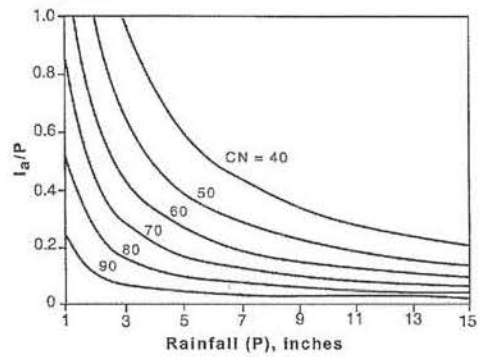

Table 4-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	70	0.857
41	2.878	71	0.817
42	2.762	72	0.778
43	2.651	73	0.740
44	2.545	74	0.703
45	2.444	75	0.667
46	2.348	76	0.632
47	2.255	77	0.597
48	2.167	78	0.564
49	2.082	79	0.532
50	2.000	80	0.500
51	1.922	81	0.469
52	1.846	82	0.439
53	1.774	83	0.410
54	1.704	84	0.381
55	1.636	85	0.353
56	1.571	86	0.326
57	1.509	87	0.299
58	1.448	88	0.273
59	1.390	89	0.247
60	1.333	90	0.222
61	1.279	91	0.198
62	1.226	92	0.174
63	1.175	93	0.151
64	1.125	94	0.128
65	1.077	95	0.105
66	1.030	96	0.083
67	0.985	97	0.062
68	0.941	98	0.041
69	0.899		

49th Street Annexation
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Exhibit III.288

Exhibit 4-IA Unit peak discharge (q_u) for NRCS (SCS) type IA rainfall distribution

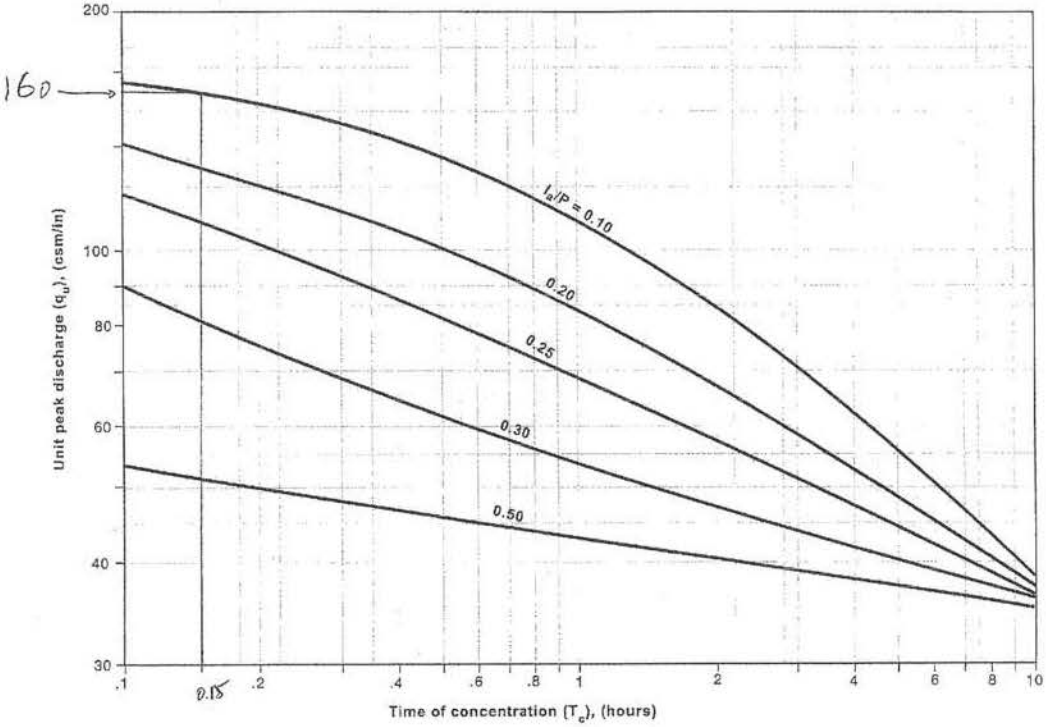

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Exhibit III.289

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PROJECT: 49th STREET ANNEXATION	PROJECT NO: 08-442	DESIGN: SB	DATE: 10/08

STORM WATER QUALITY CALCULATIONS (KING COUNTY STANDARDS)

- 6' WB SWALE (LOCAL STREET)

$Q_{WQ} = 0.006$ CFS PER TR-55

→ BIOSWALE DESIGN

- CHECK BOTTOM

$$b = \frac{Q_{WQ}\, n_{WQ}}{1.49\, y^{1.67}\, s^{0.5}}$$

$$b = \frac{(0.006)(0.20)}{1.49\,(0.08)^{1.67}(0.06)^{0.5}} = 0.223' \quad \text{USE } 2' \text{ BOTTOM}$$

- CHECK DEPTH

$$y = \left(\frac{Q_{wq}\, n_{wq}}{1.49\, s^{0.5}\, b}\right)^{3/5}$$

$$= \left(\frac{(0.006)(0.20)}{1.49\,(0.01)^{0.5}(2)}\right)^{3/5} = 0.02' = 0.24''$$

- CHECK VELOCITY

$$V_{wq} = \frac{Q_{wq}}{A_{wq}} \qquad A_{wq} = by + Zy^2$$

$$= 2(0.02) + 4(0.02)^2$$

$$= 0.0416 \text{ SF}$$

$$V_{wq} = \frac{0.006}{0.0416} = 0.144 \text{ FT/SEC}$$

PAGE OF

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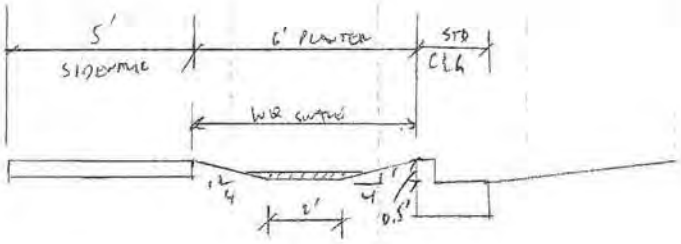
PROJECT: 49TH STREET ANNEXATION	PROJECT NO: 08-442	DESIGN: SLT	DATE: 10/08

- CHECK LENGTH

$L = 540\ V_{avg} = 540\ (0.144) = 77.9' < 100'$ GOOD



PAGE OF

6.3 BIOFILTRATION FACILITY DESIGNS

This section presents the methods, details of analysis, and design criteria for biofiltration swales and filter strips. Included in this section are the following specific facility designs:

- "Basic Biofiltration Swales," Section 6.3.1
- "Wet Biofiltration Swales," Section 6.3.2 (p. 6-55)
- "Continuous Inflow Biofiltration Swales," Section 6.3.3 (p. 6-58)
- "Basic Filter Strips," Section 6.3.4 (p. 6-59)
- "Narrow Area Filter Strips," Section 6.3.5 (p. 6-66).

The information presented for each facility is organized into the following two categories:

1. **Methods of Analysis:** Contains a step-by-step procedure for designing and sizing each facility.
2. **Design Criteria:** Contains the details, specifications, and material requirements for each facility.

6.3.1 BASIC BIOFILTRATION SWALES

A *biofiltration swale* is an open, gently sloped, vegetated channel designed for treatment of stormwater (see the details in Figure 6.3.1.A through Figure 6.3.1.E beginning on page 6-52). The primary pollutant removal mechanisms are filtration by grass blades which enhance sedimentation, and trapping and adhesion of pollutants to the grass and thatch. Biofiltration swales generally do not remove dissolved pollutants effectively.

Applications and Limitations

A biofiltration swale is designed so that water will flow evenly across the entire width of a densely-vegetated area. A swale may be designed for both treatment and conveyance of onsite stormwater flow. This combined use can reduce development costs by eliminating the need for separate conveyance systems.

Biofiltration swales are best applied on a relatively small scale (generally less than 5 acres of impervious surface). They work well along roadways, driveways, and parking lots. Swales are more costly to apply in situations where the swale channel would be deep; in deep swales, self-shading can inhibit the necessary grass growth, resulting in poor pollutant removal performance. Some specific considerations for biofiltration swale applications are as follows:

- A biofiltration swale **shall not be located in a shaded area**. For healthy grass growth, a swale should receive a minimum of 6 hours of sunlight daily during the summer months throughout the length of the swale.
- To maintain healthy grass growth, a **swale must dry between storms**. It shall not receive continuous base flows (such as seepage from a hill slope throughout the winter) or be located in a high groundwater area, because saturated soil conditions will kill grass. If these conditions are likely to occur, design options given under "Design Criteria" (p. 6-43) shall be used, or the wet biofiltration swale design may be used (see Section 6.3.2, p. 6-55, for details).
- Stormwater runoff carrying **high concentrations of oil and grease** impairs the treatment capability of a swale. Oil control options given in Section 6.6 (p. 6-139) should be applied in these situations.
- **Modifying an existing drainage ditch** to create an engineered biofiltration swale may be difficult due to physical constraints and because ditches often serve as conveyance for flows from larger offsite areas.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.292

49th Street Annexation
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- **Utilities** may be located in swale side slopes above the WQ design depth. However, the repair or placement of utilities in swale side slopes requires aggressive implementation of erosion control practices to prevent soil and sediment from reaching the treatment area of the swale.

Note: Consult the water quality menus in Section 6.1 (p. 6-3) for information on how this facility may be used to meet Core Requirement # 8. Also see Table 6.1.1.A on page 6-5 for guidance on which type of biofiltration swale (basic, wet or continuous inflow) to use for a given set of site characteristics.

6.3.1.1 METHODS OF ANALYSIS

Biofiltration swale sizing is based on several variables, including the peak water quality design flow, longitudinal slope, vegetation height, bottom width, side slope, required hydraulic residence time (i.e., the time required for flow to travel the full length of the swale), and design flow depth. Swales sized and built using the method of analysis outlined in this section and the required design criteria presented in Section 6.3.1.2 are expected to meet the Basic Water Quality menu goal of 80% TSS removal. Procedures for sizing swales are summarized below.

Step 1: Calculate design flows. The swale design is based on the water quality design flow Q_{wq} (see Section 6.2.1, p. 6-17, for a definition of water quality design flow). If a biofilter is used for conveyance, the capacity requirements of Core Requirement #4 must be met. These flows must be estimated using the hydrologic analysis procedures described in detail in Chapter 3. If the swale is located downstream of an onsite detention facility, the swale design flow shall be the 2-year release rate from the detention facility.

Step 2: Calculate swale bottom width. The swale bottom width is calculated based on Manning's equation for open-channel flow. This equation can be used to calculate discharges as follows:

$$Q = \frac{1.49}{n} A R^{0.67} s^{0.5} \tag{6-1}$$

where
Q = flow rate (cfs)
n = Manning's roughness coefficient (unitless)
A = cross-sectional area of flow (sf)
R = hydraulic radius (ft) = area divided by wetted perimeter
s = longitudinal slope (ft/ft)

For shallow flow depths in swales, channel side slopes are ignored in the calculation of bottom width. Use the following equation (a simplified form of Manning's formula) to estimate the swale bottom width:

$$b = \frac{Q_{wq} n_{wq}}{1.49 y^{1.67} s^{0.5}} \tag{6-2}$$

where
b = bottom width of swale (ft)
Q_{wq} = water quality design flow (cfs)
n_{wq} = Manning's roughness coefficient for shallow flow conditions = 0.20 (unitless)
y = design flow depth (ft)
s = longitudinal slope (along direction of flow) (ft/ft)

See "Water Depth and Base Flow" (p. 6-44) to determine the allowable design water depth. Proceed to Step 3 if the bottom width is calculated to be between 2 and 10 feet.

A minimum 2-foot bottom width is required. Therefore, if the calculated bottom width is less than 2 feet, increase the width to 2 feet and recalculate the design flow depth y using Equation (6-3) as follows:

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Exhibit III.293

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$$y = \left(\frac{Q_{wq} n_{wq}}{1.49 s^{0.5} b} \right)^{3/5} \tag{6-3}$$

where Q_{wq}, n_{wq}, and s are the same values as used in Equation (6-2), but $b = 2$ feet.

The maximum bottom width is 10 feet; therefore if the calculated bottom width exceeds 10 feet, then one of the following steps is necessary to reduce the design bottom width:

- Increase the longitudinal slope s to a maximum of 6 feet in 100 feet (0.06 feet per foot).
- Increase the design flow depth y to a maximum of 4 inches (0.333 feet).
- Reduce the design flow rate by rearranging the swale location with respect to detention facilities; a swale located downstream of a detention facility may have a lower flow rate due to flow attenuation in the detention facility. However, if a swale is located downstream of a detention facility providing Level 2 or Level 3 flow control, and it is located in till soils (according to the KCRTS soil group in Chapter 3), then the swale must be designed as a wet biofiltration swale (see Section 6.3.2, p. 6-55).
- Place a divider lengthwise along the swale bottom (cross section) at least three-quarters of the swale length (beginning at the inlet), without compromising the design flow depth and swale lateral slope requirements. See "Design Criteria" (p. 6-43) for swale divider requirements. A flow spreader must be provided at the inlet to evenly divide flows into each half of the swale cross section. See Section 6.2.6 (p. 6-33) for details on flow spreaders.

Step 3: Determine design flow velocity. To calculate the design flow velocity through the swale, use the flow continuity equation:

$$V_{wq} = \frac{Q_{wq}}{A_{wq}} \tag{6-4}$$

where V_{wq} = design flow velocity (fps)
A_{wq} = $by + Zy^2$ = cross-sectional area (sf) of flow at design depth
Z = side slope length per unit height (e.g., $Z = 3$ if side slopes are 3H:1V)

If the design flow velocity exceeds 1 foot per second, go back to Step 2 and modify one or more of the design parameters (longitudinal slope, bottom width, or flow depth) to reduce the design flow velocity to 1 foot per second or less. If the design flow velocity is calculated to be less than 1 foot per second, proceed to Step 4. *Note: It is desirable to have the design velocity as low as possible, both to improve treatment effectiveness and to reduce swale length requirements.*

Step 4: Calculate swale length. Use the following equation to determine the necessary swale length to achieve a hydraulic residence time of at least 9 minutes (540 seconds):

$$L = 540 V_{wq} \tag{6-5}$$

where L = minimum allowable swale length (ft)
V_{wq} = design flow velocity (fps)

The minimum swale length is 100 feet; therefore, if the swale length is calculated to be less than 100 feet, increase the length to a minimum of 100 feet, leaving the bottom width unchanged. If a larger swale could be fitted on the ***site***, consider using a greater length to increase the hydraulic residence time and improve the swale's pollutant removal capability. If the calculated length is too long for the ***site***, or if it would

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.181

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.294

cause layout problems, such as encroachment into shaded areas, proceed to Step 5 to further modify the layout. If the swale length can be accommodated on the ***site***, proceed to Step 6.

Step 5: Adjust swale layout to fit on site. If the swale length calculated in Step 4 is too long for the ***site***, the length may be reduced (to a minimum of 100 feet) by increasing the bottom width up to a maximum of 16 feet, **as long as the 9 minute retention time is retained**. However, the length cannot be increased in order to reduce the bottom width because Manning's depth-velocity-flow rate relationships would not be preserved. If the bottom width is increased to greater than 10 feet, a low dividing berm is needed to split the swale cross section in half.

Length can be adjusted by finding the top area of the swale and providing an equivalent top area with the adjusted dimensions.

a) Calculate the swale treatment top area based on the swale length calculated in Step 4:

$$A_{top} = (b_i + b_{slope})\, L_i \qquad (6\text{-}6)$$

where A_{top} = top area (sf) at the design treatment depth
b_i = bottom width (ft) calculated in Step 2
b_{slope} = the additional top width (ft) above the side slope for the design water depth (for 3:1 side slopes and a 4-inch water depth, b_{slope} = 2 feet)
L_i = initial length (ft) calculated in Step 4.

b) Use the swale top area and a reduced swale length L_f to increase the bottom width, using the following equation:

$$L_f = \frac{A_{top}}{(b_f + b_{slope})} \qquad (6\text{-}7)$$

where L_f = reduced swale length (ft)
b_f = increased bottom width (ft).

c) Recalculate V_{wq} according to Step 3 using the revised cross-sectional area A_{wq} based on the increased bottom width b_f. Revise the design as necessary if the design flow velocity exceeds 1 foot per second.

d) Recalculate to assure that the 9 minute retention time is retained.

Step 6: Provide conveyance capacity for flows higher than Q_{wq}. Biofiltration swales may be designed as flow-through channels that convey flows higher than the water quality design flow rate, or they may be designed to incorporate a high-flow bypass upstream of the swale inlet. A high-flow bypass usually results in a smaller swale size (see flow splitter options, page 6-29, for more information on designing bypasses). If a high-flow bypass is provided, this step is not needed. If no high-flow bypass is provided, proceed with the procedure below.

a) Check the swale sized using Steps 2 through 5 above to determine whether the swale can convey the 25-year and 100-year peak flows consistent with the conveyance requirements of Core Requirement #4 in Chapter 1. The roughness coefficient n in Manning's equation shall be selected to reflect the deeper flow conditions with less resistance provided by grass during these high-flow events. The bottom width (Step 2) should be calculated as per Section 4.4.1.2, "Methods of Analysis" for open channels.

b) The 100-year peak flow velocity ($V_{100} = Q_{100}/A_{100}$) based on the 100-year flow depth must be less than 3.0 feet per second. If V_{100} exceeds 3.0 feet per second, return to Step 2 and increase the bottom width or flatten the longitudinal slope as necessary to reduce the 100-year peak flow velocity to 3.0 feet per second or less. If the longitudinal slope is flattened, the swale bottom width must be recalculated (Step 2) and meet all design criteria.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.295

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.182

c) The conveyance requirements in Core Requirement #4 (see Section 1.2.4) must be met.

6.3.1.2 DESIGN CRITERIA

An effective biofiltration swale achieves uniform sheet flow over and through a densely vegetated area for a period of several minutes. Figure 6.3.1.A (p. 6-52) shows a typical biofiltration swale schematic. Basic design requirements for achieving proper flow conditions through a biofiltration swale are described below.

Swale Geometry

1. Swale **bottom width** shall be between 2 and 16 feet.[14]
   a) **Minimum bottom width** is 2 feet to allow for ease of mowing.
   b) If the bottom width exceeds 10 feet, a length-wise divider shall be provided. The divider shall extend from the flow spreader at the inlet for at least three-quarters of the swale length.
   c) **Maximum bottom width** is 16 feet, excluding the width of the divider.

   Note: Multiple swales may be placed side by side provided the flow to each swale is split at the inlet and spread separately for each swale. Adjacent swales may be separated with a vertical wall, but a low berm is preferred for easier maintenance and better landscape integration.
2. The **longitudinal slope** (along the direction of flow) shall be between 1 percent and 6 percent.
   a) If the longitudinal slope is less than 1.5 percent, **underdrains** must be provided (see next page and Figure 6.3.1.C, p. 6-53, for underdrain specifications).
   b) If the longitudinal slope is less than 1 percent, the swale must be designed according to the criteria presented in Section 6.3.2 (p. 6-55) for **wet biofiltration swales**.
   c) If the longitudinal slope exceeds 6 percent, **check dams** with vertical drops of 12 inches or less shall be provided to achieve a bottom slope of 6 percent or less between the drop sections.
3. The swale shall be **flat** in cross section (perpendicular to the flow direction) to promote even flow across the whole width of the swale.
4. The **minimum swale length** shall be 100 feet; no maximum length is set.
5. The **swale treatment area** (below the WQ design water depth) shall be trapezoidal in cross-section. If trapezoidal, **side slopes within the treatment area** should be 3H:1V or flatter whenever possible, but shall not steeper than 2H:1V.
6. **Side slope sections above the treatment area** may be steeper than 3H:1V, subject to the following provisions:
   a) If there is an interior side slope between 1H:1V and 2H:1V outside the treatment area, the slope shall be reinforced with **erosion control netting or matting** during construction.
   b) Any interior slope steeper than 1H:1V shall be constructed as a **rockery or structural retaining wall**[15] to prevent the swale slope from sloughing. To ensure that adequate sunlight reaches the swale bottom, **only one wall can be taller than 2 feet.** If possible, the higher wall should be on the northern or eastern side of the swale to maximize the amount of light reaching the swale bottom.

[14] Experience with biofiltration swales shows that when the width exceeds about 10 feet it is difficult to keep the water from forming low-flow channels. It is also difficult to construct the bottom level and without sloping to one side. Biofilters are best constructed by leveling the bottom after excavating, and after the soil is amended. A single-width pass with a front-end loader produces a better result than a multiple-width pass.

[15] Soil bioengineering techniques may be used as an alternative to a rockery or structural retaining wall.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.296

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.183

7. **Curved swales** are encouraged for aesthetic reasons, but curves must be gentle to prevent erosion and allow for vehicle access to remove sediment. Criteria for maintenance access road curves shall also be applied for swale curves (see Section 5.3.1.1 for design of access roads).

Water Depth and Base Flow

1. A swale that will be **frequently mowed**, as in commercial or landscaped areas, shall have a **design water depth** of no more than 2 inches (0.17 feet) under the water quality design flow conditions.
2. A swale that will **not be frequently mowed**, such as along roadsides or in rural areas, shall have a **design water depth** of no more than 4 inches (0.33 feet) under the water quality design flow conditions.
3. If a swale is located **downstream of a detention facility providing Level 2 or Level 3 flow control**, and it is located in till soils (according to the KCRTS soil group in Chapter 3), then the swale must be designed as a **wet biofiltration swale** (see Section 6.3.2, p. 6-55).
4. If a swale will receive **base flows** because of seeps and springs onsite, then either a low-flow drain shall be provided or a wet biofiltration swale shall be used. *Low-flow drains* are narrow surface drains filled with pea gravel that run lengthwise through the swale to bleed off base flows; they should not be confused with underdrains. In general, base flows less than 0.01 cfs per acre can be handled with a low-flow drain. If flows are likely to be in excess of this level, a wet biofiltration swale shall be used.
5. If a **low-flow drain** is used, it shall extend the entire length of the swale. The drain shall be a minimum of 6 inches deep, and its width shall be no greater than 5 percent of the calculated swale bottom width; the width of the drain shall be in addition to the required bottom width. If an anchored plate or concrete sump is used for flow spreading at the swale inlet, the plate or sump wall shall have a v-notch (maximum top width = 5% of swale width) or holes to allow preferential exit of low flows into the drain. See Figure 6.3.1.D (p. 6-54) for low-flow drain specifications and details.

Flow Velocity, Energy Dissipation, and Flow Spreading

1. The **maximum flow velocity** through the swale under the water quality design flow conditions shall not exceed 1.0 foot per second.
2. The **maximum flow velocity** through the swale under the peak 100-year flow conditions shall not exceed 3.0 feet per second.
3. A **flow spreader** shall be used at the inlet of a swale to dissipate energy and evenly spread runoff as sheet flow over the swale bottom. Flow spreaders are recommended but not required at mid-length. For details on various types of flow spreaders, see Section 6.2.6 (p. 6-33).
4. If **check dams** are used to reduce the longitudinal slope of the swale, a **flow spreader** shall be provided at the toe of each vertical drop. The spreader must span the width of the swale. An **energy dissipater** shall also be provided if flows leaving the spreader could be erosive.
5. If a swale **discharges flows to a slope** rather than to a piped system or confined channel, an **energy dissipater** shall be provided at the swale outlet. This requirement also applies to discharges from swale underdrains. The outlet energy dissipater may be a riprap pad sized according to the specifications described in Table 4.2.2.A for conveyance system outfalls.

Underdrains

If underdrains are required by Criterion 2 under "Swale Geometry" (p. 6-43), they must meet the following criteria:

1. Underdrains must be made of **PVC perforated pipe** (SDR 35), laid parallel to the swale bottom and backfilled and bedded as shown in Figure 6.3.1.C (p. 6-53).
2. For facilities to be maintained by the County, the underdrain pipe must be 6 inches or greater in **diameter**. (Six inches is the smallest diameter pipe that can be cleaned without damage to the pipe.)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.297

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.184

3. Six inches of clean **drain rock** ($^5/_8$-inch minus) must be above the top of the pipe.
4. The drain rock must be wrapped in **geotextile**. Geotextile requirements are summarized in Table 6.3.1.A below.
5. The underdrain **must infiltrate** into the subsurface **or drain freely** to an acceptable discharge point.

TABLE 6.3.1.A GEOTEXTILE MATERIAL MINIMUM REQUIREMENTS

Geotextile Property	Value	Test Method
Grab Tensile Strength, min in machine and x-direction	250 lbs/160 lbs min.	ASTM D4632
Grab Failure Strain, in machine and x-machine direction	<50%/>50%	ASTM D4632
Seam Breaking Strength (if seams are present)	220 lbs/140 lbs min.	ASTM D4632 and ASTM D4884 (adapted for grab test)
Puncture Resistance	80 lbs/50 lbs min.	ASTM D4833
Tear Strength, min. in machine and x-machine direction	80 lbs/50 lbs min.	ASTM D4533
Ultraviolet (UV) Radiation stability	50% strength min., after 500 hrs. in weather meter	ASTM D4355
AOS	.43 mm max. (#40 sieve)	ASTM D4751
Water Permitivity	.5 sec – 1 min.	ASTM D4491

Notes:

- Minimum values should be in the weaker principal direction. All numerical values represent minimum average roll value (i.e., test results from any sampled lot shall meet or exceed the minimum values in the table). Stated values are for noncritical and nonsevere applications.

AOS: Apparent Opening Size is the measure of the diameter of the pores on the geotextile.

Swale Divider

1. If a swale divider is used (such as when swale bottom widths are greater than 10 feet), the divider shall be constructed of a **firm material** that will resist weathering and not erode, such as treated lumber, concrete, plastic, or compacted soil seeded with grass. Selection of divider material shall take into consideration swale maintenance, especially mowing.
2. The divider shall have a **minimum height** of one inch higher than the water quality design water depth.
3. **Earthen berms** shall be no steeper than 2H:1V.
4. Materials other than earth (e.g. treated lumber, recycled plastic lumber, concrete, etc.) shall be embedded to a depth sufficient to be stable.

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.185

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.298

Access

1. For swales to be maintained by King County, an **access road** shall be provided to the swale inlet and along one side of the swale according to the schedule shown in Table 6.3.1.B below. *Note: County streets and paved parking areas adjacent to the top of slope may be counted as access.*

TABLE 6.3.1.B REQUIREMENTS FOR BIOFILTRATION SWALE ACCESS ROAD	
Swale Bottom Area*: *L* x *w* (sf)	**Access Road Length**
200 - 1000	$^1/_2$ swale length L
1000 - 1600	$^2/_3$ swale length L
Over 1600	entire swale length L
* The swale area used for computing access road length may be the bottom area.	

2. In areas outside critical area buffers, **wheel strips** made of modular grid pavement may be built into the swale bottom for maintenance vehicle access instead of an access road. The subgrade for the strips must be engineered to support a vehicle weight of 16,000 pounds and installed according to the manufacturer's recommendations on firm native soil or structural fill, not on the amended topsoils. Each strip shall be 18 inches wide and spaced as shown in Figure 6.3.1.E (p. 6-54). The strip lattice should be filled or covered with native soil (no amendments required) and overseeded with grass. If a low-flow drain is also needed (see "Water Depth and Base Flow" on page 6-44), a portion of the wheel strip may be filled with pea gravel as appropriate to form the drain. Continuous vehicle access shall be provided to the wheel strips from the access road. If access to the wheel strips is over the flow-spreader, then a grate (or other DDES approved method) shall be placed over the flow-spreader for vehicle access. Wheel strips shall not be counted as treatment area; therefore, the swale bottom width must be increased accordingly.

Soil Amendment

1. Two inches (minimum) of **well-rotted compost** shall be tilled into the entire swale treatment area to amend the topsoil unless the soil already has an organic content of 1 percent or greater. This applies to both till soils as well as sandy soils. In very coarse soils (gravels or courser), **top soil** must be imported and amended to the required organic content.

   a) Compost must be tilled into the underlying native soil to a depth of 6 inches to prevent the compost from being washed out and to avoid creating a defined layer of different soil types that can prevent downward percolation of water.

   b) Compost shall not contain any sawdust, straw, green or under-composted organic matter, or toxic or otherwise harmful materials.

   c) Compost shall not contain unsterilized manure because it can leach fecal coliform bacteria into receiving waters.

2. **Soil or sod** with a clay content of greater than 10 percent should be avoided. If there is concern for contamination of the underlying groundwater, the swale bottom shall be lined with a treatment liner to prevent groundwater contamination. See Section 6.2.4 (p. 6-23) for details on treatment liner options.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.299

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.186

49th Street Annexation
April 26, 2010

Traffic Impact Study

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.187

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.300

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April 28, 2009

Lyle Hutchens
Devco Engineering
P.O. Box 1211
Corvallis, OR 97339

RE: 49th Street Annexation – Traffic Study Addendum

Dear Lyle:

We have received the City of Corvallis's comments regarding the traffic study of the proposed 49th Street annexation project. This letter is intended to address the City's concerns.

One of the City's concerns was regarding the traffic counts for the project, which had been obtained before school was in session. At the request of the City, new traffic counts were conducted for the study intersections. These counts were taken recently and include school traffic.

A comparison of the traffic counts showed that, with one exception, traffic volumes have decreased at the study intersections. The exception is the morning peak hour counts taken at the intersection of SW 53rd Street and Philomath Boulevard/Highway 20. However, the critical analysis period for this intersection is the evening peak hour and the mitigations discussed in the study reflect those which are necessary to improve evening peak hour operation.

Any revision to the analysis of the study intersections would show slightly improved operation at most of the study intersections. Since the volumes did not decrease substantially, any improvement based on the recent counts would be minimal; therefore, a revised analysis is unlikely to demonstrate that any of the mitigations proposed in the original traffic study become unnecessary.

There is no development proposal associated with the zone change project. A development proposal would be needed to identify the number of trips that would be added to the street system as a result of development of the property. For this reason, we analyzed only the planning horizon.

A review of the trip generation for the site did not reveal any discrepancy with the AM and PM peak hour totals. The trip distribution was based on both the morning and evening peak hour existing volumes. The distribution percentages account for difference in the morning and evening peak hour volumes.

Figures 4, 5, 6, and 7 show volumes for the PM peak hour only. The revised drawings are attached to this letter.

The City uses a volume-to-capacity (v/c) ratio standard to determine level of service. A revised table showing the level of service based on the City's level of service definitions from the City's Transportation System Plan (TSP) is shown below.

LEVEL OF SERVICE SUMMARY

	PM Peak Hour		
	LOS	Delay	V/C
*SW Philomath Boulevard & SW 53rd Street**			
Existing Conditions	E	57	0.94
2030 Background Conditions	F	167	1.30
2030 Background + Site Trips	F	175	1.33
2030 Background Conditions[1]	F	174	1.32
2030 Background + Site Trips[1]	F	183	1.35
2030 Background + Site Trips[2]	F	164	1.21
2030 Background + Site Trips[3]	D	43	0.85
SW Country Club Drive & SW 53rd Street			
Existing Conditions	A	--	481
2030 Background Conditions	C	--	221
2030 Background + Site Trips	D	--	193
2030 Background Conditions[1]	C	--	212
2030 Background + Site Trips[1]	D	--	185
SW 53rd Street & Site Access			
2030 Background + Site Trips	A	--	781
2030 Background + Site Trips[1]	A	--	773

* Signalized intersection
LOS = Level of Service
Delay = Average Delay per Vehicle in Seconds
V/C = Volume-to-Capacity Ratio or Reserve Capacity
[1] with Cannon Applegate annexation traffic included
[2] with northbound right-turn lane
[3] with improvements as discussed in CAMPO report

Transportation Planning Rule (OAR 660-012-0060)

As defined by TPR, the proposed annexation will have a "significant effect". One of the study intersections, SW 53rd Street at Philomath Boulevard, is forecast to operate below acceptable standards. The intersection is forecast to operate below standards without the annexation and falls under the criterion of OAR 660-012-0060(1)(c)(C).

OAR 660-012-0060(3)(a) allows a local government to approve an amendment that would significantly affect an existing transportation facility without assuring that the allowed land uses are consistent with the function, capacity and performance standards of the facility where the facility is already performing below the minimum acceptable performance standard identified in the TSP or comprehensive plan on the date the amendment application is submitted. The traffic study identified the SW 53rd Street/Philomath Boulevard/Highway 20 intersection as functioning below ODOT's acceptable v/c standard under existing conditions.

Installing a northbound right-turn lane at the SW 53rd Street/Philomath Boulevard intersection would mitigate the impact of the annexation. The applicant is willing to enter into an agreement to pay a proportionate share of the cost of installing the right-turn lane.

If you have any questions regarding the original traffic study or this letter or if you need any further assistance, please don't hesitate to call.

Yours truly,

Catriona Sumrain, TOPS
Engineering Analyst

attachment: Technical Appendix

REGISTERED PROFESSIONAL ENGINEER
54853
OREGON
JULY 9, 2001
TODD E. MOBLEY
4/29/09
EXPIRES: 12/31/2010

1e

TECHNICAL APPENDIX

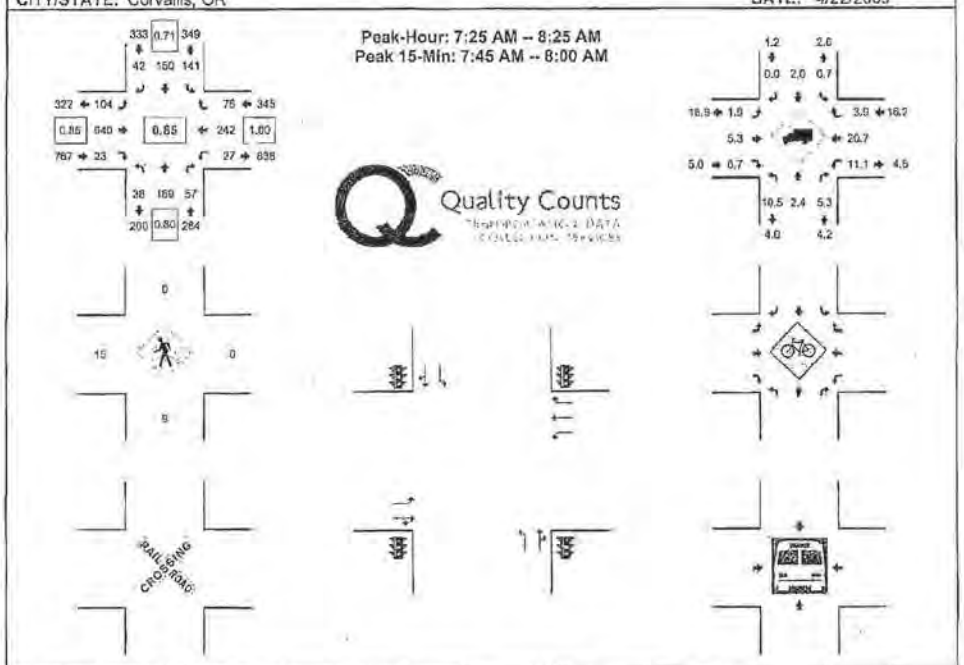
49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.304

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

LOCATION: SW 53rd St -- OR 20
CITY/STATE: Corvallis, OR

QC JOB #: 10426907
DATE: 4/22/2009



5-Min Count Period Beginning At	SW 53rd St (Northbound)				SW 53rd St (Southbound)				OR 20 (Eastbound)				OR 20 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	3	3	1	0	5	2	4	0	2	39	1	0	1	21	1	0	83	
7:05 AM	2	3	4	0	5	4	0	0	5	39	0	0	0	14	3	0	82	
7:10 AM	2	12	3	0	11	6	1	0	4	25	1	0	0	21	2	0	88	
7:15 AM	1	15	2	0	7	2	2	0	6	42	1	0	3	20	2	0	103	
7:20 AM	1	6	5	0	7	9	1	0	4	46	0	0	1	12	0	0	92	
7:25 AM	1	17	4	0	10	4	3	0	4	44	2	0	0	22	6	0	117	
7:30 AM	2	12	8	0	9	5	2	0	4	65	3	0	3	19	1	0	131	
7:35 AM	3	11	6	0	9	12	2	0	12	61	1	0	1	18	4	0	140	
7:40 AM	3	13	4	0	13	16	2	0	10	53	3	0	6	27	5	0	155	
7:45 AM	7	13	2	0	20	8	4	0	10	68	0	0	2	16	6	0	158	
7:50 AM	2	26	4	0	6	28	11	0	10	65	0	0	3	18	6	0	180	
7:55 AM	9	14	5	0	18	18	5	0	14	54	5	0	3	16	8	0	167	1496
8:00 AM	2	12	6	0	14	12	6	0	7	43	1	0	1	30	5	0	139	1552
8:05 AM	3	11	5	0	14	14	2	0	7	53	1	0	5	28	11	0	154	1624
8:10 AM	1	18	3	0	10	13	1	0	12	46	2	0	0	5	10	0	121	1657
8:15 AM	2	14	6	0	10	11	2	0	5	40	4	0	2	19	7	0	122	1676
8:20 AM	3	8	5	0	8	9	2	0	9	48	1	0	1	25	5	0	125	1706
8:25 AM	0	12	4	0	6	6	4	0	8	41	1	0	0	23	8	0	113	1705
8:30 AM	0	4	3	0	12	10	4	0	1	46	3	0	1	27	4	0	115	1689
8:35 AM	4	13	5	0	14	7	3	0	8	34	3	0	7	20	3	0	121	1670
8:40 AM	3	12	12	0	8	5	2	0	7	42	0	0	1	13	3	0	111	1626
8:45 AM	4	18	3	0	5	8	5	0	8	27	4	0	4	18	2	0	102	1570
8:50 AM	1	11	7	0	11	11	6	0	11	31	5	0	1	26	7	0	128	1518
8:55 AM	0	7	6	0	12	16	3	0	4	34	3	0	1	23	5	0	114	1465

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	72	212	44	0	176	216	80	0	136	748	20	0	32	196	88	0	2020
Heavy Trucks	0	0	4		0	4	0		4	28	0		4	40	0		84
Pedestrians		20				0				12				0			32
Bicycles																	
Railroad																	
Stopped Buses																	

Comments:

Report generated on 4/24/2009 2:55 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

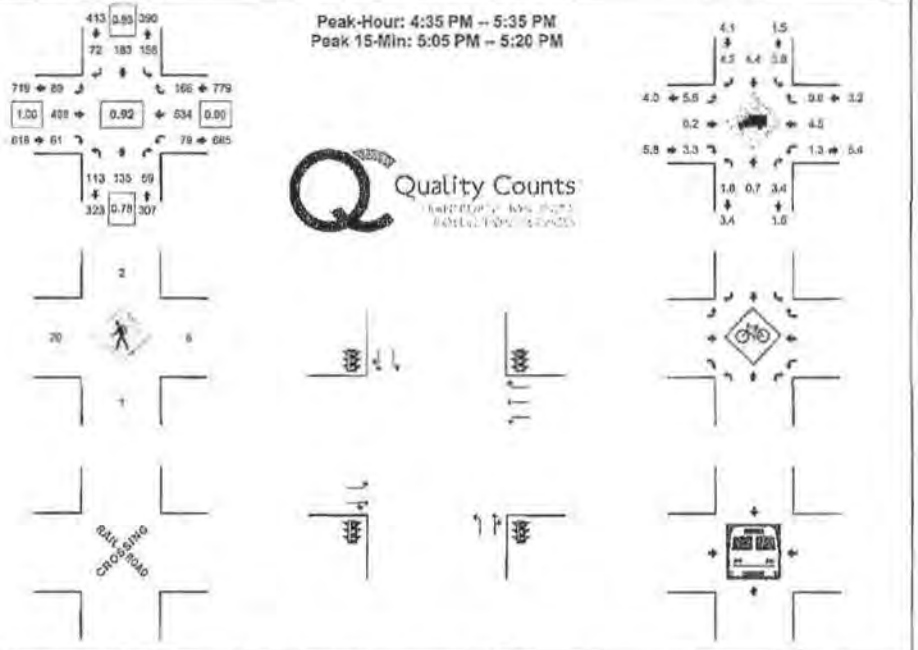
49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.305

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

LOCATION: SW 53rd St -- OR 20
CITY/STATE: Corvallis, OR

QC JOB #: 10426908
DATE: 4/21/2009



5-Min Count Period Beginning At	SW 53rd St (Northbound)				SW 53rd St (Southbound)				OR 20 (Eastbound)				OR 20 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	6	8	2	0	10	8	6	0	5	41	6	0	7	41	12	0	152	
4:05 PM	7	13	4	0	8	17	7	0	8	36	7	0	2	43	15	0	165	
4:10 PM	6	15	5	0	6	12	7	0	12	46	7	0	6	40	7	0	181	
4:15 PM	9	17	8	0	13	10	2	0	7	36	4	0	5	60	11	0	182	
4:20 PM	16	15	3	0	14	16	9	0	7	40	3	0	1	47	10	0	181	
4:25 PM	7	16	4	0	7	7	9	0	5	37	1	0	4	37	7	0	141	
4:30 PM	12	8	9	0	8	8	9	0	10	43	4	0	4	31	8	0	154	
4:35 PM	6	13	3	0	16	13	6	0	4	41	5	0	4	40	15	0	166	
4:40 PM	7	10	5	0	8	12	5	0	12	53	4	0	5	49	14	0	184	
4:45 PM	7	17	5	0	12	21	8	0	4	46	6	0	5	39	8	0	177	
4:50 PM	11	10	6	0	12	10	5	0	7	49	8	0	9	46	14	0	186	
4:55 PM	14	17	2	0	17	16	5	0	11	37	3	0	6	29	7	0	154	2023
5:00 PM	3	8	7	0	6	15	7	0	6	39	6	0	3	40	17	0	157	2028
5:05 PM	15	9	7	0	19	14	4	0	7	30	0	0	7	35	21	0	180	2043
5:10 PM	9	21	8	0	13	18	6	0	8	27	4	0	8	53	16	0	188	2050
5:15 PM	12	12	5	0	14	16	7	0	11	48	4	0	11	52	11	0	206	2073
5:20 PM	5	9	3	0	12	13	5	0	6	39	6	0	10	57	16	0	181	2073
5:25 PM	14	9	1	0	18	14	6	0	8	28	4	0	4	51	11	0	167	2099
5:30 PM	10	30	7	0	11	21	9	0	7	28	5	0	7	44	13	0	172	2117
5:35 PM	8	23	3	0	8	12	5	0	1	46	3	0	5	51	14	0	179	2130
5:40 PM	12	15	4	0	9	5	7	0	3	29	1	0	3	29	28	0	145	2091
5:45 PM	11	17	9	0	12	17	8	0	6	26	5	0	3	48	21	0	185	2099
5:50 PM	12	14	6	0	12	13	0	0	5	24	4	0	7	22	9	0	128	2041
5:55 PM	9	16	6	0	7	11	2	0	1	20	6	0	4	37	6	0	126	2013

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	144	188	80	0	184	192	68	0	96	436	56	0	104	560	204	0	2292
Heavy Trucks	4	4	0		0	12	0		0	16	0		0	20	0		56
Pedestrians		4				0				40				8			52
Bicycles																	
Railroad																	
Stopped Buses																	

Comments:

Report generated on 4/24/2009 2:57 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

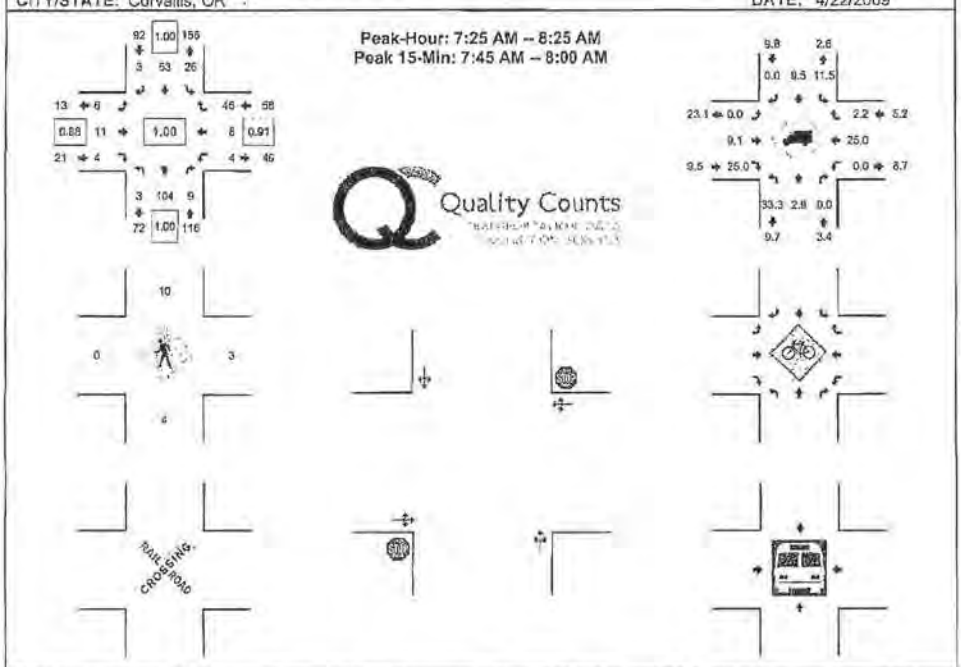
49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.306

Type of peak hour being reported: System Peak.

Method for determining peak hour: Total Entering Volume

LOCATION: SW 53rd St -- SW Country Club Dr
CITY/STATE: Corvallis, OR

QC JOB #: 10426901
DATE: 4/22/2009



5-Min Count Period Beginning At	SW 53rd St (Northbound)				SW 53rd St (Southbound)				SW Country Club Dr (Eastbound)				SW Country Club Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	19	2	0	3	9	1	0	3	1	1	0	0	1	1	0	41	
7:05 AM	0	8	2	0	1	7	1	0	2	1	0	0	2	3	5	0	32	
7:10 AM	0	10	1	0	0	6	0	0	1	3	1	0	2	1	5	0	30	
7:15 AM	1	12	0	0	3	9	0	0	1	3	1	0	1	0	1	0	32	
7:20 AM	0	7	0	0	3	5	0	0	0	0	1	0	3	2	4	0	25	
7:25 AM	0	12	0	0	5	2	0	0	1	2	1	0	1	1	7	0	32	
7:30 AM	0	15	1	0	2	7	0	0	0	2	0	0	0	0	2	0	29	
7:35 AM	0	4	0	0	3	6	0	0	0	1	0	0	0	4	6	0	24	
7:40 AM	1	9	0	0	2	2	0	0	0	0	0	0	0	0	4	0	18	
7:45 AM	0	12	0	0	1	4	0	0	2	1	1	0	1	1	3	0	26	
7:50 AM	0	6	4	0	1	7	0	0	0	0	1	0	1	0	4	0	24	
7:55 AM	0	8	1	0	2	6	0	0	0	1	0	0	0	0	6	0	22	336
8:00 AM	0	7	0	0	2	8	1	0	0	3	0	0	0	0	0	0	21	315
8:05 AM	0	9	1	0	3	3	0	0	1	1	1	0	0	0	2	0	21	304
8:10 AM	0	7	1	1	0	4	0	0	0	0	0	0	1	0	6	0	20	284
8:15 AM	1	6	0	0	2	6	2	0	1	0	0	0	0	2	3	0	23	285
8:20 AM	0	11	1	0	3	8	0	0	1	0	0	0	0	0	3	0	27	287
8:25 AM	0	4	1	0	3	5	1	0	0	0	0	0	0	0	7	0	21	276
8:30 AM	0	7	0	0	0	6	0	0	0	1	0	0	2	1	2	0	19	266
8:35 AM	0	5	1	0	2	7	1	0	0	1	0	0	0	1	3	0	21	263
8:40 AM	0	9	0	0	5	3	1	0	0	4	1	0	0	1	2	0	26	271
8:45 AM	0	13	0	0	0	3	1	0	0	0	1	0	0	0	0	0	18	263
8:50 AM	0	8	0	0	3	5	1	0	1	0	1	0	0	0	4	0	23	262
8:55 AM	0	9	2	0	2	4	0	0	1	0	0	0	1	0	1	0	20	260

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	95	20	0	16	68	0	0	8	8	8	0	8	4	52	0	288
Heavy Trucks	0	0	0		0	8	0		0	4	0		0	4	4		20
Pedestrians		0				24				0				0			24
Bicycles																	
Railroad																	
Stopped Buses																	

Comments:

Report generated on 4/24/2009 2:55 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

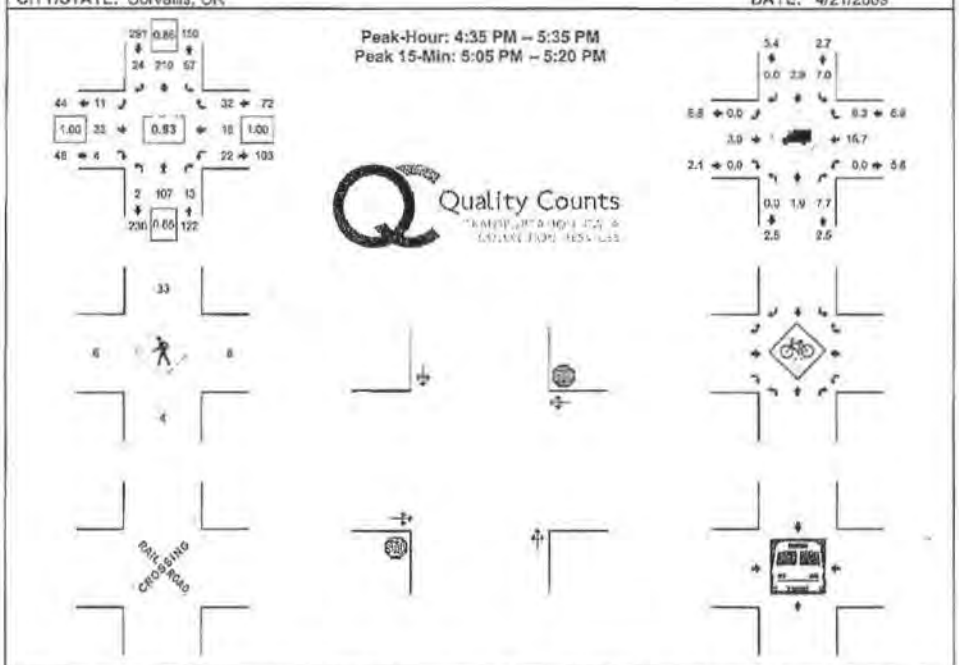
49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.307

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

LOCATION: SW 53rd St -- SW Country Club Dr
CITY/STATE: Corvallis, OR

QC JOB #: 10426902
DATE: 4/21/2009



5-Min Count Period Beginning At	SW 53rd St (Northbound)				SW 53rd St (Southbound)				SW Country Club Dr (Eastbound)				SW Country Club Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	9	2	0	1	10	1	0	0	3	1	0	2	0	4	0	33	
4:05 PM	0	13	0	0	3	15	2	0	2	2	0	0	2	0	5	0	44	
4:10 PM	0	15	2	0	6	17	1	0	3	4	0	0	1	0	7	0	56	
4:15 PM	0	11	0	0	3	13	2	0	0	1	2	0	3	0	5	0	40	
4:20 PM	1	7	2	0	6	12	0	0	0	1	1	0	0	1	3	0	36	
4:25 PM	0	13	2	0	3	14	0	0	2	2	0	0	0	3	1	0	40	
4:30 PM	0	8	0	0	2	10	0	0	0	3	0	0	2	0	7	0	32	
4:35 PM	2	11	1	0	3	19	2	0	0	4	1	0	2	0	2	0	47	
4:40 PM	0	16	0	0	4	11	0	0	2	3	0	0	0	2	4	0	44	
4:45 PM	0	0	0	0	9	13	3	0	4	4	0	0	1	3	7	0	50	
4:50 PM	0	10	2	0	2	8	3	0	1	1	1	0	5	0	2	0	35	
4:55 PM	0	4	1	0	6	14	2	0	0	2	0	0	0	3	1	0	33	490
5:00 PM	0	8	2	0	4	13	4	0	0	3	0	0	4	3	2	0	43	500
5:05 PM	0	12	1	0	7	23	2	0	0	2	0	0	0	0	3	0	50	506
5:10 PM	0	16	1	0	2	21	0	0	2	1	0	0	2	1	2	0	47	497
5:15 PM	0	6	1	0	7	22	1	0	0	5	1	0	1	1	1	0	46	503
5:20 PM	0	3	2	0	6	22	1	0	0	3	0	0	0	1	0	0	38	505
5:25 PM	0	7	0	0	6	24	2	0	1	1	0	0	1	0	4	0	48	511
5:30 PM	0	9	0	0	1	20	4	0	1	4	1	0	8	4	4	0	54	533
5:35 PM	0	4	1	0	3	13	0	0	3	3	0	0	2	2	2	0	34	520
5:40 PM	0	17	2	0	2	12	1	0	0	2	0	0	2	1	3	0	42	518
5:45 PM	0	16	0	0	1	19	1	0	0	1	0	0	0	1	0	0	39	507
5:50 PM	0	7	0	0	2	13	2	0	1	1	0	0	0	3	4	0	33	505
5:55 PM	0	8	1	0	5	14	3	0	1	0	1	0	0	3	7	0	43	515

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	132	12	0	64	284	12	0	8	32	4	0	12	8	24	0	572
Heavy Trucks	0	0	0		4	4	0		0	0	0		0	0	4		12
Pedestrians		4				28				4				20			56
Bicycles																	
Railroad																	
Stopped Buses																	

Comments:

Report generated on 4/24/2009 2:57 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.308

Type of report: Tube Count - Volume Data

LOCATION: SW 53rd north of Plymouth Dr
SPECIFIC LOCATION: 500 ft from
CITY/STATE: Corvallis, OR

QC JOB #: 10426909
DIRECTION: NB
DATE: Apr 21 2009 - Apr 23 2009

Start Time	Mon	Tue 21-Apr-09	Wed 22-Apr-09	Thu 23-Apr-09	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM			5	3		4			4	
1:00 AM			1			1			1	
2:00 AM			0			0			0	
3:00 AM			5			5			5	
4:00 AM			5			5			5	
5:00 AM			23			23			23	
6:00 AM			65			65			65	
7:00 AM			183			183			183	
8:00 AM			163			163			163	
9:00 AM			106			106			106	
10:00 AM			84			84			84	
11:00 AM			96			96			96	
12:00 PM			90			90			90	
1:00 PM			76			76			76	
2:00 PM			108			108			108	
3:00 PM			128			128			128	
4:00 PM			122			122			122	
5:00 PM		111	99			105			105	
6:00 PM		86	79			82			82	
7:00 PM		43	61			52			52	
8:00 PM		40	46			43			43	
9:00 PM		28	14			21			21	
10:00 PM		15	5			10			10	
11:00 PM		6	3			4			4	
Day Total		329	1567	3		1576			1576	
% Weekday Average		20.9%	99.4%	0.2%						
% Week Average		20.9%	99.4%	0.2%		100.0%				
AM Peak Volume			7:00 AM 183	12:00 AM 3		7:00 AM 183			7:00 AM 183	
PM Peak Volume		5:00 PM 111	3:00 PM 128			3:00 PM 128			3:00 PM 128	

Comments:

Report generated on 4/24/2009 11:23 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

LOCATION: SW 53rd north of Plymounth Dr
SPECIFIC LOCATION: 500 ft from
CITY/STATE: Corvallis, OR

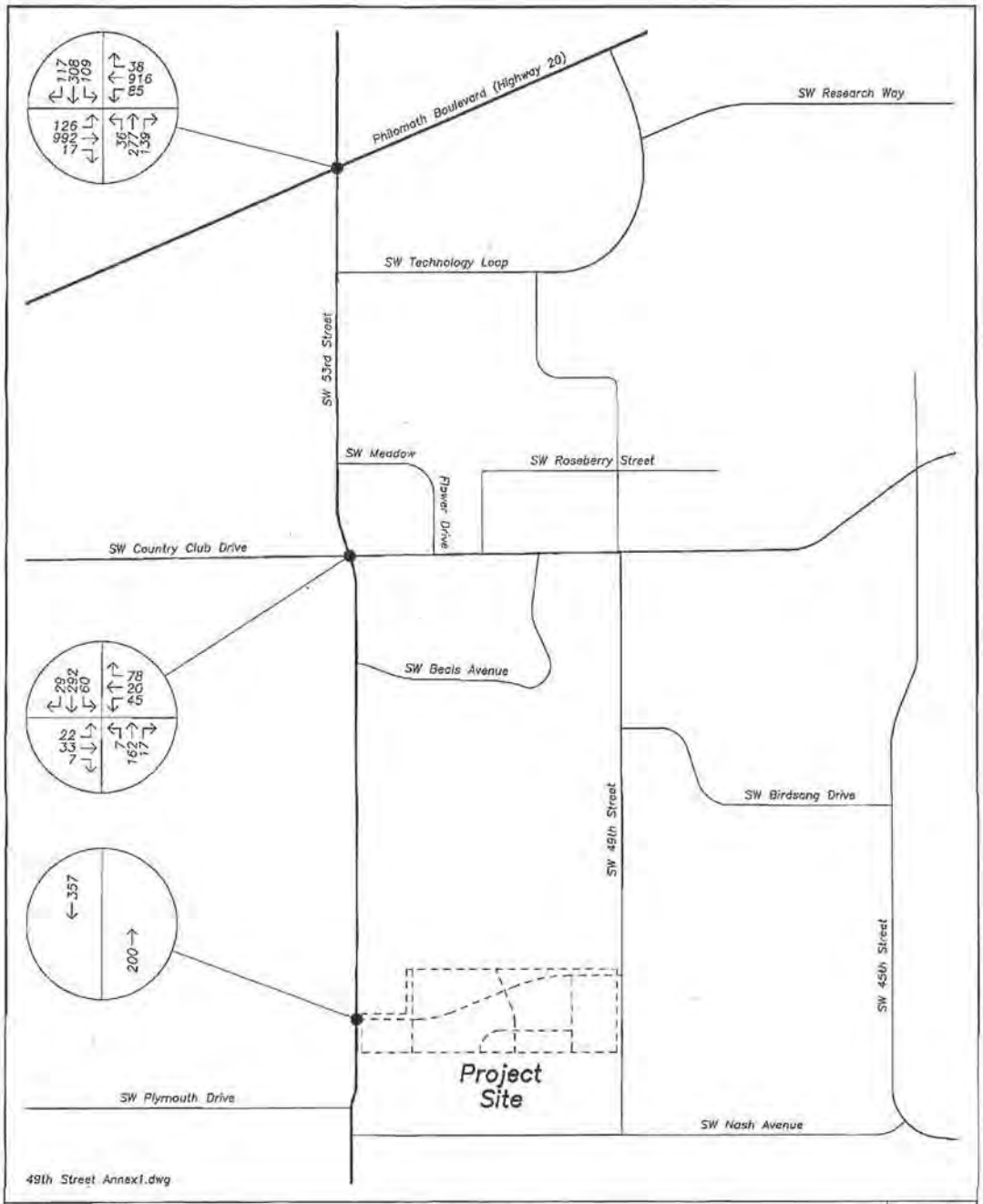
QC JOB #: 10426909
DIRECTION: SB
DATE: Apr 21 2009 - Apr 23 2009

Start Time	Mon	Tue 21-Apr-09	Wed 22-Apr-09	Thu 23-Apr-09	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM			5	7		6			6	
1:00 AM			0			0			0	
2:00 AM			1			1			1	
3:00 AM			0			0			0	
4:00 AM			3			3			3	
5:00 AM			12			12			12	
6:00 AM			25			25			25	
7:00 AM			53			53			53	
8:00 AM			82			82			82	
9:00 AM			66			66			66	
10:00 AM			79			79			79	
11:00 AM			84			84			84	
12:00 PM			102			102			102	
1:00 PM			110			110			110	
2:00 PM			121			121			121	
3:00 PM			129			129			129	
4:00 PM			169			169			169	
5:00 PM		227	228			227			227	
6:00 PM		137	125			131			131	
7:00 PM		89	92			90			90	
8:00 PM		55	72			63			63	
9:00 PM		63	56			59			59	
10:00 PM		27	24			25			25	
11:00 PM		8	6			7			7	
Day Total		606	1644	7		1644			1644	
% Weekday Average		36.9%	100.0%	0.4%						
% Week Average		36.9%	100.0%	0.4%		100.0%				
AM Peak Volume			11:00 AM 84	12:00 AM 7		11:00 AM 84			11:00 AM 84	
PM Peak Volume		5:00 PM 227	5:00 PM 228			5:00 PM 227			5:00 PM 227	

Comments:

Report generated on 4/24/2009 11:23 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

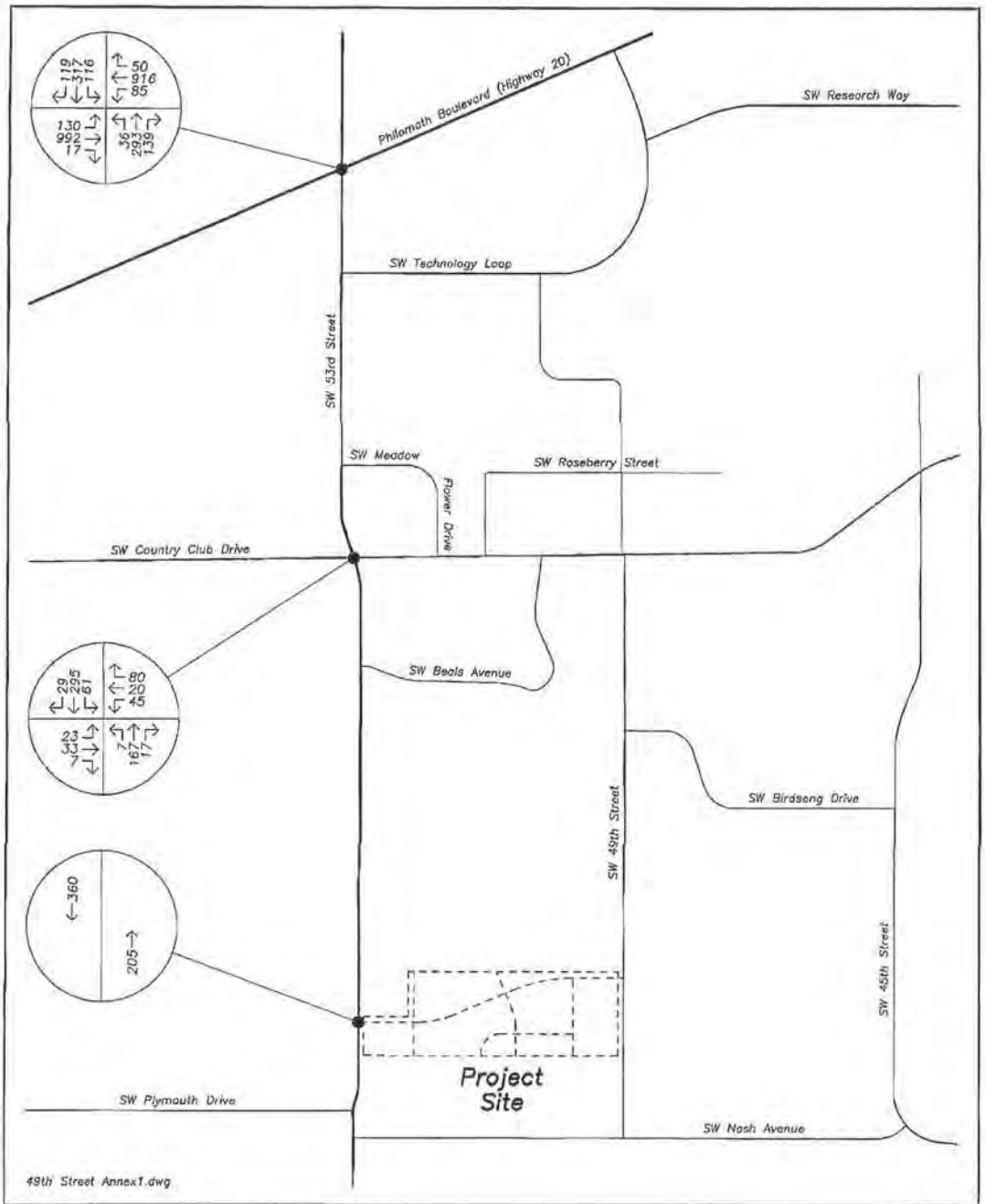


TRAFFIC VOLUMES
Year 2030 Background Conditions
PM Peak Hour

no scale

FIGURE 4

PAGE 13

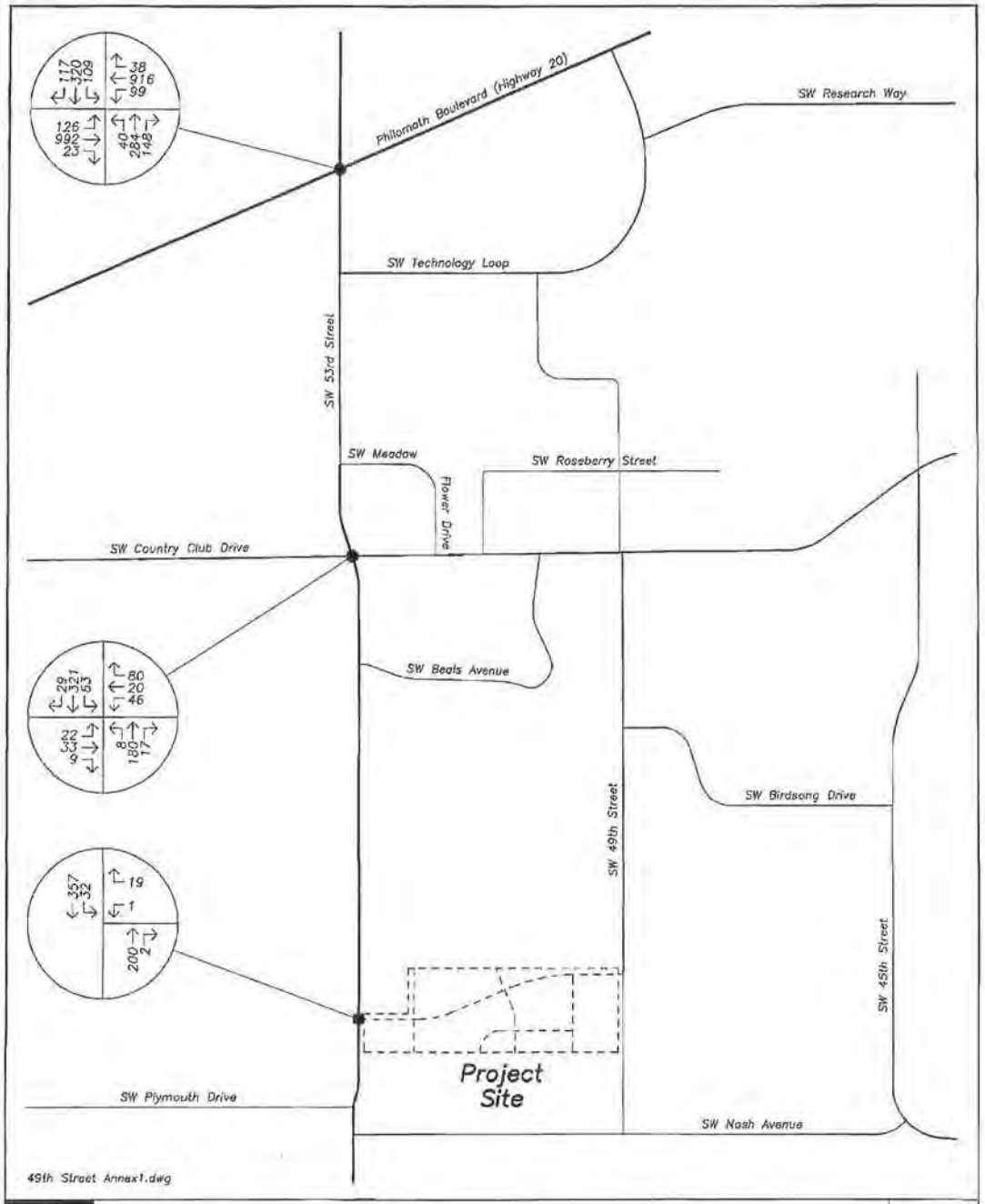


TRAFFIC VOLUMES (w/ Cannon Applegate)
Year 2030 Background Conditions
PM Peak Hour

no scale

FIGURE 5

PAGE 14



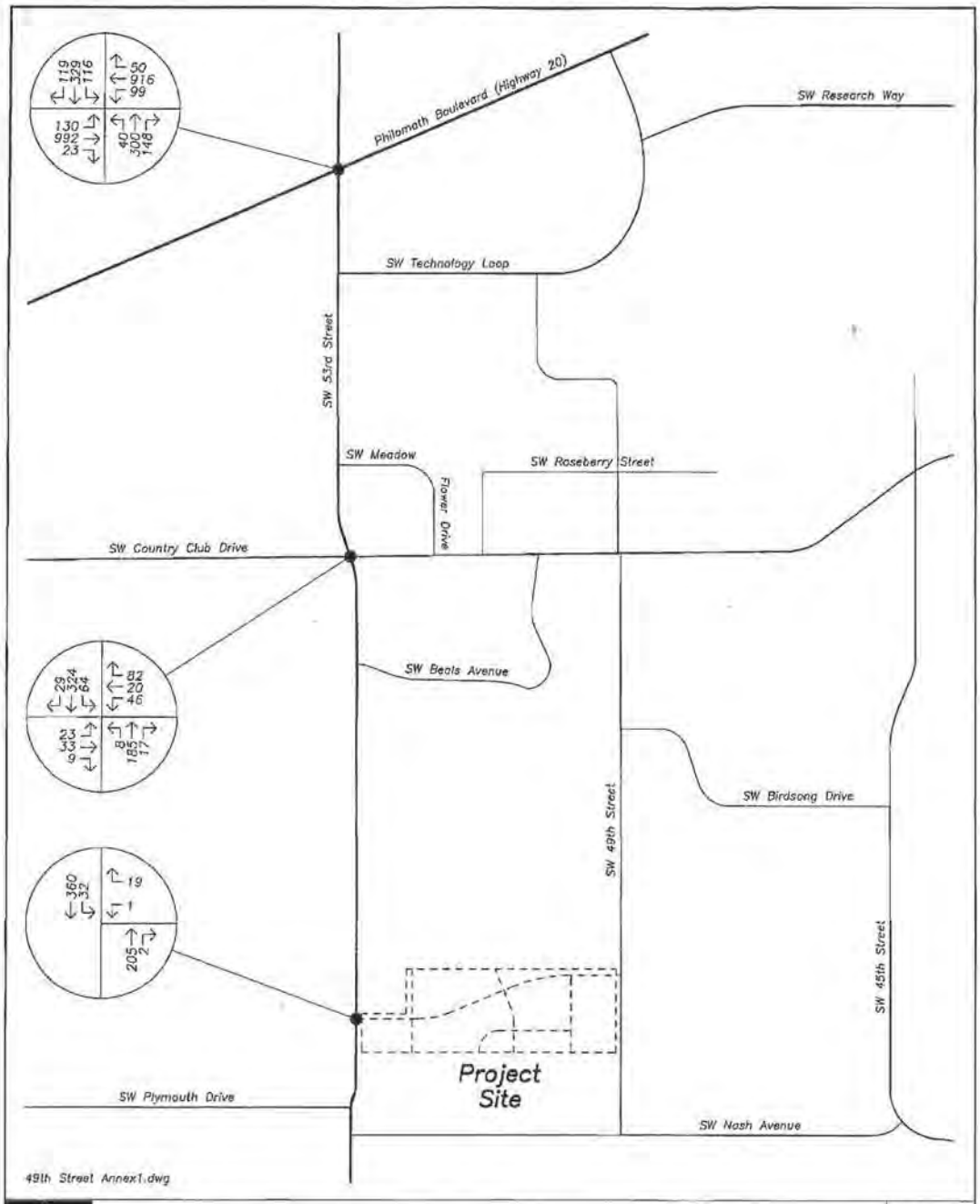
TRAFFIC VOLUMES
Year 2030 Background plus Site Trips
PM Peak Hour

no scale

FIGURE 6

PAGE 15

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.313



TRAFFIC VOLUMES (w/ Cannon Applegate)
Year 2030 Background plus Site Trips
PM Peak Hour

no scale

FIGURE 7

PAGE 16

HCM Signalized Intersection Capacity Analysis
3: Highway 20/34 (Philomath Blvd) & SW 53rd Street

4/28/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1662	1630		1646	1667	1458	1662	1733	1373	1646	1646	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1662	1630		1646	1667	1458	1662	1733	1373	1646	1646	
Volume (vph)	130	992	23	99	916	50	40	300	148	116	329	119
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	146	1115	26	111	1029	56	45	337	166	130	370	134
RTOR Reduction (vph)	0	1	0	0	0	7	0	0	127	0	12	0
Lane Group Flow (vph)	146	1140	0	111	1029	49	45	337	39	130	492	0
Confl. Peds. (#/hr)			2									1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	7%	3%	1%	5%	2%	0%	1%	6%	1%	2%	0%
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	8.0	57.0		6.0	55.0	55.0	3.2	22.8	22.8	9.0	28.6	
Effective Green, g (s)	8.0	57.0		6.0	55.0	55.0	3.2	22.8	22.8	9.0	28.6	
Actuated g/C Ratio	0.07	0.51		0.05	0.50	0.50	0.03	0.21	0.21	0.08	0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	120	839		89	827	724	48	357	283	134	425	
v/s Ratio Prot	c0.09	c0.70		0.07	0.62		0.03	0.19		c0.08	c0.30	
v/s Ratio Perm						0.03			0.03			
v/c Ratio	1.22	1.36		1.25	1.24	0.07	0.94	0.94	0.14	0.97	1.16	
Uniform Delay, d1	51.4	26.9		52.4	27.9	14.5	53.7	43.4	36.0	50.8	41.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	151.7	169.2		175.8	120.1	0.0	105.3	35.4	1.0	68.3	94.4	
Delay (s)	203.1	196.1		228.2	148.0	14.6	159.0	78.7	37.0	119.1	135.5	
Level of Service	F	F		F	F	B	F	E	D	F	F	
Approach Delay (s)		196.9			149.2			72.7			132.2	
Approach LOS		F			F			E			F	

Intersection Summary			
HCM Average Control Delay	151.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	107.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.315

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.202

SW 49TH STREET ANNEXATION
TRAFFIC IMPACT STUDY

CORVALLIS, OREGON

DATE:
March 25, 2009

PREPARED FOR:
Devco Engineering

PREPARED BY:
Lancaster Engineering

REGISTERED PROFESSIONAL ENGINEER
54853
OREGON
JULY 9, 2001
TODD E. MOBLEY
3/25/09
EXPIRES: 12/31/2010

LANCASTER
ENGINEERING

321 SW 4th Ave., Suite 400 | Portland, OR 97204 | 503.248.0313 | lancasterengineering.com

TABLE OF CONTENTS

Executive Summary 3

Project Description 4

Trip Generation & Distribution 8

Safety Analysis 11

Operational Analysis 12

Appendix 21

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.317

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.204

1e

EXECUTIVE SUMMARY

1. A site comprising three parcels and located between SW 53rd Street and SW 49th Street in SW Corvallis is proposed to be annexed into the City Limits. The site could be developed with up to 63 homes under the City's R-6 zoning. The site fronts onto SW 53rd Street and SW 49th Street and access is possible to both streets.

2. The site could generate up to 47 trips during the morning peak hour, 64 trips during the evening peak hour, and 602 trips during the weekday.

3. The intersection of SW Philomath Boulevard (Highway 20/34) and SW 53rd Street is presently exceeding acceptable standards. Mitigating the impact of the annexation will fulfill TPR requirements. Installing protected/permissive left-turn phasing on the northbound and southbound approaches will mitigate the impact of the annexation.

4. The intersection of SW Country Club Drive and SW 53rd Street is presently functioning within satisfactory criteria and will continue to function satisfactorily with the proposed annexation.

5. Access onto SW 53rd Street or SW 49th Street is forecast to operate with very low delays.

6. Sight distance along the site frontage on SW 53rd Street is adequate, but improves the farther north the access is located. For this reason, access is recommended to be as far north as practical.

7. Sight distance along the site frontage on SW 49th Street is adequate if the access is located at the crest of the road or somewhat south of the crest.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.318

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.205

1e

PROJECT DESCRIPTION

INTRODUCTION

A site located between SW 53rd Street and SW 49th Street and north of SW Nash Avenue is proposed to be annexed into the City of Corvallis's City Limits. The site comprises three tax lots and could be developed with up to 63 homes under the City's R-6 zoning designation.

The site fronts both SW 53rd Street and SW 49th Street. Access is likely onto both streets.

The purpose of this study is to assess the traffic impact of the proposed annexation on the nearby street system and to recommend any required mitigative measures. The analysis will include level of service calculations.

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

LOCATION DESCRIPTION

Three tax lots are proposed to be annexed into Corvallis's City Limits. The site is located between SW 53rd Street and SW 49th Street somewhat north of SW Nash Avenue and would be residentially zoned. There is no application yet to develop the parcels; the traffic study will review the worst-case residential development.

The site fronts onto both SW 53rd Street and SW 49th Street. Access is possible to both streets. In addition, road stubs could be provided to the adjacent parcels for future connectivity in the area.

The City of Corvallis requires analysis of intersections with 30 or more site trips. These intersections are: SW 53rd Street/site access, SW 53rd Street/SW Country Club Drive, and SW 53rd Street/SW Philomath Boulevard/Highway 34. Figure 1 on page six is a vicinity map showing the existing lane configurations and traffic control devices at the study area intersections.

Highway 20/34, also known as SW Philomath Boulevard, is under the jurisdiction of the Oregon Department of Transportation (ODOT) and is classified as a Statewide Highway. It is also designated a Freight Route and Truck Route in the vicinity of the site. It is a three-lane facility near the site with a travel lane in each direction and a center turn lane, which generally becomes a left-turn lane at intersections. There are curbs and sidewalks along sections with recent development, although shoulders are typical on most sections of the highway. The posted speed is 45 mph.

SW 53rd Street is also under the jurisdiction of the City of Corvallis and is classified as an Arterial in the City's 1999 Transportation System Plan (TSP). It is generally a two-lane facility, widening to three lanes at major intersections. There is a detached sidewalk/walkway on the western side of the

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.319

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.206

1e

road, but generally no pedestrian facilities on the eastern side. The posted speed is 45 mph in the vicinity of the site.

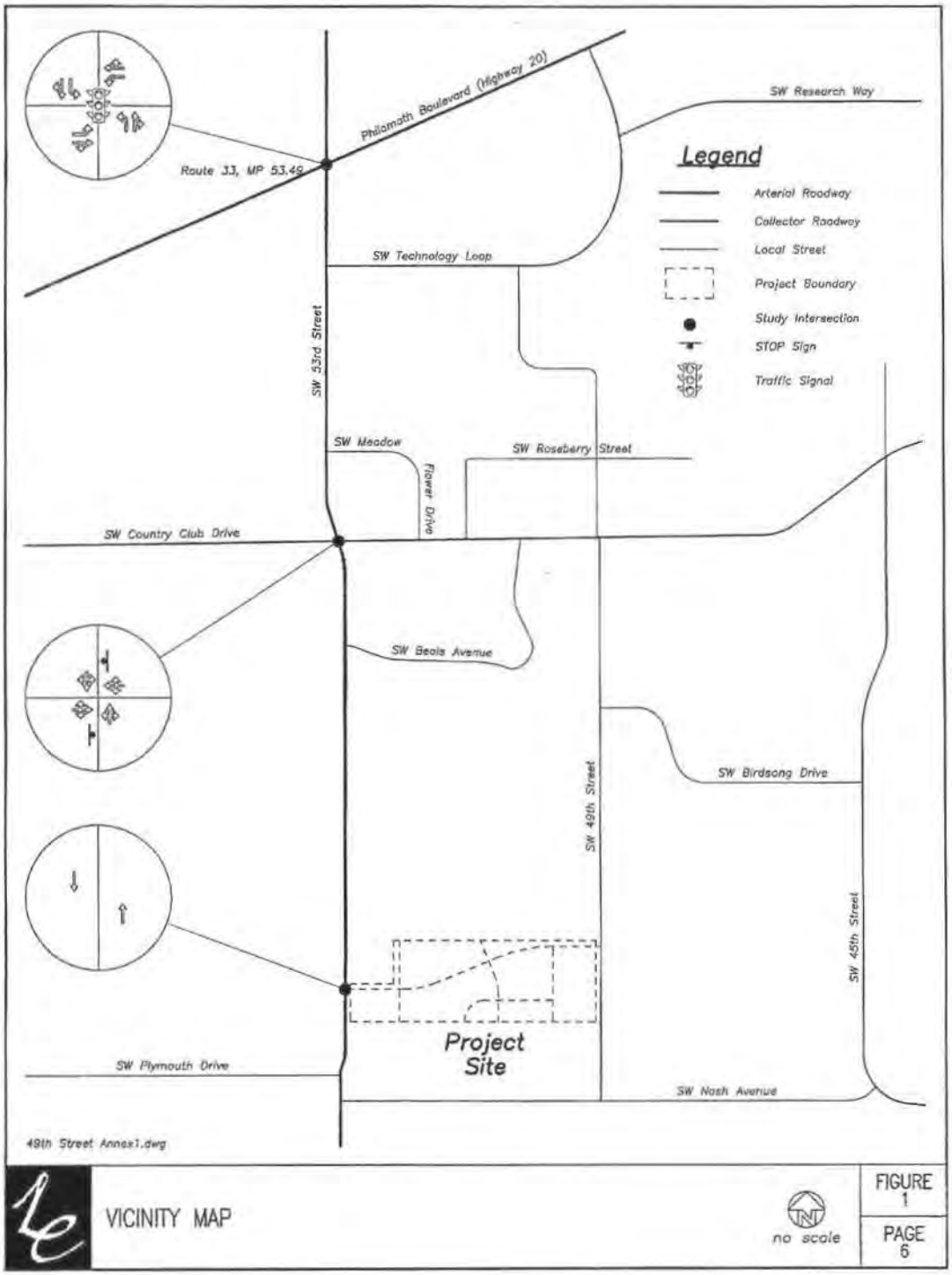
SW Country Club Road is under the jurisdiction of the City of Corvallis and is classified as a Collector in the 1999 TSP. The facility is generally two lanes, widening to three lanes only at SW 47th Place. There are curbs and sidewalks in areas of recent developments and generally shoulders elsewhere. The posted speed is 35 mph east of SW 53rd Street and 45 mph west of SW 53rd Street.

Corvallis Transit Service (CTS) provides transit service in the vicinity of the site. Limited Service Route PC, Jefferson/osu/west hills/53rd st, travels between downtown Corvallis and the southwest area. Service is from about 6:30 a.m. to about 7:00 p.m. with buses running approximately every hour during the peak periods and one bus during the midday period. There is no weekend service. There are several additional routes that travel within one-half of a mile of the site. Routes 3, 8, and C3 also travel between downtown Corvallis and the Technology Loop area with weekday service generally every half hour between 7:00 a.m. and 7:00 p.m.

Manual turning movement counts were made at the study intersections during September 2008 from 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m. The peak hours typically occur from about 7:15 to 8:15 a.m. and from about 4:45 to 5:45 p.m. The volumes for the morning and evening peak hours are shown in Figure 2 on page seven.

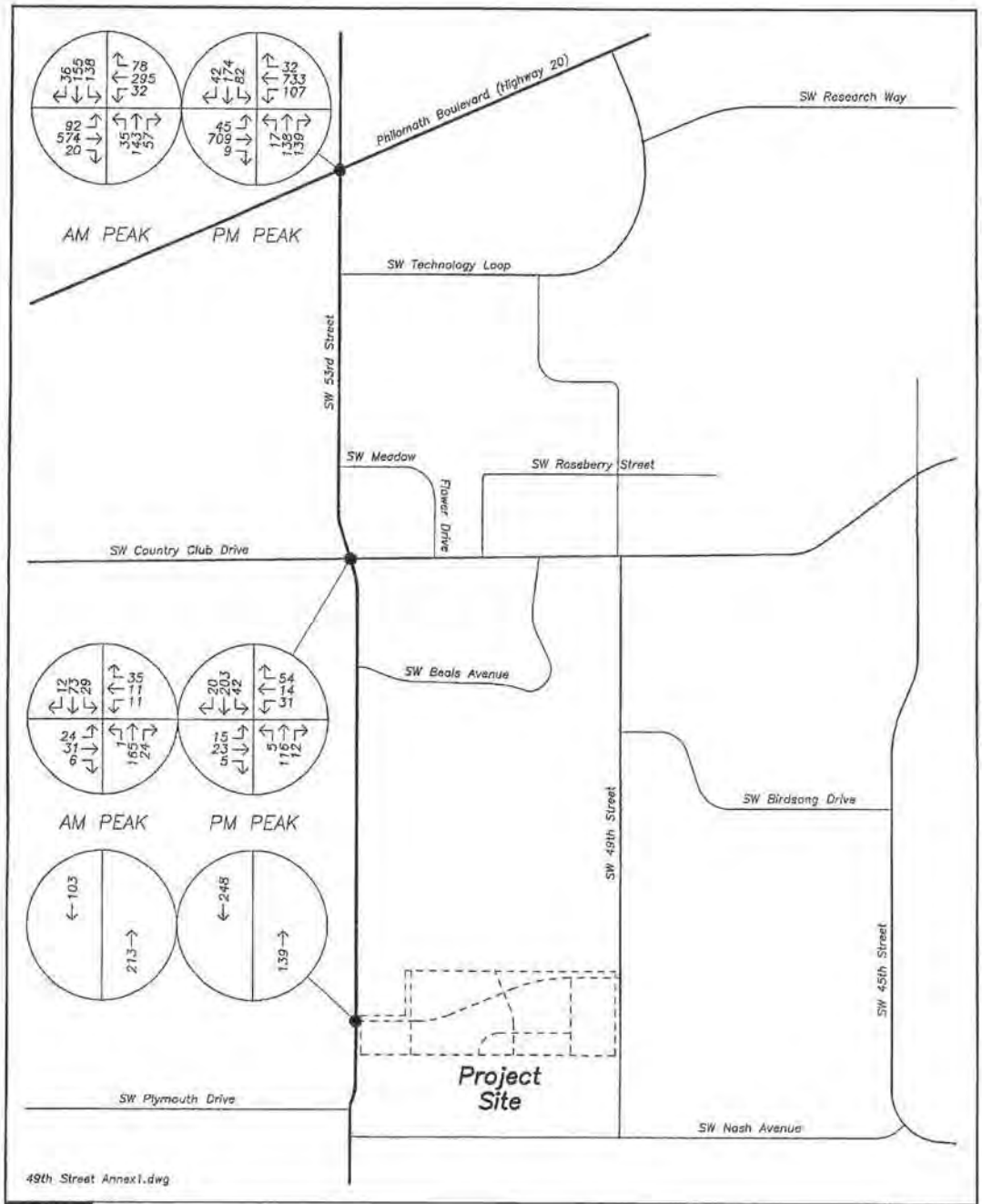
49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.320

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.207



49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.208

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.321



TRAFFIC VOLUMES
Existing Conditions
AM & PM Peak Hours

no scale

FIGURE 2

PAGE 7

49th Street Annexation
(ANN10-0002 ZDC10-0002)
Exhibit III.322

1e

TRIP GENERATION & DISTRIBUTION

TRIP GENERATION

Because the site is proposed as an annexation, long-term conditions need to be examined. Recent LUBA decisions have stated that annexation projects involve a zone change from the County's zoning designation to the City's Comprehensive Plan or zoning designation. There is no Comprehensive Plan amendment associated with the project; therefore, the trips generated by the annexation should be included in the City's planning model, which is used to develop the transportation data used to identify future transportation needs. However, to comply with the LUBA decisions, an analysis of the impacts of a zone change from the County's UR-5 (Urban Residential, 5-acre minimum) to the City's R-6 (Low-Density Residential) has been conducted.

Under the County's UR-5 designation, the site would support three homes, generating a negligible number of trips. Therefore, the impact of the annexation would be the development potential of the site under the City's zoning designation.

To estimate the number of trips that will be generated by the proposed annexation, trip rates from Trip Generation, Seventh Edition, published by the Institute of Transportation Engineers (ITE), were used. When the subject property is annexed, the zoning designation for the property will become R-6 (Low-Density Residential). The ITE trip rates used were for land-use code 210, Single-Family Detached Housing. The trip generation rates are based on the number of dwelling units and were calculated for a developable maximum of 63 homes.

The trip generation calculations indicate that there will be up to 47 trips generated by the proposed annexation during the morning peak hour. Of these, 12 will be entering and 35 will be exiting the site. During the evening peak hour, there are up to 64 trips expected, with 40 entering and 24 exiting the site. Up to 602 weekday trips are expected, with half entering and half exiting.

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

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.323

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.210

1e

TRIP GENERATION SUMMARY

SW 49th Street Annexation

	Entering Trips	Exiting Trips	Total Trips
Single-Family Detached Housing (63 homes)			
AM Peak Hour	12	35	47
PM Peak Hour	40	24	64
Weekday	301	301	602

Because a residential development is typically an origin or destination for trips, no reduction was taken for pass-by trips. Also, because the closest transit services are greater than one-mile from the site, no reduction was made for transit use.

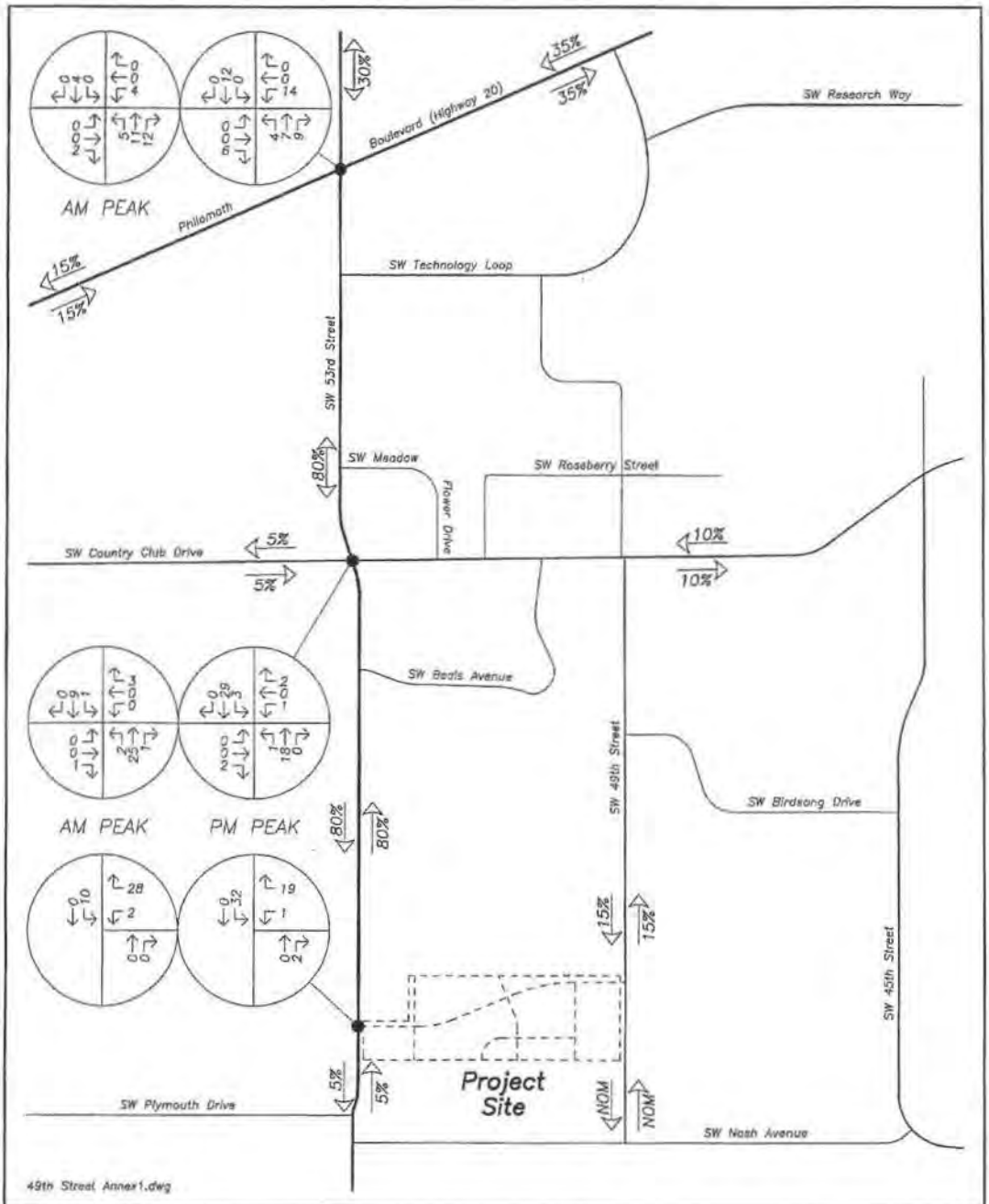
TRIP DISTRIBUTION

Since the proposed land use is residential and is located amongst other residential land uses, it is expected that the trip distribution patterns will be similar to the existing patterns. For this reason, the existing traffic volumes at the study intersections were used to determine the distributional patterns of the proposed development.

Figure 3 on page 10 shows the distribution and assignment of the site trips to the roadway network during the morning and evening peak hours.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.324

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.211



SITE TRIP DISTRIBUTION AND ASSIGNMENT
Inbound and Outbound Percentages & Site Trips
AM & PM Peak Hours

no scale

FIGURE 3

PAGE 10

1e

SAFETY ANALYSIS

SIGHT DISTANCE

Intersection sight distance was calculated from the equations given in A Policy on Geometric Design of Highways and Streets, published in 2004 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 oncoming driver's eye height of 3.5 feet, with the driver's eye 15 feet behind the edge of the near-side travel lane. Access to the site was assumed to both SW 53rd Street and SW 49th Street.

SW 53rd Street has a posted speed on 45 mph in the vicinity of the site. Based on this speed, minimum intersection sight distance required is 500 feet in either direction. SW 53rd Street is generally straight and level and sight distance to the north is unobstructed. Sight distance to the south could be obscured by the curve in the road south of the site. If site access is located near the northern boundary, sight distance to the south is in excess of 550 feet. It is recommended that site access be placed as far north as practical to provide adequate sight distance.

SW 49th Street does not have a posted speed. Based on Oregon Basic Rule, ORS 811, the statutory speed is 25 mph, requiring a minimum of 280 feet of sight distance in either direction. The road is generally level to the south, although the grade lowers farther north. It is recommended that site access be located near the crest of the road or slightly north of the crest.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.326

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.213

OPERATIONAL ANALYSIS

BACKGROUND TRAFFIC

ODOT requires an analysis of the planning horizon year or 15 years, whichever is greater. The Corvallis Area Metropolitan Planning Organization (CAMPO) Transportation Plan established a planning year of 2030. Year 2030 conditions were examined in this report.

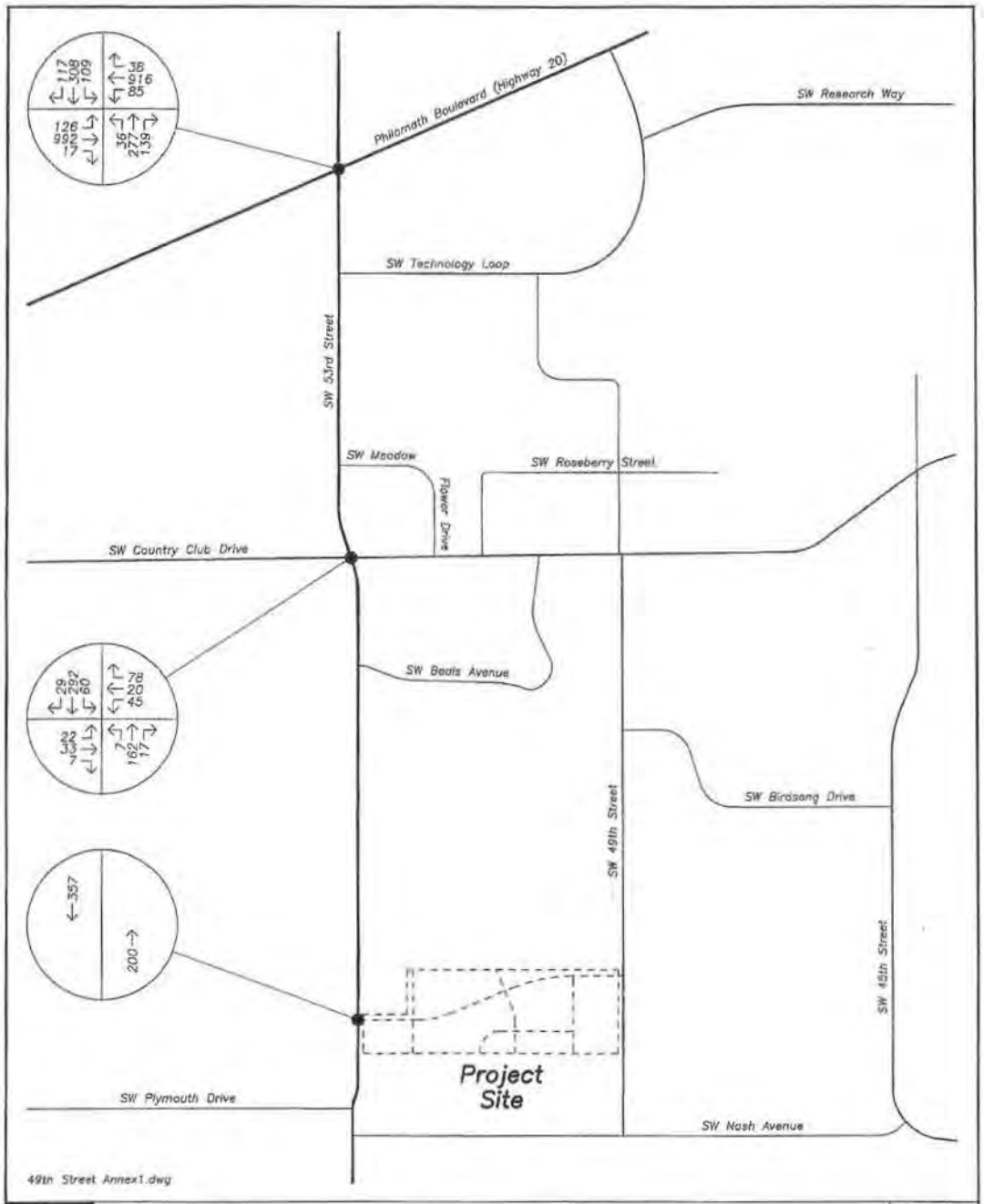
The City's TSP indentifies a two-percent per year growth rate. This growth rate was applied to the traffic volumes to project year 2030 conditions. The Philomath Boulevard/53rd Street intersection was analyzed in the CAMPO report. Year 2030 traffic volumes for this intersection were taken from that report.

The 2030 background traffic volumes comprise the existing traffic volumes with the growth rates applied. Figure 4 on page 13 shows the background traffic volumes during the morning and evening peak hours. Figure 5 on page 14 shows the background traffic with the site trips added.

There is a second annexation project in the southwest area of the City and both projects could conceivably be approved. In order to determine if the street system could support both proposed annexations, a scenario was added that included trips from the Cannon Applegate annexation. Figure 6 on page 15 shows the background traffic volumes during the morning and evening peak hours. Figure 7 on page 16 shows the background traffic with the site trips added.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.327

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.214

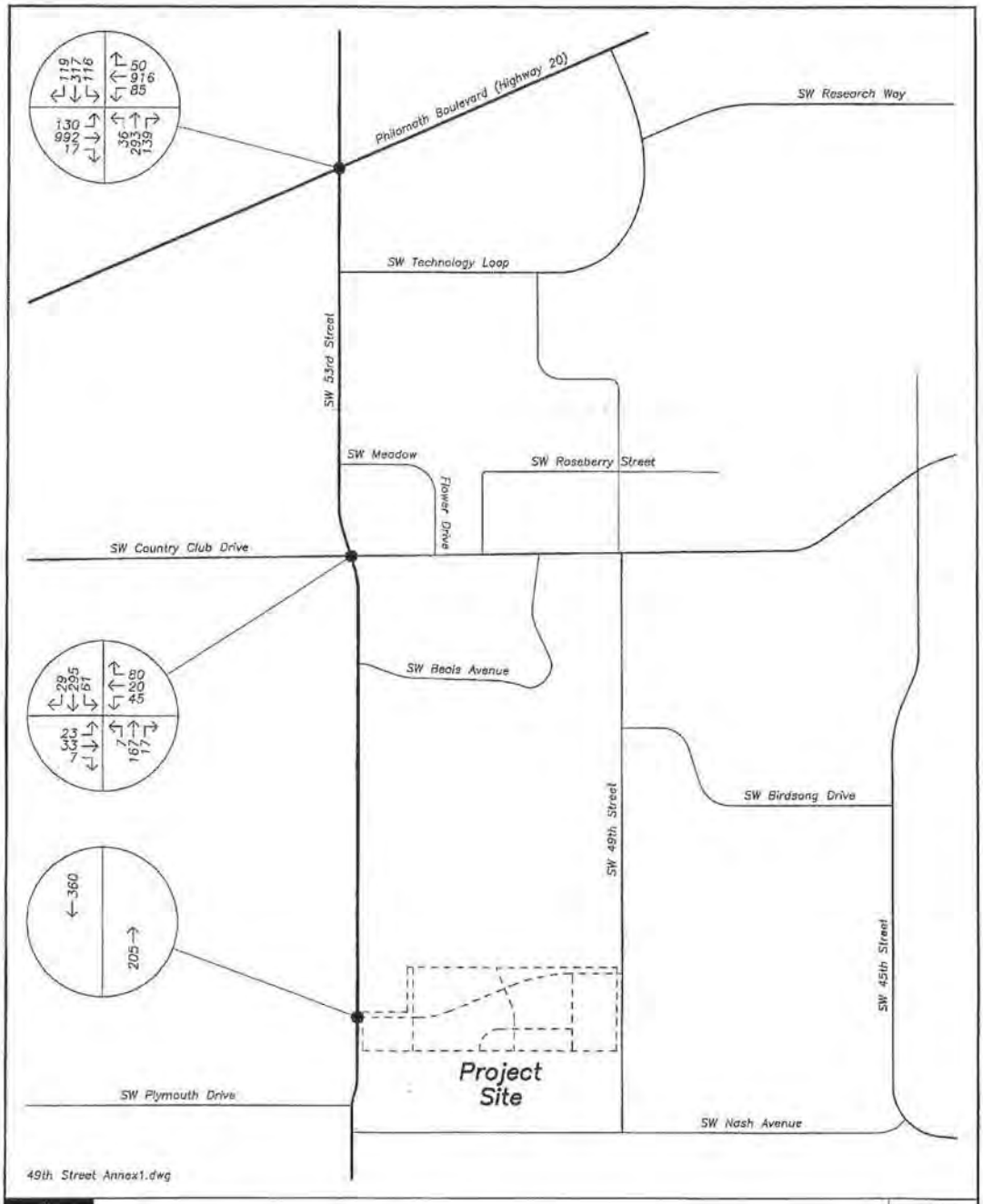


TRAFFIC VOLUMES
Year 2030 Background Conditions
AM & PM Peak Hours

no scale

FIGURE 4

PAGE 13



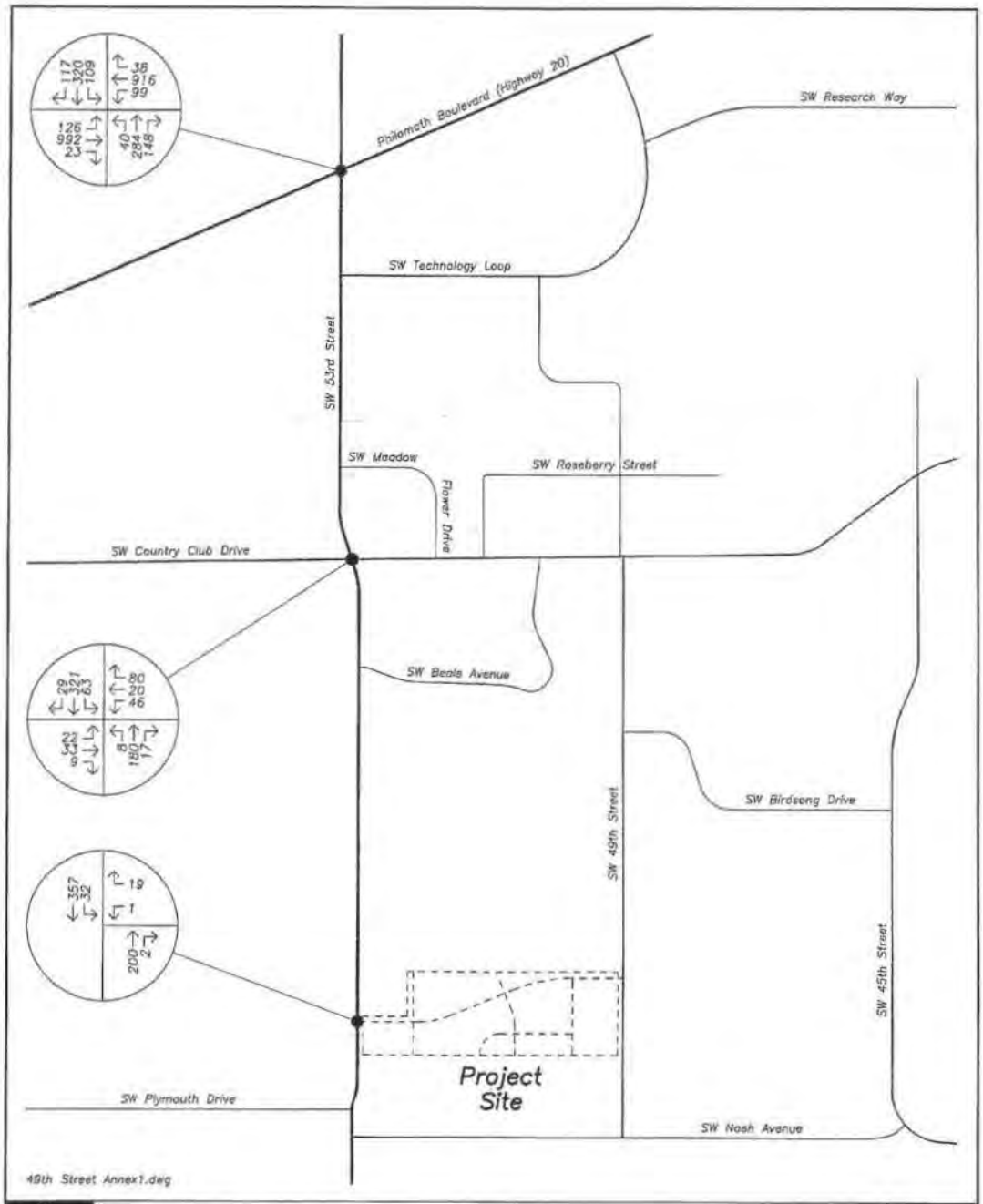
TRAFFIC VOLUMES (w/ Cannon Applegate)
Year 2030 Background Conditions
AM & PM Peak Hours

no scale

FIGURE 5

PAGE 14

49th Street Annexation
(ANN10-0002 ZDC10-0002)
Exhibit III.329

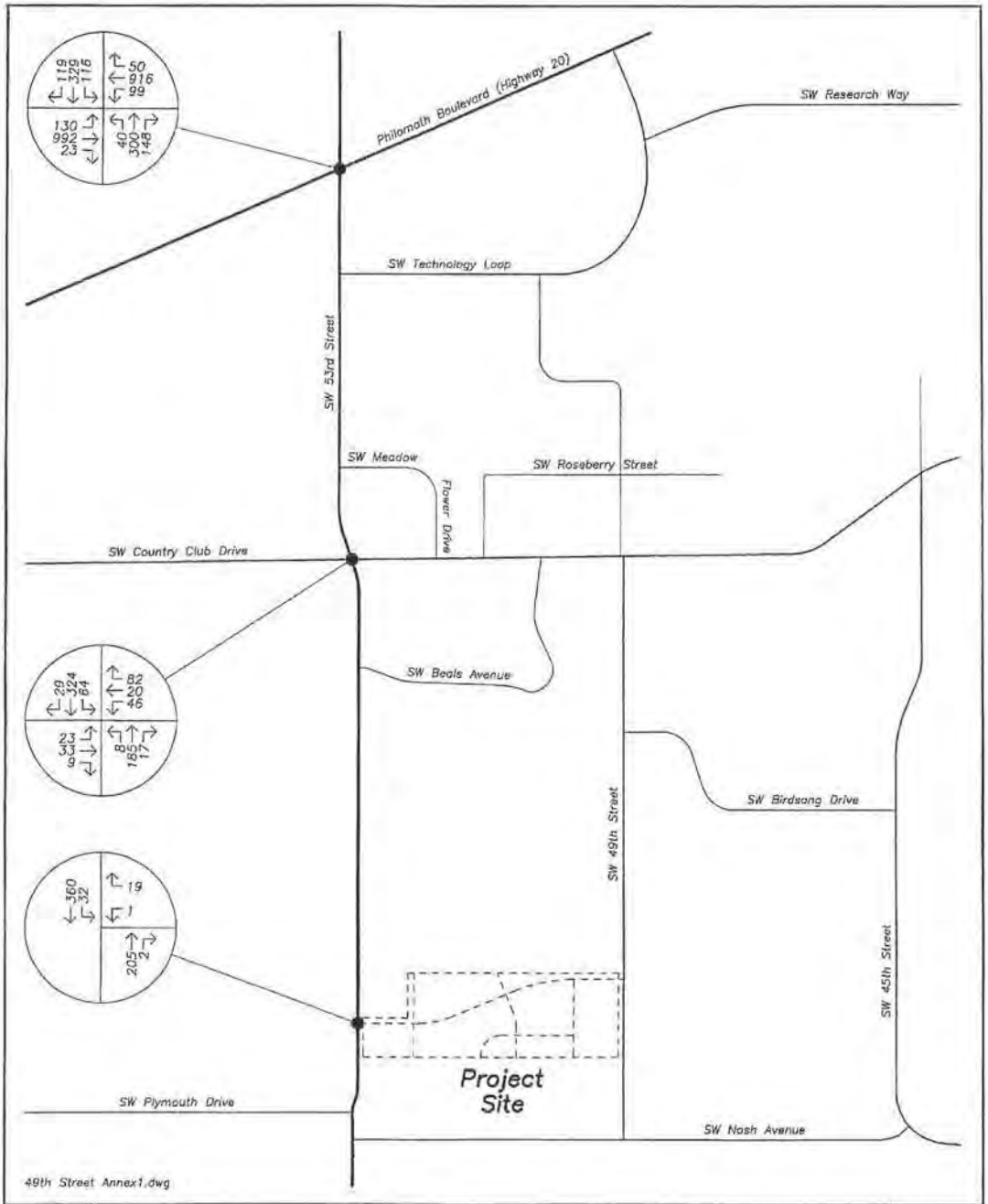


TRAFFIC VOLUMES
Year 2030 Background plus Site Trips
AM & PM Peak Hours

no scale

FIGURE 6

PAGE 15



TRAFFIC VOLUMES (w/ Cannon Applegate)
Year 2030 Background plus Site Trips
AM & PM Peak Hours

no scale

FIGURE 7

PAGE 16

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.331

1e

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) and Synchro, 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 morning and evening peak hours. The intersections of SW Country Club Drive/SW 53rd Street and SW 53rd Street/site access are under the jurisdiction of the City of Corvallis and therefore must operate at level of service D or better.

The intersection of SW Philomath Boulevard (Highway 34) and SW 53rd Street is under the jurisdiction of ODOT. ODOT standards are based on volume-to-capacity (v/c) ratio rather than level of service. The v/c ratio compares the actual (or demand) volumes to the potential capacity to determine the available capacity of the intersection. The maximum allowable v/c ratio for Highway 34 is 0.80 during the peak period. This means that up to 80-percent of the capacity of the intersection can be used during the peak period.

The signalized intersection of SW Philomath Boulevard (Highway 20/34) and SW 53rd Street is currently operating at level of service E during the evening peak hour. The level of service becomes F during the peak hour by 2030. The level of service remains F with the proposed annexation.

The unsignalized intersection of SW Country Club Drive and SW 53rd Street is presently operating at level of service B during the evening peak hour. The level of service describes the delay experienced by the eastbound traffic on SW Country Club Drive. The level of service becomes C for the 2030 projected traffic and remains C with the proposed annexation. If both projects (49th Street and Cannon Applegate) are approved, the level of service becomes D during the evening peak hour.

An access onto SW 53rd Street is forecast to operate between level of service A and B during the evening peak hour. The level of service refers to the delay for the westbound movements on the site access road.

It is expected that an access onto SW 53rd Street would have higher traffic volumes than an access onto SW 49th Street. For this reason, access onto only SW 53rd Street was analyzed. With lower volumes, an access onto SW 49th Street would function as well as or better than SW 53rd Street.

Any mitigation installed for the subject site will provide sufficient capacity for both annexations.

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.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.332

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.219

1e

LEVEL OF SERVICE SUMMARY

	PM Peak Hour		
	LOS	Delay	V/C
*SW Philomath Boulevard & SW 53rd Street**			
Existing Conditions	E	57	0.94
2030 Background Conditions	F	167	1.30
2030 Background + Site Trips	F	175	1.33
2030 Background Conditions[1]	F	174	1.32
2030 Background + Site Trips[1]	F	183	1.35
2030 Background + Site Trips[2]	F	164	1.26
2030 Background + Site Trips[3]	D	43	0.85
SW Country Club Drive & SW 53rd Street			
Existing Conditions	B	14	--
2030 Background Conditions	C	21	--
2030 Background + Site Trips	C	25	--
2030 Background Conditions[1]	C	22	--
2030 Background + Site Trips[1]	D	25	--
SW 53rd Street & Site Access			
2030 Background + Site Trips	A/B	10	--
2030 Background + Site Trips[1]	A/B	10	--

* Signalized intersection
LOS = Level of Service
Delay = Average Delay per Vehicle in Seconds
V/C = Volume-to-Capacity ratio
[1] with Cannon Applegate annexation traffic included
[2] with protected/permitted left-turn phasing
[3] with improvements as discussed in CAMPO report

The CAMPO report identifies the need for improvement along Highway 20/34, including the intersection of SW 53rd Street. The report examined northbound and southbound right-turn lanes as well as improving Philomath Boulevard to a four-lane facility with left-turn lanes. Signal modifications are easier to achieve than obtaining right-of-way for road widening and for this reason, signal modifications were evaluated. The result of the analysis showed that installing protected/permissive left-

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(ANN10-00002 ZDC10-00002)
Exhibit III.333

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.220

turn phasing for the northbound and southbound left turns will mitigate the impact of the annexation (including the Cannon Applegate annexation).

PROTECTED/PERMISSIVE LEFT-TURN PHASING

Philomath Boulevard and SW 53rd Street exceeds the operational standards established for the intersection. In order to identify an appropriate mitigation, the protected/permissive left-turn phasing guidelines in ODOT's Traffic Signal Policy and Guidelines were examined.

Traffic volumes indicate protected/permissive phasing is applicable at the Philomath Boulevard/SW 53rd Street intersection. If this phasing is used, in order to maintain acceptable operation, both the northbound and southbound left-turn phasing should be modified for protected/permissive phasing.

TRANSPORTATION PLANNING RULE

The Transportation Planning Rule is Oregon Administrative Rules (OAR) 660, Division 12. OAR 660-012-0060 governs proposals for plan and land-use regulation amendments. It applies when an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation would significantly affect an existing or planned transportation facility. The land use action would significantly affect the transportation system if it worsens the performance of the facility projected to operate below acceptable standards. The goal also states that a local government may approve an amendment that would significantly affect an existing transportation facility where:

> (3)(c) Development resulting from the amendment will, at a minimum, mitigate the impacts of the amendment in a manner that avoids further degradation to the performance of the facility by the time of the development through one or a combination of transportation improvements or measures;

The unsignalized study intersections will continue to function within acceptable City standards with the proposed annexation.

The intersection of SW Philomath Boulevard (Highway 20/34) and SW 53rd Street will exceed ODOT's operational criteria, although it should be mentioned that the intersection is currently exceeding the maximum allowable v/c ratio. Modifying the signal phasing to allow protected/permissive left-turn phasing for the northbound and southbound left turns will mitigate the impact of the annexation.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.334

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.221

CONCLUSIONS

The unsignalized intersections are forecast to operate within acceptable City standards with the proposed annexation. The signalized intersection of Philomath Boulevard (Highway 20/34) and SW 53rd Street will exceed ODOT's operational standards, but the impact of the annexation can be mitigated with changes to the signal's left-turn phases.

There were no other safety or operational issues associated with the proposed annexation.

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.222

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.335

1e

APPENDIX

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.336

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.223

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

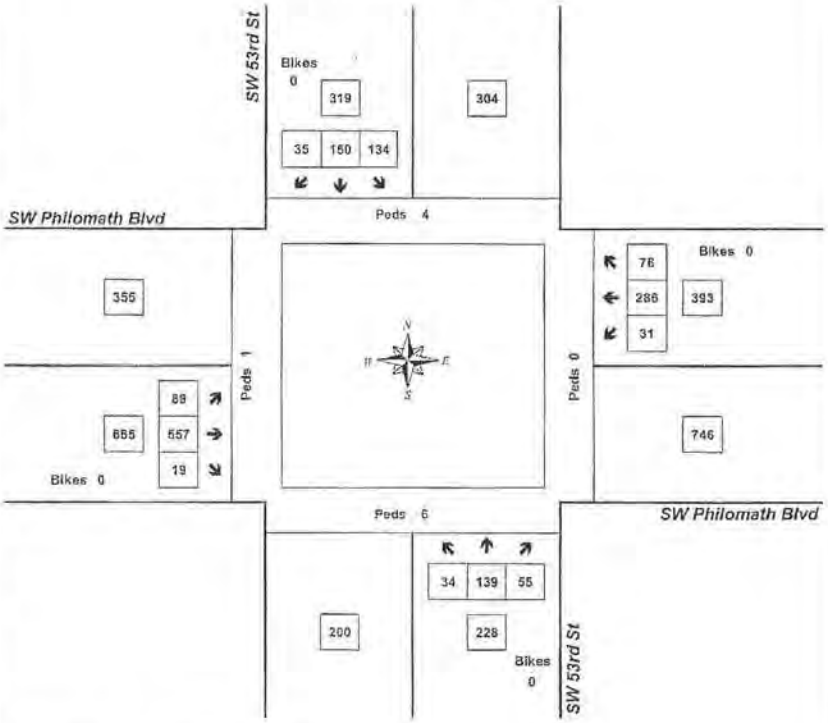
Peak Hour Summary

All Traffic Data Services Inc

Clay Carney
(503) 833-2740

SW 53rd St & SW Philomath Blvd

7:25 AM to 8:25 AM
Thursday, September 18, 2008



Approach	PHF	HV%	Volume
EB	0.90	6.3%	665
WB	0.89	18.3%	393
NB	0.86	3.9%	228
SB	0.71	5.0%	319
Intersection	0.86	8.7%	1,605

Count Period: 7:00 AM to 9:00 AM

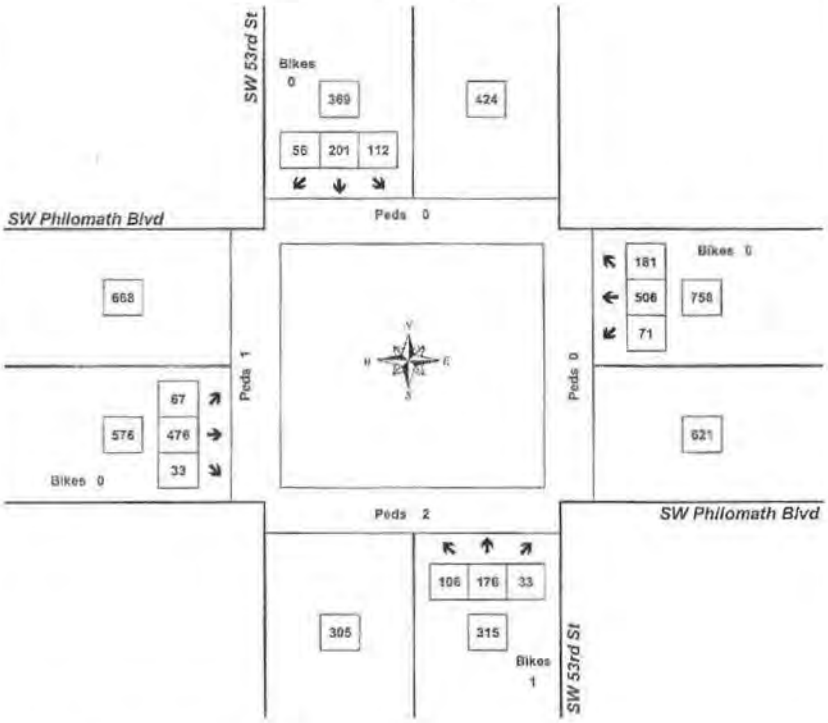
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 633-2740

SW 53rd St & SW Philomath Blvd

5:00 PM to 6:00 PM
Wednesday, September 17, 2008



Approach	PHF	HV%	Volume
EB	0.89	5.9%	576
WB	0.89	3.6%	758
NB	0.81	1.3%	315
SB	0.72	1.4%	389
Intersection	0.89	3.5%	2,018

Count Period: 4:00 PM to 6:00 PM

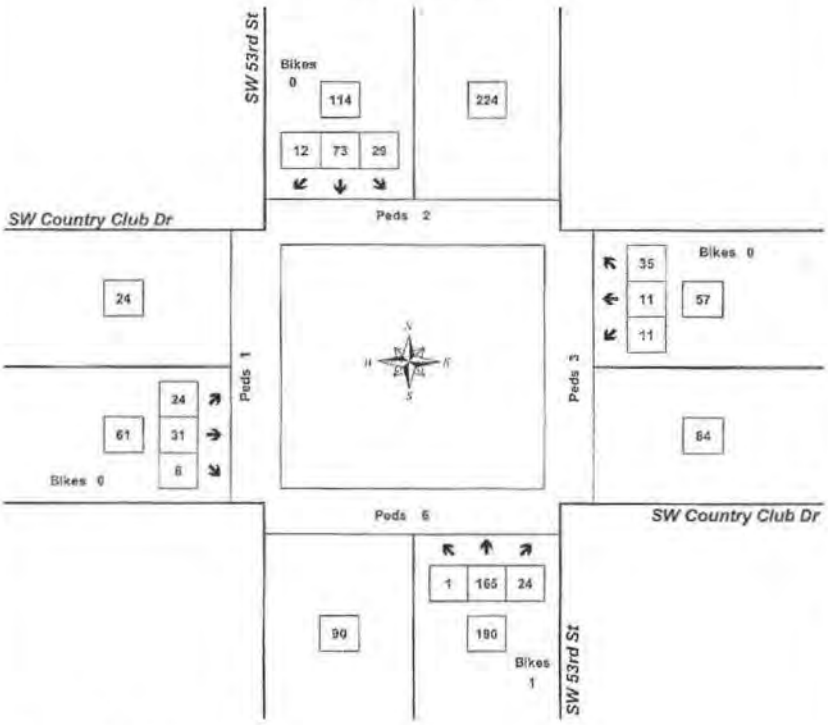
Peak Hour Summary

All Traffic Data
Services Inc.

Clay Carney
(503) 633-2746

SW 53rd St & SW Country Club Dr

7:15 AM to 8:15 AM
Thursday, September 18, 2008



Approach	PHF	HV%	Volume
EB	0.66	4.9%	61
WB	0.89	5.3%	57
NB	0.67	3.2%	190
SB	0.79	7.9%	114
Intersection	0.80	5.0%	422

Count Period: 7:00 AM to 9:00 AM

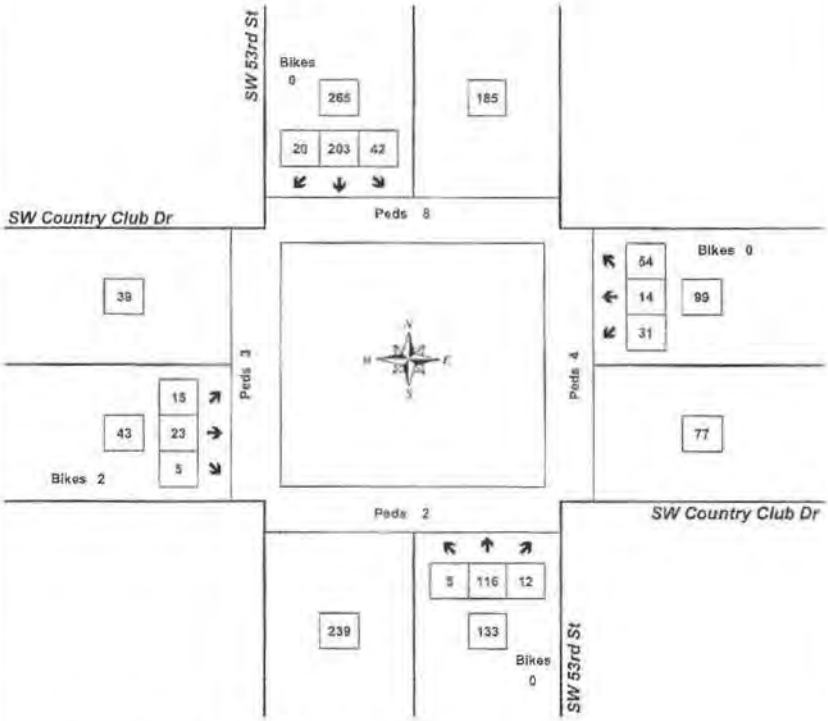
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 633-2740

SW 53rd St & SW Country Club Dr

4:40 PM to 5:40 PM
Wednesday, September 17, 2008



Approach	PHF	HV%	Volume
EB	0.77	2.3%	43
WB	0.71	1.0%	99
NB	0.81	1.5%	133
SB	0.74	3.4%	265
Intersection	0.85	2.4%	540

Count Period: 4:00 PM to 6:00 PM

All Traffic Data Services, Inc.
15105 SE 17th St.
Vancouver, WA. 98683
PH. 503-833-2740

Site Code: 1

SW 53rd St N-O SW Plymouth Dr

Start Time	17-Sep-08 Wed	NB	SB	Total
12:00 PM		*	*	*
12:15		*	*	*
12:30		*	*	*
12:45		*	*	*
01:00		*	*	*
01:15		*	*	*
01:30		*	*	*
01:45		*	*	*
02:00		*	*	*
02:15		*	*	*
02:30		*	*	*
02:45		*	*	*
03:00		*	*	*
03:15		*	*	*
03:30		*	*	*
03:45		25	47	72
04:00		24	46	70
04:15		39	44	83
04:30		23	48	71
04:45		33	46	79
05:00		45	66	111
05:15		25	80	105
05:30		36	56	92
05:45		23	51	74
06:00		29	39	68
06:15		26	37	63
06:30		31	31	62
06:45		19	27	46
07:00		23	30	53
07:15		16	28	44
07:30		19	20	39
07:45		20	18	38
08:00		12	17	29
08:15		8	26	34
08:30		10	16	26
08:45		18	22	40
09:00		5	19	24
09:15		6	15	21
09:30		4	6	10
09:45		7	7	14
10:00		4	7	11
10:15		0	5	5
10:30		2	7	9
10:45		1	3	4
11:00		2	0	2
11:15		2	0	2
11:30		4	2	6
11:45		0	5	5
Total		541	871	1412
Percent		38.3%	61.7%	
Peak		16:15	17:00	16:45
Vol.		140	253	387
P.H.F.		0.778	0.791	0.872

All Traffic Data Services, Inc.
15105 SE 17th St.
Vancouver, WA. 98683
PH. 503-833-2740

Site Code: 1

SW 53rd St N-O SW Plymouth Dr

Start Time	18-Sep-08 Thu	NB	SB	Total
12:00 AM		0	0	0
12:15		3	3	6
12:30		1	0	1
12:45		0	0	0
01:00		0	0	0
01:15		1	0	1
01:30		0	1	1
01:45		0	0	0
02:00		2	1	3
02:15		0	0	0
02:30		0	0	0
02:45		0	1	1
03:00		0	0	0
03:15		2	0	2
03:30		1	1	2
03:45		0	0	0
04:00		1	1	2
04:15		0	0	0
04:30		0	0	0
04:45		1	0	1
05:00		3	1	4
05:15		4	2	6
05:30		11	2	13
05:45		8	8	16
06:00		11	5	16
06:15		12	6	18
06:30		19	6	25
06:45		24	12	36
07:00		41	12	53
07:15		51	20	71
07:30		46	26	72
07:45		68	28	96
08:00		48	29	77
08:15		42	20	62
08:30		43	14	57
08:45		42	21	63
09:00		32	18	50
09:15		15	9	24
09:30		*	*	*
09:45		*	*	*
10:00		*	*	*
10:15		*	*	*
10:30		*	*	*
10:45		*	*	*
11:00		*	*	*
11:15		*	*	*
11:30		*	*	*
11:45		*	*	*
Total		532	247	779
Percent		68.3%	31.7%	
Peak		07:15	07:15	07:15
Vol.		213	103	316
P.H.F.		0.783	0.888	0.823
Grand Total		1073	1118	2191
Percent		49.0%	51.0%	
ADT	Not Calculated			

1e

TRIP GENERATION CALCULATIONS

Land Use: Single-Family Detached Housing
Land Use Code: 210
Variable: Dwelling Units
Variable Value: 63

AM PEAK HOUR

Trip Rate: 0.75

	Enter	Exit	Total
Directional Distribution	25%	75%	
Trip Ends	**12**	**35**	**47**

PM PEAK HOUR

Trip Rate: 1.01

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	**40**	**24**	**64**

WEEKDAY

Trip Rate: 9.57

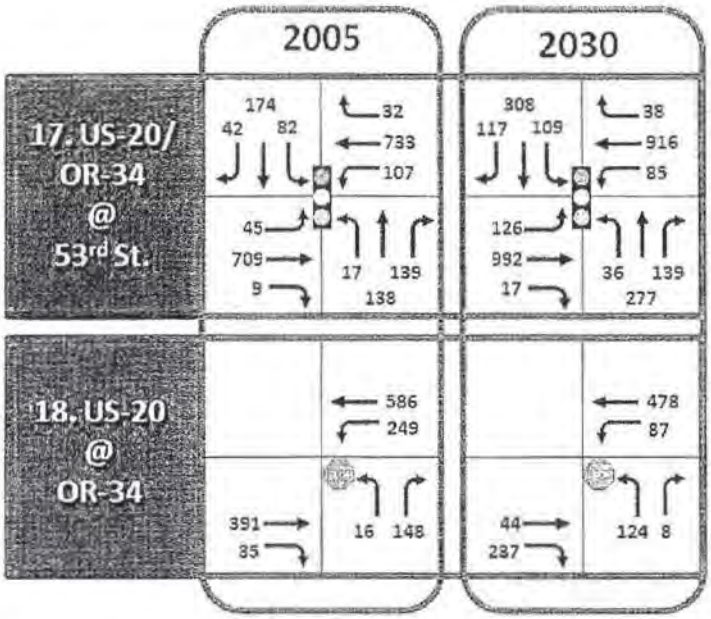
	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**301**	**301**	**602**

SATURDAY

Trip Rate: 10.10

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**318**	**318**	**636**

Source: TRIP GENERATION, Seventh Edition


2005
2030
17. US-20/ OR-34 @ 53rd St.
174
42
82
32
733
107
45
709
9
17
139
138
308
117
109
38
916
85
126
992
17
36
139
277
18. US-20 @ OR-34
586
249
391
35
16
148
478
87
44
237
124
8

Projected Future Traffic Volumes

Analyst: C Sumrain
Intersection: SW Country Club Drive & SW 53rd Street
Project: SW 49th Street Annexation
Time Period: PM Peak Hour
Scenario: 2030 Background
Date: 10/13/2008

Growth Rates
east/west street: 2.6%
north/south street: 1.5%
number of years: 22

TEV 540

Base traffic counts

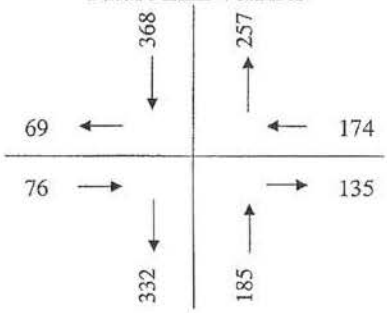
			265		185	
			20	203	42	
	39	15				54	99
		23				14	
	43	5				31	77
			5	116	12	
			239		133	

TEV 792

Future traffic counts

			364		257	
			30	267	68	
	69	21				85	172
		46				30	
	75	8				57	135
			9	151	22	
			332		182	

Future Link Volumes



Total Entering Volume: 802
Total Exiting Volume: 792

HCM Signalized Intersection Capacity Analysis
3: Highway 20/34 (Philomath Blvd) & SW 53rd Street 3/25/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1662	3098		1646	3167	1458	1662	1733	1385	1646	1716	1467
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1662	3098		1646	3167	1458	1662	1733	1385	1646	1716	1467
Volume (vph)	130	992	23	99	916	50	40	300	148	116	329	119
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	146	1115	26	111	1029	56	45	337	166	130	370	134
RTOR Reduction (vph)	0	2	0	0	0	14	0	0	63	0	0	46
Lane Group Flow (vph)	146	1139	0	111	1029	42	45	337	103	130	370	88
Confl. Peds. (#/hr)			2									1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	7%	3%	1%	5%	2%	0%	1%	6%	1%	2%	0%
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			6
Actuated Green, G (s)	12.1	42.3		9.5	39.7	39.7	3.9	28.1	28.1	11.2	35.4	35.4
Effective Green, g (s)	12.1	42.3		9.5	39.7	39.7	3.9	28.1	28.1	11.2	35.4	35.4
Actuated g/C Ratio	0.11	0.39		0.09	0.37	0.37	0.04	0.26	0.26	0.10	0.33	0.33
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	188	1224		146	1174	540	61	455	363	172	567	485
v/s Ratio Prot	c0.09	c0.37		0.07	0.32		0.03	c0.19		c0.08	0.22	
v/s Ratio Perm						0.03			0.07			0.06
v/c Ratio	0.78	0.93		0.76	0.88	0.08	0.74	0.74	0.28	0.76	0.65	0.18
Uniform Delay, d1	46.2	31.0		47.7	31.4	21.8	51.1	36.2	31.5	46.6	30.6	25.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	18.0	12.5		20.5	7.6	0.1	36.8	10.4	2.0	17.1	5.8	0.8
Delay (s)	64.2	43.5		68.2	39.0	21.9	87.9	46.5	33.4	63.7	36.4	26.3
Level of Service	E	D		E	D	C	F	D	C	E	D	C
Approach Delay (s)		45.9			40.9			46.0			39.8	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	43.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	107.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.235

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.348

HCM Signalized Intersection Capacity Analysis
3: Highway 20/34 (Philomath Blvd) & SW 53rd Street 3/25/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.95		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1630		1646	1667	1458	1662	1609		1646	1646	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.14	1.00		0.14	1.00	
Satd. Flow (perm)	1662	1630		1646	1667	1458	252	1609		242	1646	
Volume (vph)	130	992	23	99	916	50	40	300	148	116	329	119
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	146	1115	26	111	1029	56	45	337	166	130	370	134
RTOR Reduction (vph)	0	1	0	0	0	7	0	16	0	0	12	0
Lane Group Flow (vph)	146	1140	0	111	1029	49	45	487	0	130	492	0
Confl. Peds. (#/hr)			2									1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	7%	3%	1%	5%	2%	0%	1%	6%	1%	2%	0%
Turn Type	Prot			Prot		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8	2			6		
Actuated Green, G (s)	8.0	57.0		6.0	55.0	55.0	31.0	27.8		32.6	28.6	
Effective Green, g (s)	8.0	57.0		6.0	55.0	55.0	31.0	27.8		32.6	28.6	
Actuated g/C Ratio	0.07	0.51		0.05	0.50	0.50	0.28	0.25		0.29	0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	120	839		89	827	724	111	404		122	425	
v/s Ratio Prot	c0.09	c0.70		0.07	0.62		0.01	c0.30		c0.04	0.30	
v/s Ratio Perm						0.03	0.10			0.27		
v/c Ratio	1.22	1.36		1.25	1.24	0.07	0.41	1.21		1.07	1.16	
Uniform Delay, d1	51.4	26.9		52.4	27.9	14.5	32.9	41.5		55.6	41.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	151.7	169.2		175.8	120.1	0.0	2.4	114.0		100.1	94.4	
Delay (s)	203.1	196.1		228.2	148.0	14.6	35.3	155.5		155.7	135.5	
Level of Service	F	F		F	F	B	D	F		F	F	
Approach Delay (s)		196.9			149.2			145.6			139.7	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	163.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	111.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.236

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.349

HCM Signalized Intersection Capacity Analysis
3: Highway 20/34 (Philomath Blvd) & SW 53rd Street 3/25/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.95		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1630		1646	1667	1458	1662	1609		1646	1646	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	1630		1646	1667	1458	1662	1609		1646	1646	
Volume (vph)	130	992	23	99	916	50	40	300	148	116	329	119
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	146	1115	26	111	1029	56	45	337	166	130	370	134
RTOR Reduction (vph)	0	1	0	0	0	7	0	16	0	0	11	0
Lane Group Flow (vph)	146	1140	0	111	1029	49	45	487	0	130	493	0
Confl. Peds. (#/hr)			2									1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	7%	3%	1%	5%	2%	0%	1%	6%	1%	2%	0%
Turn Type	Prot			Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	7.0	54.0		6.0	53.0	53.0	3.2	28.8		6.0	31.6	
Effective Green, g (s)	7.0	54.0		6.0	53.0	53.0	3.2	28.8		6.0	31.6	
Actuated g/C Ratio	0.06	0.49		0.05	0.48	0.48	0.03	0.26		0.05	0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	105	794		89	797	697	48	418		89	469	
v/s Ratio Prot	c0.09	c0.70		0.07	0.62		0.03	c0.30		c0.08	c0.30	
v/s Ratio Perm						0.03						
v/c Ratio	1.39	1.44		1.25	1.29	0.07	0.94	1.16		1.46	1.05	
Uniform Delay, d1	51.9	28.4		52.4	28.9	15.6	53.7	41.0		52.4	39.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	223.7	203.6		175.8	140.3	0.0	105.3	97.2		258.7	55.4	
Delay (s)	275.6	232.0		228.2	169.2	15.6	159.0	138.2		311.1	95.0	
Level of Service	F	F		F	F	B	F	F		F	F	
Approach Delay (s)		236.9			167.5			139.9			139.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	182.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	111.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.237

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.350

HCM Signalized Intersection Capacity Analysis 2/13/2009
3: Highway 20/34 (Philomath Blvd) & SW 53rd Street 5:00 pm

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.95		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1632		1646	1667	1458	1662	1612		1646	1644	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	1632		1646	1667	1458	1662	1612		1646	1644	
Volume (vph)	130	992	17	85	916	50	36	293	139	116	317	119
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	146	1115	19	96	1029	56	40	329	156	130	356	134
RTOR Reduction (vph)	0	1	0	0	0	7	0	16	0	0	12	0
Lane Group Flow (vph)	146	1133	0	96	1029	49	40	469	0	130	478	0
Confl. Peds. (#/hr)			2									1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	7%	3%	1%	5%	2%	0%	1%	6%	1%	2%	0%
Turn Type	Prot			Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	7.0	55.0		5.0	53.0	53.0	3.2	27.8		7.0	31.6	
Effective Green, g (s)	7.0	55.0		5.0	53.0	53.0	3.2	27.8		7.0	31.6	
Actuated g/C Ratio	0.06	0.50		0.05	0.48	0.48	0.03	0.25		0.06	0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	105	810		74	797	697	48	404		104	469	
v/s Ratio Prot	c0.09	c0.69		0.06	0.62		0.02	c0.29		c0.08	c0.29	
v/s Ratio Perm						0.03						
v/c Ratio	1.39	1.40		1.30	1.29	0.07	0.83	1.16		1.25	1.02	
Uniform Delay, d1	51.9	27.9		52.9	28.9	15.6	53.5	41.5		51.9	39.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	223.7	187.2		203.5	140.3	0.0	70.4	96.8		169.8	46.4	
Delay (s)	275.6	215.1		256.4	169.2	15.6	123.9	138.3		221.7	86.0	
Level of Service	F	F		F	F	B	F	F		F	F	
Approach Delay (s)		222.0			169.0			137.2			114.5	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	173.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	109.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.238

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.351

HCM Signalized Intersection Capacity Analysis
3: Highway 20/34 (Philomath Blvd) & SW 53rd Street

2/13/2009
5:00 pm

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.95		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1630		1646	1667	1458	1662	1604		1646	1645	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	1630		1646	1667	1458	1662	1604		1646	1645	
Volume (vph)	126	992	23	99	916	38	40	284	148	109	320	117
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	142	1115	26	111	1029	43	45	319	166	122	360	131
RTOR Reduction (vph)	0	1	0	0	0	6	0	17	0	0	12	0
Lane Group Flow (vph)	142	1140	0	111	1029	37	45	468	0	122	479	0
Confl. Peds. (#/hr)			2									1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	7%	3%	1%	5%	2%	0%	1%	6%	1%	2%	0%
Turn Type	Prot			Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	7.0	55.0		6.0	54.0	54.0	3.2	27.8		6.0	30.6	
Effective Green, g (s)	7.0	55.0		6.0	54.0	54.0	3.2	27.8		6.0	30.6	
Actuated g/C Ratio	0.06	0.50		0.05	0.49	0.49	0.03	0.25		0.05	0.28	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	105	809		89	812	711	48	402		89	454	
v/s Ratio Prot	c0.09	c0.70		0.07	0.62		0.03	c0.29		c0.07	c0.29	
v/s Ratio Perm						0.03						
v/c Ratio	1.35	1.41		1.25	1.27	0.05	0.94	1.16		1.37	1.06	
Uniform Delay, d1	51.9	27.9		52.4	28.4	14.9	53.7	41.5		52.4	40.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	208.6	191.5		175.8	130.0	0.0	105.3	97.6		222.8	57.8	
Delay (s)	260.5	219.4		228.2	158.4	15.0	159.0	139.1		275.2	97.9	
Level of Service	F	F		F	F	B	F	F		F	F	
Approach Delay (s)		223.9			159.7			140.8			133.2	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	175.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.33		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	110.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.352

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.239

HCM Signalized Intersection Capacity Analysis 2/13/2009
3: Highway 20/34 (Philomath Blvd) & SW 53rd Street 5:00 pm

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.95		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1632		1646	1667	1458	1662	1607		1646	1643	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	1632		1646	1667	1458	1662	1607		1646	1643	
Volume (vph)	126	992	17	85	916	38	36	277	139	109	308	117
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	142	1115	19	96	1029	43	40	311	156	122	346	131
RTOR Reduction (vph)	0	0	0	0	0	6	0	16	0	0	12	0
Lane Group Flow (vph)	142	1134	0	96	1029	37	40	451	0	122	465	0
Confl. Peds. (#/hr)			2									1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	7%	3%	1%	5%	2%	0%	1%	6%	1%	2%	0%
Turn Type	Prot			Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	7.0	56.0		5.0	54.0	54.0	3.2	26.8		7.0	30.6	
Effective Green, g (s)	7.0	56.0		5.0	54.0	54.0	3.2	26.8		7.0	30.6	
Actuated g/C Ratio	0.06	0.51		0.05	0.49	0.49	0.03	0.24		0.06	0.28	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	105	825		74	812	711	48	389		104	454	
v/s Ratio Prot	c0.09	c0.69		0.06	0.62		0.02	c0.28		c0.07	c0.28	
v/s Ratio Perm						0.03						
v/c Ratio	1.35	1.37		1.30	1.27	0.05	0.83	1.16		1.17	1.02	
Uniform Delay, d1	51.9	27.4		52.9	28.4	14.9	53.5	42.0		51.9	40.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	208.6	175.9		203.5	130.0	0.0	70.4	96.8		142.2	48.4	
Delay (s)	260.5	203.3		256.4	158.4	15.0	123.9	138.8		194.1	88.5	
Level of Service	F	F		F	F	B	F	F		F	F	
Approach Delay (s)		209.7			161.2			137.6			110.0	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	166.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	107.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.353

HCM Signalized Intersection Capacity Analysis 2/13/2009
3: Highway 20/34 (Philomath Blvd) & SW 53rd Street 5:00 pm

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.92		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1633		1646	1667	1458	1662	1547		1646	1665	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	1633		1646	1667	1458	1662	1547		1646	1665	
Volume (vph)	45	709	9	107	733	32	17	138	139	82	174	42
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	51	797	10	120	824	36	19	155	156	92	196	47
RTOR Reduction (vph)	0	1	0	0	0	6	0	33	0	0	7	0
Lane Group Flow (vph)	51	806	0	120	824	30	19	278	0	92	236	0
Confl. Peds. (#/hr)			2									1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	7%	3%	1%	5%	2%	0%	1%	6%	1%	2%	0%
Turn Type	Prot			Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	4.0	55.0		9.0	60.0	60.0	1.6	25.4		7.0	30.8	
Effective Green, g (s)	4.0	55.0		9.0	60.0	60.0	1.6	25.4		7.0	30.8	
Actuated g/C Ratio	0.04	0.49		0.08	0.53	0.53	0.01	0.23		0.06	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	59	799		132	890	778	24	350		103	456	
v/s Ratio Prot	0.03	c0.49		c0.07	0.49		0.01	c0.18		c0.06	0.14	
v/s Ratio Perm						0.02						
v/c Ratio	0.86	1.01		0.91	0.93	0.04	0.79	0.80		0.89	0.52	
Uniform Delay, d1	53.9	28.7		51.3	24.1	12.5	55.2	41.1		52.3	34.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	70.2	34.2		51.0	15.1	0.0	94.5	16.9		55.8	4.1	
Delay (s)	124.1	62.9		102.3	39.3	12.5	149.8	58.0		108.1	38.7	
Level of Service	F	E		F	D	B	F	E		F	D	
Approach Delay (s)		66.5			46.0			63.3			57.7	
Approach LOS		E			D			E			E	

Intersection Summary

HCM Average Control Delay	56.9	HCM Level of Service	E
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	112.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.354

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT M.241

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	C Sumrain	Intersection	Country Club/53rd
Agency/Co.	Lancaster	Jurisdiction	Corvallis
Date Performed	9/26/2008	Analysis Year	Existing (2008)
Analysis Time Period	PM Peak		

Project Description	SW 49th Street Annexation - #08136
East/West Street: SW Country Club Drive	North/South Street: SW 53rd Street
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	5	116	12	42	203	20
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	5	136	14	49	238	23
Percent Heavy Vehicles	0	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	15	23	5	31	14	54
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	17	27	5	36	16	63
Percent Heavy Vehicles	0	4	0	0	7	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (veh/h)	5	49		115			49	
C (m) (veh/h)	1309	1421		596			437	
v/c	0.00	0.03		0.19			0.11	
95% queue length	0.01	0.11		0.71			0.38	
Control Delay (s/veh)	7.8	7.6		12.5			14.3	
LOS	A	A		B			B	
Approach Delay (s/veh)	--	--	12.5			14.3		
Approach LOS	--	--	B			B		

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49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.355

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	C Sumrain	Intersection	Country Club/53rd
Agency/Co.	Lancaster	Jurisdiction	Corvallis
Date Performed	1/28/2009	Analysis Year	Background (2030)
Analysis Time Period	PM Peak		

Project Description	SW 49th Street Annexation - #06136
East/West Street: SW Country Club Drive	North/South Street: SW 53rd Street
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	9	151	22	68	267	30
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	10	177	25	79	314	35
Percent Heavy Vehicles	0	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	21	46	8	57	30	85
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	24	54	9	67	35	99
Percent Heavy Vehicles	0	4	0	0	7	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (veh/h)	10	79		201			87	
C (m) (veh/h)	1215	1360		421			308	
v/c	0.01	0.06		0.48			0.28	
95% queue length	0.02	0.18		2.51			1.13	
Control Delay (s/veh)	8.0	7.8		21.1			21.2	
LOS	A	A		C			C	
Approach Delay (s/veh)	--	--	21.1			21.2		
Approach LOS	--	--	C			C		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	C Sumrain	Intersection	Country Club/53rd
Agency/Co.	Lancaster	Jurisdiction	Corvallis
Date Performed	1/28/2009	Analysis Year	Background + Site (2030)
Analysis Time Period	PM Peak		

Project Description	SW 49th Street Annexation - #08136
East/West Street: SW Country Club Drive	North/South Street: SW 53rd Street
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	10	169	22	71	296	30
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	11	198	25	83	348	35
Percent Heavy Vehicles	0	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	21	46	10	58	30	87
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	24	54	11	68	35	102
Percent Heavy Vehicles	0	4	0	0	7	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (veh/h)	11	83		205			89	
C (m) (veh/h)	1181	1337		385			282	
v/c	0.01	0.06		0.53			0.32	
95% queue length	0.03	0.20		3.01			1.31	
Control Delay (s/veh)	8.1	7.9		24.5			23.5	
LOS	A	A		C			C	
Approach Delay (s/veh)	--	--	24.5			23.5		
Approach LOS	--	--	C			C		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	C Sumrain	Intersection	Country Club/53rd
Agency/Co.	Lancaster	Jurisdiction	Corvallis
Date Performed	1/28/2009	Analysis Year	Background (2030)
Analysis Time Period	PM Peak		

Project Description	SW 49th Street Annexation - #08136 (w/ Cannon Applegate)
East/West Street: SW Country Club Drive	North/South Street: SW 53rd Street
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	9	156	22	69	270	31
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	10	183	25	81	317	36
Percent Heavy Vehicles	0	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	22	46	8	57	30	87
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	25	54	9	67	35	102
Percent Heavy Vehicles	0	4	0	0	7	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (veh/h)	10	81		204			88	
C (m) (veh/h)	1211	1353		416			300	
v/c	0.01	0.06		0.49			0.29	
95% queue length	0.02	0.19		2.63			1.19	
Control Delay (s/veh)	8.0	7.8		21.7			21.9	
LOS	A	A		C			C	
Approach Delay (s/veh)	--	--	21.7			21.9		
Approach LOS	--	--	C			C		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	C Sumrain	Intersection	Country Club/53rd
Agency/Co.	Lancaster	Jurisdiction	Corvallis
Date Performed	1/28/2009	Analysis Year	Background + Site (2030)
Analysis Time Period	PM Peak		

Project Description	SW 49th Street Annexation - #08136 (w/ Cannon Applegate)
East/West Street: SW Country Club Drive	North/South Street: SW 53rd Street
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	10	174	22	72	299	31
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	11	204	25	84	351	36
Percent Heavy Vehicles	0	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	22	46	10	58	30	89
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	25	54	11	68	35	104
Percent Heavy Vehicles	0	4	0	0	7	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (veh/h)	11	84		207			90	
C (m) (veh/h)	1177	1331		379			275	
v/c	0.01	0.06		0.55			0.33	
95% queue length	0.03	0.20		3.15			1.38	
Control Delay (s/veh)	8.1	7.9		25.4			24.3	
LOS	A	A		D			C	
Approach Delay (s/veh)	--	--	25.4			24.3		
Approach LOS	--	--	D			C		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	C Sumrain	Intersection	53rd/Site
Agency/Co.	Lancaster	Jurisdiction	Corvallis
Date Performed	1/28/2009	Analysis Year	Background + Site (2030)
Analysis Time Period	PM Peak		

Project Description	SW 49th Street Annexation - #08136
East/West Street: Site Access	North/South Street: SW 53rd Street
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		180	2	32	330	
Peak-Hour Factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87
Hourly Flow Rate, HFR (veh/h)	0	206	2	36	379	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				1		19
Peak-Hour Factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87
Hourly Flow Rate, HFR (veh/h)	0	0	0	1	0	21
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	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		36		22				
C (m) (veh/h)		1375		803				
v/c		0.03		0.03				
95% queue length		0.08		0.08				
Control Delay (s/veh)		7.7		9.6				
LOS		A		A				
Approach Delay (s/veh)	--	--	9.6					
Approach LOS	--	--	A					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	C Sumrain	Intersection	53rd/Site
Agency/Co.	Lancaster	Jurisdiction	Corvallis
Date Performed	1/28/2009	Analysis Year	Background + Site (2030)
Analysis Time Period	PM Peak		

Project Description	SW 49th Street Annexation - #08136 (w/ Cannon Applegate)
East/West Street: Site Access	North/South Street: SW 53rd Street
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		185	2	32	335	
Peak-Hour Factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87
Hourly Flow Rate, HFR (veh/h)	0	212	2	36	385	0
Percent Heavy Vehicles	0	–	–	0	–	–
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				1		19
Peak-Hour Factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87
Hourly Flow Rate, HFR (veh/h)	0	0	0	1	0	21
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	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		36		22				
C (m) (veh/h)		1368		795				
v/c		0.03		0.03				
95% queue length		0.08		0.09				
Control Delay (s/veh)		7.7		9.7				
LOS		A		A				
Approach Delay (s/veh)	–	–	9.7					
Approach LOS	–	–	A					

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49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.362

Letter from Benton County Public Works Department

PUBLIC WORKS DEPARTMENT
360 SW Avery Avenue
Corvallis, OR 97333-1192

(541) 766-6821
FAX (541) 766-6891
www.co.benton.or.us/pw/index.html

March 24, 2008

Matt Grassel
City of Corvallis Development Review
P.O. Box 1083
Corvallis, Oregon 97339-1083

RE: Annexation Proposal
North of Nash Avenue between 49th and 53rd Streets
T12S – R5W – Section 9CB – Tax Lots 600, 700 & 801
SW 53rd Street – County Road Number: 25271

Matt,

I was recently contacted by Trish Weber of Devco Engineering regarding the proposed annexation of the lots noted above (see enclosed aerial view). Ms. Weber inquired as whether Benton County would accept pre-payment for improvements to 53rd Street. Actually, the County would ***prefer*** prepayment in this circumstance. The County anticipates the eventual urbanization of the segment of 53rd Street between Country Club Drive and Nash Avenue. This project would be similar to the urbanization of 53rd Street between Technology Loop and Country Club Drive 2 years ago. Rather than perform improvements piecemeal and by half street, the County would prefer to establish a fund that would supplement a future Capital Improvement or MPO project.

Ms. Weber also inquired as to whether County ditches could be used as a discharge point for storm drain runoff. The County has no objection to this as long as the City's storm water discharge standards for water quality and quantity are met. The County will defer to the City's storm water standards, although we request that the design package and calculations be provided to our staff for review.

G:\Avery ProjMgmt\DEVELOPMENT REVIEW\53rd Street Annexation - DEVCO\Grassel-3-24-09.doc

Please be sure to provide the County with three sets of engineering drawings for review when design of the proposed subdivision reaches the 80% stage. The County will provide comments to the City of Corvallis to be incorporated into their comments to the engineer. I have enclosed a list of the requirements and documentation to be provided to our office prior to start of construction.

Please feel free to contact if there are questions or concerns.

Sincerely,

Gordon P. Kurtz
Associate Engineer

Encl

Cc: Patricia J. Weber, Devco Engineering, Inc.

G:\Avery ProjMgmt\DEVELOPMENT REVIEW\53rd Street Annexation - DEVCO\Grassel-3-24-09.doc

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.365

▪ Gazette Times
July 10, 2007

gazettetimes.com

CORVALLIS Gazette-Times

Print Page

Tuesday, July 10, 2007
Last modified Saturday, July 7, 2007 11:41 PM PDT

Community

Corvallis home prices top $300,000

By Kyle Odegard
Corvallis Gazette-Times

Anne Baker has a great job as a budget and accounting analyst for Benton County, but when she wanted to buy a home, she started looking across the Willamette River.

"I can't afford Corvallis. The house prices here are just astronomical," the 44-year-old said.

Baker ended up buying a brand new 1,400-square-foot house east of Interstate 5 in Albany. The price tag was $183,000 for three bedrooms, two and a half baths and a small but nice enough yard.

In Corvallis, the same money would have bought a zero-lot line home, Baker said. "That's what I could have afforded if I could have found something," she added.

The average home sales price in Corvallis surpassed $300,000 for the first time this year. For June, it had climbed to $311,000, said Lee Eckroth, a real estate broker for Town & Country Realty.

High home prices, however, have led to concerns that Corvallis is becoming something of an unofficial gated community, an incredible place that's unaffordable for many working families.

The average home sales price for Albany was $214,000, and Eckroth said the Linn County city has some of the best values in the Willamette Valley.

With inexpensive housing and proximity to highways, Albany is a hub for commuters. More than a quarter of Linn County's 45,000 workers go to jobs someplace else, according to a 2003 state study.

"That's quite a few people who are on the road," said Will Summers, an Oregon Employment Department work force analyst.

That's also a lot of people who believe they have a higher quality of life with a little drive each day, he added.

Location, location, location

One of the main reasons for the difference in home prices is the scarcity of land in Corvallis, Eckroth said.

"Albany has had a lot more residential developable land than Corvallis had." That leads to lower land prices and more homes available, which keeps costs down.

The high price of land spurs developers to build bigger homes to get a better return on investment, said Kenneth Edwards, a real estate broker and author who teaches classes at Linn-Benton Community College.

The average size of a Benton County home sold in 2007 is 1,910 square feet. In Linn County, the average is 1,467 square feet.

Corvallis also is seen as more desirable because it lies off the Interstate 5 corridor, is close to the hills and has Oregon State University and a strong downtown. The community promotes itself as creative and sustainable.

"What are the three most important factors in determining the value of a home? The answer: location, location, location," Edwards said.

But that location is out of reach for many.

"One of the most discouraging things I encountered while teaching home buying classes at LBCC was to encounter a young couple, both with jobs, who could not find a home they could afford in Corvallis," Edwards said.

City Council member Mike Beilstein has lamented the housing market in Corvallis. "Are we losing families and school-aged children because it's too expensive to live here? We're getting to be like San Francisco or something, where nobody can afford to live here."

He also was concerned about commuting as a sustainability and economic issue, with gas prices at about $3 per gallon.

"I would like to find solutions for that, such as more mass transit," Beilstein said.

Summers said that's likely to happen in the mid-Willamette Valley. For now, though, plenty of people are spending quality time with their cars, he added.

On the road again

Nearly 6,000 people from Linn County travel to jobs in Benton County every workday, and thousands also commute to Marion and Lane counties, according to the state study, which is based on the 2000 Census.

Despite the study's age, the numbers today would be similar, Summers said.

OSU, Hewlett-Packard, CH2M Hill and Samaritan Health Services remain strong regional employers.

But plenty of Benton County workers also are leaving for jobs in other areas, including 4,600 who travel to Linn County. The Oregon Employment Department doesn't know exactly where they are going.

Many of those commuters to Linn County are likely a different type of worker, since statistics were compiled during the school year, Summers said.

In the Corvallis area, "you've got nearly 20,000 people who, a good number of them might be seeking part-time work," he added.

Once the pizza joints and other eateries fill their ranks in Corvallis, the next logical step for many OSU students is to look for work in Albany.

More medium- and high-wage blue-collar jobs are being created in Albany as large businesses decide to locate there, such as the Lowe's and Target distribution centers.

Plenty of professionals likely are leaving Benton County for work elsewhere, as well.

Charlie Bruce of Corvallis works for the Oregon Department of Fish & Wildlife and car-pools to Salem each day, which takes him 50 minutes.

The group talks about high school sports scores, elections and other news, but never listens to the radio.

"Some people didn't want to listen to country-Western music or NPR, so we said, 'OK, forget the radio,'" Bruce said.

Bruce worked for the agency out of Adair Village for about 20 years, but then he was transferred to Portland in a "temporary" move six years ago.

Three years ago, that position switched to Salem.

His family has stayed in Corvallis because of its livability.

"We just had our roots here after many, many years. We sure didn't want to leave," Bruce said.

So he'll tough out the commute until he retires.

Kyle Odegard covers the city of Corvallis and Benton County government. He can be reached at 758-9523 or kyle.odegard@lee.net.

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Latta, Brian

From: Liz Frenkel [lizbobfrenkel@proaxis.com]
Sent: Tuesday, May 04, 2010 9:12 PM
To: Latta, Brian
Subject: Re: 49th St. Annexation

Just noting: this applicant HAS NOT held such a meeting. Two were scheduled but none actually occurred!
And, thanks for the response.
Liz

Liz Frenkel
4954 SW Hollyhock Circle
Corvallis, OR 97333
(541) 754-6790
****
----- Original Message -----
From: "Latta, Brian" <Brian.Latta@ci.corvallis.or.us>
To: "Liz Frenkel" <lizbobfrenkel@proaxis.com>
Sent: Tuesday, May 04, 2010 4:34 PM
Subject: RE: 49th St. Annexation

Liz,

The type of meeting that you are referring to is called a neighborhood meeting and is held by the applicant/developer. Although it is not required by the Land Development Code, the City encourages applicants/developers to hold such a meeting. I am not aware if the applicant/developer is going to hold one of these meeting before the hearing on June 2nd. In the past, I know that the applicant/developer has held this meeting before he has made application.

Please let me know if you have any other questions.

Thanks,
Brian Latta, Assistant Planner
City of Corvallis Planning Division
501 SW Madison Avenue
PO Box 1083
Corvallis, OR 97339-1083
541-766-6908 Ext. 5020

-----Original Message-----
From: Liz Frenkel [mailto:lizbobfrenkel@proaxis.com]
Sent: Tuesday, May 04, 2010 4:39 PM
To: Latta, Brian
Subject: 49th St. Annexation

This annexation came up several months ago and our neighborhood was invited to two "show & tell" evenings. Both werre cancelled. Has one been scheduled prior to the tentative hearing on June 2nd?

Liz

Liz Frenkel
4954 SW Hollyhock Circle
Corvallis, OR 97333
(541) 754-6790
****

660-012-0060

Plan and Land Use Regulation Amendments

(1) Where an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation would significantly affect an existing or planned transportation facility, the local government shall put in place measures as provided in section (2) of this rule to assure that allowed land uses are consistent with the identified function, capacity, and performance standards (e.g. level of service, volume to capacity ratio, etc.) of the facility. A plan or land use regulation amendment significantly affects a transportation facility if it would:

(a) Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);

(b) Change standards implementing a functional classification system; or

(c) As measured at the end of the planning period identified in the adopted transportation system plan:

(A) Allow land uses or levels of development that would result in types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;

(B) Reduce the performance of an existing or planned transportation facility below the minimum acceptable performance standard identified in the TSP or comprehensive plan; or

(C) Worsen the performance of an existing or planned transportation facility that is otherwise projected to perform below the minimum acceptable performance standard identified in the TSP or comprehensive plan.

(2) Where a local government determines that there would be a significant effect, compliance with section (1) shall be accomplished through one or a combination of the following:

(a) Adopting measures that demonstrate allowed land uses are consistent with the planned function, capacity, and performance standards of the transportation facility.

(b) Amending the TSP or comprehensive plan to provide transportation facilities, improvements or services adequate to support the proposed land uses consistent with the requirements of this division; such amendments shall include a funding plan or mechanism consistent with section (4) or include an amendment to the transportation finance plan so that the facility, improvement, or service will be provided by the end of the planning period.

(c) Altering land use designations, densities, or design requirements to reduce demand for automobile travel and meet travel needs through other modes.

(d) Amending the TSP to modify the planned function, capacity or performance standards of the transportation facility.

(e) Providing other measures as a condition of development or through a development agreement or similar funding method, including transportation system management measures, demand management or minor transportation improvements. Local governments shall as part of the amendment specify when measures or improvements provided pursuant to this subsection will be provided.

(3) Notwithstanding sections (1) and (2) of this rule, a local government may approve an amendment that would significantly affect an existing transportation facility without assuring that the allowed land uses are consistent with the function, capacity and performance standards of the facility where:

(a) The facility is already performing below the minimum acceptable performance standard identified in the TSP or comprehensive plan on the date the amendment application is submitted;

(b) In the absence of the amendment, planned transportation facilities, improvements and services as set forth in section (4) of this rule would not be adequate to achieve consistency with the identified function, capacity or performance standard for that facility by the end of the planning period identified in the adopted TSP;

(c) Development resulting from the amendment will, at a minimum, mitigate the impacts of the amendment in a manner that avoids further degradation to the performance of the facility by the time of the development through one or a combination of transportation improvements or measures;

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT O.1

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.370

(d) The amendment does not involve property located in an interchange area as defined in paragraph (4)(d)(C); and

(e) For affected state highways, ODOT provides a written statement that the proposed funding and timing for the identified mitigation improvements or measures are, at a minimum, sufficient to avoid further degradation to the performance of the affected state highway. However, if a local government provides the appropriate ODOT regional office with written notice of a proposed amendment in a manner that provides ODOT reasonable opportunity to submit a written statement into the record of the local government proceeding, and ODOT does not provide a written statement, then the local government may proceed with applying subsections (a) through (d) of this section.

(4) Determinations under sections (1)-(3) of this rule shall be coordinated with affected transportation facility and service providers and other affected local governments.

(a) In determining whether an amendment has a significant effect on an existing or planned transportation facility under subsection (1)(c) of this rule, local governments shall rely on existing transportation facilities and services and on the planned transportation facilities, improvements and services set forth in subsections (b) and (c) below.

(b) Outside of interstate interchange areas, the following are considered planned facilities, improvements and services:

(A) Transportation facilities, improvements or services that are funded for construction or implementation in the Statewide Transportation Improvement Program or a locally or regionally adopted transportation improvement program or capital improvement plan or program of a transportation service provider.

(B) Transportation facilities, improvements or services that are authorized in a local transportation system plan and for which a funding plan or mechanism is in place or approved. These include, but are not limited to, transportation facilities, improvements or services for which: transportation systems development charge revenues are being collected; a local improvement district or reimbursement district has been established or will be established prior to development; a development agreement has been adopted; or conditions of approval to fund the improvement have been adopted.

(C) Transportation facilities, improvements or services in a metropolitan planning organization (MPO) area that are part of the area's federally-approved, financially constrained regional transportation system plan.

(D) Improvements to state highways that are included as planned improvements in a regional or local transportation system plan or comprehensive plan when ODOT provides a written statement that the improvements are reasonably likely to be provided by the end of the planning period.

(E) Improvements to regional and local roads, streets or other transportation facilities or services that are included as planned improvements in a regional or local transportation system plan or comprehensive plan when the local government(s) or transportation service provider(s) responsible for the facility, improvement or service provides a written statement that the facility, improvement or service is reasonably likely to be provided by the end of the planning period.

(c) Within interstate interchange areas, the improvements included in (b)(A)-(C) are considered planned facilities, improvements and services, except where:

(A) ODOT provides a written statement that the proposed funding and timing of mitigation measures are sufficient to avoid a significant adverse impact on the Interstate Highway system, then local governments may also rely on the improvements identified in paragraphs (b)(D) and (E) of this section; or

(B) There is an adopted interchange area management plan, then local governments may also rely on the improvements identified in that plan and which are also identified in paragraphs (b)(D) and (E) of this section.

(d) As used in this section and section (3):

(A) Planned interchange means new interchanges and relocation of existing interchanges that are authorized in an adopted transportation system plan or comprehensive plan;

(B) Interstate highway means Interstates 5, 82, 84, 105, 205 and 405; and

(C) Interstate interchange area means:

(i) Property within one-half mile of an existing or planned interchange on an Interstate Highway as measured from the center point of the interchange; or

(ii) The interchange area as defined in the Interchange Area Management Plan adopted as an amendment to the Oregon Highway

Plan.

(e) For purposes of this section, a written statement provided pursuant to paragraphs (b)(D), (b)(E) or (c)(A) provided by ODOT, a local government or transportation facility provider, as appropriate, shall be conclusive in determining whether a transportation facility, improvement or service is a planned transportation facility, improvement or service. In the absence of a written statement, a local government can only rely upon planned transportation facilities, improvements and services identified in paragraphs (b)(A)-(C) to determine whether there is a significant effect that requires application of the remedies in section (2).

(5) The presence of a transportation facility or improvement shall not be a basis for an exception to allow residential, commercial, institutional or industrial development on rural lands under this division or OAR 660-004-0022 and 660-004-0028.

(6) In determining whether proposed land uses would affect or be consistent with planned transportation facilities as provided in 0060(1) and (2), local governments shall give full credit for potential reduction in vehicle trips for uses located in mixed-use, pedestrian-friendly centers, and neighborhoods as provided in (a)-(d) below;

(a) Absent adopted local standards or detailed information about the vehicle trip reduction benefits of mixed-use, pedestrian-friendly development, local governments shall assume that uses located within a mixed-use, pedestrian-friendly center, or neighborhood, will generate 10% fewer daily and peak hour trips than are specified in available published estimates, such as those provided by the Institute of Transportation Engineers (ITE) Trip Generation Manual that do not specifically account for the effects of mixed-use, pedestrian-friendly development. The 10% reduction allowed for by this section shall be available only if uses which rely solely on auto trips, such as gas stations, car washes, storage facilities, and motels are prohibited;

(b) Local governments shall use detailed or local information about the trip reduction benefits of mixed-use, pedestrian-friendly development where such information is available and presented to the local government. Local governments may, based on such information, allow reductions greater than the 10% reduction required in (a);

(c) Where a local government assumes or estimates lower vehicle trip generation as provided in (a) or (b) above, it shall assure through conditions of approval, site plans, or approval standards that subsequent development approvals support the development of a mixed-use, pedestrian-friendly center or neighborhood and provide for on-site bike and pedestrian connectivity and access to transit as provided for in 0045(3) and (4). The provision of on-site bike and pedestrian connectivity and access to transit may be accomplished through application of acknowledged ordinance provisions which comply with 0045(3) and (4) or through conditions of approval or findings adopted with the plan amendment that assure compliance with these rule requirements at the time of development approval; and

(d) The purpose of this section is to provide an incentive for the designation and implementation of pedestrian-friendly, mixed-use centers and neighborhoods by lowering the regulatory barriers to plan amendments which accomplish this type of development. The actual trip reduction benefits of mixed-use, pedestrian-friendly development will vary from case to case and may be somewhat higher or lower than presumed pursuant to (a) above. The Commission concludes that this assumption is warranted given general information about the expected effects of mixed-use, pedestrian-friendly development and its intent to encourage changes to plans and development patterns. Nothing in this section is intended to affect the application of provisions in local plans or ordinances which provide for the calculation or assessment of systems development charges or in preparing conformity determinations required under the federal Clean Air Act.

(7) Amendments to acknowledged comprehensive plans and land use regulations which meet all of the criteria listed in (a)-(c) below shall include an amendment to the comprehensive plan, transportation system plan the adoption of a local street plan, access management plan, future street plan or other binding local transportation plan to provide for on-site alignment of streets or accessways with existing and planned arterial, collector, and local streets surrounding the site as necessary to implement the requirements in Section 0020(2)(b) and Section 0045(3) of this division:

(a) The plan or land use regulation amendment results in designation of two or more acres of land for commercial use;

(b) The local government has not adopted a TSP or local street plan which complies with Section 0020(2)(b) or, in the Portland Metropolitan Area, has not complied with Metro's requirement for street connectivity as contained in Title 6, Section 3 of the Urban Growth Management Functional Plan; and

(c) The proposed amendment would significantly affect a transportation facility as provided in 0060(1).

(8) A "mixed-use, pedestrian-friendly center or neighborhood" for the purposes of this rule, means:

(a) Any one of the following:

(A) An existing central business district or downtown;

(B) An area designated as a central city, regional center, town center or main street in the Portland Metro 2040 Regional Growth Concept;

(C) An area designated in an acknowledged comprehensive plan as a transit oriented development or a pedestrian district; or

(D) An area designated as a special transportation area as provided for in the Oregon Highway Plan.

(b) An area other than those listed in (a) which includes or is planned to include the following characteristics:

(A) A concentration of a variety of land uses in a well-defined area, including the following:

(i) Medium to high density residential development (12 or more units per acre);

(ii) Offices or office buildings;

(iii) Retail stores and services;

(iv) Restaurants; and

(v) Public open space or private open space which is available for public use, such as a park or plaza.

(B) Generally include civic or cultural uses;

(C) A core commercial area where multi-story buildings are permitted;

(D) Buildings and building entrances oriented to streets;

(E) Street connections and crossings that make the center safe and conveniently accessible from adjacent areas;

(F) A network of streets and, where appropriate, accessways and major driveways that make it attractive and highly convenient for people to walk between uses within the center or neighborhood, including streets and major driveways within the center with wide sidewalks and other features, including pedestrian-oriented street crossings, street trees, pedestrian-scale lighting and on-street parking;

(G) One or more transit stops (in urban areas with fixed route transit service); and

(H) Limit or do not allow low-intensity or land extensive uses, such as most industrial uses, automobile sales and services, and drive-through services.

Stat. Auth.: ORS 183 & 197.040
Stats. Implemented: ORS 195.025, 197.040, 197.230, 197.245, 197.610 - 197.625, 197.628 - 197.646, 197.712, 197.717 & 197.732
Hist.: LCDC 1-1991, f. & cert. ef. 5-8-91; LCDD 6-1998, f. & cert. ef. 10-30-98; LCDD 6-1999, f. & cert. ef. 8-6-99; LCDD 3-2005, f. & cert. ef. 4-11-05

49th Street Annexation
(ANN10-0002 ZDC10-0002 PLD10-0006)
ATTACHMENT O.4

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit III.373

Latta, Brian

From: DETAR John G [John.G.DETAR@odot.state.or.us]
Sent: Friday, October 31, 2008 4:07 PM
To: Latta, Brian
Subject: RE: Annexation routing

Thanks for the reminder Brian.

As I stated in the email to Kevin, ODOT will be releasing a report in the next week that establishes the operating conditions at signalized intersections along US-20, including 15th, 35th, Technology Loop and 53rd Street intersections at US-20. US-20 is a Statewide Freight Route Highway. Inside an MPO, the mobility standard for such a highway is a volume/capacity ratio of 0.80. In 2005, the report will show that US-20/15th was operating at a V/C ratio of 0.95; US-20/35th Street at a V/C ratio of 0.86; US-20/Technology Loop at 0.97, and US-20/53rd Street at 0.94. The conclusion from this is that these intersections already are operating at conditions worse than the applicable Oregon Highway Plan mobility standard.

Changes in land use regulations are subject to the provisions of the TPR (OAR660-012-0060) if there is a significant affect, regardless of their consistency with the comprehensive plan. In this circumstance, OAR 660-012-0060(1)(c)(C) becomes the measure of "significant affect." If the development would worsen the performance of the highway as measured at the end of the planning period, there is a significant affect. Even a handful of vehicles at any of these intersections could worsen the performance of the highway. The MPO plan does not include modernization of US-20 as a part of the financially-constrained plan, so it will not be possible to assume that a multi-lane highway is a planned facility, even though it is called for in the city's TSP.

The information provided so far leads me to the conclusion that the TPR will be applicable. The three tax lots and 10.48 acres appear to have current zoning allowing one dwelling unit per 5-acres. With the bonus parcel provision, perhaps as many as six dwellings could be provided on the property using the current zoning. The development proposal would provide 53 dwelling unit based upon the city zoning. ODOT will likely request that a Transportation Impact Analysis (TIA) be performed for the land use change to assess the impacts of the action on US-20. ODOT will work with the City of Corvallis to determine an appropriate scope of work and study area for the development.

It is certainly possible to proceed with the annexation, provided the property is demonstrated to be consistent before the zoning is changed, or interim zoning of some sort is adopted so that no change in the traffic volumes from the current zoning would result. This could be done by establishing a property-specific development requirement dealing with TPR consistency. This has been done elsewhere, but it is not a recommended practice by either the Oregon Department of Land Conservation and Development or ODOT.

I hope this information helps the City determine appropriate steps forward in your review. Please give me some prospective meeting times so that we can get together to discuss the TIA scope of work.

Please include this information into the public hearing record for the land use action.

John G. deTar

Senior Region Planner, ODOT Region 2
3700 SW Philomath Blvd., Corvallis, OR 97333
541.757.4159

From: Latta, Brian [mailto:Brian.Latta@ci.corvallis.or.us]
Sent: Wednesday, October 22, 2008 9:57 AM
To: DETAR John G
Cc: Reese, Ted
Subject: Annexation routing

John,

I apologize for the late notice on this. An annexation request has been submitted to the City of Corvallis for property between SW 49th and SW 53rd Streets. Kevin Young brought to my attention that the annexation may be subject to the Transportation Planning Rule. Since that is the case, I am routing this application to you. The annexation will require a Zoning District Change to assign a city zone to the property. The applicant proposes to have the property zoned RS-6, which is a low density residential zone within the City of Corvallis. That zoning is consistent with the site's Low Density Residential Comprehensive Plan designation as well, which is the basis for the City's adopted Transportation Plan. The applicant will be required to address compliance with the TPR as part of their application, but we don't expect the trips generated to constitute a "significant impact" as defined by the TPR. The applicant has not yet submitted a traffic impact analysis, but one will be required prior to our writing a staff report.

Two links are provided below. One is to the application and narrative, and the other is to the plans. The general land use plan is conceptual only. A specific development proposal for the site would be subject to a future land use approval, through the subdivision and possibly other land use processes.

http://archive.ci.corvallis.or.us/Browse.aspx?startid=238793

http://archive.ci.corvallis.or.us/Browse.aspx?startid=238798

Please let me know if you have any questions or concerns with the proposal. You can contact me by email or telephone at 766-6908.

Thank you,
Brian Latta, Assistant Planner
City of Corvallis Planning Division
501 SW Madison Avenue
PO Box 1083
Corvallis, OR 97339-1083
541-766-6908 Ext. 5020

07-419

Oregon
Theodore R. Kulongoski, Governor

Department of Transportation
Corvallis Office
3700 SW Philomath Blvd.
Corvallis, OR 97333-1147
Telephone 541.757.4211
Fax 541.757.4290

May 29, 2009

Kevin Young, Senior Planner
Corvallis Community Development Department
Corvallis City Hall
P. O. Box 1083
Corvallis, OR 97339-1083

Subject: Cannon-Applegate Annexation and Rezone (ANN-09-00001 and ZDC-09-00002) and South 49th Street Annexation and Rezone (ANN-09-00002; ZDC-09-00001)

Dear Mr. Young:

Thank you for providing ODOT with the notice of these land use actions and for the application materials. Your undated letter notifying ODOT that the City of Corvallis has decided to apply OAR 660-012-0060(3) was received May 18, 2009. The time frame specified in your letter did not provide ODOT with a reasonable amount of time to reply, so ODOT is providing this letter into the public hearing record before the Planning Commission's hearing. As a participant in the public hearing, ODOT should be notified of any delays or continuances in the public hearing. ODOT also should be entitled to a copy of the land use decision in this matter when one occurs.

ODOT's May 15, 2009 letter establishes that OAR 660-012-0060 applies to this annexation and change in zoning because there would be a significant affect, as that term is used in OAR 660-012-0060, at the US-20/53rd Street Intersection. It also states that the intersection is already performing at conditions that are worse than the applicable mobility standard. The applicant's revised TIA dated April 28, 2009, states that construction of a northbound right-turn lane at the intersection would be sufficient mitigation to avoid further degradation. ODOT agrees this mitigation would be sufficient for the proposed changes.

OAR 660-012-0060(3)(e) calls for ODOT to consider whether the proposed funding and timing of mitigation improvements are sufficient to avoid further degradation to the performance of the state highway. The applicant proposes to provide funding, but this funding is described as a proportionate share of the total funding needed to provide the right-turn lane. In other words, funding from the development would not be adequate to construct the mitigation. ODOT funding is not reasonably likely to be provided by the time of development or within the planning horizon. ODOT's May 15, 2009 letter identifies that other funding could be used to provide the needed mitigation or to supplement the funding proposed by the applicant, but there has been no

commitment of these other funds. ODOT therefore cannot conclude that the mitigation needed to avoid further degradation of the US-20/53rd Street intersection will be constructed by the time of development.

Please contact me if you have any questions about this letter. If available funding for the mitigation changes, please notify ODOT.

Yours truly,

John G. deTar
Senior Region Planner

Electronic copies provided to:

Gerry Juster, ODOT
Erik Havig, ODOT
Ed Moore, DLCD
Ali Bonakdar, CAMPO
Kathy Lincoln, DOJ

Lyle Hutchins, DEVCO Engineering
Todd Mobley, Lancaster Engineering
Jim Boeder, applicant
Steve Rogers, Corvallis Public Works
Roger Irvin, Benton County Public Works

DEVCO engineering inc. ■ 245 NE Conifer P.O. Box 1211 Corvallis, OR 97339 (541) 757-8991 Fax: (541) 757-9885

RECEIVED
JUN 14 2010
TIME 2:30 pm
CITY RECORDER'S OFFICE

RECEIVED
JUN 14 2010
2:28 pm
Community Development
Planning Division

June 14, 2010

Ms. Kathy Louie
City Recorder
Corvallis City Manager's Office
501 SW Madison Avenue
Corvallis, OR 97333

SUBJECT: Appeal of 49th Street Annexation (ANN10-00002; ZDC10-00002; PLD10-00006)

Dear Ms. Louie:

One behalf of the applicant, we wish to appeal the Planning Commission's June 2nd decision on the 49th Street Annexation project referenced above. As a participant in the Planning Commission public hearing, I am an affected party with standing.

The grounds for this appeal are as follows:

The Planning Commission found the project failed to provide a Conceptual Development Plan of sufficient detail for them to positively evaluate the proposal based on applicable LDC criteria.

Per LDC Section 2.5.30 – General Provisions, an applicant may request approval of a Conceptual Development Plan in accordance with Section 2.5.40 and later apply for a Detailed Development Plan. The application requirements for a Conceptual Development Plan to be reviewed are outlined in Section 2.5.40.01. However, per that LDC Section, "When the Director deems any requirement below unnecessary for proper evaluation of a proposed application, it may be waived." As the City Staff report deemed the application to be complete, the Conceptual Development Plan contained sufficient information for proper evaluation. The Planning Commission review of the application is to evaluate the Conceptual Development Plan against the review criteria outlined in Section 2.5.40.04, not to attempt to determine whether it contains sufficient information to perform that evaluation. That decision is made by the Director, and in this case the application was deemed satisfactory.

Enclosed with this letter is the $240 appeal fee. If you have any questions, please do not hesitate to call.

Sincerely,

Lyle E. Hutchens
Project Manager

08-442 appeal of planning commission decision.doc

cc: Jim Boeder, 49th Street Annexation Partners

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit IV.1

RECEIVED

JUN 29 2010

Community Development
Planning Division

June 29, 2010

Mr. Kevin Young
Planning Division Manager
City of Corvallis
501 SW Madison Ave.
Corvallis, OR 97330

SUBJECT: Appeal of 49th Street Annexation (ANN10-00002; ZDC10-00002; PLD10-00006).

Dear Kevin,

We would like to extend our appeal period to meet the May 2011 election deadline. We have encountered an issue that requires more time; and it appears bringing the appeal to Council for a July 6 hearing would be impractical.

In the meantime, we will schedule with City Planning in order to better prepare the appeal in a timely manner for a future Council hearing.

Please let me know if there is any further information you need from me at this time.

Sincerely,

Jim Boeder

Jim Boeder, Manager
49th Street Annexation Partners
2022 SW 49th St.
Corvallis, OR 97330
541.754.9826

49th Street Annexation

An Application for
An Annexation and Zone Change

Submitted to:

CORVALLIS
ENHANCING COMMUNITY LIVABILITY

The City of Corvallis
501 SW Madison Avenue
Corvallis, Oregon 97333

Submitted by:
49th Street Annexation Partners
2022 SW 45th Street
Corvallis, Oregon 97333

February 8, 2013

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.1

TABLE OF CONTENTS

Narrative

Introduction

Annexation

Zone Change

Graphics

Attachment "A" ..... Vicinity & Public Notice Map

Attachment "B" ..... Existing Zoning Designations

Attachment "C" ..... Comprehensive Plan Designations

Attachment "D" ..... Surrounding Uses

Attachment "E" ..... Natural Features - Significant Vegetation

Attachment "F" ..... Natural Features - Protected Riparian & Wetlands

Attachment "G" ..... Natural Features - 100 Year Flood Protection Area

Attachment "H" ..... Natural Features - Steep Slopes

Attachment "I" ..... Natural Features - Landslides

Attachment "K" ..... General Land Use/Conceptual Development Plan

Appendix

- ..... Franchise Utility Confirmations
- ..... Legal Description of Property
- ..... Tax Assessor's Map
- ..... Waterline, Sanitary Sewer, and Stormwater Calculations
- ..... Traffic Impact Study Review
- ..... Traffic Impact Study
- ..... Letter from Benton County Public Works Department
- ..... Summary of Amendments to the Transportation Planning Rule (TPR), LCDC
- ..... Letter from John deTar, ODOT
- ..... Letter to Valerie Grigg Devis, ODOT
- ..... Corvallis Gazette-Times Articles, Editorials, Letters
- ..... Representative Dwellings: Renderings & Floor Plans

49th Street Annexation
February 8, 2013

Narrative

- Introduction
- Annexation
- Zone Change

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.3

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.4

Introduction

INTRODUCTION

Original Application: Annexation, Zone Change, Conceptual and Detailed Development

In April, 2010 the 49th St. Annexation Partners (Applicants) submitted an application to the City of Corvallis for Annexation, Zone Change, and Conceptual and Detailed Development (ANN 10-00002, ZDC 10-00002, PLD 10-00006) for their properties in southwest Corvallis. The Applicants each own ~5 acres, and are partnering to bring their three parcels totaling 10.48 acres into the city for future residential development.

Traffic Impact Study

As required by the City, a Traffic Impact Study (TIS) was conducted by Applicants in March 2009. The TIS went above and beyond the City's requirements, to address impacts to State transportation facilities at the 53rd St. and Philomath Blvd. intersection, as required by the Oregon Administrative Rules (OAR) existing at the time.

ODOT Conditions Annexation

At the time of the April, 2010 annexation application submission, the State of Oregon's Transportation Planning Rule (TPR; OAR 660-012-0060) required traffic studies of, and assurance of mitigation for, development-related traffic impacts to the 53rd St. and Highway 20 intersection.

The Oregon Department of Transportation (ODOT) considered/considers the 53rd St. and Philomath Blvd. intersection "failing" with current traffic volumes—due, in large part, to ODOT's recent re-designation of Highway 20 as a "Freight Route and Truck Route." According to ODOT at the time, any additional traffic to that intersection from development would then be responsible for mitigating proportionally for the development's share of its impacts. And the TPR, as interpreted by ODOT, required that any development applying for a zone change, and impacting State transportation facilities determine the impacts (traffic study) and mitigate for those impacts.

Because any annexation involves a zone change—from County to City zoning—the 49th St. annexation was in the unique position of being the first annexation in Corvallis, as far as Applicants know, not abutting a state highway, to be required, at the time of annexation, to provide a financial guarantee to ODOT for mitigating projected impacts to affected State transportation facilities. And ODOT would need financial guarantee for mitigation, prior to annexation, in order to accept the annexation. (see attached letter from John deTar, ODOT Senior Region Planner).

Conceptual/Detailed Development Plan Addresses TPR and Satisfies ODOT

For a year, Applicants' representatives worked with the City and ODOT to address and satisfy ODOT's requirement for mitigation, pre-development. The Applicants would need to either pay/bond for, or mitigate, estimated impacts—prior to annexation—or provide financial to security to assure future mitigation post-annexation.

After several conversations among ODOT, City staff, and the Applicants' representatives, it was finally determined that if Applicants submitted a Conceptual/Detailed Development Plan along with the Annexation, ODOT would have the security it needed to assure mitigation post-annexation.

The Applicants had no prior interest in submitting a Development Plan in conjunction with the Annexation application, and the City had imposed no such requirement. The resulting Conceptual/Detailed Development Plan was initiated only as a necessary administrative instrument, agreed to by the ODOT representative, to secure financial commitment from the Applicants for impacts to the State's transportation system.

To ensure that the Conceptual/Detailed Development Plan could not be removed from the site at a future date, in order to assure that the TPR requirements would be satisfied with future development, a Public Improvement by Private Contractor (PIPC) project was proposed by the Applicants and agreed to by ODOT and the City. The public improvement commitment and completion, or bonding for, would make the Detailed Development Plan "effective", and thereby would provide the necessary legal commitment from property owners to ODOT officials for mitigation to the State's facilities. Without this mechanism—Conceptual/Detailed Development Plan and PIPC improvements bonding—ODOT and the City would not support the annexation.

The proposed public improvements consisted of extending the storm sewer running under 49th St., south of its current terminus in 49th St. north of the property. It was determined that those improvements would cost ~$135,000, and financial security/bonding for that amount would be required by the City prior to a City Council hearing.

Planning Commission Hearing

On June 2, 2010 the application was heard and denied by the Corvallis Planning Commission, primarily because the development plans required by ODOT for mitigation compliance and financial security—Conceptual/Detailed Development Plans—were judged to be lacking in sufficient detail, and allegedly may commit the City to strict adherence of those plans if the annexation were approved.

It was never Applicant's intention to apply for, focus on, nor seek permanent status for, the Conceptual/Detailed Development Plan. Rather, it was assumed that the Planning Commission, City Council and City staff would understand that the lack of specificity in the Development Plans reflected the Applicants' attempt to only meet the minimum

requirements imposed by ODOT—in order to secure ODOT's acceptance of the annexation—and that the Annexation would exist, for all intents and purposes, as one with a General Land Use Plan. Annexations are typically not required to present development plans, rather a General Land Use Plan is sufficient. This fact was pointed out by City staff at the Planning Commission hearing.

The Planning Commission also expressed the opinion that a public need for the annexation had not been sufficiently demonstrated.

Applicants then appealed the Planning Commission decision, and decided to postpone presenting the application and appeal to the City Council until such time as economic conditions for residential development improved.

TPR Amended in Favor of Local Governments

In January, 2012, the TPR (OAR 660-012-0060) was amended to no longer require a local government to address impacts of development on a State transportation facility, as long as it meets all of the following requirements:[1]

(a) The proposed zoning is consistent with the existing comprehensive plan map designation and the amendment does not change the comprehensive plan map;

(b) The local government has an acknowledged TSP and the proposed zoning is consistent with the TSP; and

(c) The area subject to the zoning map amendment was not exempted from this rule at the time of an urban growth boundary amendment as permitted in OAR 660-024-0020(1)(d), or the area was exempted from this rule but the local government has a subsequently acknowledged TSP amendment that accounted for urbanization of the area.

The subject property and the City of Corvallis meet all of the above requirements.

Appeal to City Council

In light of the amended TPR/OAR, and improving market conditions, Applicants are now bringing their Annexation and Zone Change application to the City Council, and are removing the previous ODOT-required burdens of Conceptual/Detailed Development Plan and PIPC improvements that were included in the application to the Planning Commission. In addition, the current Application includes further evidence that conclusively demonstrates the need for this type of housing in Corvallis.

[1] "*OAR 660-012-0060(9)*". (See Appendix: "*Summary of Amendments to the Transportation Planning Rule (TPR)*", LCDC)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.7

Annexation

ANNEXATION APPLICATION

A. Applicant's Request

Approval to send the voters a request to annex approximately 10.48 acres of privately owned land into the Corvallis City Limits. The private property proposed to be annexed is designated as Tax Lots 600, 700, and 801 on Map 12-5-09BC. The Comprehensive Plan Designation for the property is Low-Density Residential. The proposed Zoning is RS-6.

B. Site Description

The site consists of 3 tax lots, comprising 10.48 acres. The site is bordered on the east by City limits, on the north, south, and west by rural residential development. The site is gently sloped from the southern central area, generally to the north and east. The site contains no significant vegetation, wetlands, riparian corridors or floodplains.

A General Land Use Plan (GLUP) is included with this application (Attachment K). The GLUP provides an example of what a future subdivision could look like, and illustrates the mix and quantities of housing types required by the Corvallis Land Development Code (LDC) on the site. This Plan should not be construed as a conceptual or detailed development plan, rather an illustration of what is possible.

At Staff's request, based on Planning Commission comments and concerns[2], the GLUP now includes lot layouts, lot areas, building types, and density calculations. 61 dwelling units (du) are portrayed, at a density of 5.8 du/acre, 2 dwellings short of maximum density of 63 units. 47% of the units are attached dwellings on individual lots. The Plan includes a new neighborhood collector street along the northern property boundary, from SW 49th Street on the east to the eastern boundary of Tax Lot 500. This neighborhood collector is included in the Corvallis Transportation Master Plan.

The dwelling units are arranged in rectangular or square blocks with a continuous network of intersecting local streets serving them, along with the neighborhood collector street. A local street is included from SW 49th Street on the east to SW 53rd Street on the west, so emergency vehicles will have access to the site from two points.

C. Submission Requirements

2.6.60.03 - Application Requirements

When the Director deems any requirement below unnecessary for proper evaluation of a proposed application, it may be waived.

Prior to formal submittal of an application, the applicant is encouraged to participate in an informal pre-application conference with Community Development Department staff to discuss the proposal, the applicant's

[2] As mentioned in Introduction, the Planning Commission was reviewing a Conceptual/Detailed Development Plan along with the Annexation Application, which was a necessary addition to satisfy ODOT's requirements.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.9

requirements, and the applicant's materials developed in response to this Code's applicable requirements.

Applications shall be made on forms provided by the Director and shall be accompanied by:

a. Location and description of the subject property(ies), including all of the following, as relevant: address; tax assessor map and tax lot number; parcel number; written description of the boundaries of the proposal; and one set of assessor's maps of the subject site and surrounding area, with the subject site outlined in red;

b. Signed consent by the subject property's owner(s) and/or the owner's legal representative(s). If a legal representative is used as a signatory, written proof of ability to be a signatory shall be furnished to the City. The owner's name(s) and address(es), and the applicant's name, address, and signature shall also be provided;

c. Fifteen copies of the narrative, on 8.5 by 11 in. sheets, and 15 copies of graphics at an 8.5 by 11 in. size. The Director may request additional copies of the narrative and/or graphics for routing purposes, if needed. Related names/numbers must be legible on the graphics. The Director may also require some or all graphics at an 11 by 17 in. size if, for legibility purposes, such a size would be helpful;

d. Six sets of full-scaled black line or blueprint drawings of the graphic(s), with sheet size not to exceed 24 by 36 in. Where necessary, an overall plan with additional detail sheets may be submitted;

e. An electronic version of these documents (both text and graphics, as applicable) if an applicant has produced part or all of an application in an electronic format. The applicant shall coordinate with the City regarding compatible electronic formats, to the greatest extent practicable.

f. Boundary survey of the property to be annexed, certified by a registered surveyor; and a legal description of the property and associated rights-of-way to be Annexed that includes the road or street right-of-way adjacent to the property. Copies of the legal description shall be provided in both written and electronic format.

g. If the Annexation proposal includes areas planned for open space, general community use, or public or semi-public ownerships, the Annexation request shall be accompanied by a Comprehensive Map Amendment request consistent with Section 2.6.30.06.d and Chapter 2.1 – Comprehensive Plan Amendment Procedures.

Response: The application form (signed by the owners of the property) and appropriate copies of the graphics are being submitted with this Narrative.

h. Graphic Requirements Graphics shall include the following information where applicable:

1. Public Notice Map - Typically a street map at one in. = 800 ft. as per the City's public notice format;

Response: Attachment "A," Vicinity & Public Notice Map..

2. Zoning Map - Typically one in. = 400 ft., but up to one in. = 800 ft., depending on the size of the site, with a key that identifies each zone on the site and within 1,000 ft. of the site as per City format;

Response: Attachment "B," Existing Zoning Designations.

3. Comprehensive Plan Map - Typically one in. = 800 ft. with a key that identifies each and use designation on the site and within 1,000 ft. of the site as per City format;

Response: Attachment "C," Existing Comprehensive Plan Designations

4. Existing Land Use Map - Typically a topographic map that extends at least 1,000 ft. beyond the site. The map shall include building footprints and distinguish between single-family, multi-family, Commercial, and Industrial Uses, as well as other significant features such as roads, parks, schools, and Significant Natural Features identified by Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions;

Response: Attachment "D," Surrounding Uses.

5. Significant Natural Features Map(s) - Maps shall identify Significant Natural Features of the site, including but not limited to:

a) All information and preservation plans required by Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions, as applicable;

Response: Attachments "E" through "I". There are no significant natural features, landslide hazards, or floodplains on the site. The site does contain some steep slopes, which are indicated on Attachment "H".

b) All Jurisdictional Wetlands not already shown as part of "a," above. While not all Jurisdictional Wetlands are locally regulated by Chapter

4.13 - Riparian Corridor and Wetland Provisions, they need to be shown so that the City can route the application to the appropriate state and federal agencies for comment; and

Response: *Not applicable. There are no jurisdictional wetlands located on the site.*

c) Archaeological sites recorded by the State Historic Preservation Office (SHPO).

Response: *There are no recorded archeological sites on the applicant's property.*

6. Graphics for Annexation applications shall be drawn to scale and shall contain a sheet title, date, north arrow, and legend placed in the same location on each sheet and contain the following information:

a) <u>Vicinity Map</u> – A map of the area to be annexed that shows adjacent City and county territory at least 300 ft. beyond the boundaries of the Annexation site for Minor Annexations, and at least 1,200 ft. beyond the boundaries of the site for Major Annexations. The map shall include features such as existing streets and parcel boundaries; existing structures; driveways; utilities; Significant Natural Features regulated by Chapter 4.2 – Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 – Natural Hazard and Hillside Development Provisions, Chapter 4.12 – Significant Vegetation Protection Provisions; and Chapter 4.13 – Riparian Corridor and Wetland Provisions; Minimum Assured Development Area information from Chapter 4.11 - Minimum Assured Development Area (MADA), if applicable; and any other information that, in the Director's opinion, would assist in providing a context for the proposed Annexation. The map shall be 8.5- by 11-in. size for Minor Annexations, and both 8.5- by 11-in. and 24- by 36-in size for Major Annexations. The Director may require an area greater than 1,200 ft. beyond the site if such maps would be helpful, such as in cases where adjacent property is large and a view of the whole parcel would be helpful, or when existing infrastructure is far away from the site.

Response: *Attachment "A," Vicinity & Public Notice Map.*

b) <u>General Land Use Plan</u> – A map that illustrates the following, at a minimum, in sufficient detail to apply the review criteria in Section 2.6.30.06:

1) Proposed land use zones and densities;

2) Transportation corridors and functional classifications of streets within and surrounding the Annexation area;

3) Site utilities within and surrounding the Annexation area;

4) Significant Natural Features covered in 2.6.30.03.h.5, above;

5) Topographic contours at two-ft. intervals and identification of grades governed by Chapter 4.5 – Natural Hazard and Hillside Development Provisions; and

6) Information on land areas within at least 300 ft. of the subject property, indicating the relationship of the Annexation area to adjacent land uses. The Director may require an applicant's General Land Use Plan to include information on lands in excess of 300 ft. from an Annexation site, as in cases where an adjacent property is large and a view of the whole parcel would be helpful. The General Land Use Plan shall identify land uses, lot lines, existing buildings, driveways, transportation connections, utilities, and Significant Natural Features covered in "5" above. Illustrative cross-sections of potential streets shall also be provided. An aerial photo may be used as the base for the General Land Use Plan. Ortho photos are available at City Hall.

Response: Attachment "K," General Land Use Plan

c) The applicant may provide a more detailed General Land Use Plan and may consolidate the Annexation proposal with other applications such as a Tentative Subdivision Plat. However, a Detailed Development Plan is not required at the Annexation phase. If the applicant chooses to consolidate land use applications, all of the submittal requirements as stated in other chapters of this Code shall be met.

i. Narrative Requirements

A written statement shall include the following information:

1. Statement of availability, capacity, and status of existing water, sewer, storm drainage, transportation, park, and school facilities; and franchise utilities. The franchise utility companies shall provide a written statement confirming the ability to serve the site. The applicant shall obtain information from the affected service and utility providers using GIS base maps where available;

Response: SW 49th Street is a City neighborhood collector street that is currently improved to County Standards. SW 53rd Street is a County street that is currently improved to county standards, with bike lanes on both sides. All franchise utilities are available in both SW 49th Street and SW 53rd Street adjacent to the site. First level water service is available to the site in 49th Street. This is a dead end 8" main line. Sanitary sewer service is available in SW 49th Street to the east of the site and at the intersection of SW Country Club Road and SW 53rd Street. Storm drainage will be accomplished by constructing a new sewer main discharging to the west to the existing county

ditch in SW 53rd Street, and to the east by extending the existing storm sewer located in SW 49th Street south to the site. Sunset Park and Starker Arts Park are less than 1 mile from the Annexation site. Adams Elementary School, Linus Pauling Middle School, and Corvallis High School all have sufficient capacity to support the Annexation site at full urban development.

2. **Statement of increased demand for the facilities that will be generated by the proposed Annexation. The applicant shall refer to the criteria of the City's facility master plans, available via the City Engineer, to determine the methodology used to estimate public facility demands. Information related to an actual development proposal may be included for informational purposes. At minimum, the demand calculations associated with the full range of development potential (min. to max.) under proposed land uses designations shall be addressed in the analysis;**

Response:

Water

Portions of the annexed property are located in both the first and second level water service areas. The Corvallis Water Distribution System Plan calls for future second level distribution improvements in the vicinity of the property. These improvements include a 16" distribution line in 53rd Street, looped to a 24" distribution line in Nash Avenue and connecting to the existing 24" waterline at the intersection of 45th and Nash, plus a new second level pump station located in the vicinity of this property.

Water service to the site is proposed to include three components:

1) Constructing a 16-inch distribution line in SW 53rd Street consistent with the Water Master Plan improvements, beginning at the intersection of SW Country Club Road and SW 53rd Street and designing a loop connection between the existing 8-inch dead end line in SW 49th Street and the new proposed 16-inch distribution line in SW 53rd Street. These new lines sized as required to accommodate future Master Plan improvements.

2) Local distribution piping required to serve the site, with required isolation between first and second levels.

3) A second level pump station sited on the annexed property, with water supply coming from the first level distribution system described above. The pump station support systems would be constructed to accommodate future full build-out of the contiguous second level service area, with the actual pumps sized to accommodate incremental increases as the area develops.

Calculations along with existing flow and pressure information, supporting the premises above, are included in the Appendix of this application.

An alternate water service design could involve the extension of the 24" water line currently located in SW Nash Avenue, with the construction of a new water line in SW 49th Street. The above mentioned calculations support the viability of this alternate design, as well.

The peak hour demand for a single family residence is 1.4 gallons per minute, for the maximum possible 63 residences the total peak hour demand is 90 gallons per minute.

Sanitary Sewer

The annexed property is located in the "Country Club" basin. The City's Wastewater Utility Master Plan shows no backbone collection system improvements are needed in this basin until the population of the City exceeds 80,000. The Master Plan anticipates only the extension of local collection piping as needed to serve development in the Basin. The improvements anticipated in the Master Plan for the Brooklane Pump Station have been completed.

The peak daily unit flow rate per equivalent dwelling unit is 2.3 times 193 gallons per capita per day plus 4,000 gallons per acre per day. For the maximum units allowable for 10.49 acres, we assume 63 units. The total inflow rate would be 69,886 gallons per day. This represents approximately 19.3% of the peak flow capacity of a 8" pipe at minimum grade in the existing line in SW 49th Street. If we compare the area of this development to the area of the approximate basin discharging to the sanitary line in SW 49th Street, this percentage is approximately 18.9%. Proposed design incorporates discharging approximately 7.28 acres of this development to 49th Street with the remainder of the site to discharge to a new line in SW 53rd Street. This new line will be connected at the existing sanitary line in SW Country Club Road at the intersection of SW 53rd Street. This new line will be an 8-inch line constructed at minimum design grade.

Calculations for stormwater and sanitary sewer are included in the Appendix.

3. **Statement of additional facilities required to meet the increased demand and phasing of such facilities in accordance with projected demand. The applicant shall review adopted public facility plans, master plans, and capital improvement programs, and state whether additional facilities are planned or programmed for the Annexation area. Information related to an actual development proposal may be included for informational purposes. At minimum, the demand calculations associated with the full range of development potential (min. to max.) under proposed land uses designations shall be addressed in the analysis;**

Response:

Water

Portions of the annexed property are located in both the first and second level water service areas. The Corvallis Water Distribution System Plan calls for future second level distribution improvements in the vicinity of the property. These improvements include a 16" distribution line in 53rd Street, looped to a 24" distribution line in Nash Avenue and connecting to the existing 24" waterline at the intersection of 45th and Nash, plus a new second level pump station located in the vicinity of this property.

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Calculations along with existing flow and pressure information, supporting the premises above, are included in the Appendix of this application.

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4. **Traffic impact study, if required by the City Engineer. The City Engineer shall define the scope of the traffic impact study based on established procedures. Information related to an actual development proposal may be included for informational purposes. At minimum, the traffic calculations associated with the full range of development potential (min. to max.) under proposed land uses designations shall be addressed in the analysis. See also Section 4.0.60.a;**

Response: *A traffic impact study, completed in March 2009, is included with this application. It must be noted that the study addresses the since-amended ODOT Transportation Planning Rule (TPR), that previously required recognizing effects on State transportation facilities for any development involving a zone change. The current TPR allows ODOT approval of zone changes "without considering the effect on the transportation system"…"if a proposed zoning is consistent with the existing comprehensive plan map designation, and consistent with the acknowledged transportation system." (see in Appendix "Summary of Amendments to the Transportation Planning Rule (TPR), LCDC"). A traffic Engineer's review of, and comments on, the traffic impact study are supplied in the Appendix.*

5. **Statement outlining the method and source of financing required to provide additional facilities;**

Response: *The applicant assumes all financial responsibility for the provision of additional facilities.*

6. **Discussion demonstrating the public need for the Annexation. To provide consistency in reviewing Annexations, the applicant shall use the information sources and methodology described in Section 2.6.30.07; and**

Response: *We anticipate that in the next five years, the available, practicably serviceable quantity of all Low-Density Residential land in the City will be between 395.74 and 523.37 acres. The available, practicably serviceable quantity of RS-6 land will be between 157.46 and 194.90 acres. (see 2.6.30.06.a.2.a and 2.6.30.07.a below for explanation). While this may appear to be a sufficient amount of buildable Low-Density Residential land, in fact a majority, especially RS-6 land, is held privately by a very small number of owners, who prefer for reasons of their own to keep the land undeveloped. This is evidenced by the fact that, during the last housing boom that was experienced by the rest of the country, the quantity and rate of new housing stock in Corvallis remained relatively stable.*

The maximum available acreage figure assumes no barriers to full development on acreage constrained by natural features. This will obviously not be the case, but there are no figures available for developable portion of constrained lands, so we are assuming the most generous amount possible.

The stock of existing available houses and vacant lots for sale in Corvallis severely limit the choices available to potential purchasers, especially those in the income range of 50-90% of median income. The public would be greatly served by the addition of approximately 61 lots developed to RS-6 standards, as the smaller size and/or detached housing featured on many of these houses would serve to expand the market choices of an underserved segment.

7. **Comprehensive narrative of potential positive and negative effects of the proposed Annexation related to "a," through "c," below. For properties containing a Natural Resource and/or Natural Hazard Overlay, the narrative shall include a discussion of the applicable provisions of Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions.**

   a) **Issues of need, serviceability, economics, environmental, and related social effects of the proposed Annexation on the community as a whole;**

   b) **Issues of need, serviceability, economics, environmental, and related social effects of the proposed Annexation on the comprehensive neighborhood of which the Annexation will become a part;**

   c) **Proposed actions to mitigate negative effects/impacts.**

Response: *Annexation and subsequent development of this site will provide approximately 61 new dwelling units into the City, the need for which is amply demonstrated by the discussion in 2.6.30.07.b below. The site is readily serviceable by a major street with bicycle lanes, and a nearby multi-purpose*

path. Additional social amenities in the immediate vicinity include an existing public park. Economically, the subdivision will contain at least 46% attached housing units, which will be more affordable than detached housing units typically are, and is a housing type currently not well represented in the real estate market.

The City's adopted stormwater master plan and adopted standards for water quality mitigate any potential negative impacts from any changes in stormwater runoff onto adjacent properties.

The site contains no significant vegetation, wetlands, riparian corridors, floodplains, or landslide hazards. It does contain some steep slopes. All future development in the sloped areas would be performed in conformance with the provisions of LDC Chapter 4.5, which affords greater protections than currently exist. Therefore, annexation would have a positive impact on the only significant natural features located on the site.

The information provided by the applicant shall be used to assist in weighing the advantages and disadvantages of the proposed Annexation. The information shall address all aspects of the review criteria in Section 2.6.30.06, and the advantages and disadvantages shall be discussed in terms of those listed in review criteria and further detailed in Section 2.6.30.07.

2.6.30.06 – Review Criteria

Requests for Annexations shall be reviewed to ensure consistency with the purposes of this Chapter, applicable policies of the Comprehensive Plan, particularly Article 14, and other applicable policies and standards adopted by the City Council and State of Oregon

Annexations can only be referred to the voters when the proposed Annexation site is within the City's Urban Growth Boundary (UGB), and where the findings below are made. The criteria are highlighted in bold type.

a. The applicant has demonstrated a public need for the Annexation -

1. <u>Minor Annexations</u> – Factors to be considered in evaluating public need for Minor Annexations shall include, but are not limited to:

a) Reason for the Annexation;

b) Health issues;

c) Adequate demonstration that the Annexation provides for the logical urbanization of land;

d) Whether the site can be served with public facilities; and

e) Discussion of the applicable livability indicators and benchmarks as specified in Section 2.6.30.07.c.

Minor Annexation proposals need not include the calculations relative to a five-year supply of serviceable land that are required in "2," below for Major Annexations.

Response: *Not applicable.*

2. <u>Major Annexations</u> – Factors to be considered in evaluating public need for Major Annexations shall include, but are not limited to:

a) The five-year supply of serviceable land of the Annexation's land use category (single-family, multi-family, Commercial, or Industrial). Annexations of land designated as Public Institutional, Open Space-Conservation, or Open Space-Agriculture on the Comprehensive Plan Map are exempt from the criteria;

Response: *As no Council Policy actually exists, it is difficult to calculate a five-year supply of serviceable land based on any uniform standards. At this time, the City's 2011 Land Development Information Report (LDIR) lists the following quantities of vacant land zoned Low-Density Residential—both unconstrained and constrained by natural features.*

	Unconstrained	*Constrained*
- RS-3.5 ….. 67.52 acres		*33.85 acres*
- RS-5 ….. 119.48 "		*107.62 "*
- RS-6 …... 141.54 "		*53.36 "*

To calculate the minimum amount of land available, we assume the worst case scenario of 100% constraint & most generous application of MADA allowances for natural features constrained lands, and add that amount to the unconstrained acreage:

- 17,500 sf/acre of each of the 33.85 constrained acres of RS-3.5 land could be developed for 13.60 additional acres;

- 15,250 sf/acre of each of the 107.62 constrained acres of RS-5 land could be developed for 37.68 additional acres;

- 13,000 sf/acre of each of the 53.36 constrained acres of RS-6 land could be developed for 15.92 additional acres.

Therefore, the total minimum additional vacant, natural features constrained acreage available is 67.20 acres. Adding this to unconstrained acreage results in 395.74 acres minimum for all Low-Density Residential land. For RS-6 land, this results in a total of 157.46 acres minimum.

If we assume all constrained lands are 100% developable (not likely), there is between 395.74 and 523.37 acres of vacant Low-Density Residential land in the City of Corvallis. And, under a similar assumption, the quantity of vacant land zoned RS-6 is between 157.46 and 194.90 acres.

b) Availability of sufficient land of this type (single-family, multi-family, Commercial, or Industrial) to ensure choices in the market place. Annexations of land designated as Public Institutional, Open Space-Conservation, or Open Space-Agriculture on the Comprehensive Plan Map are exempt from the criteria; and

Response: *As discussed in 2.6.30.07.b below, the market in Corvallis is extremely limited in the choices it offers the people who work here, especially those who work at jobs that are not exceptionally high-paying. The annexation of this site would provide approximately 61 additional housing units. As these units would be developed to RS-6 standards, many of them will be on smaller lot sizes and/or be attached housing types, which will provide more choices to a market that is currently underserved.*

c) Compliance with adopted community-wide livability indicators and benchmarks relative to Major Annexations, as identified in Section 2.6.30.07.c.

Response: *See Table 2.6-1 below for a tabulation of the community-wide livability indicators and benchmarks which are met by this proposal.*

The City shall provide annually updated Citywide data for the applicant to use in calculating supply and demand for the major land use categories (single-family residential, multi-family residential, Commercial, and Industrial). Residential land supply and demand data shall be calculated using housing units. Commercial and Industrial land supply and demand data shall be calculated using acres.

The required data sources and methodologies for use in determining land supply and demand for Major Annexations, and the requirements for addressing community-wide benchmarks, are outlined below in Section 2.6.30.07.

b. The annexation provides more advantages to the community than disadvantages – To provide guidance to applicants examples of topics to address for the advantages versus disadvantages discussion are highlighted in Section 2.6.30.07.

1. <u>Minor Annexations</u> – Minor Annexation proposals shall include a general discussion regarding:

a) **Advantages and disadvantages of the Annexation. Examples include the existence of a Health Hazard situation or the existence of Significant Natural Features addressed in Chapter 4.2 – Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 – Natural Hazard and Hillside Development Provisions, Chapter 4.12 – Significant Vegetation Protection Provisions; and Chapter 4.13 – Riparian Corridor and Wetland Provisions. Also relevant is whether or not the Minimum Assured Development Area information from Chapter 4.11 - Minimum Assured Development Area (MADA) is applicable; and**

b) **Applicable livability indicators and benchmarks identified in Section 2.6.30.07.c.**

Response: *Not applicable.*

2. **<u>Major Annexations</u> – Major Annexation proposals shall include a discussion of advantages and disadvantages in terms of the methodologies outlined in Section 2.6.30.07. Applicants are required to document the methodologies and criteria used. The Director will review the applicant's arguments, but will not conduct independent research to verify or justify them.**

Response: *The following table outlines the advantages versus the disadvantages of annexing the property. As can be seen, the advantages strongly outweigh the disadvantages.*

Criterion	Advantages	Disadvantages	Neutral	Discussion
Annexation Density, Rural Development Potential	RS-6 development will exceed City's average, preclude development to County standards	No disadvantages to this.	No neutral aspects of this.	As the proposed net density for the proposed land use plan, excluding public right-of-way, is 5.8 dwelling units/acre, and the average net density of land within the City is 3.6 dwelling units/acre, development of this site to RS-6 standards will result in an slight increase to the City's average density, which results in a more compact & efficient use of land. Current county standards could allow development of aggregate mining operation or manufactured home park, both of which are less desirable.

Criterion	Advantages	Disadvantages	Neutral	Discussion
Planned Public Transportation Improvements	Builds new neighborhood collector street per City's Transportation Master Plan	No disadvantages to this.	No neutral aspects of this.	Addition of new neighborhood collector street extending from SW 49th Street to Tax Lot 500 will greatly enhance automobile, bicycle, and pedestrian connectivity in Southwest Corvallis.
Development Plans (no development plans submitted as part of this application)	No advantages to this.	No disadvantages to this.	No neutral aspects of this.	The strictness of the LDC and Transportation Master Plan means that any variation from the proposed General Land Use Plan would be modest.
Adjacency to City	No advantages to this.	Site is not adjacent to City limits for over 50% of its perimeter.	No neutral aspects of this.	Does not assist in the orderly expansion of the City boundary.
Distance to bicycle and pedestrian access, shopping, transit, major street, local school, fire station, parks, and/or downtown.	Location is close to major street, transit stop, and bike lanes. Also close to downtown and an existing park.	Location is not close to shopping, existing sidewalk, fire station, or elementary school.	Location is not far from existing multi-use path. Existing police force has close to optimal level of staffing for City's population.	See Table 2.6-1 for numerical tabulations of distances to existing facilities and amenities.

Criterion	Advantages	Disadvantages	Neutral	Discussion
Connectivity & extension of existing pedestrian facilities.	New sidewalk and proposed multi-use path abutting SW 53rd Street will assist other properties in UGB to develop.	No connectivity to existing sidewalk(s).	No neutral aspects of this.	When other properties in the City or the UGB wish to develop, the sidewalk facilities installed under this project will be available for connection.
Affordable Housing	46% of units will be attached, therefore likely to be affordable to low-income buyers.	No guarantee that attached units will be affordable.	54% of lots will be detached single-family, selling at market rate.	Attached housing tends to sell for less money than detached in Corvallis. Low-income families, defined as being at 80% of median-income or lower (<$54,400/year) will likely find attached units to be within their means, where detached is not.
Distance to sewer and water	Sanitary Sewer service is available adjacent to the site. This development will begin some of the second level water system improvements anticipated in the City's Water Master Plan.	Water service will need to be extended from the corner of SW 53rd Street and SW Country Club Drive. Storm Sewer service will need to be extended from north of the site	No neutral aspects of this.	Utilities are essentially readily available. The extension of the utilities will be done by the developer, and are anticipated in the respective utility system master plans.
Natural Features	The site contains steep slopes, which will be afforded greater protection if annexed.	No disadvantages to this.	No neutral aspects of this.	The site contains steep slopes, which will be protected under the provisions of LDC Chapter 4.5.
Public Improvements	All new development will be to current LDC standards.	No disadvantages to this.	No existing urban development on site at this time.	All urban development on site will be new with this proposal, and developed to current LDC standards.

Criterion	Advantages	Disadvantages	Neutral	Discussion
Intersection	All adjacent intersections will be upgraded as required to achieve LOS "D" or greater.	Development of site will increase traffic on SW 49th Street and SW 53rd Street.	No neutral aspects of this.	Increase in traffic will occur with development. However, developer will perform any necessary upgrades to nearby intersections as indicated by traffic study to be necessary to maintain acceptable level of service.

c. The site is capable of being served by urban services and facilities required with development – The developer is required to provide urban services and facilities to and through the site. At minimum, both Minor and Major Annexations shall include consideration of the following:

1. Sanitary sewer facilities consistent with the City's Sanitary Sewer Master Plan and Chapter 4.0 – Improvements Required with Development;

Response: Sanitary sewer facilities of sufficient capacity are available to the east of the Annexation site, in SW 49th Street, and at the corner of SW 53rd Street, and at the corner of SW 53rd, at SW Country Club Drive.

2. Water facilities consistent with the City's Water Master Plan, Chapter 4.0 – Improvements Required with Development, and fire flow and hydrant placement;

Response:

Water

Portions of the annexed property are located in both the first and second level water service areas. The Corvallis Water Distribution System Plan calls for future second level distribution improvements in the vicinity of the property. These improvements include a 16" distribution line in 53rd Street, looped to a 24" distribution line in Nash Avenue and connecting to the existing 24" waterline at the intersection of 45th and Nash, plus a new second level pump station located in the vicinity of this property.

Water service to the site is proposed to include three components:

1) Constructing a 16-inch distribution line in SW 53rd Street consistent with the Water Master Plan improvements, beginning at the intersection of SW Country Club Road and SW 53rd Street and designing a loop connection between the existing 8-inch dead end line in SW 49th Street and the new proposed 16-inch distribution line in SW 53rd Street. These new lines sized as required to accommodate future Master Plan improvements.

2) Local distribution piping required to serve the site, with required isolation between first and second levels.

3) A second level pump station sited on the annexed property, with water supply coming from the first level distribution system described above. The pump station support systems would be constructed to accommodate future full build-out of the contiguous second level service area, with the actual pumps sized to accommodate incremental increases as the area develops.

Calculations along with existing flow and pressure information, supporting the premises above, are included in the Appendix of this application.

An alternate water service design could involve the extension of the 24" water line currently located in SW Nash Avenue, with the construction of a new water line in SW 49th Street. The above mentioned calculations support the viability of this alternate design, as well.

The peak hour demand for a single family residence is 1.4 gallons per minute, for the maximum possible 63 residences the total peak hour demand is 90 gallons per minute.

3. **Storm drainage facilities and drainageway corridors consistent with the City's Stormwater Master Plan, Chapter 4.0 – Improvements Required with Development, Chapter 4.5 – Natural Hazard and Hillside Development Provisions, and Chapter 4.13 – Riparian Corridor and Wetland Provisions;**

Response: *Storm drainage will be accomplished by constructing a new storm sewer main discharging to the west to the existing county ditch in SW 53rd Street, and to the east by extending the existing storm sewer located in SW 49th Street south to the site. Any lot where storm drainage cannot gravity feed to a weephole in the curb will be provided with either a private storm line that will drain into the public system or individual pumps which will pump the stormwater up to the public system.*

4. **Transportation facilities consistent with the City's Transportation Plan and Chapter 4.0 – Improvements Required with Development; and**

Response: *Full-street improvements are required for both SW 49th Street and SW 53rd Street. However, neither of these streets have sufficient right-of-way available at this time to accommodate the full planter strip and sidewalks required on the opposite side of the street from the site. Therefore, half-street improvements, including curb and gutter on both sides of SW 49th Street, will be installed with the development of the annexation site. A new neighborhood collector street will be constructed from SW 49th Street to Tax Lot 500, per the City's Transportation Master Plan. The applicant will provide pre-payment to Benton County as required for future half-street developments for SW 53rd Street. Please see accompanying letter from Benton County Public Works affirming that this is the appropriate plan of action for this location.*

5. **Park facilities consistent with the City's Parks Master Plan.**

Response: *Sunset Park and Starker Arts Park are located approximately ¾ of a mile from the annexation site.*

d. **If the Annexation proposal includes areas planned for open space, general community use, or public or semi-public ownerships, the Annexation request shall be accompanied by a Comprehensive Plan Map Amendment as outlined in "1," and "2," below –**

Response: *Not applicable.*

e. **Compatibility – The application shall demonstrate compatibility in the following areas, as applicable:**

1. **Basic site design (the organization of Uses on a site and the Uses' relationships to neighboring properties);**

Response: *The site that is proposed to be annexed is to be zoned RS-6, per LDC Section 3.3.10, and will be developed according to the requirements of LDC Chapter 3.3. As it is larger than 10 acres, it will be developed with a mix of housing types per LDC Section 4.9.80.a.3, that is: at least three housing or building types, with each building or housing type being at least 20 percent of the total units. As all neighboring properties are also designated as Low-Density Residential and are presently zoned RS-6 or will be zoned RS-6 when annexed into the City, this development will be compatible with neighboring properties.*

2. **Visual elements (scale, structural design and form, materials, etc.);**

Response: *The site is proposed to be developed to RS-6 development standards, including all applicable PODS standards. The nearby urban subdivision, Stoneybrook, is developed to RS-6 and RS-9 standards, so the RS-6 development standards will be compatible with that existing neighborhood. The immediate adjacent properties are all built to urban residential densities, so Low-Density Residential development will be compatible with them as well. All buildings will be built within the maximum height allowances, and attached housing units are limited to three dwelling units each. While the structural design, form, and materials will be ultimately decided by the builder(s) of each lot, adherence to the PODS standards will require a certain minimum standard of attention to streetscape visuals.*

3. **Noise attenuation;**

Response: *No special measures have been considered for noise attenuation, nor will this project create any noises greater than nor atypical of the surrounding residential and street uses.*

4. **Odors and emissions;**

Response: *Odors on the site are anticipated to be similar to those permitted on adjacent residential lands. Individual trash and recycling pickup service will be provided at each unit.*

Corvallis is currently in compliance with State and Federal air and water quality standards. It is anticipated that any emissions resulting from this development will be minimal. This project is not expected to affect the City's compliance with these State and Federal standards.

5. **Lighting;**

Response: *All new exterior lighting for the project will be shielded so as not to produce glare onto adjacent properties.*

6. **Signage;**

Response: *All signage associated with the development will be in compliance with the City's sign regulations and vision clearance requirements.*

7. **Landscaping for buffering and screening;**

Response: *The proposed screening and buffering is proposed to be in compliance with LDC 4.20.40 and 4.2.50.*

8. **Transportation facilities;**

Response: *The development site is adjacent to SW 49th Street, which is designated as a neighborhood collector street, and SW 53rd Street, which is designated an arterial street. Their capacity is adequate to handle the quantity of additional traffic to be generated by the development. Existing bicycle lanes are readily accessible to the site, at SW 53rd Street to the west.*

9. **Traffic and off-site parking impacts;**

Response: *Following is a trip generation summary for the project:*

Trip Generation Summary			
	Entering Trips	Exiting Trips	Total Trips
63 Single-family Detached (ITE Land Use Code – Residential Single-Family Detached Housing)			
AM Peak Hour	12	35	47
PM Peak Hour	40	24	64

As the development site will generate more than 30/trips per hour, an LOS analysis for the adjacent intersection(s) is to be performed. The LOS analysis is included as part of this application and is summarized above.

10. **Utility infrastructure;**

Response: *New utility infrastructure to be provided will include new water service provided via a new second level pump station as indicated on the City's Utility Master Plan, and a new storm sewer main discharging to the west to the existing county ditch in SW 53rd Street, and to the east by extending the existing storm sewer located in SW 49th Street south to the site. A new sewer main will be tapped off the existing sewer main located adjacent to the property in SW 49th Street. A new*

sanitary sewer extension in SW 53rd Street from the existing mainline in SW Country Club Road at the intersection of SW 53rd. New water mains will be tapped off the existing water main located adjacent to the property in SW 49th Street, as well as constructing a new 16-inch water main at the intersection of SW Country Club Road and SW 53rd Street along the frontage of the proposed annexation. A new water main will loop the waterlines in SW 53rd Street and SW 49th Street. New stormwater quality and detention facilities will be constructed as part of this development. Structures with stormwater filters will be installed, and shall be designed consistent with the City's adopted standard of the King County Washington Surface Water Design Manual, as design parameters allow. The detention facilities will be detention ponds as shown on the Proposed Utilities Plan and shall be designed to be consistent with the City's adopted standard of the King County Washington Surface Water Design Manual. The sewer mains are sized adequately to support the development and no compatibility conflicts are anticipated. The new sidewalk and streetlights are to be installed per City requirements and are not anticipated to generate any conflicts.

11. **Effects on air and water quality (note: a DEQ permit is not sufficient to meet this criterion);**

Response: *This project does not create any air or water quality impacts which would be inconsistent with or in excess of the residential zoning or the adjacent residential uses.*

Stormwater quantity and quality measures will be made consistent with the City's adopted Master Plan and Design Standards.

12. **Consistency with the applicable development standards, including the applicable Pedestrian Oriented Design Standards;**

Response: *The development of the Annexation site is proposed to be in compliance with Chapter 4.10 – PODS. The General Land Use Plan indicates an example of how this might be possible.*

13. **Preservation and/or protection of Significant Natural Features addressed in Chapter 4.2 – Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 – Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 – Significant Vegetation Protection Provisions; and Chapter 4.13 – Riparian Corridor and Wetland Provisions. Streets shall also be designed along contours, and structures shall be designed to fit the topography of the site to ensure compliance with these Code standards.**

Response: *There are no existing Significant Natural Features on the site, though there are some steep slopes. All future development activities will be accomplished in accordance with Chapter 4.5 – Natural Hazard and Hillside Development Provisions.*

APPLICABLE COMPREHENSIVE PLAN POLICIES

- **Comprehensive Plan Policy 14.2.4 – Upon annexation, all lands shall be districted in a manner consistent with Comprehensive Plan designations**.

Response: *Complies. An application is included for a zone district change to RS-6, which is consistent with the Comprehensive Plan designation of Low-Density Residential.*

- **Comprehensive Plan Policy 14.2.5 - Upon annexation, residential lands on hillside areas shall be developed in accordance with Policy 4.6.6.**

  Comprehensive Plan Policy 4.4.6 – On tree-covered hills, the design of dwellings and their placement shall be planned to retain a sufficient number of trees to preserve a green, tree-covered hillside appearance.

Response: *Not applicable. The hillsides on the annexation site are not tree-covered.*

- **Comprehensive Plan Policy 14.3.2 – Conversion of urbanizable land to urban uses shall be based on orderly, economic provision of public utilities, facilities, and services.**

Response: *Complies. Public utilities, facilities, and services can be provided in an orderly economic fashion as described above and as detailed in the City's Facility Master Plans.*

- **Comprehensive Plan Policy 14.3.4 – Urbanization shall be contained within the Urban Growth Boundary, and shall occur incrementally through the annexation process.**

Response: *Complies. The proposed annexation site is within the Urban Growth Boundary and would be annexed incrementally to the adjacent properties.*

- **Comprehensive Plan Policy 14.3.5 - Annexations can only be recommended to the voters where the following findings are made:**

  A. There is a demonstrated public need for the annexation.

Response: *Complies. The public need for the annexation is demonstrated in the response to LDC Section 2.6.30.07 below.*

  B. The advantages to the community resulting from the annexation shall outweigh the disadvantages.

Response: *Complies. The advantages to the community compared to the disadvantages are discussed in the response to LDC Section 2.6.30.06.b.2 above.*

  C. The City and other jurisdictions are capable of providing urban services and facilities required by the annexed area, when developed.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.32

Response: *Complies. The site is capable of being served by urban services and facilities, as discussed in the response to LDC Section 2.6.30.07 below.*

- **Comprehensive Plan Policy 14.3.6- Factors to be considered in evaluating the public need for annexation may include, but are not limited to the following:**

  A. The 5-year supply of serviceable land of this type to meet projected demand.

  B. The availability of sufficient land of this type to ensure choices in the marketplace; and

  C. Other factors, including livability benchmarks, as delineated in the Land Development Code.

Response: *Complies. These factors are discussed in the response to LDC Section 2.6.30.07 below.*

2.6.30.07 – Methodologies for Some of the Review Criteria in Section 2.6.30.06

All of the provisions within this Section are required for Major Annexation proposals except for proposals or portions of proposals that include land with Comprehensive Plan designations of Public Institutional, Open Space-Conservation, or Open Space-Agriculture. Lands with these map designations are exempt from the provisions within "a" and "b" below. Minor Annexation proposals are subject only to the provisions within "c," below.

a. Determining Five-year Supply of Serviceable Land – Serviceable land is land within the City limits capable of being served by public facilities.

When calculating a five-year supply of serviceable land, applicants shall refer to and follow the Council Policy addressing the five-year supply, as amended from time to time. This policy outlines the accepted methodology and will result in more uniform application submittals.

Response: *As no Council Policy actually exists, it is difficult to calculate a five-year supply of serviceable land based on any uniform standards. The City's 2011 Land Development Information Report (2011 LDIR) is likely the most objective source for available land information. In it, are the following quantities of vacant land zoned Low-Density Residential—both unconstrained and constrained by natural features:*[3]

	Unconstrained	*Constrained*
- RS-3.5 ….. 67.52 acres		*33.85 acres*
- RS-5 ….. 119.48 "		*107.62 "*
- RS-6 …... 141.54 "		*53.36 "*

To calculate the minimum amount of land available, we assume the worst case scenario of 100% constraint & most generous application of MADA allowances for natural features constrained lands, and add that amount to the unconstrained acreage:

- *17,500 sf/acre of each of the 33.85 constrained acres of RS-3.5 land could be developed for 13.60 additional acres;*
- *15,250 sf/acre of each of the 107.62 constrained acres of RS-5 land could be developed for 37.68 additional acres;*
- *13,000 sf/acre of each of the 53.36 constrained acres of RS-6 land could be developed for 15.92 additional acres.*

Therefore, the total minimum additional vacant, natural features constrained acreage available is 67.20 acres. Adding this to unconstrained acreage results in 395.74 acres minimum for all Low-Density Residential land. For RS-6 land alone, this results in a total of 157.46 acres, minimum.

If we generously assume all constrained lands are 100% developable (not likely, since they are constrained, to some extent), there is between 395.74 and 523.37 acres of vacant Low-Density Residential land in the City of Corvallis. And under a similar assumption, the quantity of vacant land zoned RS-6 is between 157.46 and 194.90 acres.

Total vacant & vacant approved single family lots in the RS-6 zone totaled only 121 as of December 2011,[4] *compared to 346 lots for lower density (RS-5 and RS-3.5). The below table provides a view of what is available from the remaining Low-Density Residential lots listed in the 2011 LDIR, among subdivisions with 10 or more available lots.*

[3] "*2011 Corvallis Land Development Information Report*", (Corvallis: Corvallis Community Development Department, 2012), 30.
[4] "*2011 Corvallis Land Development Information Report*", *op. cit.*, 26

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.34

Approved, Vacant Lots, Low-Density Residential[5]

Subdivision	Remaining lots[6]	Zoning	Typical lot, sf
Brooklane Heights	42	RS-3.5	13,000
Oakmont Addition	24	RS-3.5	13,000
Meadowridge	16	RS-3.5, 5	12,500
Cascade Crest	10	RS-3.5	11,500
Coronado	46	RS-3.5, 5, 12	8,000
Sparrow Hill	11	RS-6	8,500
Suncrest I & II	42	RS-6	5,300[7]
Megan's Addition	13	RS-6	5,200
Ashwood Preserve	28	RS-6[8]	2,800
Total	222		8,000[9]

49th St, General Land Use Plan, Proposed Lots (for comparison)

49th St. (GLUP)	61	RS-6	4,000[10]

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.35

[5] "*2011 Corvallis Land Development Information Report*", *op. cit.*, 25
[6] *Ibid*, 26
[7] ~2/3 of lots >5,200 sf
[8] RS-9 building types and density, due to wetlands/open space density transfer
[9] Mean lot size, rounded off to nearest 100 sf
[10] " "

Looking at the market for vacant lots, choices are even more limited. Of 40 lots listed in 2012, only 3 were in the RS-6 zone. The remainder of lots were in lower density zones than RS-6, with half of the active listings from the Coronado Subdivision. Below table is a summation/average of all Low-Density Residential lots that were listed in Corvallis for 2012:

Corvallis Low-Density Residential Lots, Listed, 2012[11]

Status	Price	Area	$/sf	$/acre	#s, RS-6	#s, RS-3.5 & RS-5
Sold	$102,000	10,150 sf	$10.0	$533,000	3[12]	16
Active	$130,600	10,650 sf	$12.3	$600,200	0	24[13]

The Suncrest Planned Development & Subdivisions are also in the RS-6 zone. Phase 1 was approved in 1995 for 9 lots on 82 acres; Phase 2 was platted in 1998 for 87 lots on 16 acres. As of December 2011, 42 of Phase 2 lots were vacant.[14] *Approximately 63 acres remain to be platted and approved. This remaining acreage is significantly constrained by protected natural features, including: High Protection Proximate Wetlands Adjacent to Riparian Corridors; Locally Protected Wetlands of Special Significance; High Protection 75 foot Riparian Corridors; and High Protection 100 foot Riparian Corridors.*[15] *At a glance, it appears that at least 1/3 of the 63 acres of vacant land are constrained by these natural features;and potentially more is impacted, if a large grove of trees is preserved, as well. It is unclear exactly how much of the parcel is constrained until a formal wetlands delineation is conducted, and the fate of the tree grove is decided. No tentative plat application or subdivision plan has been submitted for the remaining 63 acres.*

The other subdivisions with any appreciable amount of available lots—Brooklane Heights, Meadowridge, Cascade Crest, and Coronado—are in lower density zoning (RS-3.5 & RS-5), and offer much larger lots and houses, at much higher prices. For example, the two most recent listed lots at Meadowridge averaged 12,000 sf each, with an average list price of $220,000.[16]

The 15.25 acre piece of RS-6 zoned vacant land adjacent to Suncrest Planned Development has no land development approval associated with it. The property is heavily constrained by natural features and lack of readily available infrastructure. It is owned by a corporation that in 2008 filed for Chapter 11 Bankruptcy Protection. Again, it is highly unlikely that these 15.25 acres will be available as lots on the market any time within the next five years.

[11] WVMLS, mean averages
[12] Megan's Addition
[13] 12 lots in Coronado Subdivision
[14] "*2011 Corvallis Land Development Information Report*", *op. cit.*, 25
[15] *"Riparian Corridors and Wetlands, Corvallis, Oregon—Map",* (Corvallis: City of Corvallis, Public Works Department, GIS Services, 2006)
[16] WVMLS, February 5, 2013

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.36

Ashwood Subdivision is on RS-6 zoned land, however the platted housing types are RS-9—with 3 and 5 unit attached townhouses at 9 units per acre—allowed through a density transfer from adjacent undeveloped wetlands.

Megan's Addition, with 10 vacant lots,[17] and, to a lesser degree, Suncrest, with 42 vacant lots,[18] are the only approved, Low-Density Residential subdivisions that are even close to comparable with development that can occur at the 49th Street property. And neither of those subdivisions contains duplexes or triplexes, as does 49th Street.

In conclusion, the 49th St. Annexation, if approved, will bring not only a more diverse palette of housing than currently exists, it will certainly bring more housing at a lower price than other existing Low-Density Residential subdivisions.

b. Providing information on land availability to ensure choices in the market place – Comprehensive Plan Policy 14.3.6 states that "factors to be considered in evaluating public need for Annexation may include…the availability of sufficient land of this type to ensure choices in the market place." Minor Annexation applications are not required to include information on market choice. However, Major Annexation applications shall provide this information. Appropriate and encouraged market choice topics include, but are not limited to:

1. Information regarding a housing/jobs balance;

Response: *In 2010, 28,026 people were employed in Corvallis.[19] The most current housing data from the City show that, as of December, 2011, the Corvallis housing stock consisted of 23,752 housing units,[20] of which 44.9%, or 10,665, are units in multi-unit structures.[21] That leaves 13,087 units remaining as single family detached. And a large percentage of multi-unit housing is occupied by OSU students, and are, by and large, rental properties, not owner-occupied.*

On first appearance, Corvallis has a job to housing ratio of 1.2 workers (jobs) to 1 housing unit. Many planners recommend a range of 1.4:1 to 1.6:1.[22] However, the above calculation does not take into account the number of housing units occupied by students (24,425 currently enrolled at OSU),[23] retirees (5,718),[24] stay

[17] As of December 2012 (3 lots sold in 2012)
[18] "*2011 Corvallis Land Development Information Report*", *op. cit.*, 25
[19] "*Work Area Profile Analysis for Corvallis, Oregon"* (US Census Bureau, 2010). Retrieved 2/5/2013, from http://onthemap.ces.census.gov
[20] "*2011 Corvallis Land Development Information Report*", *op.cit.*, 15
[21] "*State and County Quick Facts, Corvallis, Oregon".* (US Census Bureau, 2011). Retrieved 2/5/2013, from http://quickfacts.census.gov/qfd/states/41/4115800.html
[22] Weitz, J. (2003) "*Jobs-Housing Balance*". Planning Advisory Service, Report 56, American Planning Association, 4.
[23] "*Oregon State University Enrollment Summary—Winter Term 2012",* (Corvallis: OSU Office of Institutional Research, #10, 2012), 1.
[24] "*State and County Quick Facts, Corvallis, Oregon". op. cit.* 2010. (65 years and over)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.37

at home parents, or other non-employed persons. The resulting practical housing/jobs balance is undoubtedly much lower than the above number, though it is difficult to quantify without more detailed demographic information. And, when one considers the fact that many households are inhabited by more than one wage earner,[25] it can easily be inferred that the existing balance is quite inadequate to support the employment level of Corvallis.

1. Housing rental rates and prices;

Response: *Current data for the U.S. Housing & Urban Development Department (HUD) Fair Market Rents for the Corvallis Metropolitan Statistical Area (aka Benton County) are as follows:[26]*

Size	***Monthly Rent***
1 Bedroom:	*$578/month*
2 Bedroom:	*$757/month*
3 Bedroom:	*$1115/month*

The median value of Corvallis owner-occupied housing units, from 2007-2011, was $253,300.[27] On February 5, 2013, there were 47 residential housing units for sale in Corvallis listed below the median price, and 83 above median.[28]

Typical approximate monthly payment figures for home ownership are as follows:

Listed Price	***Monthly Payment****	***Available***[29]
$75K-$150K	*<$625/mo*	*0 listings*
$151K-$200K	*$625/mo-$900/mo*	*16 listings*
$201K-$250K	*$900/mo-$1250/mo*	*26 listings*
$251-$300K	*$1250/mo-$1600/mo.*	*22 listings*

*Calculated at 30 year fixed mortgage, 20% down payment, 6.0% interest

2. Vacancy rates; and

Response: *The US Census Bureau estimates the homeowner vacancy rate in Corvallis at 1.6%, and the rental vacancy rate at 7.9%.[30]*

[25] Planners typically assume an average of 1.5 workers per household

[26] *FY 2013 Corvallis, OR MSA, Fair Market Rent Documentation System",* (Washington, D.C.: U.S. Department of Housing and Urban Development, 2012). Retrieved 2/5/2013 from http://www.huduser.org/portal/datasets/fmr/fmrs/FY2013_code/select_Geography.odn

[27] *State and County QuickFacts, Corvallis, Oregon. op. cit.,* 2011

[28] WVMLS

[29] WVMLS, 2/4/2013

[30] *2007-2011 American Community Survey* (U.S. Census Bureau, 2011). Retrieved 2/5/2013, from http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.38

3. A comparison of housing costs related to incomes, land prices, and land availability.

Response: *Housing costs and affordability as related to income are calculated based on monthly housing payments compared to gross monthly income. When a household's monthly housing payment exceeds 30% of their gross monthly income, that household is considered by HUD to be "cost burdened". For purposes of the following discussion concerning what income levels are necessary for households to be able to afford a house, that standard is used.*

Following is a breakdown of the full-time hourly wage(s) necessary for a household to earn in order to afford a house in each price range:

Listed Price	***Hourly wage for affordability****
$90K-$150K	*$13/hr-$19/hr*
$150K-$200K	*$19/hr-$25/hr*
$200K-$250K	*$25/hr-$30/hr*

*Calculated at 30 year fixed mortgage, 20% down payment, 6.0% interest rate

As the median house price in Corvallis is $253,300, over half of the houses for sale are only affordable to households that earn a total wage of more than $30/hour. Working class jobs typically do not earn more than $15/hour. From this, it is clear that the majority of residential units for sale in Corvallis are well out of the price range of households with working class incomes, even when there is more than one wage earner in the household.

When compared to neighboring communities, Corvallis housing costs are significantly more expensive. The below table (next page) compares real estate listings for 3 different price ranges, single family residences and bare lots among 3 central Willamette Valley communities.[31]

[31] WVMLS, November 1, 2012 through January 1, 2013. Mean averages, BR & BA rounded to nearest 0.5

City	# Listings	$226K-$275K	$176K-$225K	$125K-175K	<1 acre lot
Corvallis	98	**39 avail** **1670 sf** **3.5BR, 2.0 BA** **0.27 acre** **$243,457** **$146/sf**	34 avail. 1294 sf 3.0BR, 2BA 0.14 acre $211,475 av. $163/sf	15 avail. 1146 sf 3.0BR, 1.5BA 0.17 acre $170,250 av. $149/sf	10 avail., $45K-$250K $19.4/sf
Albany	207	33 avail. 2197 sf 4BR, 2.5BA .38 acre $244,728 av. $111/sf	64 avail. 1862 sf 3.5BR, 2.5BA .20 acre $206,809 av. $111/sf	**86 avail.** **1497 sf** **3.0BR, 2.0BA** **0.21 acre** **$152,548 av.** **$102/sf**	24 avail., $24K-$125K $5.9/sf
Lebanon	39	2 avail. 2678 sf 4BR, 2.5BA .25 acre $256,750 $96/sf	8 avail. 2185 sf 3.5BR, 2BA, .41 acre $209,161 av. $96/sf	**27 avail.** **1382 sf** **3.0BR, 2.0BA** **0.24 acre** **$145,507 av.** **$105/sf**	2 avail., $30K-$35K $1.2/sf

This chart demonstrates that, for a comparable house in terms of square footage and lot size, prospective buyers can expect to pay approximately $100,000 more to live in Corvallis than in Albany or Lebanon. And in a recent survey of home listing prices, Corvallis ranked as the second most expensive housing market in Oregon, after Lake Oswego.[32] *Not only are the prices higher, but the quantity of houses to choose from is lower, especially in the lower range of affordability. As a result, 63% (17,706) of Corvallis' 26,496 workers live outside the city.*[33]

The net result of all this data concerning jobs, vacancy rates, housing availability, income, and housing prices is that the market in Corvallis is extremely limited in the choices it offers the people who work here, especially those who work at jobs that are not exceptionally high-paying. The annexation of this site would provide approximately 61 additional housing units. As these units would be developed to RS-6 standards, many of them will be on smaller lot sizes and/or be attached housing types, which will provide more choices to an area of the market that is currently underserved.

The City does not independently review and verify documentation of this nature. Therefore, an applicant's market choice arguments shall be developed by a recognized professional in the field. Additionally, the

[32] *"Coldwell Banker Real Estate Home Listing Report".* Based on the average home listing price for a 4BR, 2BR home on coldwellbanker.com from January to June 2012. It included over 72,000 listings in 2,500 markets nationwide

[33] *Inflow/Outflow Job Counts (All Jobs) in 2010, Corvallis, OR*", (U.S. Census Bureau, 2013), Retrieved 2/5/2013 from http://onthemap.ces.census.gov.

applicant shall identify the methodologies used and the sources of information.

The Director will summarize the applicant's arguments and methodologies in the staff report provided to the hearing authority, and identify them as the applicant's arguments. The hearing authority shall determine the validity of the arguments based on the information provided by the applicant and on public comments during the public hearing process. The hearing authority shall also determine to what extent these arguments affect the criteria in Section 2.6.30.06.b.

c. Providing information on community-wide livability indicators and determining compliance with adopted community-wide benchmarks –

1. The City has just begun the process of identifying livability indicators to ultimately assist in the development of community-wide benchmarks. Additionally, many of the community-wide livability indicators are not applicable to Annexation proposals.

2. Table 2.6-1-Livability Indicators and Benchmark Criteria provides interim direction to applicants in addressing livability indicator and benchmark criteria. As the community further develops these livability indicators and benchmarks, this Section of this Code shall be updated accordingly.

a) The livability indicators and benchmarks in the following table are intended to be balanced and identified as advantages and disadvantages relative to an Annexation proposal. Compliance with all benchmarks is not required. However, when balanced and viewed in aggregate, the decision-makers need to find that the advantages to the community outweigh the disadvantages.

b) The number of applicable livability indicators and benchmarks varies, depending on the Comprehensive Plan Map request, as well as whether the Annexation is categorized as a Minor Annexation or a Major Annexation.

c) For those livability indicators and benchmarks that require distance measurements from an amenity to a proposed Annexation site, measurements shall be taken from the average point within the Annexation site.

Response: See Table Below.

Table 2.6-1 – Community-wide Livability Indicators and Benchmarks for Annexation Proposals

LIVABILITY INDICATORS	DESCRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	COMPLIES
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Where People Live"			
Annexation Density	Average density of proposed Annexation relative to the average density of land within the City that is developed and of the same type (single-family or multi-family).	Meet or exceed the average density of land with the City, developed, and of the same type as the proposed annexation (single-family or multi-family).	**Complies. The net density for the proposed General Land Use Plan, excluding public right-of-way, is 5.8 dwelling units/acre. The average net density of land within the City is 3.6 dwelling units/acre.**
Rural Development Potential	Type of county development that could occur if property not Annexed (depends on county land use policies in effect at time of proposed Annexation).	Development on land within the Urban Growth Boundary is done in a fashion that does not preclude urban-level development on the subject site and/or on adjacent properties within the UGB.	**Complies. Current county standards allow development of manufactured home park , or mining operation, which preclude urban-level development on subject site.**

LIVABILITY INDICATORS	DESCRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	COMPLIES
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Where People Live"			
Adjacent to City	Percentage of the perimeter of the Annexation that is enclosed within the City limits.	It is considered an advantage if >= 50% of the perimeter of an Annexation site is enclosed within the City limits.	Less than 50% of the perimeter is adjacent to existing City limits.
Development Plans	None submitted	It is not considered a disadvantage for an Annexation to have a General Land Use Plan only.	**General Land Use Plan provided.**
Distance to Bicycle and Pedestrian Access	Distance to bike lanes. Distance to sidewalk. Distance to multi-use path.	0.5-mile to bike lane. 0.25-mile to sidewalk. 0.5-mile to multi-use path.	**Complies. Less than 0.25 mile to existing bike lane and sidewalk. Less than .5 mile to multi-use path.**

LIVABILITY INDICATORS	DESCRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	COMPLIES
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Where People Live"			
Connectivity & Extension of Bicycle and Pedestrian Facilities	It is considered an advantage if improvements proposed as part of the Annexation request would connect to and extend existing bicycle and pedestrian facilities.	Connection to existing pedestrian facilities and extension of them by at least 350'; or connection to existing pedestrian facilities and filling a gap between existing pedestrian facilities of at least 100'. Connection to existing bicycle facilities and extension of them by at least 350'; or connection to existing bicycle facilities and filling a gap between existing pedestrian facilities of at least 100'.	New pedestrian and bicycle facilities do not connect to existing facilities, as SW 49th Street and SW 53rd Street are not developed to City standards adjacent to the annexation site.

LIVABILITY INDICATORS	DESCRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	COMPLIES
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Where People Live"			
Planned Public Transportation Improvements	Type and Extent of public transportation improvements (street, bicycle, pedestrian) that are listed in City master plans and would occur with urban-level development of Annexation site.	It is considered an advantage if public transportation improvements (street, bicycle, pedestrian) would be installed with the Annexation, are listed in City master plans, and would enable other sites within the Urban Growth Boundary to ultimately develop.	**Complies. New pedestrian facilities on the west side of SW 49th Street will enable other properties in the UGB to ultimately develop. The new neighborhood collector street is included on the City's Master Plan and will enable other properties to the south to ultimately develop.**
Distance to Shopping	Distance from neighborhood shopping opportunities (both existing and planned).	Annexation site is within 0.5-mile of neighborhood shopping opportunities (existing or planned). More advantage associated with shorter distances from existing (as opposed to planned) shopping opportunities and/or location within 0.5-mile from existing shopping opportunities.	Annexation site is approximately 0.68 mile from nearest neighborhood shopping opportunities.

LIVABILITY INDICATORS	DESCRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	COMPLIES
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Where People Live"			
Affordable Housing	Housing Affordability.	It is considered an advantage if more than 50 percent of the proposed residential housing units are classified as Affordable Housing using the definition of Chapter 1.6 – Definitions. This benchmark will be refined with future update to this code.	Less than 50 percent of the proposed residential units will be classified as Affordable Housing.
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Economic Vitality"			
Employment/Housing	Balance of jobs and housing.	To be developed as part of a future update of this Code, and following completion of regional studies.	**Not Applicable.**

LIVABILITY INDICATORS	DESCRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	COMPLIES
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Protecting our Environment"			
Natural Features	Acres and percentage of Annexation site with Significant Natural Features	Consistency with Significant Natural Feature protections specified by Chapter 4.2 – Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 – Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 – Significant Vegetation Protection Provisions; and Chapter 4.13 – Riparian Corridor and Wetland Provisions. It is considered an advantage if Significant Natural Features are protected through Annexation, since they may be better protected within the City.	**Complies. The site contains steep slopes, which will be afforded better protection under the LDC than currently apply.**
Distance to Transit	Distance from an existing transit line and/or bus stop.	Annexation site is within 0.5-mile of an existing transit line and/or bus stop.	**Complies. Annexation site is approximately 0.4 miles from nearest transit stop, at 49th St. and Country Club Dr.**

LIVABILITY INDICATORS	DESCRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	COMPLIES
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of "Protecting our Environment"			
Distance to Major Street	Distance to nearest Collector and/or Arterial Street(s) that would serve the proposed annexation site and is fully improved to City standards or is improved to City standards with regard to bicycle and pedestrian facilities.	Distance to nearest Collector and/or Arterial Street(s) that would serve the proposed annexation site is <= 0.25-mile and is fully improved to City standards or is improved to City standards with regard to bicycle and pedestrian facilities.	Does not comply. Annexation Site is approximately 0.38 miles from SW Country Club Drive, which is the nearest Collector or Arterial fully improved to City Standards.
Intersection	Levels of service for intersections of Arterial and/or Collector Streets, as determined by the City's Traffic Engineer, within a one-mile radius of the site.	Levels of service for intersections of Arterial and/or Collector Streets affected by the proposal, as determined by the City's Traffic Engineer, and generally within a one-mile radius of the site, will be a level of service "D" or better following urban level development of the Annexation site.	**Complies. Level of service for intersections of Arterial and/or Collector streets will be "D" or greater. Intersection improvements such as signaling will be provided as required to meet this standard.**

LIVABILITY INDICATORS	DESCRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	COMPLIES
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of Education/Human Services			
Local School Capacity/Travel Distance	Student enrollment, capacity, and average class size of public schools to serve the Annexation site. Distance to public elementary school.	Public schools that would serve the Annexation site are not overcrowded. Corvallis School District goals for average class sizes may vary among grades. 0.5-mile to public elementary school. School District policies, re: boundaries of closest schools or additional schools, factor into potential redefinition of school boundaries.	The nearest public elementary school is Adams Elementary, which is approximately 1.5 miles, with separated multi-use path the majority of the way. There is sufficient capacity at all public schools that would serve the annexation site.
Police Response Time	Number of police officers per 1,000 persons residing within City limits.	At least 1.2 officers per 1,000 persons residing within City limits.	56 officers/54,000 people = 1.04/1,000 persons
Distance from Fire Station	Distance from an existing fire station.	All buildable portions of the Annexation site are within 1.5 miles of a fire station with an engine company.	The Annexation site is approximately 3.0 miles from the nearest fire station.

LIVABILITY INDICATORS	DESCRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	COMPLIES
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of			
Public Improvements	Type and extent of public improvements developed to City standards; and urban-level development, such as clustered housing, etc., existing on the proposed Annexation site.	Annexation of partially developed land within the Urban Growth Boundary (UGB) that already contains some public improvements developed to City standards, and urban-level development on part of the site, is considered more advantageous to the City than Annexation of undeveloped land.	The Annexation site is undeveloped at this time.
Distance to Sewer and Water	Distance to adequately sized public sanitary sewer and water lines needed to serve the site.	Sanitary sewer and water facilities are proximate to the annexation site. After some monitoring, distances for this benchmark may be specified in a future update of this Code.	**Complies. Sanitary sewer and water facilities are proximate to the annexation site.**

LIVABILITY INDICATORS	DESCRIPTION OF LIVABILITY INDICATORS	BENCHMARKS	COMPLIES
Livability indicators and benchmarks relating to the Corvallis Vision 2020 Statement category of Central City			
Planned Public Utilities	Types and extent of public utility improvements of sanitary sewer, water, and storm drainage, that are listed in City master plans, and would occur with urban-level development of the Annexation site.	It is considered an advantage if the installation of public utilities of sanitary sewer, water, and storm drainage, listed in City master plans, would enable other sites within the UGB to ultimately develop.	**Complies. Development of site will include the installation of the Southwest 2nd Level Water Pump Station listed in the City Utility master plan, as well as the extension of a 16" water main in SW 53rd Street.**
Distance to Parks	Distance from an existing public park.	Annexation site is within 0.5-mile of an existing public park.	The Annexation site is approximately 0.58 miles from Sunset Park.
Distance to Downtown	Distance of the Annexation from the Central Business Zone intersection of SW Third Street and SW Monroe Avenue	It is considered an advantage if an Annexation site is within 3.8 miles from the intersection of SW Third Street and SW Monroe Avenue, within the boundaries of the Central Business Zone.	**Complies. The annexation site is approximately 3.6 miles from the intersection of SW 3rd and SW Monroe.**

Analysis:

The livability benchmarks are grouped according to various goals that are listed in the Corvallis 2020 Vision Statement: Where People Live, Protecting the Environment, Education/Human Services, and Central City. This analysis will discuss the benchmarks within each goal, and the goals as they compare to each other for this annexation site. Note: the goal "Economic Vitality" is not included in this analysis as the City of Corvallis has not yet defined a specific benchmark to which an annexation can be compared.

Where We Live

The annexation meets approximately half of the livability benchmarks in this category: Annexation Density, Development Plans, Rural Development Potential, Distance to Bicycle and Pedestrian Access, Planned Public Transportation Improvements. The benchmarks that are not met include Adjacent to City, Connectivity & Extension of Bicycle and Pedestrian Facilities,

Distance to Shopping, and Affordable Housing. One of these benchmarks, Distance to Shopping, requires that the site be 0.5 miles or less to said amenity. As the actual distance from the site to amenities is 0.68 miles to the corner of SW 53rd Street and SW Philomath Blvd., the benchmark is not met. However, it is close enough that the disadvantage associated with this benchmarks not being met is minimal.

While no units are designated as being set aside as affordable units, it is unlikely that any annexation would meet this benchmark, unless the applicant is a developer devoted specifically to affordable housing and the project is subsidized as such. That said, the mixture of lot sizes and housing types on the site indicate that many of the units would be available at costs lower than typically found in the Corvallis area market. This is discussed in greater detail above under Section 2.6.30.07.b.

In conclusion, as the number of benchmarks met under this category exceeds the numbers not met, it would appear the advantages outweigh the disadvantages for the annexation application at this time, under the category "Where We Live."

Protecting the Environment

The application meets all but one of the benchmarks under Protecting the Environment. It meets them for Natural Features, Intersection, Distance to Transit and Distance to Major Street. The site contains steep slopes, which will be afforded greater protection from development if the subject site is annexed. Level of service for intersections of Arterial and/or Collector streets will be "D" or greater. Intersection improvements such as signaling will be provided as required to meet this standard. The distance from the site to the nearest transit stop is 0.4 miles. The site fronts SW 53rd Street, which is classified as an arterial street.

The applicable benchmark that is not met is Distance to Major Street. This benchmark requires that the site be <= 0.25 miles or less to said amenity. As the actual distance from the site to Major Street is 0.38 miles to Country Club Drive, the benchmark is not met. However, it is close enough that the disadvantage associated with this benchmarks not being met is minimal. Furthermore, the site fronts SW 53rd Street, which is classified as an arterial and will eventually be developed to City Standards, at which point the benchmark will be met.

Annexation of the site would reduce greenhouse gas emissions, particulate pollution, and fossil fuel usage associated with automobiles, by providing more housing opportunities to convert inbound commuters to residents. Currently, a staggering 17,706 (63%) of all Corvallis workers live outside the city.[34] While a certain percentage of these commuters may choose to live outside the city, there is likely an overwhelming percentage who can't afford to purchase a home and live where they work.

In conclusion, it would appear that the application advantages strongly outweigh the disadvantages in the category of "Protecting the Environment."

[34] "*Inflow/Outflow Job Counts (All Jobs) in 2010, Corvallis, OR*", (U.S. Census Bureau, 2013), *op. cit*.

Education/Human Services

While the application meets two of the livability benchmarks for this group (Distance to Water and Sewer and Planned Public Utilities), it does not meet any of the other benchmarks for this category. The disadvantages to annexation outweigh the advantages under the category "Education/Human Services."

That said, the primary reason cited by Corvallis 509J school administrators for declining enrollment and reduced state funding is the lack of affordable housing for those who work here. (see Appendix for newspaper articles, editorials, and letters to the editor that support this). This is evidenced by the fact that while the Corvallis population increased 10% in from 2000 to 2010,[35] during the same period, our K-12 student population has shrunk by 11%. By providing entry-level housing for young families, the 49th Street Annexation and future subdivision will provide a necessary and important solution in helping halt the decline in Corvallis' K-12 public school enrollment.

Central City

The application meets the only benchmark in this category, "Distance to Downtown".

Conclusion

The application confers more advantages than disadvantages in three of the four categories under analysis. Overall, the benchmarks that it meets or nearly meets include: Annexation Density, Rural Development Potential, Distance to Bike, Sidewalk, & Multi-use Path, Planned Public Transportation Improvements, Distance to Transit, Intersection, Distance to Water and Sewer, Planned Public Utilities, and Distance to Downtown. These represent a wide variety of advantages and diversity in opportunities to assist in the orderly growth and urbanization of the associated area. Furthermore, many of the benchmarks that are not met could be remedied in time, as SW 53rd Street gets developed to City Standards, additional school facilities are constructed, and City police staffing is expanded. In conclusion, overall the advantages of the annexation outweigh the disadvantages, in terms of livability benchmarks.

[35] *2011 Corvallis Land Development Information Report*, *op.cit.*, 9.

Zone Change

ZONE CHANGE APPLICATION

A. Applicant's Request

Approval to apply a zoning designation of RS-6 to Tax Lots 600, 700, and 801 on Map 12-5-09BC, pending annexation.

B. Site Description

The site consists of 3 tax lots, comprising 10.48 acres. The site is bordered on the east by City limits, on the north, south, and west by rural residential development. The site is gently sloped from the southern central area, generally to the north and east. The site contains no significant vegetation, wetlands, riparian corridors or floodplains.

C. Submission Requirements

2.2.40.02 - Application Requirements

When the Director deems any requirement below unnecessary for proper evaluation of a proposed application, it may be waived.

Prior to formal submittal of an application, the applicant is encouraged to participate in an informal pre-application conference with Community Development Department staff to discuss the proposal, the applicant's requirements, and the applicant's materials developed in response to this Code's applicable requirements.

Applications shall be made on forms provided by the Director and shall be accompanied by:

a. General Requirements

1. Location and description of the subject property(ies), including all of the following, as relevant: address; tax assessor map and tax lot number; parcel number; written description of the boundaries of the proposal; and one set of assessor's maps of the subject site and surrounding area, with the subject site outlined in red;

2. Signed consent by the subject property's owner(s) and/or the owner's legal representative(s). If a legal representative is used as a signatory,

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.55

written proof of ability to be a signatory shall be furnished to the City. The owner's name(s) and address(es), and the applicant's name, address, and signature shall also be provided;

3. **Fifteen copies of the narrative, on 8.5 by 11 in. sheets, and 15 copies of graphics at an 8.5 by 11 in. size. The Director may request additional copies of the narrative and/or graphics for routing purposes, if needed. Related names/numbers must be legible on the graphics. The Director may also require some or all graphics at an 11 by 17 in. size if, for legibility purposes, such a size would be helpful;**

4. **Six sets of full-scaled black line or blueprint drawings of the graphic(s), with sheet size not to exceed 24 by 36 in. Where necessary, an overall plan with additional detail sheets may be submitted;**

5. **An electronic version of these documents (both text and graphics, as applicable) if an applicant has produced part or all of an application in an electronic format. The applicant shall coordinate with the City regarding compatible electronic formats, to the greatest extent practicable.**

Response: *The application form (signed by the owners of the property) and appropriate copies of the graphics are being submitted with this Narrative.*

6. **Graphic Requirements Graphics shall include the following information where applicable:**

   a) **Public Notice Map - Typically a street map at one in. = 800 ft. as per the City's public notice format;**

Response: *Attachment "A," Vicinity & Public & Notice Map.*

   b) **Zoning Map – Existing and proposed Zoning MapsTypically one in. = 400 ft., but up to one in. = 800 ft., depending on the size of the site, with a key that identifies each zone on the site and within 1,000 ft. of the site as per City format;**

Response: *Attachment "B," Existing Zoning Designations.*

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.56

c) **Comprehensive Plan Map - Typically one in. = 800 ft. with a key that identifies each and use designation on the site and within 1,000 ft. of the site as per City format;**

Response: *Attachment "C," Existing Comprehensive Plan Designations*

d) **Existing Land Use Map - Typically a topographic map that extends at least 1,000 ft. beyond the site. The map shall include building footprints and distinguish between single-family, multi-family, Commercial, and Industrial Uses, as well as other significant features such as roads, parks, schools, and Significant Natural Features identified by Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions;**

Response: *Attachment "D," Surrounding Uses.*

e) **Significant Natural Features Map(s) - Maps shall identify Significant Natural Features of the site, including but not limited to:**

1) **All information and preservation plans required by Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions, as applicable;**

Response: *Attachments "E" through "I". There are no significant natural features, landslide hazards, or floodplains on the site. The site does contain some steep slopes, which are indicated on Attachment "H".*

2) **All Jurisdictional Wetlands not already shown as part of "a," above. While not all Jurisdictional Wetlands are locally regulated by Chapter 4.13 - Riparian Corridor and Wetland Provisions, they need to be shown so that the City can route the application to the appropriate state and federal agencies for comment; and**

Response: *Not applicable. There are no jurisdictional wetlands located on the site.*

3) **Archaeological sites recorded by the State Historic Preservation Office (SHPO).**

Response: *There are no recorded archeological sites on the applicant's property.*

7. **A legible Vicinity Map identifying the area to be amended that shows adjacent City and county territory at least 300 ft. beyond the boundaries of the subject site. The map shall include features such as existing streets and parcel boundaries; existing structures; driveways; utilities; Significant Natural Features regulated by Chapter 4.2 – Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 – Natural Hazard and Hillside Development Provisions, Chapter 4.12 – Significant Vegetation Protection Provisions; and Chapter 4.13 – Riparian Corridor and Wetland Provisions; Minimum Assured Development Area information from Chapter 4.11 - Minimum Assured Development Area (MADA), if applicable; and any other information that, in the Director's opinion, would assist in providing a context for the proposed Zone Change. The Director may require an area greater than 300 ft. beyond the subject site, such as in cases where adjacent property is large and a view of the whole parcel would be helpful, or when existing infrastructure is far away from the site.**

Response: *Attachment "A" Vicinity & Public Notice Map.*

8. **Statement of availability, capacity, and status of existing water, sewer, storm drainage, transportation, park, and school facilities. The applicant shall obtain information from the affected service and utility providers using GIS base maps where available;**

Response: *SW 49th Street is a City neighborhood collector street that is currently improved to County Standards. SW 53rd Street is a County street that is currently improved to county standards, with bike lanes on both sides. First level water service is available to the site in 49th Street. This is a dead end 8" main line. Sanitary sewer service is available in SW 49th Street to the east of the site. Storm drainage will be accomplished by constructing a new sewer main discharging to the west to the existing county ditch in SW 53rd Street, and to the east by extending the existing storm sewer located in SW 49th Street south to the site. Sunset Park and Starker Arts Park are both less than 1 mile from the Annexation site.*

Adams Elementary School, Linus Pauling Middle School, and Corvallis High School all have sufficient capacity to support the subject site at full urban development.

9. **Statement of increased demand for the facilities that will be generated by the proposed Annexation. The applicant shall refer to the criteria of the City's facility master plans, available via the City Engineer, to determine the methodology used to estimate public facility demands. Information related to an actual development proposal may be included for informational purposes. At minimum, the demand calculations associated with the full range of development potential (min. to max.) under proposed land uses designations shall be addressed in the analysis;**

Response:

Water

Portions of the annexed property are located in both the first and second level water service areas. The Corvallis Water Distribution System Plan calls for future second level distribution improvements in the vicinity of the property. These improvements include a 16" distribution line in 53rd Street, looped to a 24" distribution line in Nash Avenue and connecting to the existing 24" waterline at the intersection of 45th and Nash, plus a new second level pump station located in the vicinity of this property.

Water service to the site is proposed to include three components:

1) Constructing a 16-inch distribution line in SW 53rd Street consistent with the Water Master Plan improvements, beginning at the intersection of SW Country Club Road and SW 53rd Street and designing a loop connection between the existing 8-inch dead end line in SW 49th Street and the new proposed 16-inch distribution line in SW 53rd Street. These new lines sized as required to accommodate future Master Plan improvements.

2) Local distribution piping required to serve the site, with required isolation between first and second levels.

3) A second level pump station sited on the annexed property, with water supply coming from the first level distribution system described

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.59

above. The pump station support systems would be constructed to accommodate future full build-out of the contiguous second level service area, with the actual pumps sized to accommodate incremental increases as the area develops.

Calculations along with existing flow and pressure information, supporting the premises above, are included in the Appendix of this application.

An alternate water service design could involve the extension of the 24" water line currently located in SW Nash Avenue, with the construction of a new water line in SW 49th Street. The above mentioned calculations support the viability of this alternate design, as well.

The peak hour demand for a single family residence is 1.4 gallons per minute, for the maximum possible 63 residences the total peak hour demand is 90 gallons per minute.

Sanitary Sewer

The annexed property is located in the "Country Club" basin. The City's Wastewater Utility Master Plan shows no backbone collection system improvements are needed in this basin until the population of the City exceeds 80,000. The Master Plan anticipates only the extension of local collection piping as needed to serve development in the Basin. The improvements anticipated in the Master Plan for the Brooklane Pump Station have been completed.

The peak daily unit flow rate per equivalent dwelling unit is 2.3 times 193 gallons per capita per day plus 4,000 gallons per acre per day. For the maximum units allowable for 10.49 acres, 63 units anticipated for this property. The total inflow rate would be 69,886 gallons per day. This represents approximately 19.3% of the peak flow capacity of a 8" pipe at minimum grade in the existing line in SW 49th Street. If we compare the area of this development to the area of the approximate basin discharging to the sanitary line in SW 49th Street, this percentage is approximately 18.9%. Proposed design incorporates discharging approximately 7.28 acres of this development to 49th Street with the remainder of the site to discharge to a new line in SW 53rd Street. This new line will be connected at the existing sanitary line in SW Country Club Road at the intersection of SW 53rd Street. This new line will be an 8-inch line constructed at minimum design grade.

10. Statement of additional facilities required to meet the increased demand and phasing of such facilities in accordance with projected demand. The applicant shall review adopted public facility plans, master plans, and capital improvement programs, and state whether additional facilities are planned or programmed for the Annexation area. Information related to an actual development proposal may be included for informational purposes. At minimum, the demand calculations associated with the full range of development potential (min. to max.) under proposed land uses designations shall be addressed in the analysis;

Response:

Water

Portions of the annexed property are located in both the first and second level water service areas. The Corvallis Water Distribution System Plan calls for future second level distribution improvements in the vicinity of the property. These improvements include a 16" distribution line in 53rd Street, looped to a 24" distribution line in Nash Avenue and connecting to the existing 24" waterline at the intersection of 45th and Nash, plus a new second level pump station located in the vicinity of this property.

Water service to the site is proposed to include three components:

1) Constructing a 16-inch distribution line in SW 53rd Street consistent with the Water Master Plan improvements, beginning at the intersection of SW Country Club Road and SW 53rd Street and designing a loop connection between the existing 8-inch dead end line in SW 49th Street and the new proposed 16-inch distribution line in SW 53rd Street. These new lines sized as required to accommodate future Master Plan improvements.

2) Local distribution piping required to serve the site, with required isolation between first and second levels.

3) A second level pump station sited on the annexed property, with water supply coming from the first level distribution system described above. The pump station support systems would be constructed to accommodate future full build-out of the contiguous second level

service area, with the actual pumps sized to accommodate incremental increases as the area develops.

Calculations along with existing flow and pressure information, supporting the premises above, are included in the Appendix of this application.

An alternate water service design could involve the extension of the 24" water line currently located in SW Nash Avenue, with the construction of a new water line in SW 49th Street. The above mentioned calculations support the viability of this alternate design, as well.

The peak hour demand for a single family residence is 1.4 gallons per minute, for the maximum possible 63 residences the total peak hour demand is 90 gallons per minute.

Sanitary Sewer

The annexed property is located in the "Country Club" basin. The City's Wastewater Utility Master Plan shows no backbone collection system improvements are needed in this basin until the population of the City exceeds 80,000. The Master Plan anticipates only the extension of local collection piping as needed to serve development in the Basin. The improvements anticipated in the Master Plan for the Brooklane Pump Station have been completed.

The peak daily unit flow rate per equivalent dwelling unit is 2.3 times 193 gallons per capita per day plus 4,000 gallons per acre per day. For the maximum units allowable for 10.49 acres, 63 units anticipated for this property. The total inflow rate would be 69,886 gallons per day. This represents approximately 19.3% of the peak flow capacity of a 8" pipe at minimum grade in the existing line in SW 49th Street. If we compare the area of this development to the area of the approximate basin discharging to the sanitary line in SW 49th Street, this percentage is approximately 18.9%. Proposed design incorporates discharging approximately 7.28 acres of this development to 49th Street with the remainder of the site to discharge to a new line in SW 53rd Street. This new line will be connected at the existing sanitary line in SW Country Club Road at the intersection of SW 53rd Street. This new line will be an 8-inch line constructed at minimum design grade.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.62

11. **Traffic impact study, if required by the City Engineer. The City Engineer shall define the scope of the traffic impact study based on established procedures. Information related to an actual development proposal may be included for informational purposes. At minimum, the traffic calculations associated with the full range of development potential (min. to max.) under proposed land uses designations shall be addressed in the analysis. See also Section 4.0.60.a;**

Response: *A traffic impact study is included in the Appendix.*

12. **Statement of the reasons for the Change, and how the proposal meets the review criteria in Section 2.2.40.05.**

Response: *Upon annexation, the existing county zone designation of RR-5 would become inappropriate. The required zone designation for all new Low Density Residential lands is to be RS-6, per LDC 3.3.10, which states "The RS-6 zone shall be applied to … all future Low-Density Residential Lands."*

2.2.40.05 – Review Criteria

a. **Review Criteria for Zone Changes, Except Those Requesting to Apply or Remove a Historic Preservation Overlay**

Quasi-judicial Zone Changes shall be reviewed to determine how they affect City facilities and services, and to ensure consistency with the purposes of this Chapter, policies of the Comprehensive Plan, and any other applicable policies and standards adopted by the City Council. The application shall
demonstrate compatibility in the following areas, as applicable:

1. **Basic site design (the organization of Uses on a site and the Uses' relationships to neighboring properties);**

Response: *The site that is proposed to be annexed is to be zoned RS-6, per LDC Section 3.3.10, and will be developed according to the requirements of LDC Chapter 3.3. As it is larger than 10 acres, it will be developed with a mix of housing types per LDC Section 4.9.80-a.3, that is: at least three housing or building types, with each building or housing type being at least 20 percent of the total units. As all neighboring properties are also designated as Low-Density Residential and are presently zoned RS-6 or will be zoned RS-6 when*

annexed into the City, this development will be compatible with neighboring properties.

2. **Visual elements (scale, structural design and form, materials, etc.);**

Response: *The site is proposed to be developed to RS-6 development standards, including all applicable PODS standards. The nearby urban subdivision, Stoneybrook, is developed to RS-6 and RS-9 standards, so the RS-6 development standards will be compatible with that existing neighborhood. The immediate adjacent properties are all built to urban residential densities, so low density residential development will be compatible with them as well. All buildings will be built within the maximum height allowances, and attached housing units are limited to three dwelling units each. While the structural design, form, and materials will be ultimately decided by the builder(s) of each lot, adherence to the PODS standards will require a certain minimum standard of attention to streetscape visuals.*

3. **Noise attenuation;**

Response: *No special measures have been considered for noise attenuation, nor will this project create any noises greater than or not typical of the surrounding residential and street uses.*

4. **Odors and emissions;**

Response: *Odors on the site are anticipated to be similar to those permitted on adjacent residential lands. Individual trash and recycling pickup service will be provided at each unit.*

Corvallis is currently in compliance with State and Federal air and water quality standards. It is anticipated that any emissions resulting from this development will be minimal. This project is not expected to affect the City's compliance with these State and Federal standards.

5. **Lighting;**

Response: *All new exterior lighting for the project will be shielded so as not to produce glare onto adjacent properties.*

6. **Signage;**

Response: *All signage associated with the development will be in compliance with the City's sign regulations and vision clearance requirements.*

7. **Landscaping for buffering and screening;**

Response: *The proposed screening and buffering is proposed to be in compliance with LDC 4.20.40 and 4.2.50.*

8. **Transportation facilities;**

Response: *The development site is adjacent to SW 49th Street, which is designated as a neighborhood collector street, and SW 53rd Street, which is designated an arterial street. Their capacity is adequate to handle the quantity of additional traffic to be generated by the development. Existing bicycle lanes are readily accessible to the site, at SW 53rd Street to the west.*

9. **Traffic and off-site parking impacts;**

Response: *Following is a trip generation summary for the project:*

Trip Generation Summary			
	Entering Trips	Exiting Trips	Total Trips
63 Single-family Detached (ITE Land Use Code – Residential Single-Family Detached Housing)			
AM Peak Hour	12	35	47
PM Peak Hour	40	24	64

As the development site will generate more than 30/trips per hour, a LOS analysis for the adjacent intersection(s) is required to be performed. The LOS analysis is included as part of this application, and discussed in more detail in the Annexation application narrative.

10. **Utility infrastructure;**

Response: *New utility infrastructure to be provided will include new water service provided via a new second level pump station as indicated on the City's Utility Master Plan, and a new storm sewer main discharging to the west to the existing county ditch in SW 53rd Street, and to the east by extending the existing storm sewer located in SW 49th Street south to the site.. A new sewer main will be tapped off the existing sewer main located adjacent to*

the property in SW 49th Street. A new sanitary sewer extension in SW 53rd Street from the existing mainline in SW Country Club Road at the intersection of SW 53rd. New water mains will be tapped off the existing water main located adjacent to the property in SW 49th Street, as well as constructing a new 16-inch water main at the intersection of SW Country Club Road and SW 53rd Street along the frontage of the proposed annexation. A new water main will loop the waterlines in SW 53rd Street and SW 49th Street. New storm water quality and detention facilities will be constructed as part of this development. Biofilitration water quality swales in the street planter area will be used as the water quality facilities and shall be designed consistent with the City's adopted standard of the King County Washington Surface Water Design Manual. The detention facilities will be detention ponds as shown on the Proposed Utilities Plan and shall be designed to be consistent with the City's adopted standard of the King County Washington Surface Water Design Manual. The sewer mains are sized adequately to support the development and no compatibility conflicts are anticipated. The new sidewalk and streetlights are to be installed per City requirements and are not anticipated to generate any conflicts.

11. **Effects on air and water quality (note: a DEQ permit is not sufficient to meet this criterion);**

Response: *This project does not create any air or water quality impacts which would be inconsistent with or in excess of the residential zoning or the adjacent residential uses.*

Stormwater quantity and quality measures will be made consistent with the City's adopted Master Plan and Design Standards.

12. **Consistency with the applicable development standards, including the applicable Pedestrian Oriented Design Standards;**

Response: *The development of the subject site is proposed to be in compliance with Chapter 4.10 – PODS. The General Land Use Plan indicates an example of how this might be possible.*

13. **Preservation and/or protection of Significant Natural Features addressed in Chapter 4.2 – Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 – Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 – Significant Vegetation Protection Provisions; and Chapter 4.13 – Riparian Corridor and Wetland Provisions. Streets shall also be designed**

along contours, and structures shall be designed to fit the topography of the site to ensure compliance with these Code standards.

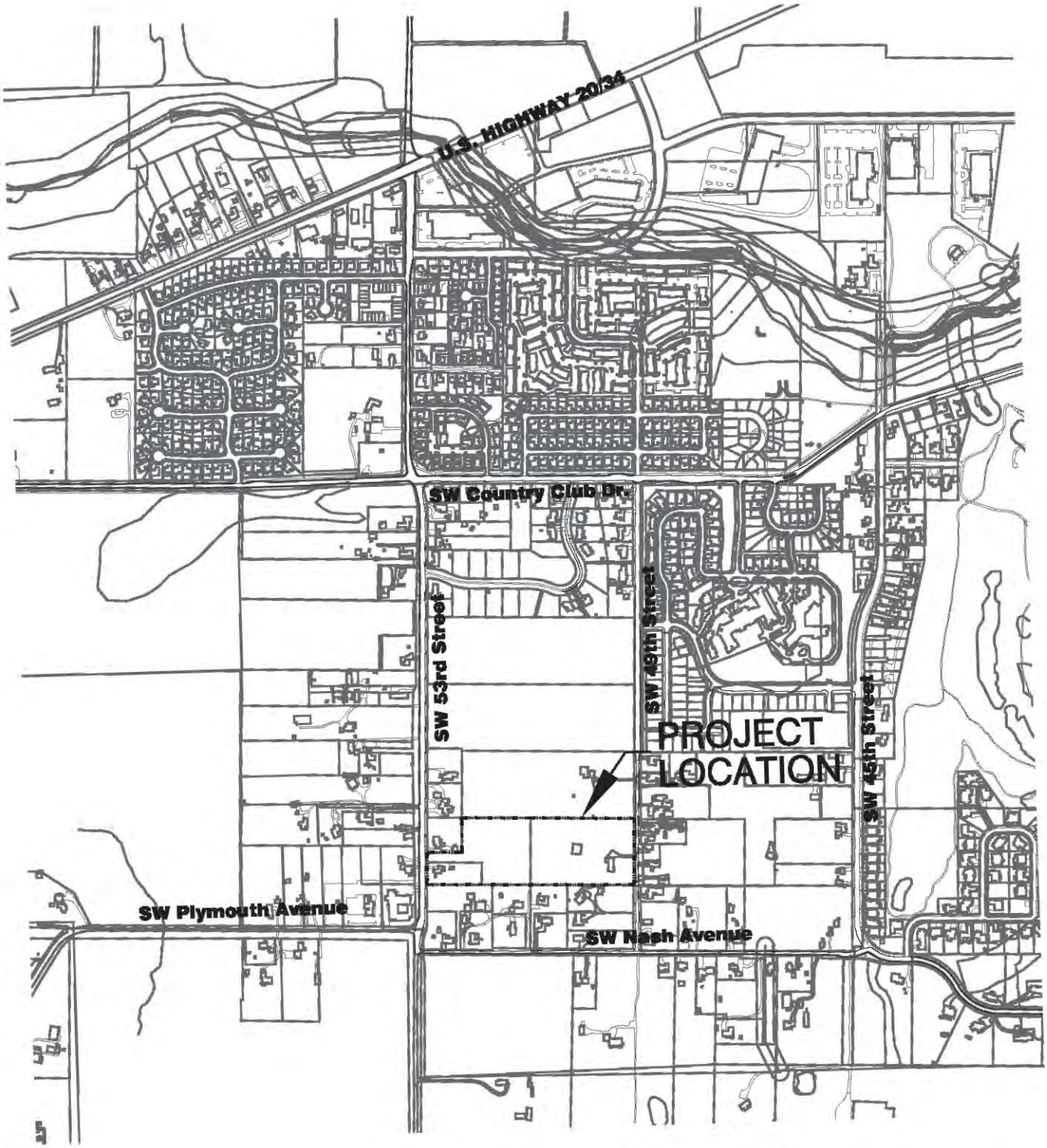
Response: *There are no existing Significant Natural Features on the site, though there are some steep slopes. All future development activities will be accomplished in accordance with Chapter 4.5 – Natural Hazard and Hillside Development Provisions.*

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.67

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.68

Graphics

- **Attachments "A" – "K"**

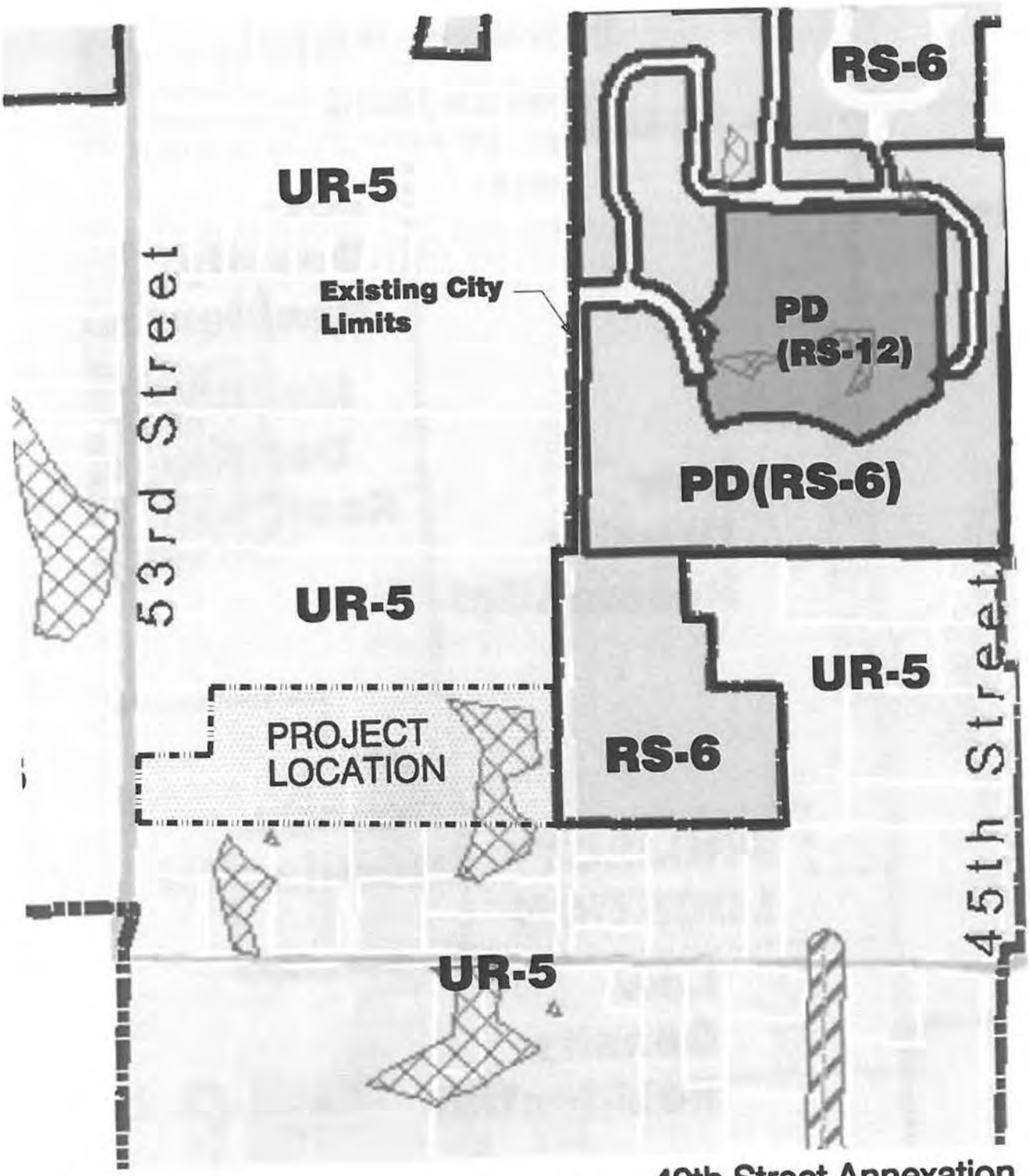


49th Street Annexation
VICINITY & PUBLIC NOTICE MAP

0 400 800 1600
SCALE IN FEET

ATTACHMENT "A"

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.69



49th Street Annexation
EXISTING ZONING DESIGNATIONS

0 200 400 800
SCALE IN FEET

ATTACHMENT "B"

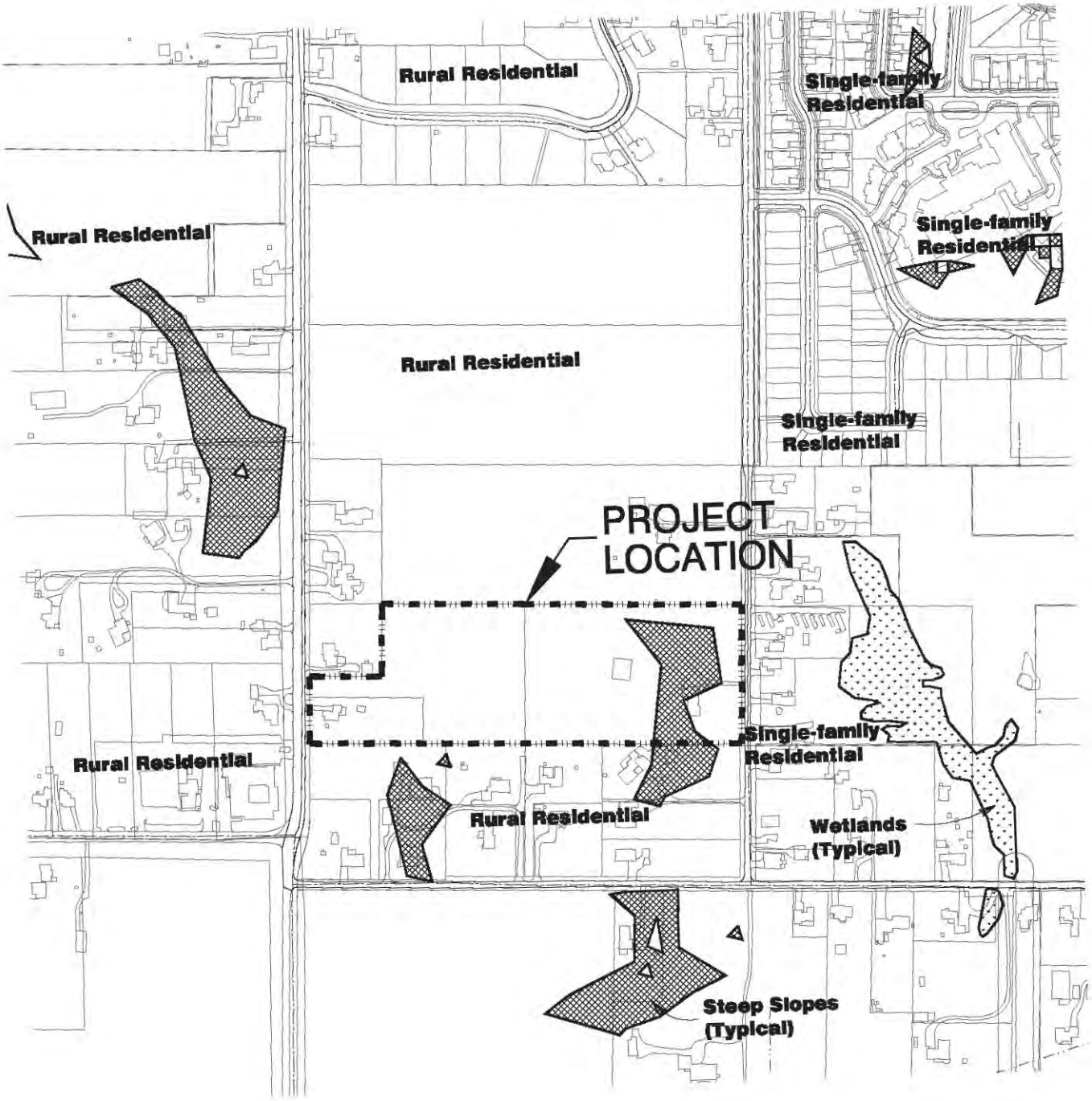
49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.70

49th Street Annexation
COMPREHENSIVE PLAN DESIGNATIONS

0 200 400 800
SCALE IN FEET

ATTACHMENT "C"

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.71

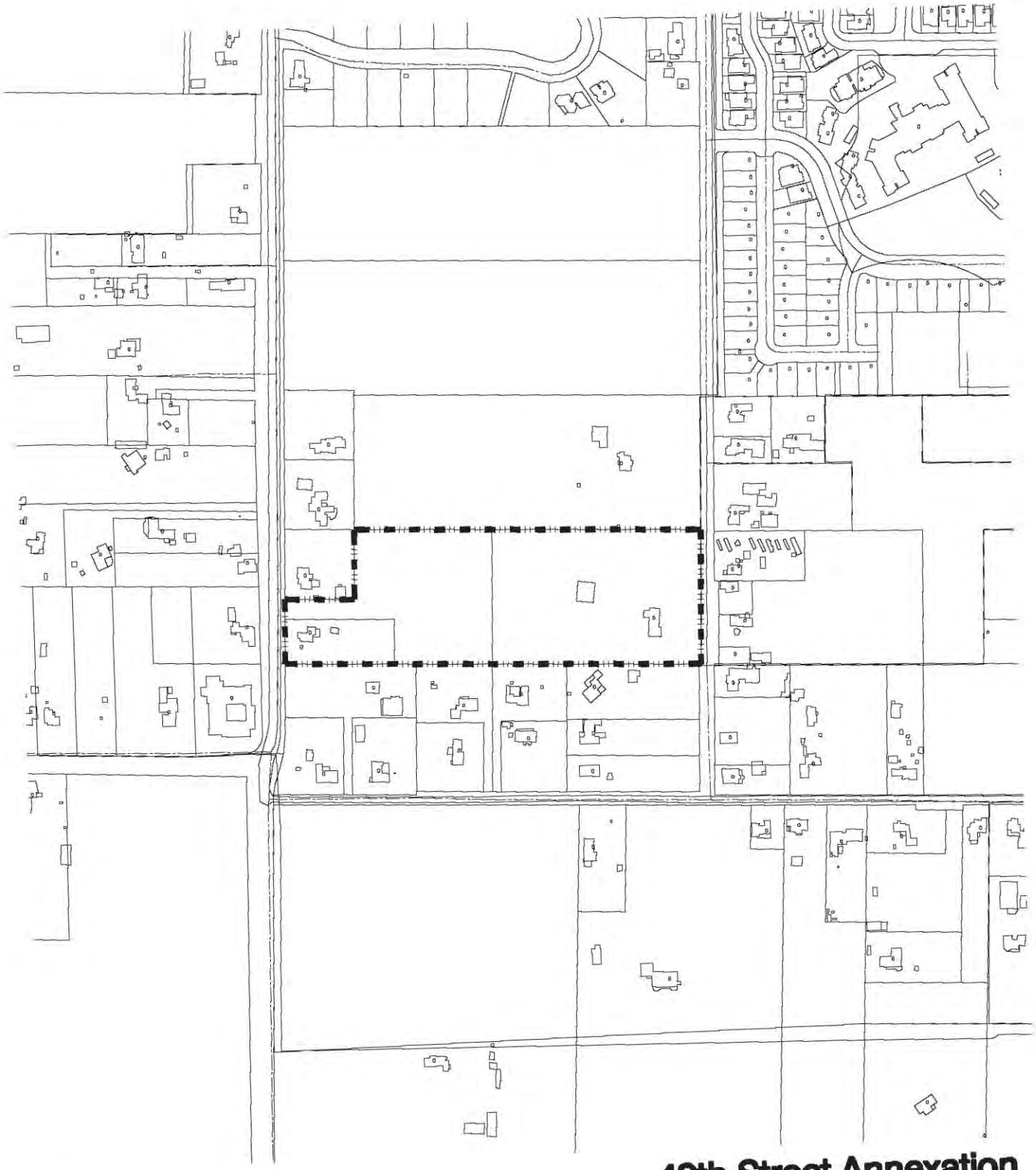


49th Street Annexation SURROUNDING USES

0 200 400 800
SCALE IN FEET

ATTACHMENT "D"

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.72



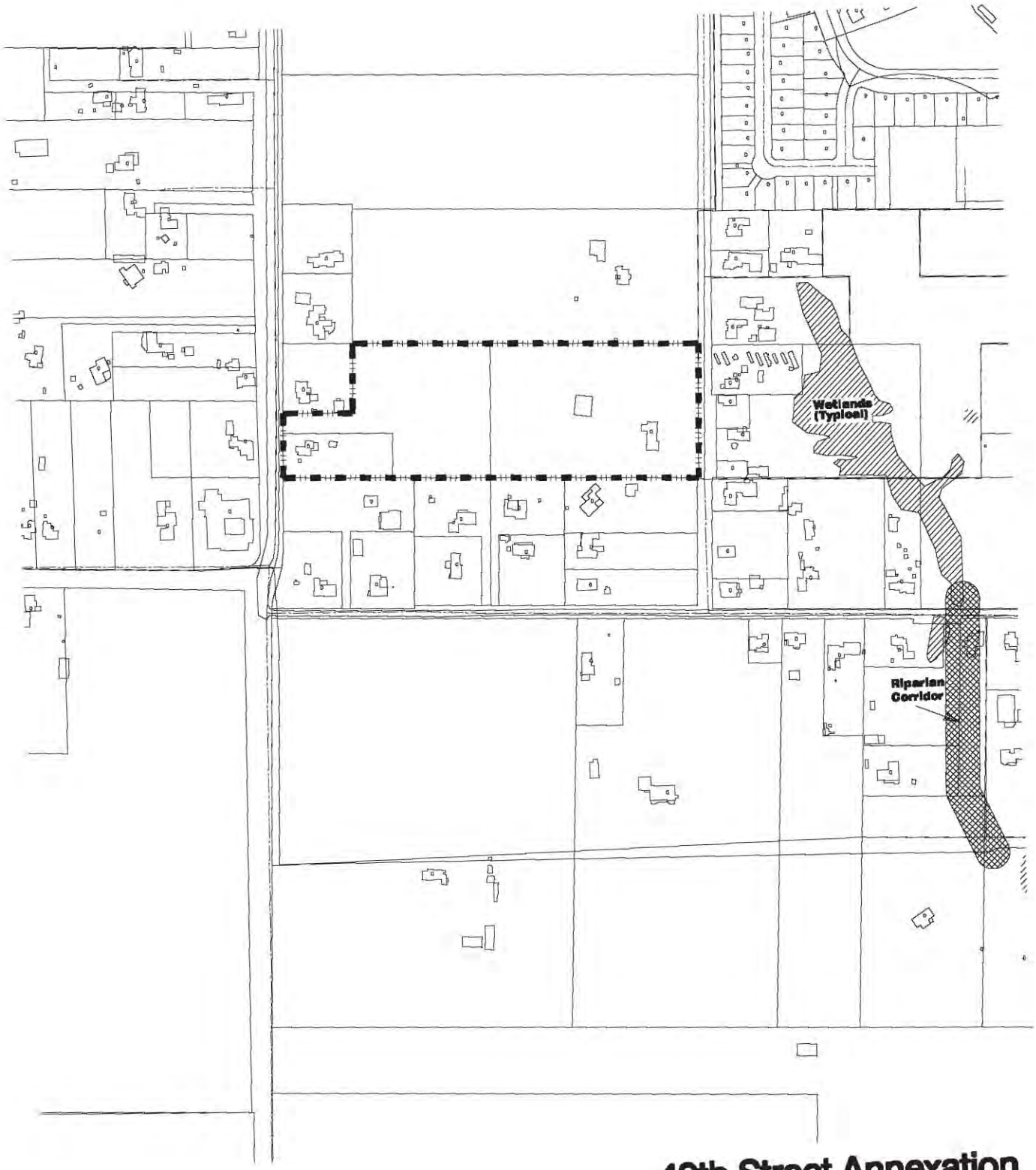
49th Street Annexation
NATURAL FEATURES

SIGNIFICANT VEGETATION

ATTACHMENT "E"

0 200 400 800

SCALE IN FEET



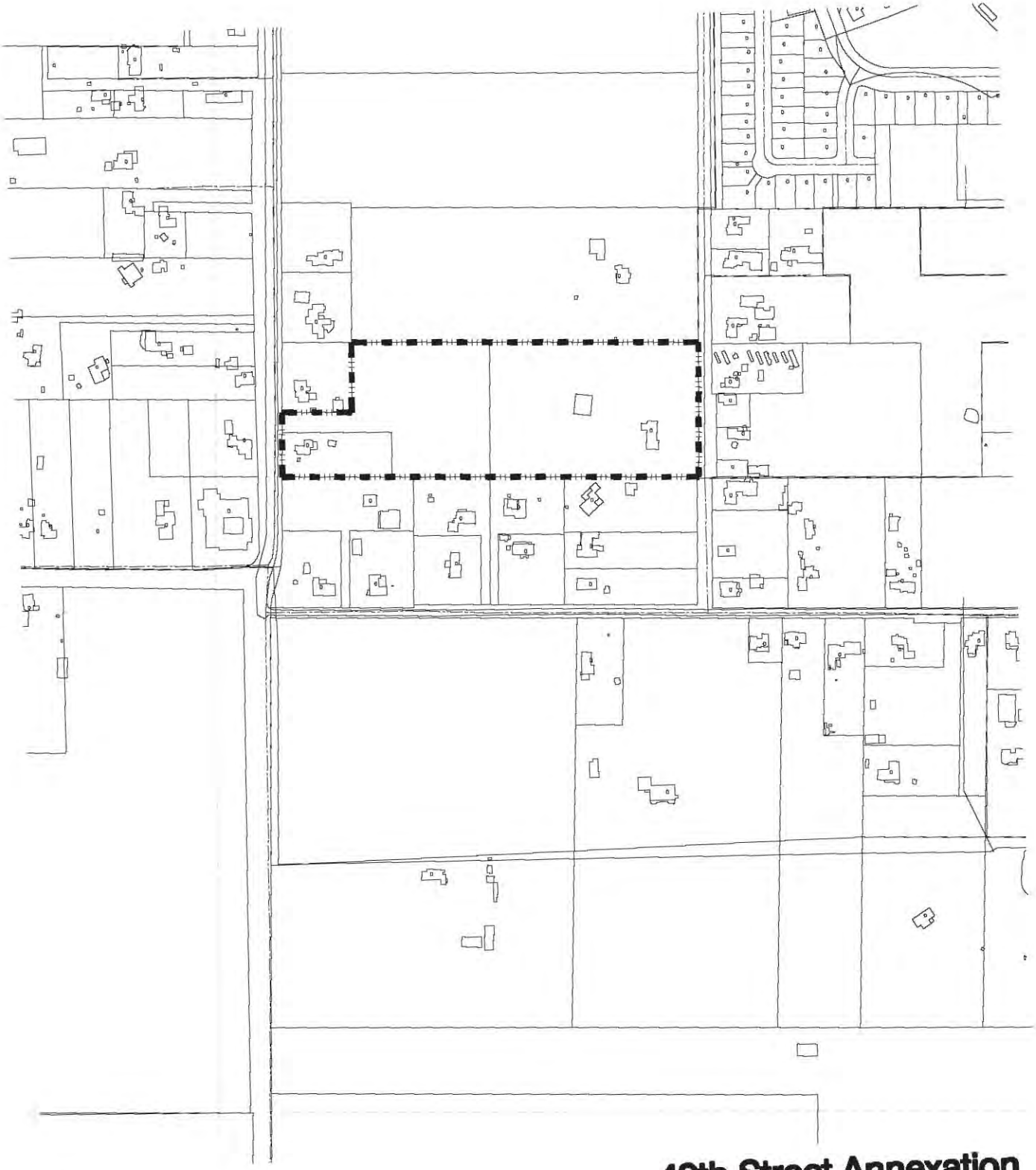
49th Street Annexation
NATURAL FEATURES

PROTECTED RIPAR AN& WETLANDS

ATTACHMENT "F

0 200 400 800
SCALE IN FEET

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.74



49th Street Annexation
NATURAL FEATURES

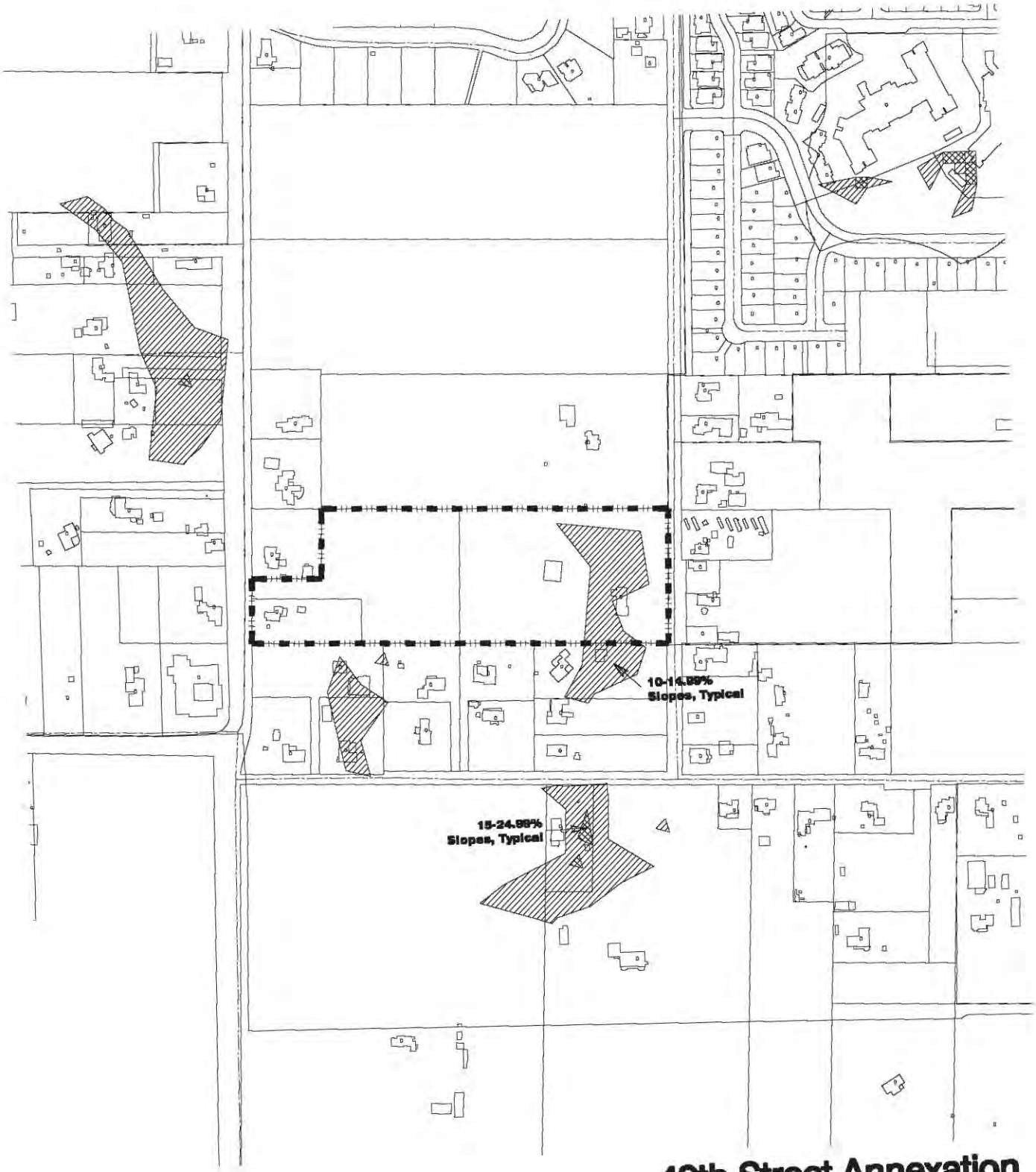
100-YEAR FLOODPLAIN

ATTACHMENT "G"

0 200 400 800

SCALE IN FEET

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.75

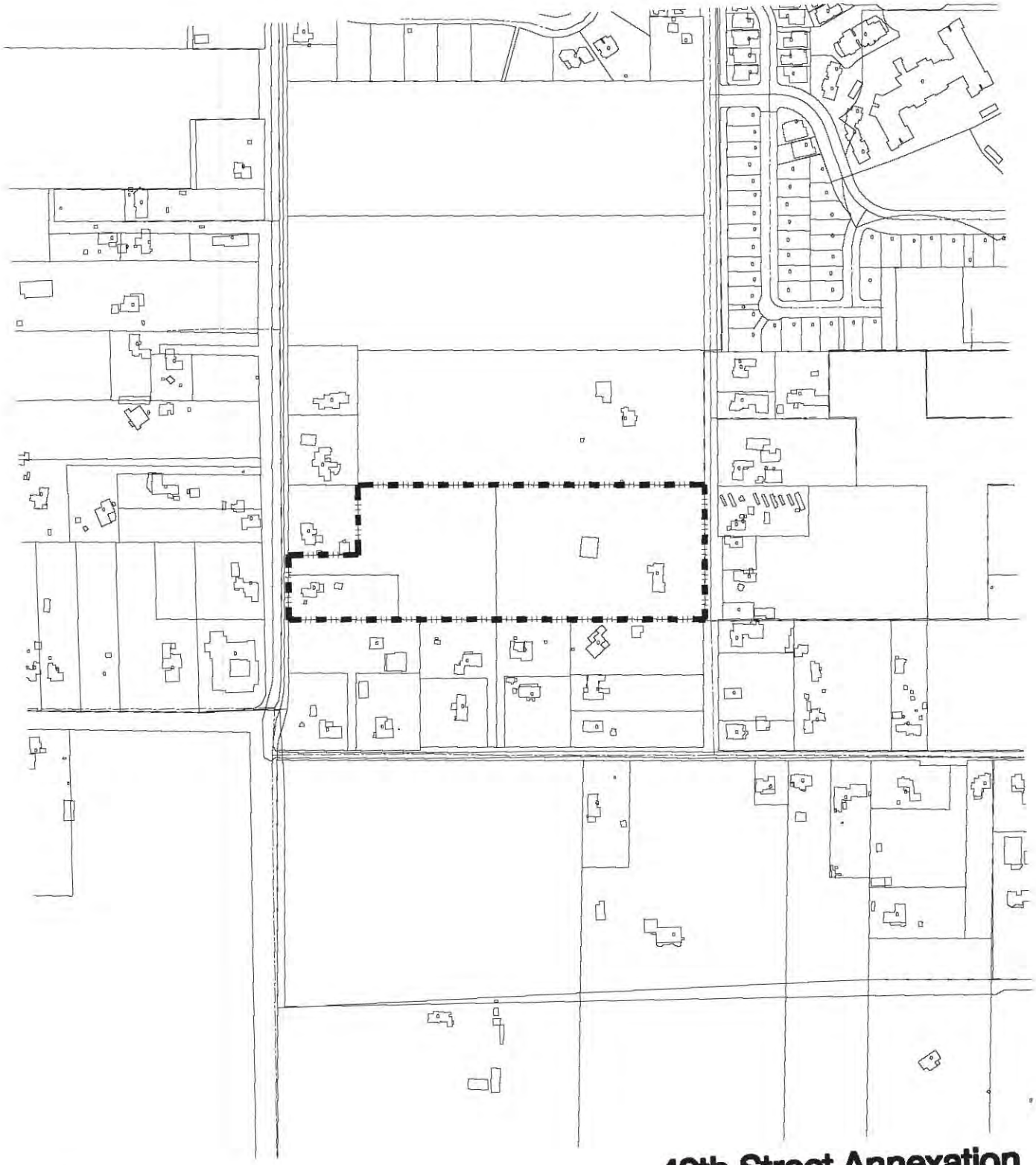


49th Street Annexation
NATURAL FEATURES

STEEP SLOPES

ATTACHMENT "H"

0 200 400 800
SCALE IN FEET



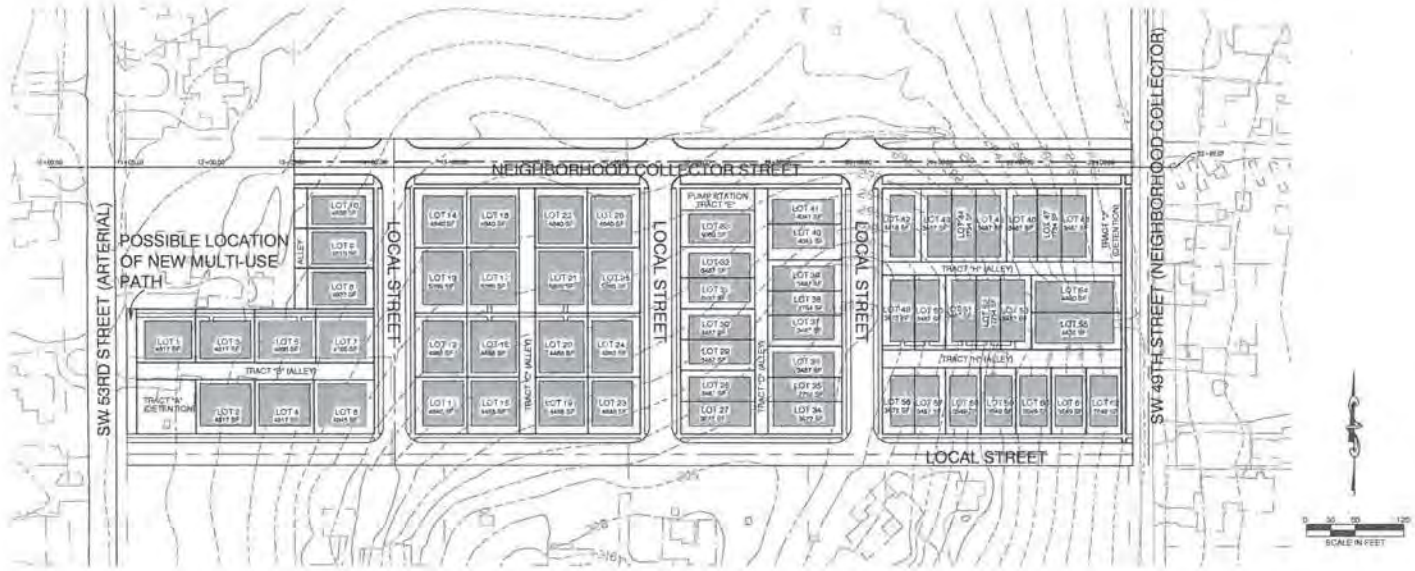
49th Street Annexation
NATURAL FEATURES
LANDSLIDES

ATTACHMENT "I"

0 200 400 800
SCALE IN FEET

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.77

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.78



62 UNITS = 5.9 du/acre DENSITY
SINGLE FAMILY DETACHED = 33 (53.3%)
DUPLEX = 14 (22.5%)
TRIPLEX = 15 (24.2%)
2500-3500 SF LOT = 24 (38.7%)

BUILDING ENVELOPES BASED ON SETBACKS;
ACTUAL BUILDING DIMENSIONS TO COMPLY WITH
LOT COVERAGE & GREEN AREA REQUIREMENTS

FOR LAND USE PURPOSES ONLY

NO.	REVISION	DATE
1	REVISED PER CITY COMMENTS	04/26/10
2	REVISED PER CITY COMMENTS	03/01/11

DEVCO engineering inc.

PROJECT: 49TH STREET ANNEXATION
PROJECT LOCATION: 2650 SW 49TH STREET
CLIENT: 49th STREET ANNEXATION PARTNERS

SHEET TITLE: GENERAL LAND USE/ CONCEPTUAL DEVELOPMENT PLAN

JOB NO. 08-442
ISSUED: 03/30/09
DRAWN BY: DEVCO
DRAWING:
OF SHEETS IN SET

ATTACHMENT "K"

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.79

Appendix

- Franchise Utility Confirmations
- Legal Description of Property
- Tax Assessor's Map
- Waterline, Sanitary Sewer, and Stormwater Calculations
- Traffic Impact Study Review
- Traffic Impact Study
- Letter from Benton County Public Works Department
- Summary of Amendments to the Transportation Planning Rule (TPR), LCDC
- Letter from John deTar, ODOT
- Letter to Valerie Grigg Devis, ODOT
- Corvallis Gazette-Times Articles, Editorial, Letter to the Editor
- Representative Dwellings: Renderings and Floor Plans

Franchise Utility Confirmations

From: Allen, Michael R [Michael_Allen@cable.comcast.com]
Sent: Friday, January 16, 2009 13:47
To: Nancy Edwards
Subject: RE: Property Service Question
Yes Comcast would be able to provide service to the area provided ditches were dug or Power poles set.

Thanks Mike

From: Nancy Edwards [mailto:nancy@devcoengineering.com]
Sent: Friday, January 16, 2009 11:15 AM
To: Curt Meadows; Greg Bronson; Kara McDonald; Allen, Michael R
Subject: Property Service Question

Attached is a map highlighted to show a piece of property (lots 600, 700 and 801) on SW 49th Street (Corvallis). Could you review this property and let me know, at your earliest convenience, if your franchise utility would be able to provide service to this property?

Thank you, Nancy

Nancy R. Edwards
Administrative Research Assistant
Devco Engineering, Inc.
POB 1211, Corvallis 97339 (mail)
245 NE Conifer, Corvallis (UPS/FedEx)
541.757.8991 (fon)
541.757.9885 (fax

nancy@devcoengineering.com (email)
www.devcoengineering.com (website)

Please consider the environment before printing this e-mail.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.81

From: Bronson, Gregory [g1b@nwnatural.com]
Sent: Tuesday, January 20, 2009 20:09
To: Nancy Edwards
Cc: Radosevich, John
Subject: RE: Property Service Question

Attachments: 08-442 Utility Franchise Service Map.pdf
We have gas mains in the vicinity of these tax lots, of sufficient size to meet most anticipated needs. It appears that lot 600 may need some type of utility easement to serve it as it appears to be landlocked by lot 801.

Thanks,

Greg Bronson
541-974-3941

Mr. John Radosevich from our Eugene 0ffice is now the primary contact for mid-valley Northwest Natural Gas questions/inquires. He can be reached at 541-926-4253 x8367.

From: Nancy Edwards [mailto:nancy@devcoengineering.com]
Sent: Friday, January 16, 2009 11:15 AM
To: Curt Meadows; Bronson, Gregory; Kara McDonald; Mike Allen
Subject: Property Service Question

Attached is a map highlighted to show a piece of property (lots 600, 700 and 801) on SW 49th Street (Corvallis). Could you review this property and let me know, at your earliest convenience, if your franchise utility would be able to provide service to this property?

Thank you, Nancy

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nancy@devcoengineering.com (email)
www.devcoengineering.com (website)

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49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.82

From: McDonald, Kara [Kara.McDonald@PacifiCorp.com]
Sent: Friday, January 16, 2009 12:00
To: Nancy Edwards; Curt Meadows; Greg Bronson; Mike Allen
Subject: RE: Property Service Question
Yes, Pacific Power is the electrical power utility for that area, and has the capability to serve.

From: Nancy Edwards [mailto:nancy@devcoengineering.com]
Sent: Friday, January 16, 2009 11:15 AM
To: Curt Meadows; Greg Bronson; McDonald, Kara; Mike Allen
Subject: Property Service Question

Attached is a map highlighted to show a piece of property (lots 600, 700 and 801) on SW 49th Street (Corvallis). Could you review this property and let me know, at your earliest convenience, if your franchise utility would be able to provide service to this property?

Thank you, Nancy

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nancy@devcoengineering.com (email)
www.devcoengineering.com (website)

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49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.83

Trish Weber

From: Nancy Edwards
Sent: Friday, March 20, 2009 10:19 AM
To: Trish Weber
Subject: 49th Street

From: Meadows, Curt [Curt.Meadows@qwest.com]
Sent: Friday, January 16, 2009 12:09
To: Nancy Edwards
Subject: RE: Property Service Question

Hi Nancy,

Qwest is the telephone company for this area and can provide service. I also sent Trish a letter regarding this back in December.

Take Care,

Curt

Nancy R. Edwards
Administrative Research Assistant
Devco Engineering, Inc.
POB 1211, Corvallis 97339 (mail)
245 NE Conifer, Corvallis (UPS/FedEx)
541.757.8991 (fon)
541.757.9885 (fax

nancy@devcoengineering.com (email)
www.devcoengineering.com (website)

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49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.84

49th Street Application
December 11, 2012

Legal Description of Property
Tax Assessor's Map

Description of Annexation Area

Beginning at a 3/4 inch iron pipe located at the Southeast corner of Lot 9 of "Pleasant View Fruit Farms", a subdivision plat of record in the Southwest Quarter of Section 9, Township 12 South, Range 5 West of the Willamette Meridian, Benton County, Oregon; thence South 89°59'41" West 623.34 feet to a 3/4 inch iron pipe at the Southwest corner of said Lot 9, also being the Southeast corner of Lot 6 of said "Pleasant View Fruit Farms"; thence South 89°57'21" West 620.26 feet to a 3/4 inch iron pipe at the Southwest corner of said Lot 6, also being on the East right-of-way line of SW 53rd Street (County Road 25271 – a 60 foot wide right-of-way); thence continuing South 89°57'21" West 56.58 feet to a point on the West line of the George W. Bethers Donation Land Claim Number 49 in said Township 12 South, Range 5 West of the Willamette Meridian; thence along said Bethers West line North 0°09'00" West 193.12 feet; thence leaving said Bethers West line North 89°57'28" East 56.58 feet to a 5/8 inch iron rod on the aforementioned East right-of-way line of SW 53rd Street, also being the Southwest corner of "Parcel A" of Minor Land Partition recorded as M-9131-79 in the Benton County Deed Records; thence continuing North 89°57'28" East 208.12 feet to a 5/8 inch iron rod at the Southeast corner of said "Parcel A"; thence North 0°06'57" West 209.42 feet to a 5/8 inch iron rod at the Northeast corner of said "Parcel A", also being on the North line of the aforementioned Lot 6; thence North 89°57'40" East 411.50 feet to a 5/8 inch iron rod at the Northeast corner of said Lot 6, also being the Northwest corner of the aforementioned Lot 9; thence North 89°58'42" East 623.92 feet to a 1/2 inch iron pipe at the Northeast corner of said Lot 9; thence South 0°08'25" East 402.66 feet to the point of beginning, and containing 10.74 acres of land, more or less.

NW1/4 SW1/4, SEC. 9, T12S, R5W, W.M.
BENTON COUNTY

THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY

12-5-09CB
CORVALLIS

12-5-09CB
CORVALLIS

49th Street Application
December 11, 2012

Waterline, Sanitary Sewer, And Stormwater Calculations

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.88

DEVCO engineering inc.

REGISTERED PROFESSIONAL ENGINEER 56483PE OREGON JAN. 15, 2002 STEVEN C. P. HATTORI

EXPIRES: 6/30/11

REGISTERED PROFESSIONAL ENGINEER 56483PE OREGON JAN. 15, 2002 STEVEN C. P. HATTORI

01/28/13

EXPIRES: 6/30/13

Waterline, Sanitary Sewer, and Stormwater
Calculations for

49th Street Annexation
For
49th Street Annexation Partners

Devco Job #08-442
April 2010

Table of Contents

Subject	No. of Pages
• Waterline Calculations	10
• Sanitary Sewer Calculations	4
• Stormwater Calculations	58

Waterline Calculations

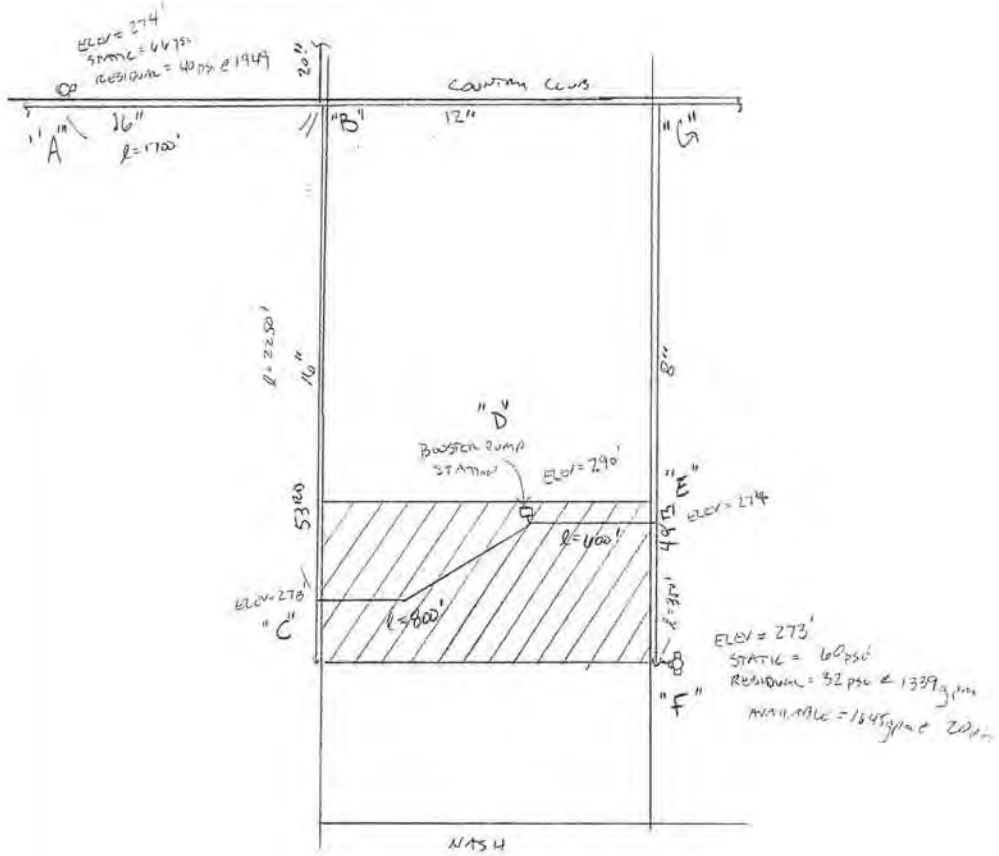
DEVCO engineering inc.

245 NE Conifer, P.O. Box 1211
Corvallis, OR 97339
Fax: (541) 757-9885

(541) 757-8991

PROJECT: 49th STREET ANNEXATION	PROJECT NO: 08-442	DESIGN: SH	DATE: 10/08

WATERLINE CALCULATIONS



- CALCULATE MAXIMUM WATER DEMANDS = MAXIMUM DAY DEMANDS + FIRE FLOWS

* FIRE FLOWS = 1500 gpm @ 20 psi FOR RESIDENCE w/o FIRE SPRINKLERS

DEVCO engineering inc.
245 NE Conifer, P.O. Box 1211
Corvallis, OR 97339
Fax: (541) 757-9885
(541) 757-8991

PROJECT: 49th STREET ANNEXATION	PROJECT NO: 08-442	DESIGN: SH	DATE: 10/08

CALCULATIONS FOR PROPOSED ANNEXATION

63 UNITS

AVE DEMAND = (76 gpcd)(63 UNITS)(2.3 PERSON/UNIT)

= 11,012 gal/day = 7.65 gpm

PEAK DAY DEMAND = 7.65 gpm (4) = 30.6 gpm

PEAK HOURLY DEMAND = 7.65 gpm (11.75) = 89.9 gpm

CALCULATIONS FOR AREA IN 2ND LEVEL PLUS PROPOSED ANNEXATION

AREA = 10.49 Ac + 11.90 Ac = 22.39 Ac

DWELLING UNITS = 22.39 Ac $\left(\frac{6 \text{ UNITS}}{\text{Ac}}\right)$ = 134.3 UNITS

= 135 UNITS

AVE DEMAND = 135 UNITS (76 gpcd)(2.3 PERS/UNIT)

= 23,598 gal/day = 16.39 gpm

PEAK DAY DEMAND = 16.39 gpm (4) = 65.6 gpm

PEAK HOURLY DEMAND = 16.39 gpm (11.75) = 192.6 gpm

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.92

DEVCO engineering inc.

245 NE Conifer, P.O. Box 1211
Corvallis, OR 97339
Fax: (541) 757-9885

(541) 757-8991

PROJECT: 49th STREET ANNEXATION	PROJECT NO: 08-442	DESIGN: SH	DATE: 10/08

MAXIMUM WATER DEMAND = 1500gpm + 200gpm

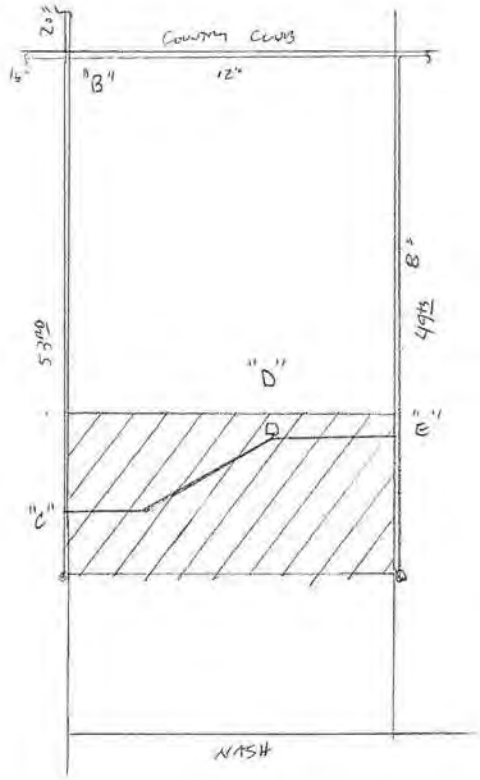
= 1700gpm

& TO SIMPLIFY CALCULATION AND TO BE CONSERVATIVE:

1) HYDRANT DATA @ "A" = "B" "B" NEAR 20" MAINLINE

2) HYDRANT DATA @ "F" WILL NOT BE USED. NOT ENOUGH TO SUPPLY 1700gpm @ 20psi

3) ANALYSIS TO ASSUME WATER FED FROM SINGLE DIRECTION.



49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.93

DEVCO engineering inc.
245 NE Conifer, P.O. Box 1211
Corvallis, OR 97339
Fax: (541) 757-9885
(541) 757-8991

PROJECT: 49th STREET ANNEXATION	PROJECT NO:	DESIGN:	DATE:

• MAX WATER DEMAND @ "D" = 1,700gpm

REQUIRED: NEED POSITIVE PRESSURE AT "D" FOR BOOSTER PUMP STATION. RESIDUAL PRESSURE NEEDS TO BE GREATER THAN 20psi. IS THE ADEQUATE WATER TO SUPPLY BOOSTER PUMP?

SOLUTION:

$$H_{OUT} = H_{RESIDUAL} - h_{le} - h_{f_{BC}} - h_{f_{CD}}$$

where h_{le} = ELEVATION LOSS

h_f = PIPE FRICTION LOSSES

* IGNORE MINOR LOSSES

* FROM NOMOGRAPH, RESIDUAL PRESSURE AT "B" IS 45psi @ 1,700gpm

$$h_f = \frac{10.44(L)(Q)^{1.85}}{(C)^{1.85}(d)^{4.8655}}$$

WHERE, L = LENGTH OF PIPE (ft)
Q = FLOW (gpm) = 1,700gpm
C = ROUGHNESS COEFFICIENT = 100 FOR DI
d = PIPE DIAMETER (in)

DEVCO engineering inc.

245 NE Conifer, P.O. Box 1211
Corvallis, OR 97339
Fax: (541) 757-9885

(541) 757-8991

PROJECT: 49th STREET ANNEXATION	PROJECT NO:	DESIGN:	DATE:

TRY 12" PIPE IN ANNEXATION, 16" IN 53RD

$H_{OUT} > 20\,psi = 46.2'$; $H_{DESIGN} = 45\,psi = 103.95'$

$$H_{OUT@D} = 103.95' - (290' - 274') - \left[\frac{10.44\,(2250)(1700)^{1.85}}{(100)^{1.85}\,(16)^{4.8655}}\right] - \left[\frac{10.44\,(800)(1700)^{1.85}}{(100)^{1.85}\,(12)^{4.8655}}\right]$$

$H_{OUT@D} = \underline{\underline{72.9' = 31.6\,psi > 20\,psi}}$ GOOD

∴ SUMMARY

- CONSTRUCT 16" MAINLINE IN SW 53RD FROM SW COUNTRY CLUB ROAD TO ANNEXATION FRONTAGE.
- CONSTRUCT 12" MAINLINE THROUGH SITE AND LOOP TO EXISTING 8" LINE IN SW 49TH ST.

Water Flow Test Summary

CORVALLIS FIRE DEPARTMENT

Conducted by PATTON/LEE Date 1/2/98

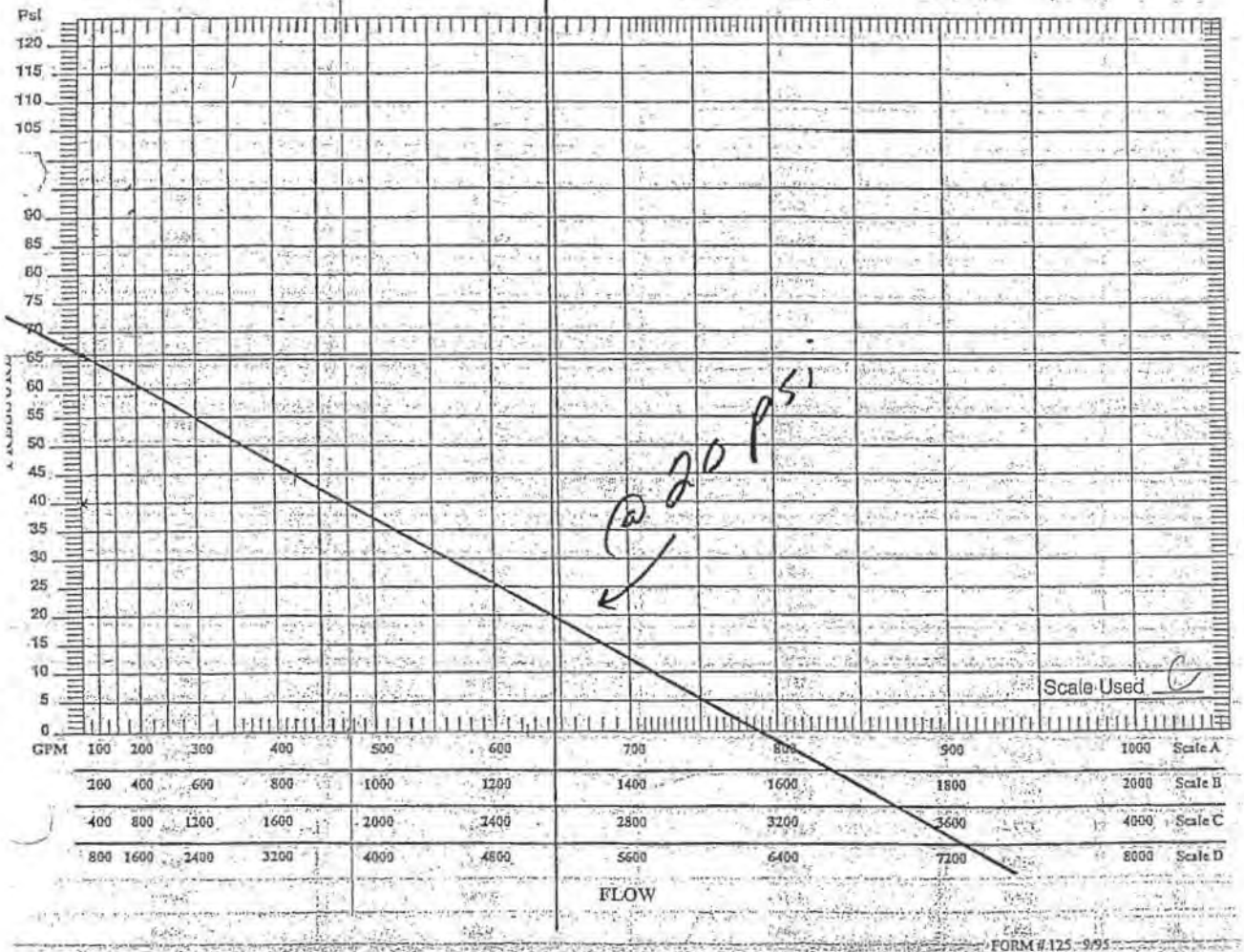
Location COUNTRY CLUB DR. & BARLEY HILL DRIVE

Time 1330 Static psi 66 Residual psi 40 Location #1486 COUNTRY CLUB WEST OF BARLEY HILL DR.

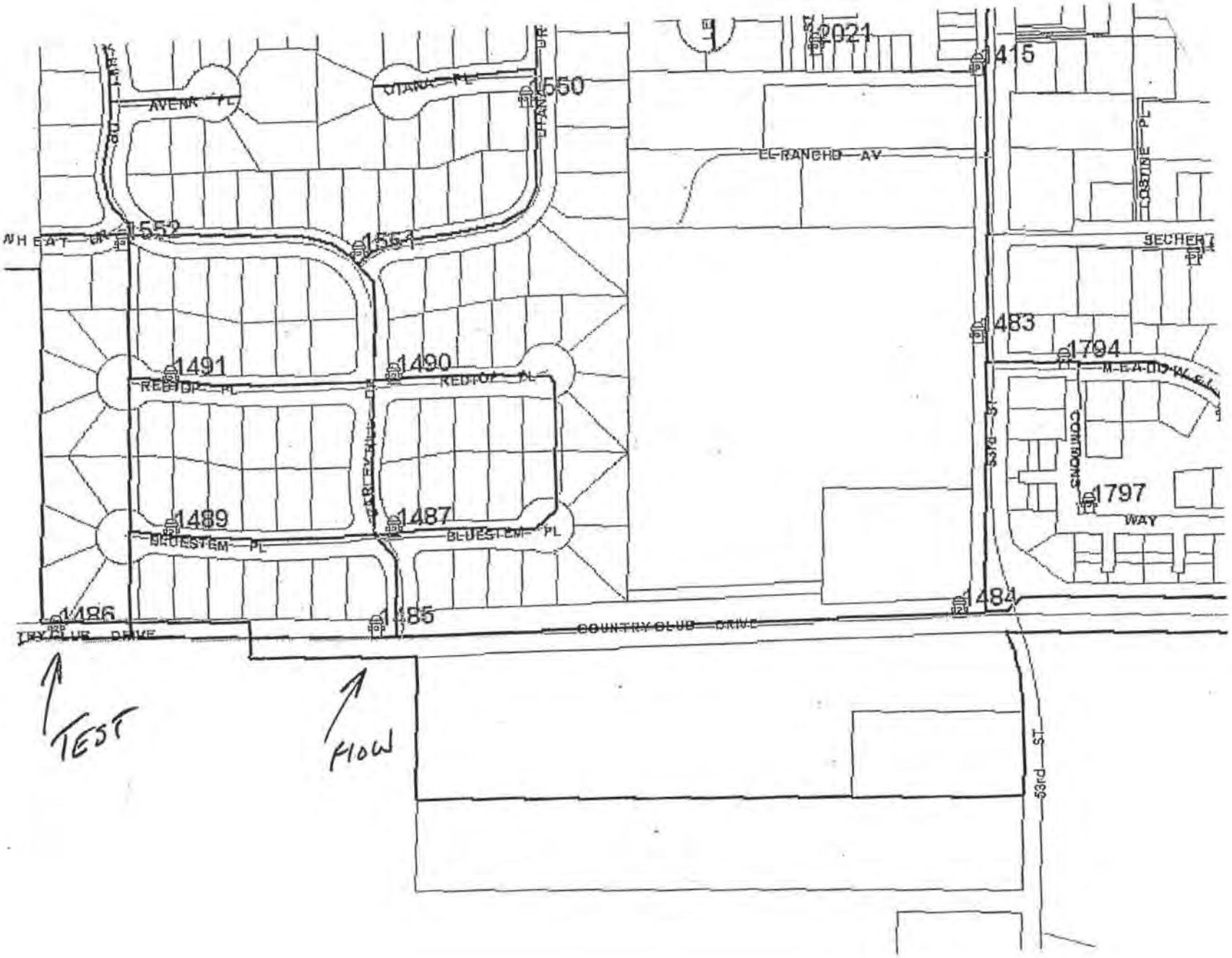
Hydrant #	Outlet Diameter	Pitot psi.	Observed Flow	Hydrant Coef.	Total Observed Flow	Available gpm @ 20 psi
1485	2½	6	457	.9	411	
	2½	6	457	.9	411	1949	2580
	4	10	1509	.9 (.83)	1127	

NOTES:

(200' West of 1485)



FORM #125 - 9/95


2021
415
1550
AVENA PL
EL RANCHO AV
1552
1551
WHEAT DR
483
1794
1491
1490
REDTOP PL
1797
1489
1487
BLUESTEM PL
1486
1485
1484
COUNTRY CLUB DRIVE
53rd ST
TEST
FLOW

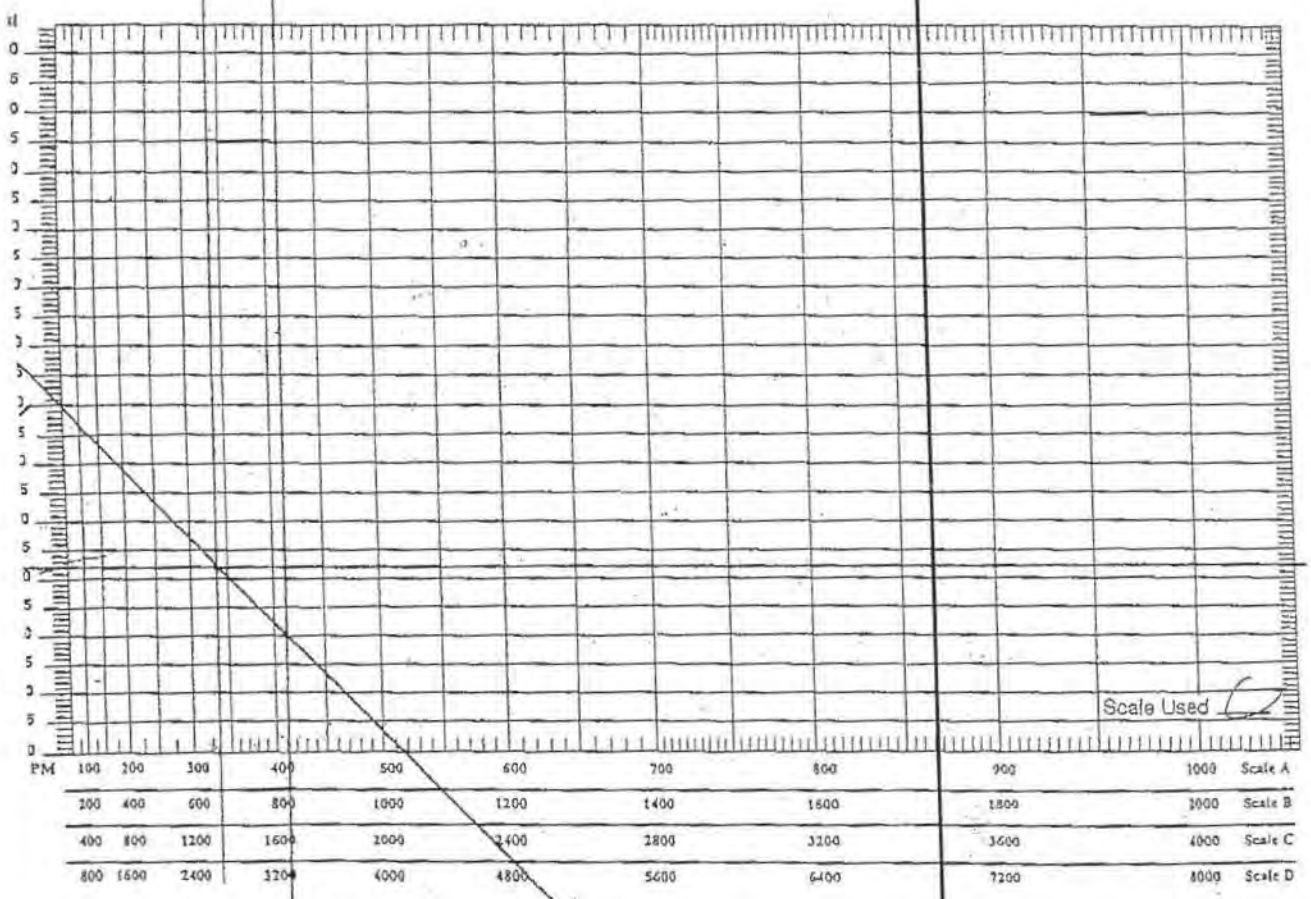
Conducted by TOLTON / WEIRE Date 9/17/08

Location - Street Address S. END OF 49th Project

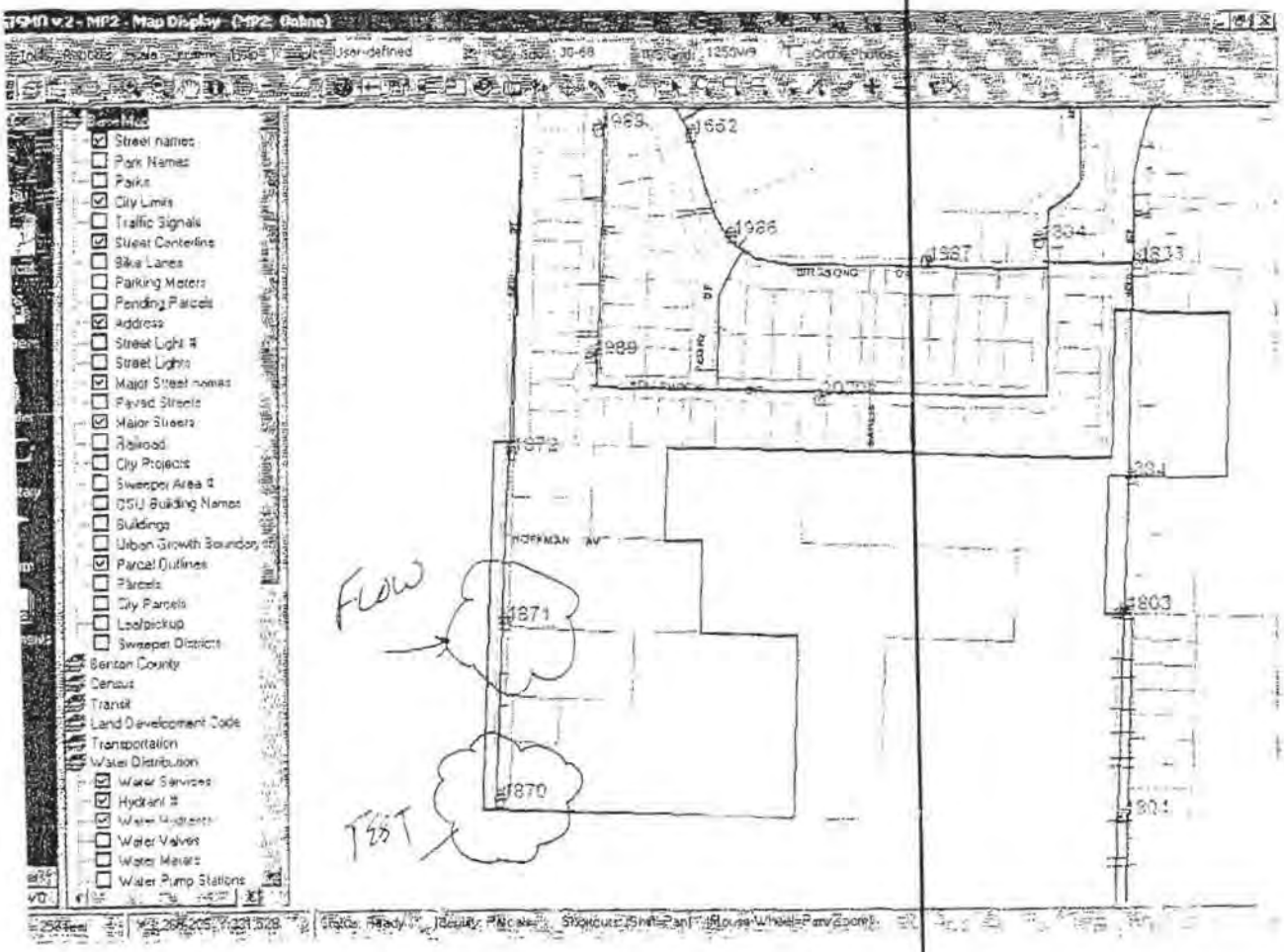
Test Pressure Hydrant # 1870 Static psi 60 Residual psi 32 Time 1145

w Hydrant #	Outlet Diameter	Pitot psi.	Observed Flow	Hydrant Coef.	Total Observed Flow	Available gpm @ 20 psi
1871	2 1/2	18	791	.9	711	1645
	2 1/2	14	698	.9	628 1339	

ES:



FORM # 125 4/99


Street names
Park Names
Parks
City Limits
Traffic Signals
Street Centerline
Bike Lanes
Parking Meters
Pending Parcels
Address
Street Light #
Street Lights
Major Street names
Paved Streets
Major Streets
Railroad
City Projects
Sweeper Area #
OSU Building Names
Buildings
Urban Growth Boundary
Parcel Outlines
Parcels
City Parcels
Leafpickup
Sweeper Districts
Benton County
Census
Transit
Land Development Code
Transportation
Water Distribution
Water Services
Hydrant #
Water Hydrants
Water Valves
Water Meters
Water Pump Stations
1983
1952
1986
1987
1989
1872
1871
1870
1804
1833
1803
1801
NORMAN AV
FLOW
TEST

Sanitary Sewer Calculations

DEVCO engineering inc.
245 NE Conifer, P.O. Box 1211
Corvallis, OR 97339
Fax: (541) 757-9885
(541) 757-8991

PROJECT: 49th STREET ANNEXATION	PROJECT NO: 08-442	DESIGN: SH	DATE: 10/08

SANITARY SEWER CALCULATIONS

DISCHARGE TO 49th STREET MAINLINE

* GROSS BASIN AREA = ~55.5Ac

* ZONING = RS6 = 6 UNITS/ACRE

OF DWELLING UNITS = (6 UNITS/ACRE)(55.5Ac)

= 333 UNITS

DESIGN FLOWS = 193 gpcd + 4000 gal/Ac/day FOR I&I

Q_{PEAK} = 193 gpcd (333 UNITS)(2.3 PERSON/UNIT) + 4000 gal/Ac/day (55.5Ac)

= 369,819 gal/day = 257 gal/min = 0.57 CFS

Q_{PIPE} CAPACITY 8" @ MIN SLOPE = 0.004 FT/FT = 0.764 CFS > 0.62 CFS OKAY!

* PROPOSED ANNEXATION AREA = 10.48Ac = 63 UNITS

% AREA = 10.48Ac / 55.5Ac = ~18.9%

$Q_{DESIGN\ ANNEX}$ = 193 gpcd (63 UNITS)(2.3 PERSON/UNIT) + 4000 gal/Ac/day (10.48Ac)

= 69,886 gal/day = 0.11 CFS

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.101

DEVCO engineering inc.

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Corvallis, OR 97339
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(541) 757-8991

PROJECT: 49th STREET ANNEXATION	PROJECT NO: 08-442	DESIGN: SA	DATE: 10/08

* IF ALL PROPOSED ANNEXATION AREA DISCHARGED TO 49th STREET, PERCENTAGE OF CAPACITY USED

$$\% \text{ CAPACITY} = \frac{0.11 \text{ cfs}}{0.57 \text{ cfs}} = \sim 19.3\% \quad \text{CLOSE, LESS THAN 1\%}$$

* BASED UPON EXISTING TOPOGRAPHY AND POSSIBLE DESIGN SCENARIOS, ONLY 7.28 Ac WILL DISCHARGE EAST TO 49th STREET MAINLINE.

$$Q_{\substack{\text{DESIGN}\\ \text{EAST}}} = 193 \text{ gpcd } (44 \text{ units})(2.3 \text{ person/unit}) + 4000 \text{ gal/Ac/day}(7.28 \text{ Ac})$$

$$= 48{,}652 \text{ gal/day} = 0.08 \text{ cfs}$$

$$\% \text{ CAPACITY} = \frac{0.08 \text{ cfs}}{0.57 \text{ cfs}} = \underline{\underline{\sim 14.0\% < 18.9\% \quad \text{Good!}}}$$

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.102

TABLE 5

CIRCULAR PIPE FLOW CAPACITY
Full Flow (cubic feet per second)

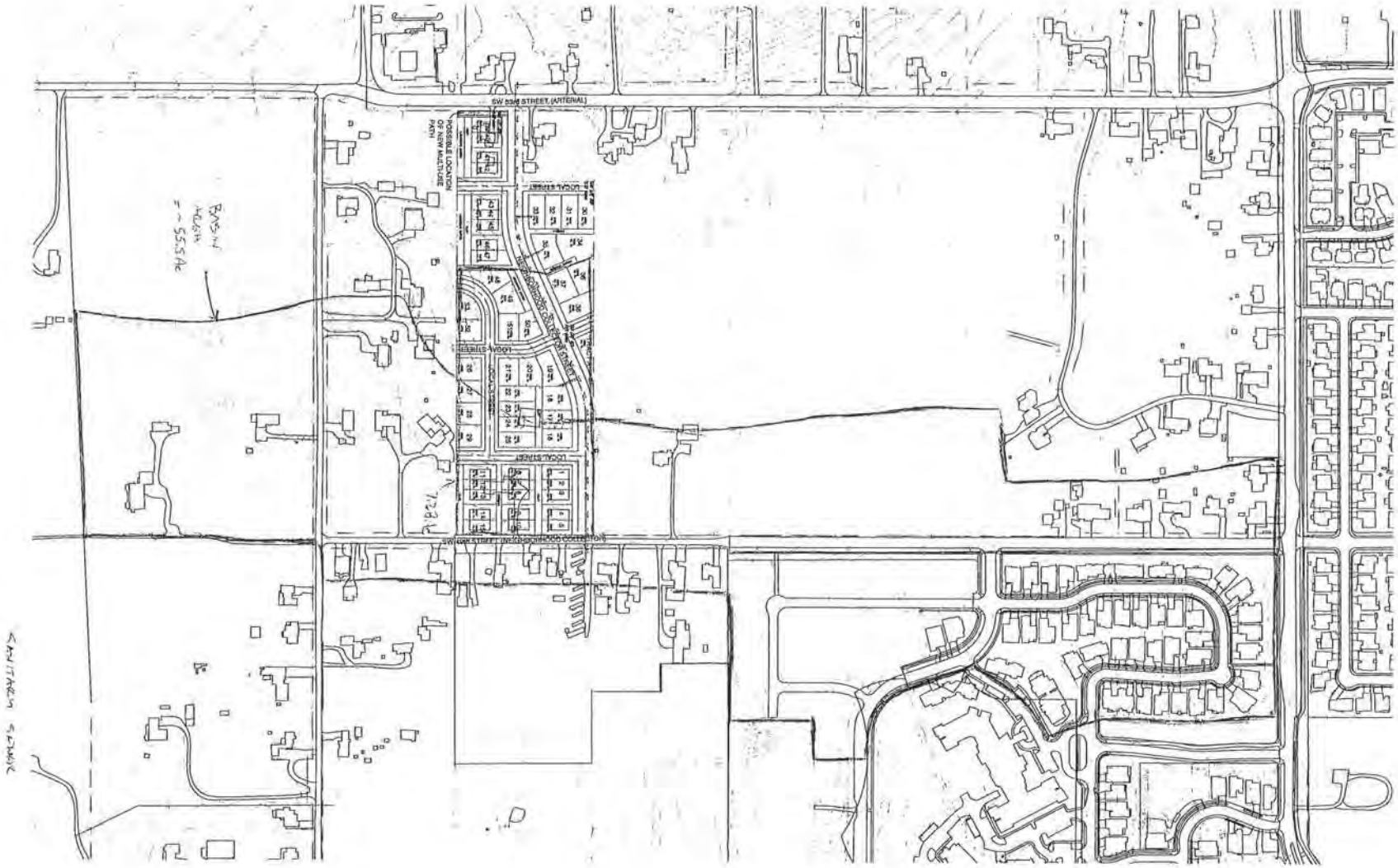
Mannings "n"= 0.013

Dia. (in.)	*Conv. Factor	% Slope (feet per 100 feet) 0.02	0.05	0.10	0.20	0.35	0.50	0.75	1.00	1.25	1.50	1.75	2.0	2.5	5.0	10.0	20.0
									(c.f.s.)								
3	0.884	0.012	0.020	0.028	0.040	0.052	0.062	0.077	0.088	0.099	0.11	0.12	0.12	0.14	0.20	0.28	0.40
4	1.903	0.027	0.043	0.060	0.085	0.113	0.135	0.165	0.190	0.213	0.23	0.25	0.27	0.30	0.43	0.60	0.85
5	3.451	0.049	0.077	0.109	0.154	0.204	0.244	0.299	0.345	0.386	0.42	0.46	0.49	0.55	0.77	1.09	1.54
6	5.611	0.079	0.125	0.177	0.251	0.332	0.397	0.486	0.561	0.627	0.69	0.74	0.79	0.89	1.25	1.77	2.51
→ 8	12.084	0.171	0.270	0.382	0.540	0.715	0.854	1.047	1.208	1.351	1.48	1.60	1.71	1.91	2.70	3.82	5.40
						@ 0.004 FT/FT = 0.764 CFS											
10	21.91	0.31	0.49	0.69	0.98	1.30	1.55	1.90	2.19	2.45	2.68	2.90	3.10	3.46	4.90	6.93	9.80
12	35.63	0.50	0.80	1.13	1.59	2.11	2.52	3.09	3.56	3.98	4.36	4.71	5.04	5.63	7.97	11.27	15.93
15	64.60	0.91	1.44	2.04	2.89	3.82	4.57	5.59	6.46	7.22	7.91	8.55	9.14	10.21	14.44	20.43	28.89
18	105.04	1.49	2.35	3.32	4.70	6.21	7.43	9.10	10.50	11.74	12.87	13.90	14.86	16.61	23.49	33.22	46.98
21	158.45	2.24	3.54	5.01	7.09	9.37	11.20	13.72	15.85	17.72	19.41	20.96	22.41	25.05	35.43	50.11	70.86
24	226.22	3.20	5.06	7.15	10.12	13.38	16.00	19.59	22.62	25.29	27.71	29.93	31.99	35.77	50.59	71.54	101.17
27	309.70	4.38	6.93	9.79	13.85	18.32	21.90	26.82	30.97	34.63	37.93	40.97	43.80	48.97	69.3	97.9	138.5
30	410.17	5.80	9.17	12.97	18.34	24.27	29.00	35.52	41.02	45.86	50.24	54.26	58.01	64.85	91.7	129.7	183.4
36	666.98	9.43	14.91	21.09	29.83	39.46	47.16	57.76	66.70	74.57	81.69	88.23	94.33	105.46	149.1	210.9	298.3
42	1006.1	14.23	22.50	31.82	44.99	59.5	71.1	87.1	100.6	112.5	123.2	133.1	142.3	159.1	225.0	318.2	449.9
48	1436.4	20.31	32.12	45.42	64.24	85.0	101.6	124.4	143.6	160.6	175.9	190.0	203.1	227.1	321.2	454.2	642.4

* Conveyance Factor = ~~(1.486 x R2/3 x A) / n~~

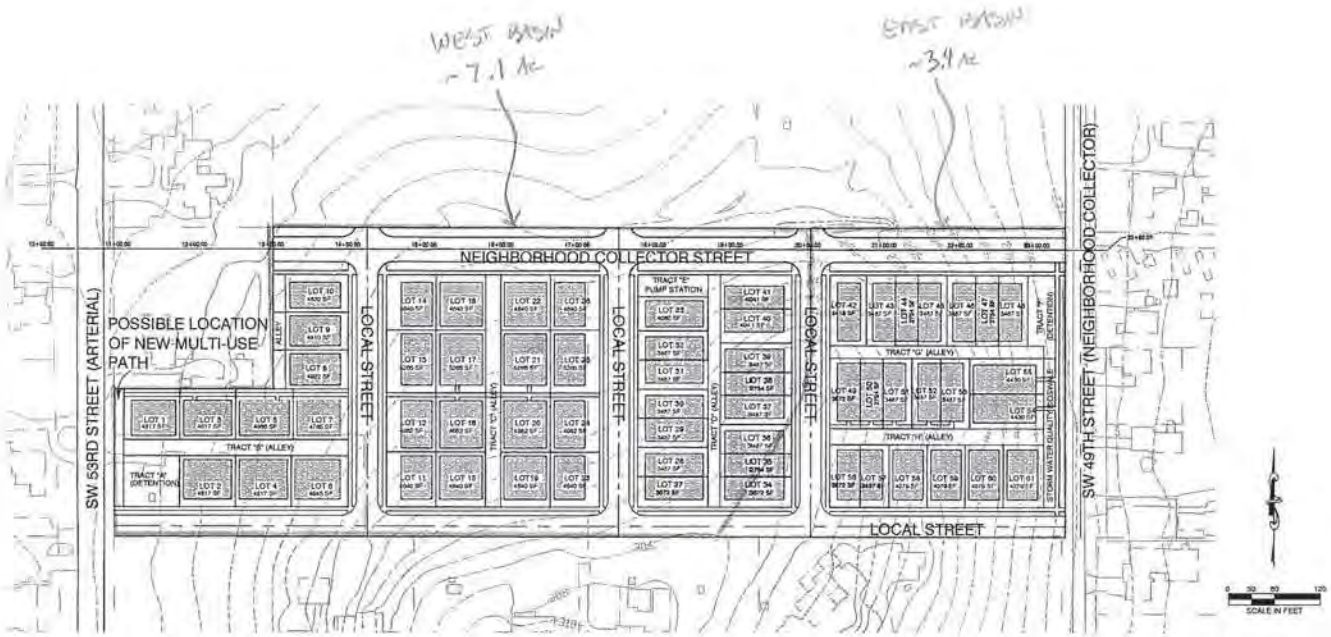
$= A \cdot \frac{1.486}{n} \cdot R^{2/3}$

$Q = A \frac{1.486}{n} R^{2/3} S^{1/2}$


SW 49th STREET (ARTERIAL)
POSSIBLE LOCATION OF NEW MULTIUSE PATH
LOCAL STREET
LOCAL STREET
LOCAL STREET
SW OAK STREET (NEIGHBORHOOD COLLECTOR)
BNSF
MAIN
LINE
SANITARY SEWER

Stormwater Calculations

EXISTING CONDITIONS - DRAINAGE BASIN



61 UNITS = 5.8 du/acre DENSITY
SINGLE FAMILY DETACHED = 32 (52.5%)
DUPLEX = 14 (23.0%)
TRIPLEX = 15 (24.5%)
2500-3500 SF LOT = 21 (34.4%)

BUILDING ENVELOPES BASED ON SETBACKS;
ACTUAL BUILDING DIMENSIONS TO COMPLY WITH
LOT COVERAGE & GREEN AREA REQUIREMENTS

ATTACHMENT "K"

FOR LAND USE PURPOSES ONLY

No.	REVISION	DATE
1	REVISED PER CITY COMMENTS	04/26/10

DEVCO ENGINEERING INC.
38 NORTHWEST BOND ST.
BEND, OR 97701
(541) 382-4449
WWW.DEVCOENGINEERING.COM

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PROJECT: 49TH STREET ANNEXATION

PROJECT LOCATION: 2650 SW 49TH STREET

CLIENT: 49TH STREET ANNEXATION PARTNERS

SHEET TITLE: GENERAL LAND USE/ CONCEPTUAL DEVELOPMENT PLAN

JOB NO.: 08-442
ISSUED: 03/30/09
DRAWN BY: DEVCO
DRAWING:
OF SHEETS IN SET:

POSSIBLE DEVELOPED CONDITIONS -
DRAINAGE BASIN

61 UNITS = 5.8 du/acre DENSITY
SINGLE FAMILY DETACHED = 32 (52.5%)
DUPLEX = 14 (23.0%)
TRIPLEX = 15 (24.5%)
2500-3500 SF LOT = 21 (34.4%)

BUILDING ENVELOPES BASED ON SETBACKS;
ACTUAL BUILDING DIMENSIONS TO COMPLY WITH
LOT COVERAGE & GREEN AREA REQUIREMENTS

ATTACHMENT "K"

FOR LAND USE PURPOSES ONLY

No.	REVISION	DATE
1	REVISED PER CITY COMMENTS	04/26/10

DEVCO engineering inc.
PROJECT: 49TH STREET ANNEXATION
PROJECT LOCATION: 2650 SW 49TH STREET
CLIENT: 49th STREET ANNEXATION PARTNERS
SHEET TITLE: GENERAL LAND USE/ CONCEPTUAL DEVELOPMENT PLAN
JOB NO.
ISSUED: 03/30/09
DRAWN BY: DEVCO
DRAWING:
OF SHEETS IN SET:

Worksheet 2: Runoff curve number and runoff

Project	By	Date
49TH STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
WEST AREA		

Check one: ☑ Present ☐ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Figure 2-3	CN 1/ Figure 2-4	Area ☐ acres ☐ mi² ☐ %	Product of CN x area
SAINTON SILT LOAM 2 TO 8% SLOPE, C	MEADOW	71			6.65	472.15
WILLAMETTE SILT LOAM, 0 TO 3% SLOPE, B	MEADOW	58			0.43	24.94
				Totals ➡	7.08	497.09

1/ Use only one CN source per line

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{497.09}{7.08} = 70.21$; **Use CN** ➡ 70

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr	2	5	10
Rainfall, P (24-hour)	in	2.5	2.9	3.6
Runoff, Q	in	0.46	0.66	1.07

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.108

Table 2-2c Runoff curve numbers for other agricultural lands [1]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. [2]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. [3]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 [4]	48	65	73
Woods—grass combination (orchard or tree farm). [5]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. [6]	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 [4]	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

1 Average runoff condition, and $I_a = 0.2S$.
2 *Poor:* <50%) ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: > 75% ground cover and lightly or only occasionally grazed.
3 *Poor:* <50% ground cover.
Fair: 50 to 75% ground cover.
Good: >75% ground cover.
4 Actual curve number is less than 30; use CN = 30 for runoff computations.
5 CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.
6 *Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.109

Worksheet 3: Time of Concentration (T_c) or travel time (T_t)

Project	By	Date
49th STREET ANNEXATION	SCRH	10/08
Location	**Checked**	**Date**
WEST AREA		

Check one: ☑ Present ☐ Developed

Check one: ☑ T_c ☐ T_t through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet. Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to Tc only)

	Segment ID		
	FIRST 300'		
1. Surface description (table 3-1)	DENSE GRASS		
2. Manning's roughness coefficient, n (table 3-1)	0.24		
3. Flow length, L (total L † 300 ft) ft	300		
4. Two-year 24-hour rainfall, P_2 in	2.5		
5. Land slope, s ft/ft	0.055		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t hr	0.43	+	= 0.43

Shallow concentrated flow

	Segment ID		
	REMAINDER		
7. Surface description (paved or unpaved)	UNPAVED		
8. Flow length, L ft	200		
9. Watercourse slope, s ft/ft	0.038		
10. Average velocity, V (figure 3-1) ft/s	3.2		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t hr	0.02	+	= 0.02

Channel flow

	Segment ID		
12. Cross sectional flow area, a ft^2			
13. Wetted perimeter, p_w ft			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r ft			
15 Channel slope, s ft/ft			
16. Manning's roughness coefficient, n			
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V ft/s			
18. Flow length, L ft			
19. $T_t = \frac{L}{3600\ V}$ Compute T_t hr		+	= —

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) Hr 0.45

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.110

Sheet flow

Sheet flow is flow over plane surfaces. It usually occurs in the headwater of streams. With sheet flow, the friction value (Manning's n) is an effective roughness coefficient that includes the effect of raindrop impact; drag over the plane surface; obstacles such as litter, crop ridges, and rocks; and erosion and transportation of sediment. These n values are for very shallow flow depths of about 0.1 foot or so. Table 3-1 gives Manning's n values for sheet flow for various surface conditions.

Table 3-1 Roughness coefficients (Manning's n) for sheet flow

Surface description	n [1]
Smooth surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils:	
Residue cover ≤20%	0.06
Residue cover >20%	0.17
Grass:	
Short grass prairie	0.15
Dense grasses [2]	0.24
Bermudagrass	0.41
Range (natural)	0.13
Woods:[3]	
Light underbrush	0.40
Dense underbrush	0.80

[1] The n values are a composite of information compiled by Engman (1986).
[2] Includes species such as weeping lovegrass, bluegrass, buffalo grass, blue grama grass, and native grass mixtures.
[3] When selecting n, consider cover to a height of about 0.1 ft. This is the only part of the plant cover that will obstruct sheet flow.

For sheet flow of less than 300 feet, use Manning's kinematic solution (Overtop and Meadows 1976) to compute T_t:

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}} \qquad \text{[eq. 3-3]}$$

where:

T_t = travel time (hr),
n = Manning's roughness coefficient (table 3-1)
L = flow length (ft)
P_2 = 2-year, 24-hour rainfall (in)
s = slope of hydraulic grade line (land slope, ft/ft)

This simplified form of the Manning's kinematic solution is based on the following: (1) shallow steady uniform flow, (2) constant intensity of rainfall excess (that part of a rain available for runoff), (3) rainfall duration of 24 hours, and (4) minor effect of infiltration on travel time. Rainfall depth can be obtained from appendix B.

Shallow concentrated flow

After a maximum of 300 feet, sheet flow usually becomes shallow concentrated flow. The average velocity for this flow can be determined from figure 3-1, in which average velocity is a function of watercourse slope and type of channel. For slopes less than 0.005 ft/ft, use equations given in appendix F for figure 3-1. Tillage can affect the direction of shallow concentrated flow. Flow may not always be directly down the watershed slope if tillage runs across the slope.

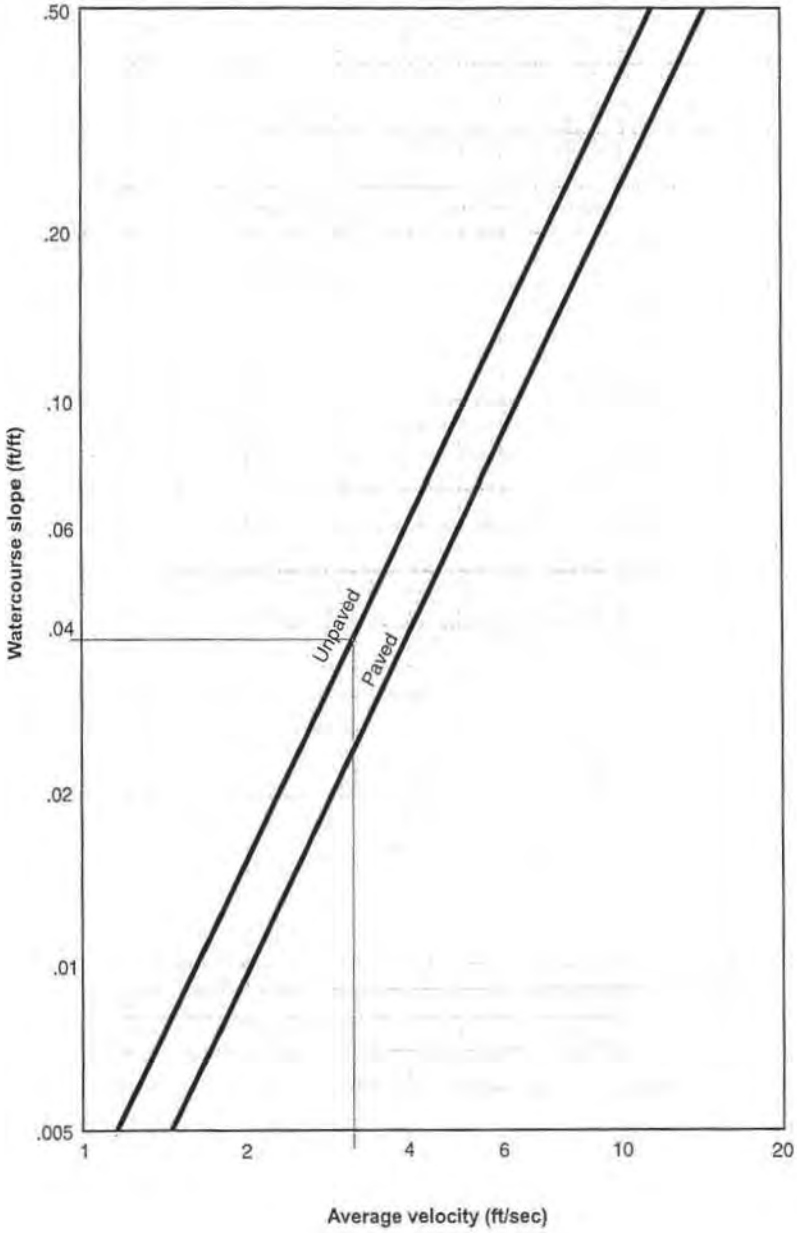
After determining average velocity in figure 3-1, use equation 3-1 to estimate travel time for the shallow concentrated flow segment.

Open channels

Open channels are assumed to begin where surveyed cross section information has been obtained, where channels are visible on aerial photographs, or where blue lines (indicating streams) appear on United States Geological Survey (USGS) quadrangle sheets. Manning's equation or water surface profile information can be used to estimate average flow velocity. Average flow velocity is usually determined for bankfull elevation.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.111

Figure 3-1 Average velocities for estimating travel time for shallow concentrated flow



49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.112

Worksheet 4: Graphical Peak Discharge method

Project	By	Date
49th STREET ANNEXATION	SCPH	10/03
Location	**Checked**	**Date**
WEST AREA		

Check one: ☑ Present ☐ Developed

1. Data

Drainage area ..... A_m = $\frac{7.08}{640} = 0.011$ mi² (acres/640)

Runoff curve number ..... CN = 70 (From worksheet 2)

Time of concentration ..... T_c = 0.45 hr (From worksheet 3)

Rainfall distribution ..... = IA (I, IA, II III)

Pond and swamp areas sprea throughout watershed ..... = 0 percent of A_m (0 acres or mi² covered)

		Storm #1	Storm #2	Storm #3
2. Frequency	yr	2	5	10
3. Rainfall, P (24-hour)	in	2.5	2.9	3.6
4. Initial abstraction, I_a (Use CN with table 4-1)	in	0.857	0.857	0.857
5. Compute I_a/P		0.343	0.296	0.238
6. Unit peak discharge, q_u (Use T_c and I_a/P with exhibit 4– IA)	csm/in	60	63	88
7. Runoff, Q (From worksheet 2) Figure 2-6	in	0.46	0.66	1.07
8. Pond and swamp adjustment factor, F_p (Use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond ans swamp area.)		1.0	1.0	1.0
9. Peak discharge, q_p	ft³/s	0.305	0.460	1.042

(Where $q_p = q_u A_m Q F_p$)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.113

Chapter 4 Graphical Peak Discharge Method

This chapter presents the Graphical Peak Discharge method for computing peak discharge from rural and urban areas. The Graphical method was developed from hydrograph analyses using TR-20, "Computer Program for Project Formulation—Hydrology" (SCS 1983). The peak discharge equation used is:

$$q_p = q_u A_m Q F_p \qquad \text{[eq. 4-1]}$$

where:

q_p = peak discharge (cfs)
q_u = unit peak discharge (csm/in)
A_m = drainage area (mi²)
Q = runoff (in)
F_p = pond and swamp adjustment factor

The input requirements for the Graphical method are as follows: (1) T_c (hr), (2) drainage area (mi²), (3) appropriate rainfall distribution (I, IA, II, or III), (4) 24-hour rainfall (in), and (5) CN. If pond and swamp areas are spread throughout the watershed and are not considered in the T_c computation, an adjustment for pond and swamp areas is also needed.

Peak discharge computation

For a selected rainfall frequency, the 24-hour rainfall (P) is obtained from appendix B or more detailed local precipitation maps. CN and total runoff (Q) for the watershed are computed according to the methods outlined in chapter 2. The CN is used to determine the initial abstraction (I_a) from table 4-1. I_a / P is then computed.

If the computed I_a / P ratio is outside the range in exhibit 4 (4-I, 4-IA, 4-II, and 4-III) for the rainfall distribution of interest, then the limiting value should be used. If the ratio falls between the limiting values, use linear interpolation. Figure 4-1 illustrates the sensitivity of I_a / P to CN and P.

Peak discharge per square mile per inch of runoff (q_u) is obtained from exhibit 4-I, 4-IA, 4-II, or 4-III by using T_c (chapter 3), rainfall distribution type, and I_a / P ratio. The pond and swamp adjustment factor is obtained from table 4-2 (rounded to the nearest table value). Use worksheet 4 in appendix D to aid in computing the peak discharge using the Graphical method.

Figure 4-1 Variation of I_a / P for P and CN

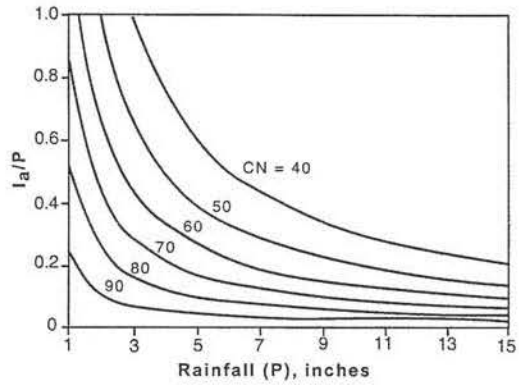
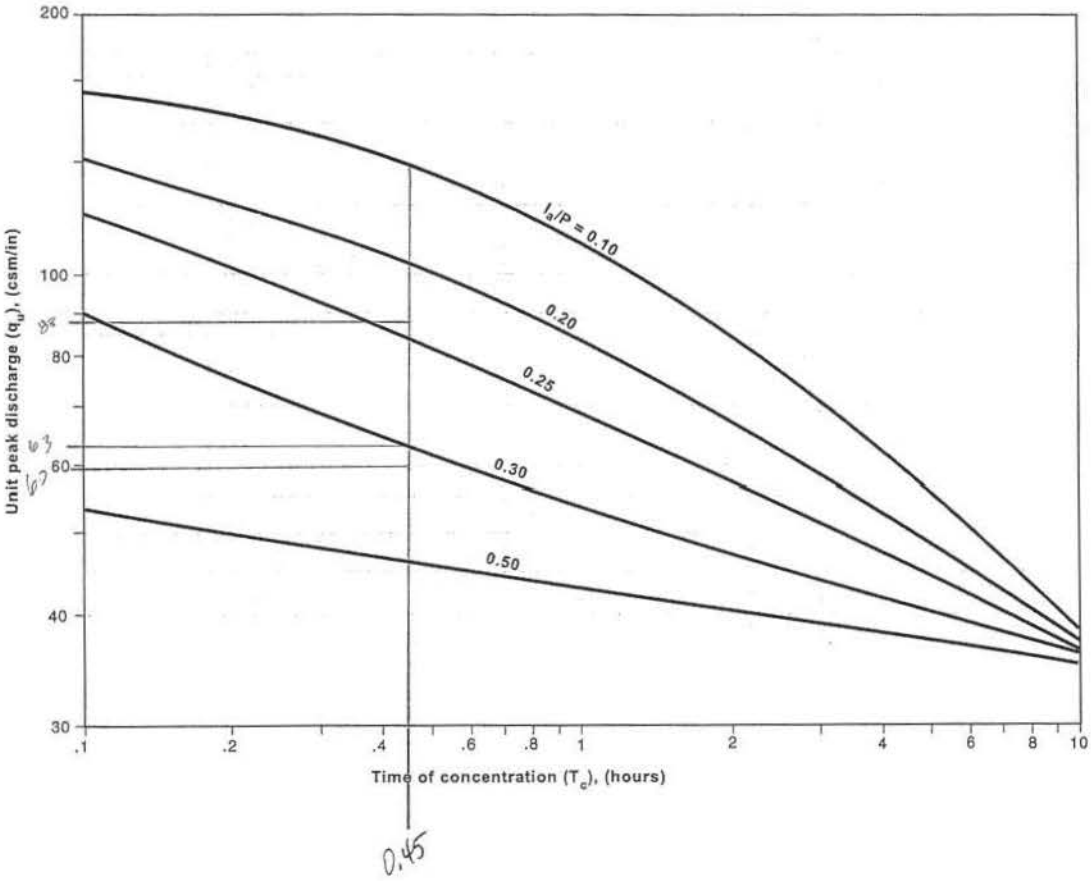


Table 4-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	70	0.857
41	2.878	71	0.817
42	2.762	72	0.778
43	2.651	73	0.740
44	2.545	74	0.703
45	2.444	75	0.667
46	2.348	76	0.632
47	2.255	77	0.597
48	2.167	78	0.564
49	2.082	79	0.532
50	2.000	80	0.500
51	1.922	81	0.469
52	1.846	82	0.439
53	1.774	83	0.410
54	1.704	84	0.381
55	1.636	85	0.353
56	1.571	86	0.326
57	1.509	87	0.299
58	1.448	88	0.273
59	1.390	89	0.247
60	1.333	90	0.222
61	1.279	91	0.198
62	1.226	92	0.174
63	1.175	93	0.151
64	1.125	94	0.128
65	1.077	95	0.105
66	1.030	96	0.083
67	0.985	97	0.062
68	0.941	98	0.041
69	0.899		

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.114

Exhibit 4-IA Unit peak discharge (q_u) for NRCS (SCS) type IA rainfall distribution



49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.115

Worksheet 2: Runoff curve number and runoff

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
WEST AREA		

Check one: ☐ Present ☑ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1/] Table 2-2	CN [1/] Figure 2-3	CN [1/] Figure 2-4	Area ☐ acres ☐ mi² ☐ %	Product of CN x area
SPOKANE SILT LOAM 2 TO 8% SLOPE, C	RESIDENTIAL DISTRICT 1/8 ACRE	90			4.86	437.40
WILLAMETTE SILT LOAM, 0 TO 3% SLOPE, B	RESIDENTIAL DISTRICT 1/8 ACRE	85			0.43	36.55
				Totals ➡	5.29	473.95

[1/] Use only one CN source per line

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{473.95}{5.29} = 89.59 \quad ; \quad \textbf{Use CN} \Rightarrow \boxed{90}$$

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr	2	5	10
Rainfall, P (24-hour)	in	2.5	2.9	3.6
Runoff, Q	in	1.53	1.89	2.54

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.116

Table 2-2a Runoff curve numbers for urban areas [1]

Cover description: Cover type and hydrologic condition	Average percent impervious area [2]	Curve numbers for hydrologic soil group: A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

1 Average runoff condition, and $I_a = 0.2S$.

2 The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

3 CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

4 Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

5 Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.117

Worksheet 3: Time of Concentration (T_c) or travel time (T_t)

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
EAST AREA		

Check one: ☐ Present ☑ Developed

Check one: ☑ T_c ☐ T_t through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet.
Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to Tc only)

	Segment ID		
1. Surface description (table 3-1)			
2. Manning's roughness coefficient, n (table 3-1)			
3. Flow length, L (total L † 300 ft) ft			
4. Two-year 24-hour rainfall, P_2 in			
5. Land slope, s ft/ft			
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{\ 0.5}\ s^{0.4}}$ Compute T_t hr		+	=

Shallow concentrated flow

	Segment ID		
7. Surface description (paved or unpaved)			
8. Flow length, L ft			
9. Watercourse slope, s ft/ft			
10. Average velocity, V (figure 3-1) ft/s			
11. $T_t = \frac{L}{3600\ V}$ Compute T_t hr		+	=

Channel flow

	Segment ID		
12. Cross sectional flow area, a ft^2			
13. Wetted perimeter, p_w ft			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r ft			
15 Channel slope, s ft/ft			
16. Manning's roughness coefficient, n			
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V ft/s			
18. Flow length, L ft			
19. $T_t = \frac{L}{3600\ V}$ Compute T_t hr		+	=
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) Hr			0.10

BY INSPECTION tc < 0.10 (hr)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.118

Worksheet 4: Graphical Peak Discharge method

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
WEST AREA		

Check one: ☐ Present ☑ Developed

1. Data

Drainage area ..... A_m = 5.29/640 = 0.008 mi² (acres/640)

Runoff curve number ..... CN = 90 (From worksheet 2)

Time of concentration ..... T_c = 0.10 hr (From worksheet 3)

Rainfall distribution ..... = IA (I, IA, II III)

Pond and swamp areas sprea throughout watershed ..... = 0 percent of A_m (0 acres or mi² covered)

	Storm #1	Storm #2	Storm #3
2. Frequency ..... yr	2	5	10
3. Rainfall, P (24-hour) ..... in	2.5	2.9	3.6
4. Initial abstraction, I_a ..... in (Use CN with table 4-1)	0.222	0.222	0.222
5. Compute I_a/P	0.089	0.077	0.062
6. Unit peak discharge, q_u ..... csm/in (Use T_c and I_a/P with exhibit 4– IA)	161	161	161
7. Runoff, Q ..... in (From worksheet 2) Figure 2-6	1.53	1.89	2.54
8. Pond and swamp adjustment factor, F_p ..... (Use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond ans swamp area.)	1.0	1.0	1.0
9. Peak discharge, q_p ..... ft³/s	2,036	2,515	3,380

(Where $q_p = q_u A_m Q F_p$)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.119

Chapter 4 Graphical Peak Discharge Method

This chapter presents the Graphical Peak Discharge method for computing peak discharge from rural and urban areas. The Graphical method was developed from hydrograph analyses using TR-20, "Computer Program for Project Formulation—Hydrology" (SCS 1983). The peak discharge equation used is:

$$q_p = q_u A_m Q F_p \qquad \text{[eq. 4-1]}$$

where:

q_p = peak discharge (cfs)
q_u = unit peak discharge (csm/in)
A_m = drainage area (mi^2)
Q = runoff (in)
F_p = pond and swamp adjustment factor

The input requirements for the Graphical method are as follows: (1) T_c (hr), (2) drainage area (mi^2), (3) appropriate rainfall distribution (I, IA, II, or III), (4) 24-hour rainfall (in), and (5) CN. If pond and swamp areas are spread throughout the watershed and are not considered in the T_c computation, an adjustment for pond and swamp areas is also needed.

Peak discharge computation

For a selected rainfall frequency, the 24-hour rainfall (P) is obtained from appendix B or more detailed local precipitation maps. CN and total runoff (Q) for the watershed are computed according to the methods outlined in chapter 2. The CN is used to determine the initial abstraction (I_a) from table 4-1. I_a / P is then computed.

If the computed I_a / P ratio is outside the range in exhibit 4 (4-I, 4-IA, 4-II, and 4-III) for the rainfall distribution of interest, then the limiting value should be used. If the ratio falls between the limiting values, use linear interpolation. Figure 4-1 illustrates the sensitivity of I_a / P to CN and P.

Peak discharge per square mile per inch of runoff (q_u) is obtained from exhibit 4-I, 4-IA, 4-II, or 4-III by using T_c (chapter 3), rainfall distribution type, and I_a / P ratio. The pond and swamp adjustment factor is obtained from table 4-2 (rounded to the nearest table value). Use worksheet 4 in appendix D to aid in computing the peak discharge using the Graphical method.

Figure 4-1 Variation of I_a / P for P and CN

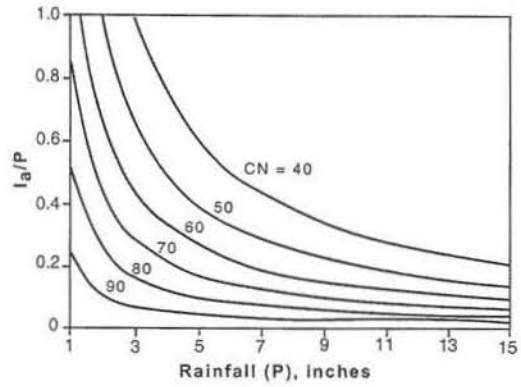
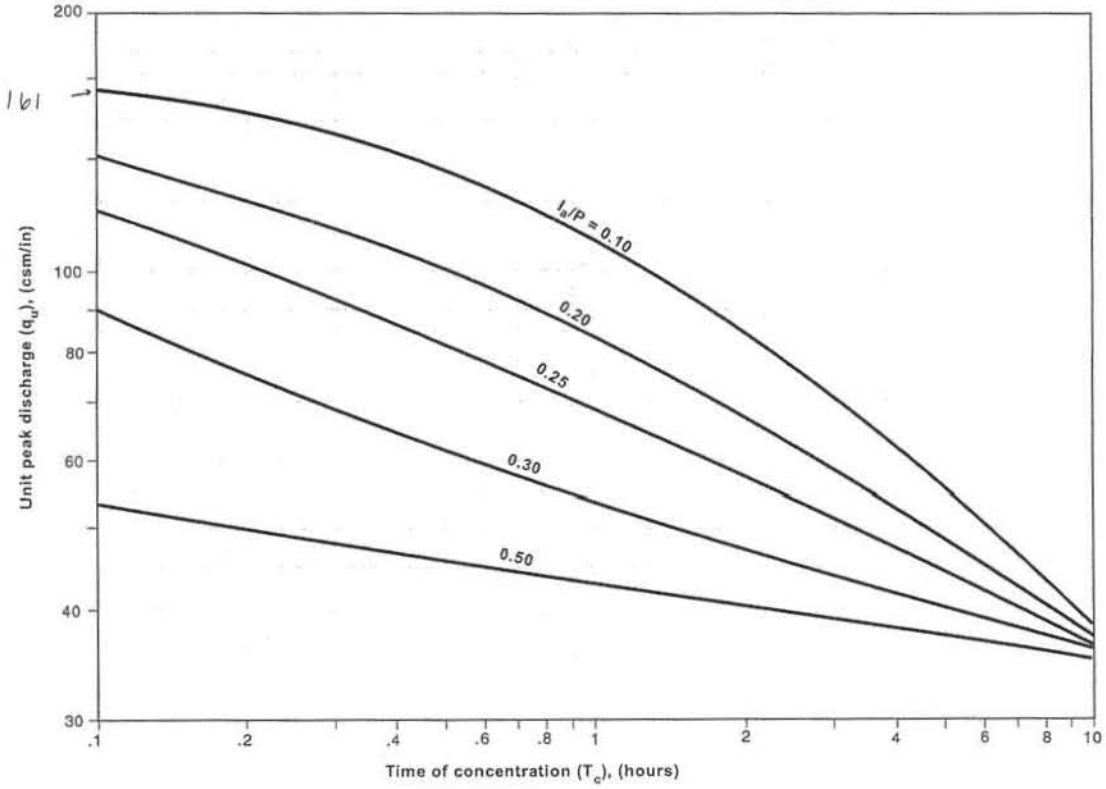


Table 4-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	70	0.857
41	2.878	71	0.817
42	2.762	72	0.778
43	2.651	73	0.740
44	2.545	74	0.703
45	2.444	75	0.667
46	2.348	76	0.632
47	2.255	77	0.597
48	2.167	78	0.564
49	2.082	79	0.532
50	2.000	80	0.500
51	1.922	81	0.469
52	1.846	82	0.439
53	1.774	83	0.410
54	1.704	84	0.381
55	1.636	85	0.353
56	1.571	86	0.326
57	1.509	87	0.299
58	1.448	88	0.273
59	1.390	89	0.247
60	1.333	90	0.222
61	1.279	91	0.198
62	1.226	92	0.174
63	1.175	93	0.151
64	1.125	94	0.128
65	1.077	95	0.105
66	1.030	96	0.083
67	0.985	97	0.062
68	0.941	98	0.041
69	0.899		

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.120

Exhibit 4-IA Unit peak discharge (q_u) for NRCS (SCS) type IA rainfall distribution



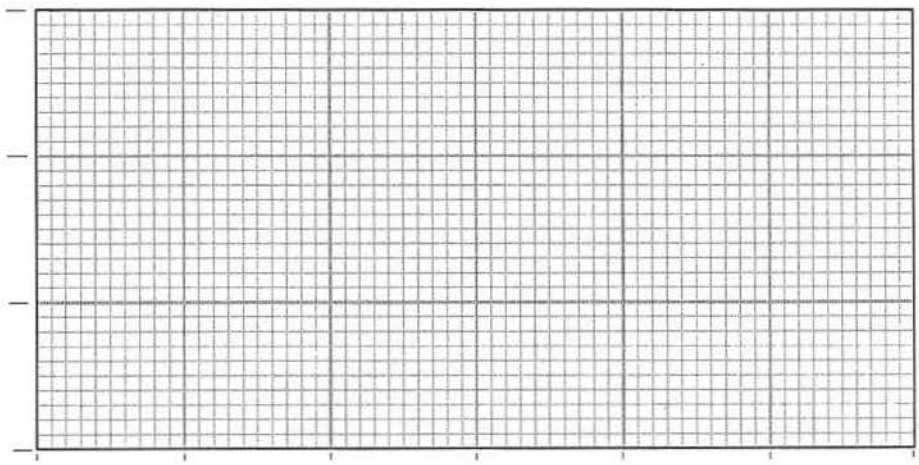
49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.121

Worksheet 6a: Detention basin storage, peak outflow discharge (q_o) known

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
WEST AREA		

Check one: ☐ Present ☑ Developed

☐ Elevation or ☐ stage



Detention basin storage (acre feet)

1. Data:
   Drainage area ..... A_m = 5.29/640 = 0.008 mi²
   Rainfall distribution type (I, IA, II, III) = IA

	1st Stage	2nd Stage
2. Frequency ..... yr	2	5
3. Peak inflow discharge q_i ..... ft³/s (from worksheet 4 or 5b)	2.036	2.515
4. Peak outflow discharge q_o ..... ft³/s	0.305	0.460 1/
5. Compute $\frac{q_o}{q_i}$	0.15	0.18
6. $\frac{V_s}{V_r}$ ..... (Use $\frac{q_o}{q_i}$ with figure 6-1)	0.44	0.47
7. Runoff, Q ..... in (From worksheet 2)	1.53	1.89
8. Runoff volume V_r..... ac ft ($V_r = QA_m$ 53.33)	0.674	0.833
9. Storage volume, V_s ..... ac-ft ($V_s = V_r (\frac{V_s}{V_r})$)	0.297 12,926 CF	0.333 14,516 CF
10. Maximum storage E_{max} (from plot)		

1/ 2nd stage q_o includes 1st stage q_o.

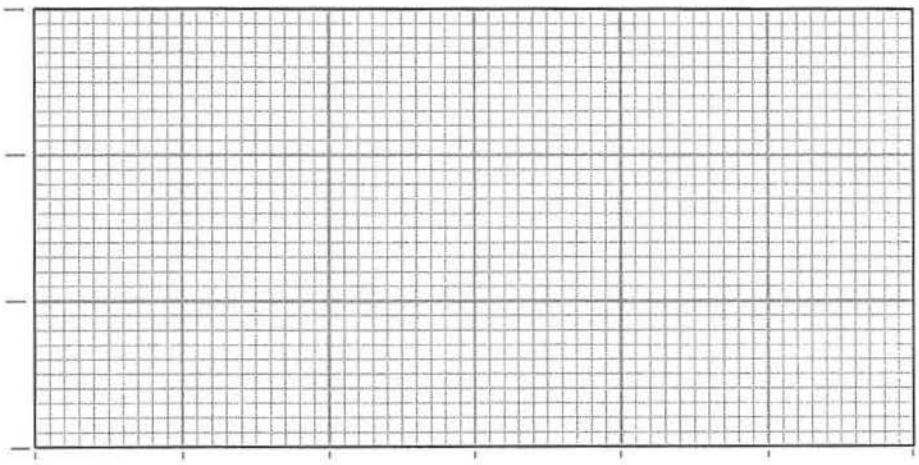
49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.122

Worksheet 6a: Detention basin storage, peak outflow discharge (q_o) known

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**

Check one: ☐ Present ☑ Developed

☐ Elevation or ☐ stage



Detention basin storage (acre feet)

1. Data:
   Drainage area ..... A_m = $\frac{5.25}{640}$ = 0.008 mi²
   Rainfall distribution type (I, IA, II, III) = IA

	1st Stage	2nd Stage
2. Frequency ..... yr	10	
3. Peak inflow discharge q_i ..... ft³/s (from worksheet 4 or 5b)	3.380	
4. Peak outflow discharge q_o ..... ft³/s 1/	1.042	
5. Compute $\frac{q_o}{q_i}$	0.31	
6. $\frac{V_s}{V_r}$ ..... (Use $\frac{q_o}{q_i}$ with figure 6-1)	0.29	
7. Runoff, Q ..... in (From worksheet 2)	2.54	
8. Runoff volume V_r..... ac ft ($V_r = QA_m$ 53.33)	1.120	
9. Storage volume, V_s ..... ac-ft ($V_s = V_r (\frac{V_s}{V_r})$)	0.325 14,143 CF	
10. Maximum storage E_{max} (from plot)		

1/ 2nd stage q_o includes 1st stage q_o.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.123

Input requirements and procedures

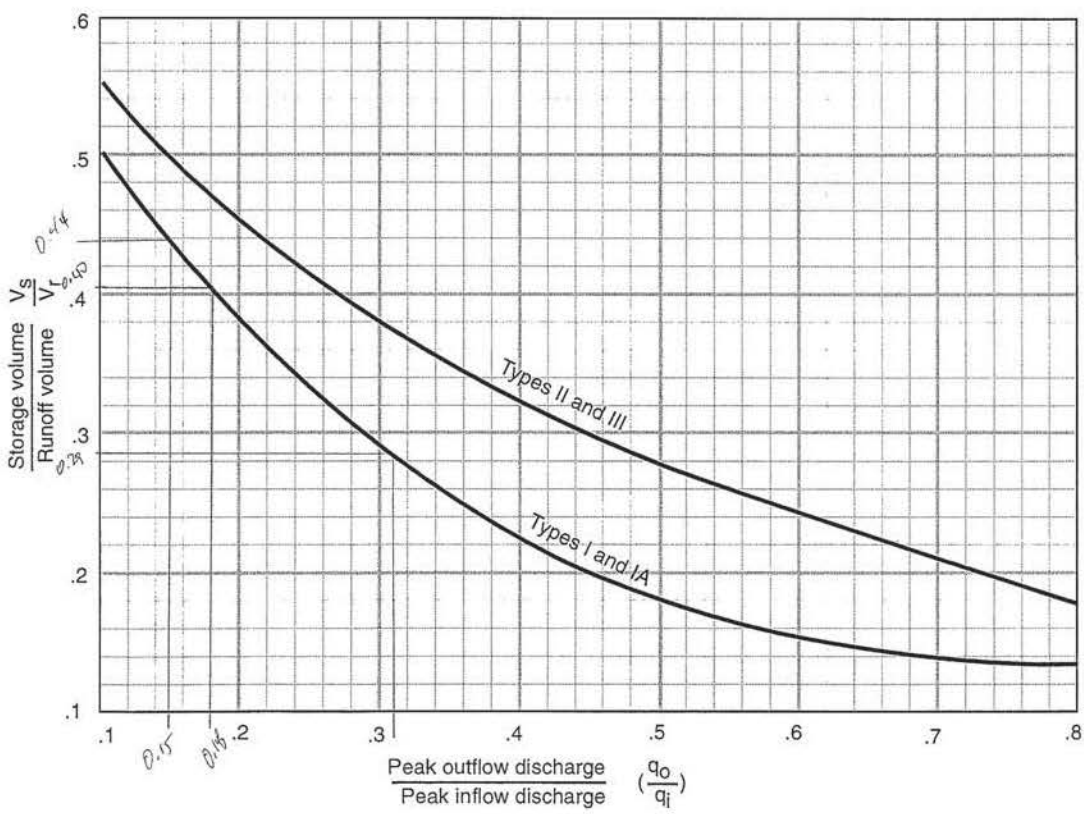
Use figure 6-1 estimate storage volume (V_s) required or peak outflow discharge (q_o). The most frequent application is to estimate V_s, for which the required inputs are runoff volume (V_r), q_o, and peak inflow discharge (q_i). To estimate q_o, the required inputs are V_r, V_s, and q_i.

Estimating V_s

Use worksheet 6a to estimate V_s, storage volume required, by the following procedure.

1. Determine q_o. Many factors may dictate the selection of peak outflow discharge. The most common is to limit downstream discharges to a desired level, such as predevelopment discharge. Another factor may be that the outflow device has already been selected.
2. Estimate q_i by procedures in chapters 4 or 5. Do not use peak discharges developed by other procedure. When using the Tabular Hydrograph method to estimate q_i for a subarea, only use peak discharge associated with $T_t = 0$.

Figure 6-1 Approximate detention basin routing for rainfall types I, IA, II, and III



49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.124

Worksheet 2: Runoff curve number and runoff

Project	By	Date
49TH STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
EAST AREA		

Check one: ☑ Present ☐ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Figure 2-3	CN 1/ Figure 2-4	Area ☑ acres ☐ mi² ☐ %	Product of CN x area
SANTIAM SILT LOAM 2 TO 8 % SLOPE, C	MEADOW	71			2.41	171.11
WILLAMETTE SILT LOAM 3 TO 12% SLOPE, B	MEADOW	58			1.00	58.00
				Totals ➡	3.41	229.11

1/ Use only one CN source per line

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{229.11}{3.41} = 67.18$; **Use CN** ➡ 67

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr	2	5	10
Rainfall, P (24-hour)	in	2.5	2.9	3.6
Runoff, Q	in	0.36	0.54	0.91

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.125

Table 2-2c Runoff curve numbers for other agricultural lands [1]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. [2]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. [3]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 [4]	48	65	73
Woods—grass combination (orchard or tree farm). [5]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. [6]	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 [4]	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

1 Average runoff condition, and $I_a = 0.2S$.
2 *Poor:* <50%) ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: > 75% ground cover and lightly or only occasionally grazed.
3 *Poor:* <50% ground cover.
Fair: 50 to 75% ground cover.
Good: >75% ground cover.
4 Actual curve number is less than 30; use CN = 30 for runoff computations.
5 CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.
6 *Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.126

Worksheet 3: Time of Concentration (T_c) or travel time (T_t)

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
EAST AREA		

Check one: ☒ Present ☐ Developed

Check one: ☒ T_c ☐ T_t through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet.
Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to Tc only)

	Segment ID			
		FIRST 300'		
1. Surface description (table 3-1)		DENSE GRASS		
2. Manning's roughness coefficient, n (table 3-1)		0.24		
3. Flow length, L (total L † 300 ft) ft		300		
4. Two-year 24-hour rainfall, P_2 in		2.5		
5. Land slope, s ft/ft		0.06		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t hr		0.42	+	= 0.42

Shallow concentrated flow

	Segment ID			
		REMAINDER TO 49TH		
7. Surface description (paved or unpaved)		UNPAVED		
8. Flow length, L ft		160		
9. Watercourse slope, s ft/ft		0.08		
10. Average velocity, V (figure 3-1) ft/s		4.6		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t hr		0.01	+	= 0.01

Channel flow

	Segment ID			
12. Cross sectional flow area, a ft^2				
13. Wetted perimeter, p_w ft				
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r ft				
15 Channel slope, s ft/ft				
16. Manning's roughness coefficient, n				
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V ft/s				
18. Flow length, L ft				
19. $T_t = \frac{L}{3600\ V}$ Compute T_t hr			+	= —
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) Hr				0.43

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.127

Sheet flow

Sheet flow is flow over plane surfaces. It usually occurs in the headwater of streams. With sheet flow, the friction value (Manning's n) is an effective roughness coefficient that includes the effect of raindrop impact; drag over the plane surface; obstacles such as litter, crop ridges, and rocks; and erosion and transportation of sediment. These n values are for very shallow flow depths of about 0.1 foot or so. Table 3-1 gives Manning's n values for sheet flow for various surface conditions.

Table 3-1 Roughness coefficients (Manning's n) for sheet flow

Surface description	n [1]
Smooth surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils:	
Residue cover ≤20%	0.06
Residue cover >20%	0.17
Grass:	
Short grass prairie	0.15
Dense grasses [2]	0.24
Bermudagrass	0.41
Range (natural)	0.13
Woods:[3]	
Light underbrush	0.40
Dense underbrush	0.80

[1] The n values are a composite of information compiled by Engman (1986).
[2] Includes species such as weeping lovegrass, bluegrass, buffalo grass, blue grama grass, and native grass mixtures.
[3] When selecting n, consider cover to a height of about 0.1 ft. This is the only part of the plant cover that will obstruct sheet flow.

For sheet flow of less than 300 feet, use Manning's kinematic solution (Overtop and Meadows 1976) to compute T_t:

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}} \qquad \text{[eq. 3-3]}$$

where:

T_t = travel time (hr),
n = Manning's roughness coefficient (table 3-1)
L = flow length (ft)
P_2 = 2-year, 24-hour rainfall (in)
s = slope of hydraulic grade line (land slope, ft/ft)

This simplified form of the Manning's kinematic solution is based on the following: (1) shallow steady uniform flow, (2) constant intensity of rainfall excess (that part of a rain available for runoff), (3) rainfall duration of 24 hours, and (4) minor effect of infiltration on travel time. Rainfall depth can be obtained from appendix B.

Shallow concentrated flow

After a maximum of 300 feet, sheet flow usually becomes shallow concentrated flow. The average velocity for this flow can be determined from figure 3-1, in which average velocity is a function of watercourse slope and type of channel. For slopes less than 0.005 ft/ft, use equations given in appendix F for figure 3-1. Tillage can affect the direction of shallow concentrated flow. Flow may not always be directly down the watershed slope if tillage runs across the slope.

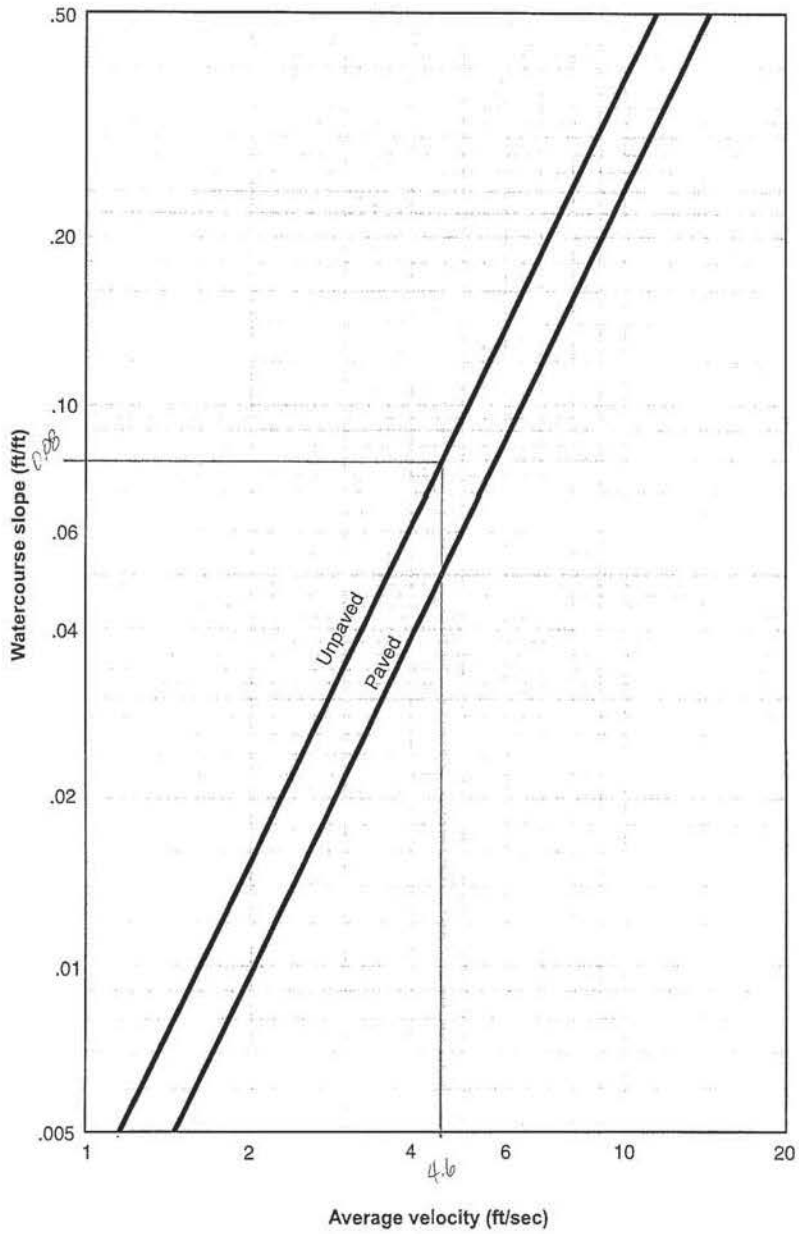
After determining average velocity in figure 3-1, use equation 3-1 to estimate travel time for the shallow concentrated flow segment.

Open channels

Open channels are assumed to begin where surveyed cross section information has been obtained, where channels are visible on aerial photographs, or where blue lines (indicating streams) appear on United States Geological Survey (USGS) quadrangle sheets. Manning's equation or water surface profile information can be used to estimate average flow velocity. Average flow velocity is usually determined for bankfull elevation.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.128

Figure 3-1 Average velocities for estimating travel time for shallow concentrated flow



49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.129

Worksheet 4: Graphical Peak Discharge method

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
EAST AREA		

Check one: ☑ Present ☐ Developed

1. Data

Drainage area ..... A_m = $\frac{3.41}{640}$ = 0.005 mi² (acres/640)

Runoff curve number ..... CN = 69 (From worksheet 2)

Time of concentration ..... T_c = 0.43 hr (From worksheet 3)

Rainfall distribution ..... = 1A (I, IA, II III)

Pond and swamp areas sprea throughout watershed ..... = 0 percent of A_m (0 acres or mi² covered)

		Storm #1	Storm #2	Storm #3
2. Frequency	yr	2	5	10
3. Rainfall, P (24-hour)	in	2.5	2.9	3.6
4. Initial abstraction, I_a (Use CN with table 4-1)	in	0.899	0.899	0.899
5. Compute I_a/P		0.360	0.310	0.250
6. Unit peak discharge, q_u (Use T_c and I_a/P with exhibit 4– 1A)	csm/in	58	62	85
7. Runoff, Q (From worksheet 2) Figure 2-6	in	0.36	0.54	0.91
8. Pond and swamp adjustment factor, F_p (Use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond ans swamp area.)		1.0	1.0	1.0
9. Peak discharge, q_p	ft³/s	0.111	0.178	0.412

(Where $q_p = q_u A_m Q F_p$)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.130

Chapter 4 Graphical Peak Discharge Method

This chapter presents the Graphical Peak Discharge method for computing peak discharge from rural and urban areas. The Graphical method was developed from hydrograph analyses using TR-20, "Computer Program for Project Formulation—Hydrology" (SCS 1983). The peak discharge equation used is:

$$q_p = q_u A_m Q F_p \qquad \text{[eq. 4-1]}$$

where:

q_p = peak discharge (cfs)
q_u = unit peak discharge (csm/in)
A_m = drainage area (mi²)
Q = runoff (in)
F_p = pond and swamp adjustment factor

The input requirements for the Graphical method are as follows: (1) T_c (hr), (2) drainage area (mi²), (3) appropriate rainfall distribution (I, IA, II, or III), (4) 24-hour rainfall (in), and (5) CN. If pond and swamp areas are spread throughout the watershed and are not considered in the T_c computation, an adjustment for pond and swamp areas is also needed.

Peak discharge computation

For a selected rainfall frequency, the 24-hour rainfall (P) is obtained from appendix B or more detailed local precipitation maps. CN and total runoff (Q) for the watershed are computed according to the methods outlined in chapter 2. The CN is used to determine the initial abstraction (I_a) from table 4-1. I_a / P is then computed.

If the computed I_a / P ratio is outside the range in exhibit 4 (4-I, 4-IA, 4-II, and 4-III) for the rainfall distribution of interest, then the limiting value should be used. If the ratio falls between the limiting values, use linear interpolation. Figure 4-1 illustrates the sensitivity of I_a / P to CN and P.

Peak discharge per square mile per inch of runoff (q_u) is obtained from exhibit 4-I, 4-IA, 4-II, or 4-III by using T_c (chapter 3), rainfall distribution type, and I_a / P ratio. The pond and swamp adjustment factor is obtained from table 4-2 (rounded to the nearest table value). Use worksheet 4 in appendix D to aid in computing the peak discharge using the Graphical method.

Figure 4-1 Variation of I_a / P for P and CN

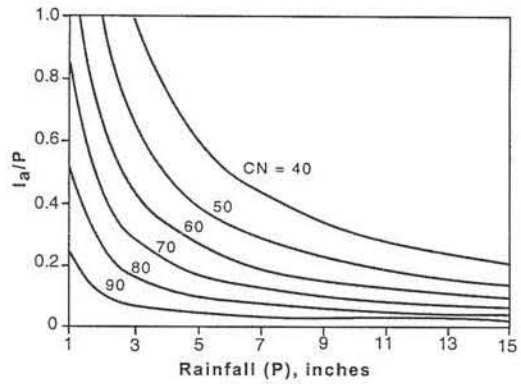
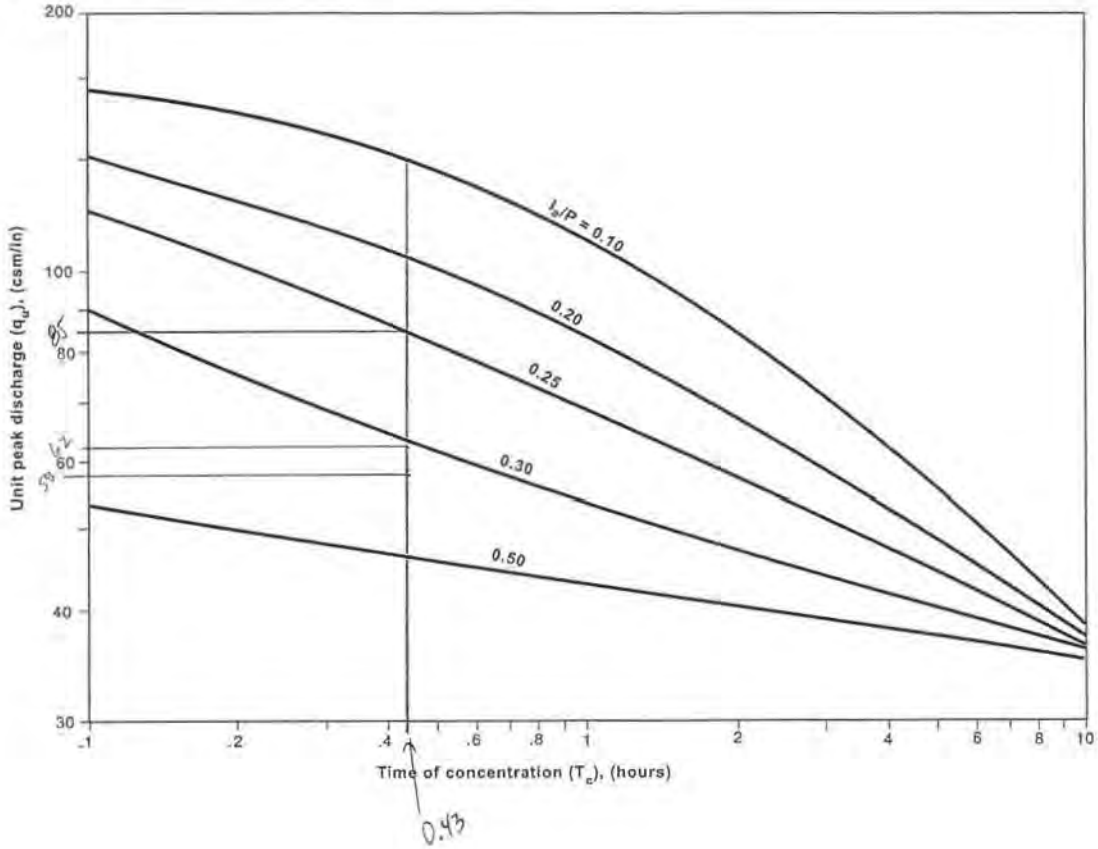


Table 4-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	70	0.857
41	2.878	71	0.817
42	2.762	72	0.778
43	2.651	73	0.740
44	2.545	74	0.703
45	2.444	75	0.667
46	2.348	76	0.632
47	2.255	77	0.597
48	2.167	78	0.564
49	2.082	79	0.532
50	2.000	80	0.500
51	1.922	81	0.469
52	1.846	82	0.439
53	1.774	83	0.410
54	1.704	84	0.381
55	1.636	85	0.353
56	1.571	86	0.326
57	1.509	87	0.299
58	1.448	88	0.273
59	1.390	89	0.247
60	1.333	90	0.222
61	1.279	91	0.198
62	1.226	92	0.174
63	1.175	93	0.151
64	1.125	94	0.128
65	1.077	95	0.105
66	1.030	96	0.083
67	0.985	97	0.062
68	0.941	98	0.041
69	0.899		

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.131

Exhibit 4-IA Unit peak discharge (q_u) for NRCS (SCS) type IA rainfall distribution



49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.132

Worksheet 2: Runoff curve number and runoff

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
EAST AREA		

Check one: ☐ Present ☑ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Figure 2-3	CN 1/ Figure 2-4	Area ☑ acres ☐ mi² ☐ %	Product of CN x area
SANTIAM SILT LOAM 2 TO 8% SLOPE, C	RESIDENTIAL DISTRICT 1/8 ACRE	90			4.20	378.00
WILLAMETTE SILT LOAM, 3 TO 12% SLOPE, B	RESIDENTIAL DISTRICT 1/3 ACRE	85			1.00	85.00
				Totals ➡	5.20	463.00

1/ Use only one CN source per line

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{463.00}{5.20} = 89.04 \; ; \quad \textbf{Use CN} \Rightarrow \boxed{89}$$

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr	2	5	10
Rainfall, P (24-hour)	in	2.5	2.9	3.6
Runoff, Q	in	1.45	1.81	2.45

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.133

Table 2-2a Runoff curve numbers for urban areas [1]

Cover description: Cover type and hydrologic condition	Average percent impervious area [2]	Curve numbers for hydrologic soil group: A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

[1] Average runoff condition, and $I_a = 0.2S$.
[2] The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.
[3] CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.
[4] Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.
[5] Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.134

Worksheet 3: Time of Concentration (T_c) or travel time (T_t)

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
EAST AREA		

Check one: ☐ Present ☑ Developed

Check one: ☑ T_c ☐ T_t through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet.
Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to Tc only)

	Segment ID		
1. Surface description (table 3-1)			
2. Manning's roughness coefficient, n (table 3-1)			
3. Flow length, L (total L † 300 ft) ft			
4. Two-year 24-hour rainfall, P_2 in			
5. Land slope, s ft/ft			
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{\ 0.5}\ s^{0.4}}$ Compute T_t hr		+	=

Shallow concentrated flow

	Segment ID		
7. Surface description (paved or unpaved)			
8. Flow length, L ft			
9. Watercourse slope, s ft/ft			
10. Average velocity, V (figure 3-1) ft/s			
11. $T_t = \frac{L}{3600\ V}$ Compute T_t hr		+	=

Channel flow

	Segment ID		
12. Cross sectional flow area, a ft^2			
13. Wetted perimeter, p_w ft			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r ft			
15 Channel slope, s ft/ft			
16. Manning's roughness coefficient, n			
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V ft/s			
18. Flow length, L ft			
19. $T_t = \frac{L}{3600\ V}$ Compute T_t hr		+	=
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) Hr			D.10

BY INSPECTION t_c < 0.10 HRS

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.135

Worksheet 4: Graphical Peak Discharge method

Project	By	Date
49th STREET	SCPH	10/08
Location	**Checked**	**Date**
EAST AREA		

Check one: ☐ Present ☑ Developed

1. Data

Drainage area ..... A_m = $\frac{5.20}{640}$ = 0.0081 mi² (acres/640)

Runoff curve number ..... CN = 89 (From worksheet 2)

Time of concentration ..... T_c = 0.10 hr (From worksheet 3)

Rainfall distribution ..... = IA (I, IA, II III)

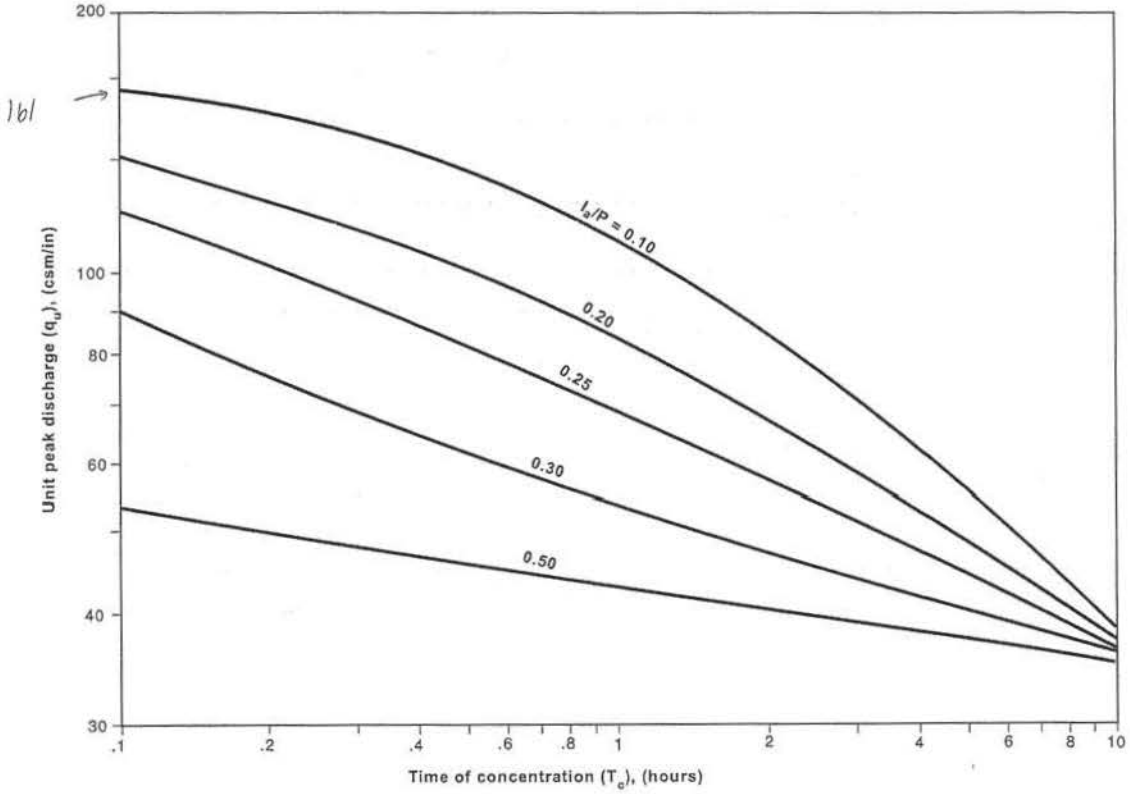
Pond and swamp areas sprea throughout watershed ..... = 0 percent of A_m (0 acres or mi² covered)

		Storm #1	Storm #2	Storm #3
2. Frequency	yr	2	5	10
3. Rainfall, P (24-hour)	in	2.5	2.9	3.6
4. Initial abstraction, I_a (Use CN with table 4-1)	in	0.247	0.247	0.247
5. Compute I_a/P		0.099	0.085	0.069
6. Unit peak discharge, q_u (Use T_c and I_a/P with exhibit 4– IA)	csm/in	161	161	161
7. Runoff, Q (From worksheet 2) Figure 2-6	in	1.45	1.81	2.45
8. Pond and swamp adjustment factor, F_p (Use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond ans swamp area.)		1.0	1.0	1.0
9. Peak discharge, q_p	ft³/s	1.897	2.368	3.205

(Where $q_p = q_u A_m Q F_p$)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.136

Exhibit 4-IA Unit peak discharge (q_u) for NRCS (SCS) type IA rainfall distribution



49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.137

Chapter 4 Graphical Peak Discharge Method

This chapter presents the Graphical Peak Discharge method for computing peak discharge from rural and urban areas. The Graphical method was developed from hydrograph analyses using TR-20, "Computer Program for Project Formulation—Hydrology" (SCS 1983). The peak discharge equation used is:

$$q_p = q_u A_m Q F_p \qquad \text{[eq. 4-1]}$$

where:

q_p = peak discharge (cfs)
q_u = unit peak discharge (csm/in)
A_m = drainage area (mi²)
Q = runoff (in)
F_p = pond and swamp adjustment factor

The input requirements for the Graphical method are as follows: (1) T_c (hr), (2) drainage area (mi²), (3) appropriate rainfall distribution (I, IA, II, or III), (4) 24-hour rainfall (in), and (5) CN. If pond and swamp areas are spread throughout the watershed and are not considered in the T_c computation, an adjustment for pond and swamp areas is also needed.

Peak discharge computation

For a selected rainfall frequency, the 24-hour rainfall (P) is obtained from appendix B or more detailed local precipitation maps. CN and total runoff (Q) for the watershed are computed according to the methods outlined in chapter 2. The CN is used to determine the initial abstraction (I_a) from table 4-1. I_a / P is then computed.

If the computed I_a / P ratio is outside the range in exhibit 4 (4-I, 4-IA, 4-II, and 4-III) for the rainfall distribution of interest, then the limiting value should be used. If the ratio falls between the limiting values, use linear interpolation. Figure 4-1 illustrates the sensitivity of I_a / P to CN and P.

Peak discharge per square mile per inch of runoff (q_u) is obtained from exhibit 4-I, 4-IA, 4-II, or 4-III by using T_c (chapter 3), rainfall distribution type, and I_a / P ratio. The pond and swamp adjustment factor is obtained from table 4-2 (rounded to the nearest table value). Use worksheet 4 in appendix D to aid in computing the peak discharge using the Graphical method.

Figure 4-1 Variation of I_a / P for P and CN

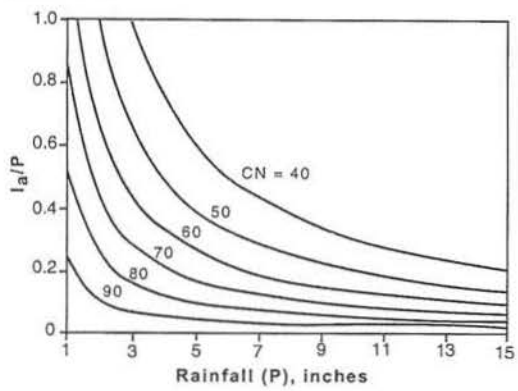


Table 4-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	70	0.857
41	2.878	71	0.817
42	2.762	72	0.778
43	2.651	73	0.740
44	2.545	74	0.703
45	2.444	75	0.667
46	2.348	76	0.632
47	2.255	77	0.597
48	2.167	78	0.564
49	2.082	79	0.532
50	2.000	80	0.500
51	1.922	81	0.469
52	1.846	82	0.439
53	1.774	83	0.410
54	1.704	84	0.381
55	1.636	85	0.353
56	1.571	86	0.326
57	1.509	87	0.299
58	1.448	88	0.273
59	1.390	89	0.247
60	1.333	90	0.222
61	1.279	91	0.198
62	1.226	92	0.174
63	1.175	93	0.151
64	1.125	94	0.128
65	1.077	95	0.105
66	1.030	96	0.083
67	0.985	97	0.062
68	0.941	98	0.041
69	0.899		

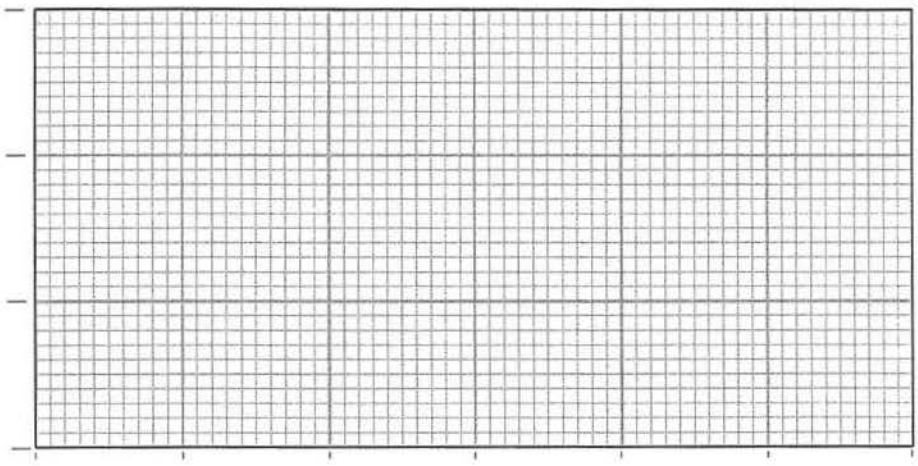
49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.138

Worksheet 6a: Detention basin storage, peak outflow discharge (q_o) known

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
EAST AREA		

Check one: ☐ Present ☑ Developed

☐ Elevation or ☐ stage



Detention basin storage (acre feet)

1. Data:
   Drainage area ..... A_m = 5.20/640 = 0.008 mi²
   Rainfall distribution type (I, IA, II, III) = IA

	1st Stage	2nd Stage
2. Frequency ..... yr	2	5
3. Peak inflow discharge q_i ..... ft³/s (from worksheet 4 or 5b)	1.897	2.368
4. Peak outflow discharge q_o ..... ft³/s	0.111	0.178 1/
5. Compute $\frac{q_o}{q_i}$	0.06	0.08
6. $\frac{V_s}{V_r}$ ..... (Use $\frac{q_o}{q_i}$ with figure 6-1)	0.50	0.50
7. Runoff, Q ..... in (From worksheet 2)	1.45	1.81
8. Runoff volume V_r..... ac ft ($V_r = QA_m$ 53.33)	0.628	0.784
9. Storage volume, V_s ..... ac-ft ($V_s = V_r (\frac{V_s}{V_r})$)	0.314 13,684 cf	0.392 17,082 cf
10. Maximum storage E_{max} (from plot)		

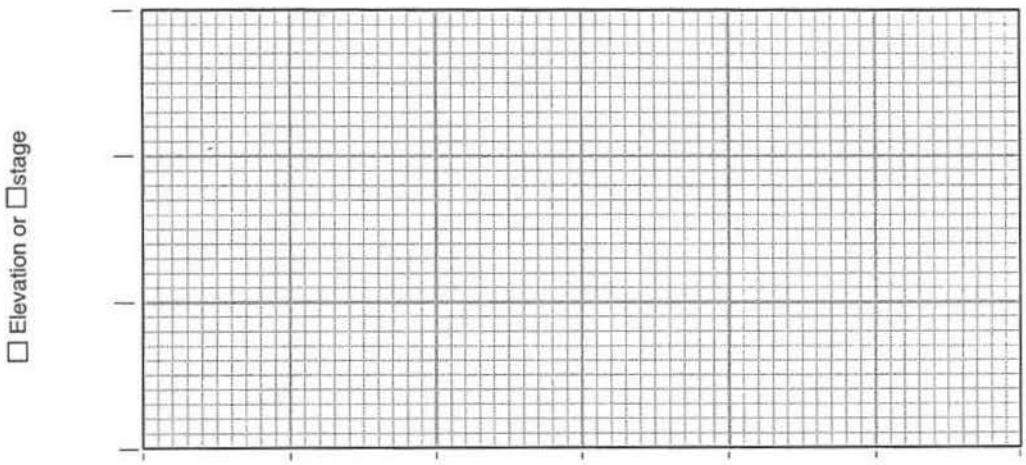
1/ 2nd stage q_o includes 1st stage q_o.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.139

Worksheet 6a: Detention basin storage, peak outflow discharge (q_o) known

Project	By	Date
Location	Checked	Date

Check one: ☐ Present ☐ Developed



1. Data:
   Drainage area ..... A_m = 0.008 mi²
   Rainfall distribution type (I, IA, II, III) = IA

	1st Stage	2nd Stage
2. Frequency ..... yr	10	
3. Peak inflow discharge q_i ..... ft³/s (from worksheet 4 or 5b)	3.205	
4. Peak outflow discharge q_o ..... ft³/s 1/	0.412	
5. Compute $\frac{q_o}{q_i}$	0.13	
6. $\frac{V_s}{V_r}$ ..... (Use $\frac{q_o}{q_i}$ with figure 6-1)	0.46	
7. Runoff, Q ..... in (From worksheet 2)	2.45	
8. Runoff volume V_r..... ac ft ($V_r = QA_m$ 53.33)	1.06	
9. Storage volume, V_s ..... ac-ft 21,272 cf	0.488	
10. Maximum storage E_{max} (from plot)		

($V_s = V_r (\frac{V_s}{V_r})$)

1/ 2nd stage q_o includes 1st stage q_o.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.140

Input requirements and procedures

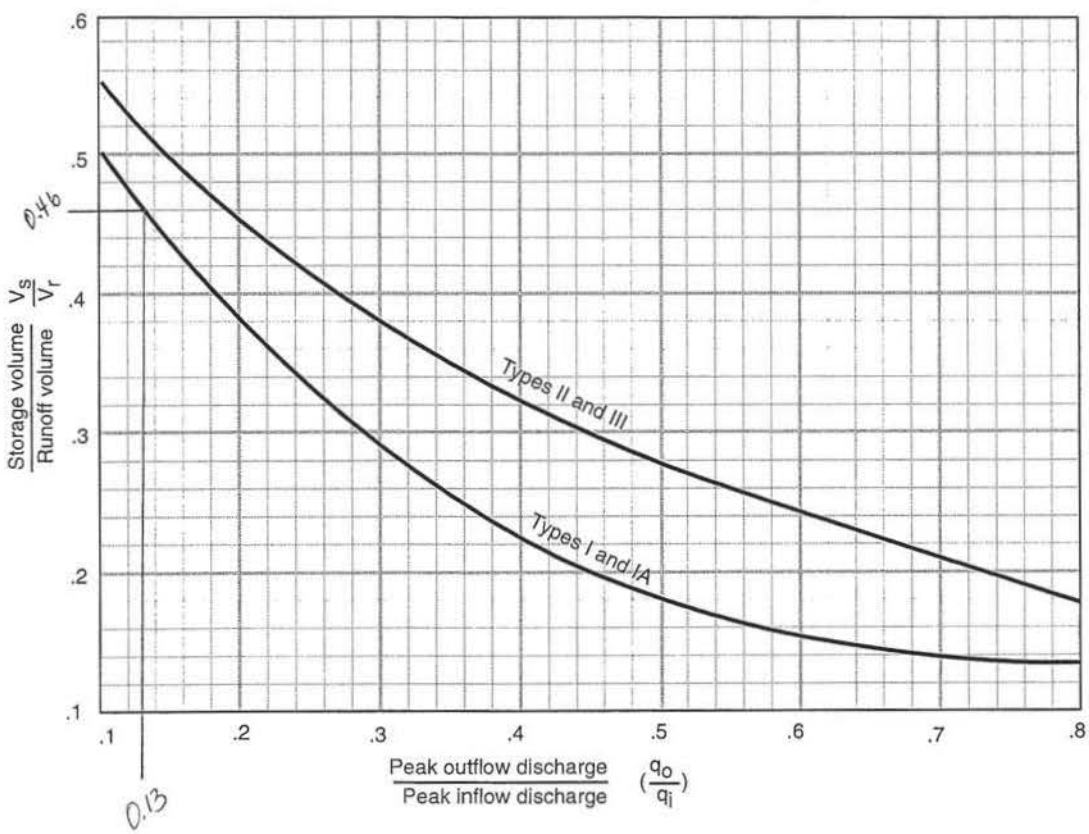
Use figure 6-1 estimate storage volume (V_s) required or peak outflow discharge (q_o). The most frequent application is to estimate V_s, for which the required inputs are runoff volume (V_r), q_o, and peak inflow discharge (q_i). To estimate q_o, the required inputs are V_r, V_s, and q_i.

Estimating V_s

Use worksheet 6a to estimate V_s, storage volume required, by the following procedure.

1. Determine q_o. Many factors may dictate the selection of peak outflow discharge. The most common is to limit downstream discharges to a desired level, such as predevelopment discharge. Another factor may be that the outflow device has already been selected.
2. Estimate q_i by procedures in chapters 4 or 5. Do not use peak discharges developed by other procedure. When using the Tabular Hydrograph method to estimate q_i for a subarea, only use peak discharge associated with $T_t = 0$.

Figure 6-1 Approximate detention basin routing for rainfall types I, IA, II, and III



49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.141

WQ CALCS

Worksheet 2: Runoff curve number and runoff

Project	By	Date
49TH STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
COLLECTOR STREET WQ SWALE		

Check one: ☐ Present ☑ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Figure 2-3	CN [1] Figure 2-4	Area ☑ acres ☐ mi² ☐ %	Product of CN x area
	IMPERVIOUS PAVEMENT (48'/2)(100') = 2400 SF	98			0.055	5.39
					Totals ➡ 0.055	5.39

[1] Use only one CN source per line

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{5.39}{0.055} = 98$; Use CN ➡ 98

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr	WQ		
Rainfall, P (24-hour)	in	0.9		
Runoff, Q	in	0.69		

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.142

Worksheet 3: Time of Concentration (T_c) or travel time (T_t)

Project	By	Date
49TH STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
COLLECTOR STREET W/ SWALE		

Check one: ☐ Present ☑ Developed

Check one: ☑ T_c ☐ T_t through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet. Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to Tc only)

	Segment ID		
1. Surface description (table 3-1)			
2. Manning's roughness coefficient, n (table 3-1)			
3. Flow length, L (total L † 300 ft) ft			
4. Two-year 24-hour rainfall, P_2 in			
5. Land slope, s ft/ft			
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t hr		+	=

Shallow concentrated flow

	Segment ID		
7. Surface description (paved or unpaved)			
8. Flow length, L ft			
9. Watercourse slope, s ft/ft			
10. Average velocity, V (figure 3-1) ft/s			
11. $T_t = \frac{L}{3600\ V}$ Compute T_t hr		+	=

Channel flow

	Segment ID		
12. Cross sectional flow area, a ft^2			
13. Wetted perimeter, p_w ft			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r ft			
15 Channel slope, s ft/ft			
16. Manning's roughness coefficient, n			
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V ft/s			
18. Flow length, L ft			
19. $T_t = \frac{L}{3600\ V}$ Compute T_t hr		+	=
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) Hr			0.15 MINIMUM

9 MIN DURATION TIME

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.143

Worksheet 4: Graphical Peak Discharge method

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
COLLECTOR STREET WQ SWALE		

Check one: ☐ Present ☑ Developed

1. Data

Drainage area ..... A_m = $\frac{0.055}{640} = 0.000086$ mi² (acres/640)

Runoff curve number ..... CN = 98 (From worksheet 2)

Time of concentration ..... T_c = 0.15 hr (From worksheet 3)

Rainfall distribution ..... = IA (I, IA, II III)

Pond and swamp areas sprea throughout watershed ..... = 0 percent of A_m (0 acres or mi² covered)

		Storm #1	Storm #2	Storm #3
2. Frequency	yr	WQ		
3. Rainfall, P (24-hour)	in	0.9		
4. Initial abstraction, I_a (Use CN with table 4-1)	in	0.041		
5. Compute I_a/P		0.046		
6. Unit peak discharge, q_u (Use T_c and I_a/P with exhibit 4– IA)	csm/in	160		
7. Runoff, Q (From worksheet 2) Figure 2-6	in	0.69		
8. Pond and swamp adjustment factor, F_p (Use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond ans swamp area.)		1.0		
9. Peak discharge, q_p	ft³/s	0.01		

(Where $q_p = q_u A_m Q F_p$)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.144

Chapter 4 Graphical Peak Discharge Method

This chapter presents the Graphical Peak Discharge method for computing peak discharge from rural and urban areas. The Graphical method was developed from hydrograph analyses using TR-20, "Computer Program for Project Formulation—Hydrology" (SCS 1983). The peak discharge equation used is:

$$q_p = q_u A_m Q F_p \qquad \text{[eq. 4-1]}$$

where:

q_p = peak discharge (cfs)
q_u = unit peak discharge (csm/in)
A_m = drainage area (mi²)
Q = runoff (in)
F_p = pond and swamp adjustment factor

The input requirements for the Graphical method are as follows: (1) T_c (hr), (2) drainage area (mi²), (3) appropriate rainfall distribution (I, IA, II, or III), (4) 24-hour rainfall (in), and (5) CN. If pond and swamp areas are spread throughout the watershed and are not considered in the T_c computation, an adjustment for pond and swamp areas is also needed.

Peak discharge computation

For a selected rainfall frequency, the 24-hour rainfall (P) is obtained from appendix B or more detailed local precipitation maps. CN and total runoff (Q) for the watershed are computed according to the methods outlined in chapter 2. The CN is used to determine the initial abstraction (I_a) from table 4-1. I_a / P is then computed.

If the computed I_a / P ratio is outside the range in exhibit 4 (4-I, 4-IA, 4-II, and 4-III) for the rainfall distribution of interest, then the limiting value should be used. If the ratio falls between the limiting values, use linear interpolation. Figure 4-1 illustrates the sensitivity of I_a / P to CN and P.

Peak discharge per square mile per inch of runoff (q_u) is obtained from exhibit 4-I, 4-IA, 4-II, or 4-III by using T_c (chapter 3), rainfall distribution type, and I_a / P ratio. The pond and swamp adjustment factor is obtained from table 4-2 (rounded to the nearest table value). Use worksheet 4 in appendix D to aid in computing the peak discharge using the Graphical method.

Figure 4-1 Variation of I_a / P for P and CN

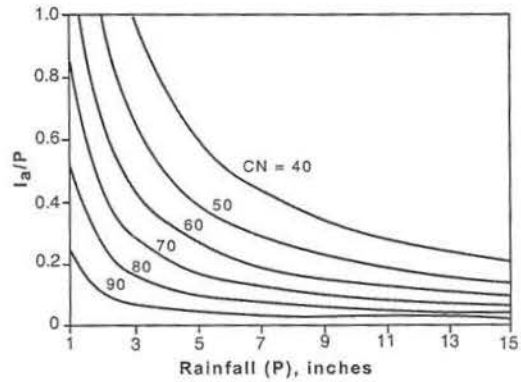
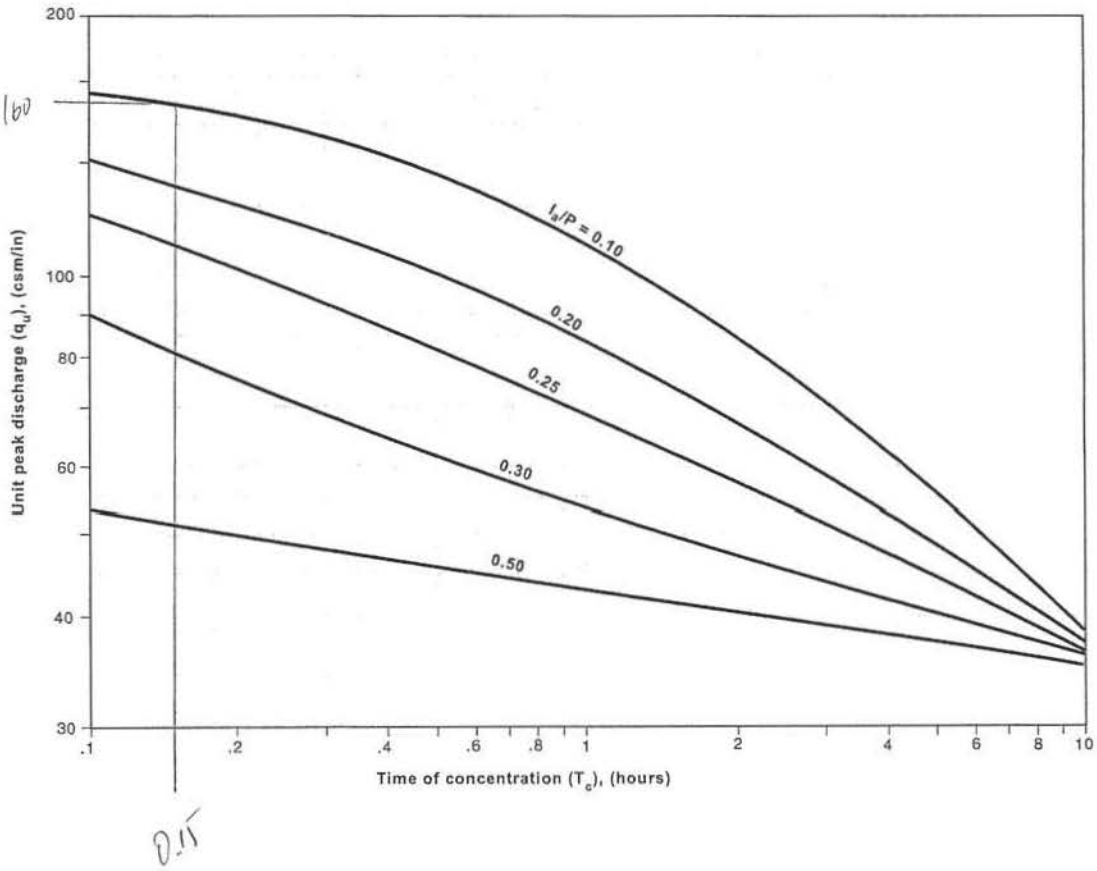


Table 4-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	70	0.857
41	2.878	71	0.817
42	2.762	72	0.778
43	2.651	73	0.740
44	2.545	74	0.703
45	2.444	75	0.667
46	2.348	76	0.632
47	2.255	77	0.597
48	2.167	78	0.564
49	2.082	79	0.532
50	2.000	80	0.500
51	1.922	81	0.469
52	1.846	82	0.439
53	1.774	83	0.410
54	1.704	84	0.381
55	1.636	85	0.353
56	1.571	86	0.326
57	1.509	87	0.299
58	1.448	88	0.273
59	1.390	89	0.247
60	1.333	90	0.222
61	1.279	91	0.198
62	1.226	92	0.174
63	1.175	93	0.151
64	1.125	94	0.128
65	1.077	95	0.105
66	1.030	96	0.083
67	0.985	97	0.062
68	0.941	98	0.041
69	0.899		

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.145

Exhibit 4-IA Unit peak discharge (q_u) for NRCS (SCS) type IA rainfall distribution



49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.146

DEVCO engineering inc.

245 NE Conifer, P.O. Box 1211
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(541) 757-8991

PROJECT: 49th STREET ANNEXATION	PROJECT NO: 08-442	DESIGN: SDH	DATE: 10/08

STORM WATER QUALITY CALCULATIONS (KING COUNTY STANDARDS)

- WQ SWALE (NEIGHBORHOOD COLLECTOR)

→ CALCULATIONS BASED ON MINIMUM DESIGN PARAMETERS
- LENGTH = 100'
- DETENTION TIME = 9 min

→ TRIBUTARY AREA = 24' (100') = 2400 SF = 0.055 Ac

→ WATER QUALITY STORM = 0.9" PER 24-hr RETURN

→ PER TR-55

$Q_{WQ} = 0.01$ CFS

→ BIOSWALE DESIGN

- CHECK BOTTOM WIDTH:

$$b = \frac{Q_{WQ}\, n_{WQ}}{1.49\, y^{1.67}\, s^{0.5}}$$

$n_{WQ} = 0.20$ $s = 0.06$ FOR ASSUMED WORST CASE
$y = 1/4 = 0.25'$

$$b = \frac{(0.01)(0.20)}{1.49\,(0.08)^{1.67}(0.06)^{0.5}} = 0.37' \quad \text{USE } 2' \text{ BOTTOM}$$

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.147

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(541) 757-8991

PROJECT: 49th STREET ANNEXATION	PROJECT NO: 08-442	DESIGN: SH	DATE: 10/08

- CHECK DEPTH

$$y = \left(\frac{Q_{WQ}\, n_{wq}}{1.49\, S^{0.5}\, b} \right)^{3/5}$$

$$= \left(\frac{(0.01)(0.20)}{1.49\,(0.06)^{0.5}\,(2)} \right)^{3/5} = 0.03' = 0.36''$$

- CHECK VELOCITY

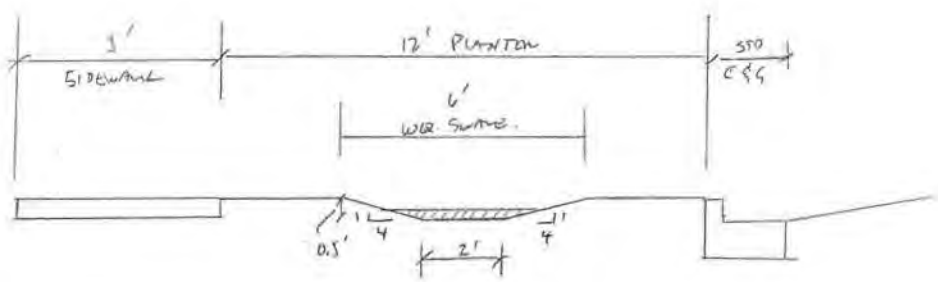
$$V_{wq} = \frac{Q_{wq}}{A_{wq}} \qquad A_{wq} = by + Zy^2 \qquad Z = \text{SIDE SLOPES}$$

$$= 2(0.03) + 4(0.03)^2 = 0.0636 \text{ SF}$$

$$V_{wq} = \frac{0.01 \text{ CFS}}{0.0636 \text{ SF}} = 0.157 \text{ FT/SEC}$$

- CHECK LENGTH

$$L = 540\, V_{wq} = 540\,(0.157) = 84.9' < 120' \quad \text{GOOD.}$$



Worksheet 2: Runoff curve number and runoff

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
LOCAL STREET WQ SWALE		

Check one: ☐ Present ☑ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Figure 2-3	CN 1/ Figure 2-4	Area ☐ acres ☐ mi² ☐ %	Product of CN x area
	IMPERVIOUS PAVEMENT $(\frac{28'}{2})(100') = 1400$ SF	98			0.032	3.15
				Totals ➡	0.032	3.15

1/ Use only one CN source per line

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{3.15}{0.032} = 98$; Use CN ➡ 98

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr	WQ		
Rainfall, P (24-hour)	in	0.9		
Runoff, Q	in	0.65		

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.149

Table 2-2a Runoff curve numbers for urban areas [1]

Cover description: Cover type and hydrologic condition	Average percent impervious area [2]	Curve numbers for hydrologic soil group: A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

1 Average runoff condition, and $I_a = 0.2S$.

2 The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

3 CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

4 Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

5 Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.150

Worksheet 3: Time of Concentration (T_c) or travel time (T_t)

Project	By	Date
49th STREET ANNEXATION	GCP IT	10/08
Location	**Checked**	**Date**
LOCAL STREET WQ SWALE		

Check one: ☐ Present ☑ Developed

Check one: ☑ T_c ☐ T_t through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet.
Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to Tc only)

	Segment ID		
1. Surface description (table 3-1)			
2. Manning's roughness coefficient, n (table 3-1)			
3. Flow length, L (total L † 300 ft) ft			
4. Two-year 24-hour rainfall, P_2 in			
5. Land slope, s ft/ft			
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{\ 0.5}\ s^{0.4}}$ Compute T_t hr		+	=

Shallow concentrated flow

	Segment ID		
7. Surface description (paved or unpaved)			
8. Flow length, L ft			
9. Watercourse slope, s ft/ft			
10. Average velocity, V (figure 3-1) ft/s			
11. $T_t = \frac{L}{3600\ V}$ Compute T_t hr		+	=

Channel flow

	Segment ID		
12. Cross sectional flow area, a ft^2			
13. Wetted perimeter, p_w ft			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r ft			
15 Channel slope, s ft/ft			
16. Manning's roughness coefficient, n			
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V ft/s			
18. Flow length, L ft			
19. $T_t = \frac{L}{3600\ V}$ Compute T_t hr		+	=
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) Hr			0.15

9 min DETENTION TIME

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.151

Worksheet 4: Graphical Peak Discharge method

Project	By	Date
49th STREET ANNEXATION	SCPH	10/08
Location	**Checked**	**Date**
LOCAL STREET WQ SWALE		

Check one: ☐ Present ☑ Developed

1. Data

Drainage area ..... A_m = 0.032/640 = 0.000050 mi² (acres/640)

Runoff curve number ..... CN = 98 (From worksheet 2)

Time of concentration ..... T_c = 0.15 hr (From worksheet 3)

Rainfall distribution ..... = IA (I, IA, II III)

Pond and swamp areas sprea throughout watershed ..... = 0 percent of A_m (0 acres or mi² covered)

		Storm #1	Storm #2	Storm #3
2. Frequency	yr	WQ		
3. Rainfall, P (24-hour)	in	0.9		
4. Initial abstraction, I_a (Use CN with table 4-1)	in	0.041		
5. Compute I_a/P		0.046		
6. Unit peak discharge, q_u (Use T_c and I_a/P with exhibit 4– IA)	csm/in	160		
7. Runoff, Q (From worksheet 2) Figure 2-6	in	0.69		
8. Pond and swamp adjustment factor, F_p (Use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond ans swamp area.)		1.0		
9. Peak discharge, q_p	ft³/s	0.006		

(Where $q_p = q_u A_m Q F_p$)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.152

Chapter 4 Graphical Peak Discharge Method

This chapter presents the Graphical Peak Discharge method for computing peak discharge from rural and urban areas. The Graphical method was developed from hydrograph analyses using TR-20, "Computer Program for Project Formulation—Hydrology" (SCS 1983). The peak discharge equation used is:

$$q_p = q_u A_m Q F_p \qquad \text{[eq. 4-1]}$$

where:

q_p = peak discharge (cfs)
q_u = unit peak discharge (csm/in)
A_m = drainage area (mi²)
Q = runoff (in)
F_p = pond and swamp adjustment factor

The input requirements for the Graphical method are as follows: (1) T_c (hr), (2) drainage area (mi²), (3) appropriate rainfall distribution (I, IA, II, or III), (4) 24-hour rainfall (in), and (5) CN. If pond and swamp areas are spread throughout the watershed and are not considered in the T_c computation, an adjustment for pond and swamp areas is also needed.

Peak discharge computation

For a selected rainfall frequency, the 24-hour rainfall (P) is obtained from appendix B or more detailed local precipitation maps. CN and total runoff (Q) for the watershed are computed according to the methods outlined in chapter 2. The CN is used to determine the initial abstraction (I_a) from table 4-1. I_a / P is then computed.

If the computed I_a / P ratio is outside the range in exhibit 4 (4-I, 4-IA, 4-II, and 4-III) for the rainfall distribution of interest, then the limiting value should be used. If the ratio falls between the limiting values, use linear interpolation. Figure 4-1 illustrates the sensitivity of I_a / P to CN and P.

Peak discharge per square mile per inch of runoff (q_u) is obtained from exhibit 4-I, 4-IA, 4-II, or 4-III by using T_c (chapter 3), rainfall distribution type, and I_a / P ratio. The pond and swamp adjustment factor is obtained from table 4-2 (rounded to the nearest table value). Use worksheet 4 in appendix D to aid in computing the peak discharge using the Graphical method.

Figure 4-1 Variation of I_a / P for P and CN

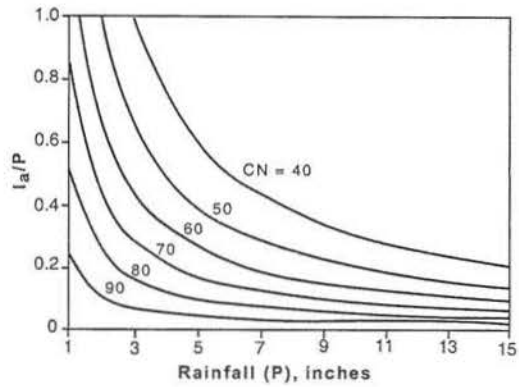
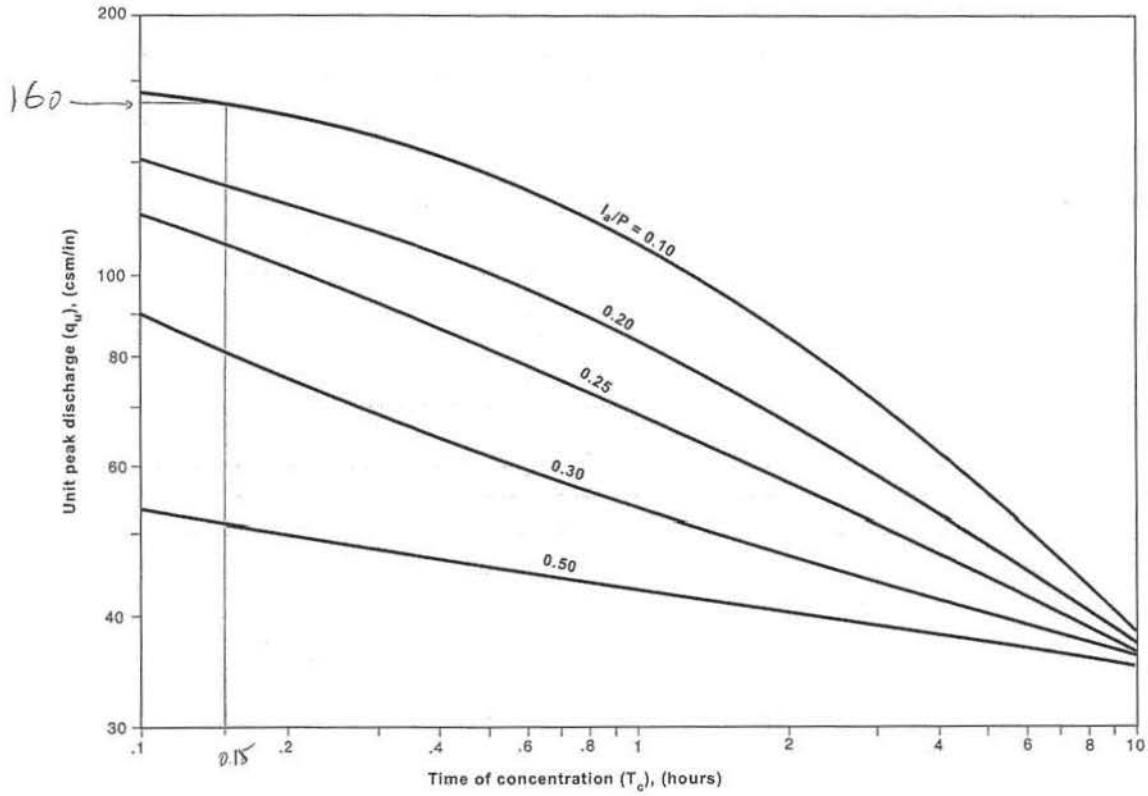


Table 4-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	70	0.857
41	2.878	71	0.817
42	2.762	72	0.778
43	2.651	73	0.740
44	2.545	74	0.703
45	2.444	75	0.667
46	2.348	76	0.632
47	2.255	77	0.597
48	2.167	78	0.564
49	2.082	79	0.532
50	2.000	80	0.500
51	1.922	81	0.469
52	1.846	82	0.439
53	1.774	83	0.410
54	1.704	84	0.381
55	1.636	85	0.353
56	1.571	86	0.326
57	1.509	87	0.299
58	1.448	88	0.273
59	1.390	89	0.247
60	1.333	90	0.222
61	1.279	91	0.198
62	1.226	92	0.174
63	1.175	93	0.151
64	1.125	94	0.128
65	1.077	95	0.105
66	1.030	96	0.083
67	0.985	97	0.062
68	0.941	98	0.041
69	0.899		

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.153

Exhibit 4-IA Unit peak discharge (q_u) for NRCS (SCS) type IA rainfall distribution



49th Street Annexation
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Exhibit VI.154

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(541) 757-8991

PROJECT: 49th STREET ANNEXATION	PROJECT NO: 09-142	DESIGN: SA	DATE: 10/08

STORM WATER QUALITY CALCULATIONS (KING COUNTY STANDARDS)

- 6' WIDE SWALE (LOCAL STREET)

$Q_{WQ} = 0.006$ CFS PER TR-55

→ BIOSWALE DESIGN

- CHECK BOTTOM

$$b = \frac{Q_{WQ}\, n_{WQ}}{1.49\, y^{1.67}\, s^{0.5}}$$

$$b = \frac{(0.006)(0.20)}{1.49\,(0.02)^{1.67}(0.06)^{0.5}} = 0.223' \quad \text{USE } 2' \text{ BOTTOM}$$

- CHECK DEPTH

$$y = \left(\frac{Q_{wq}\, n_{wq}}{1.49\, s^{0.5}\, b}\right)^{3/5}$$

$$= \left(\frac{(0.006)(0.20)}{1.49\,(0.06)^{0.5}(2)}\right)^{3/5} = 0.02' = 0.24''$$

- CHECK VELOCITY

$$V_{wq} = \frac{Q_{wq}}{A_{wq}} \qquad A_{wq} = by + Zy^2$$

$$= 2(0.02) + 4(0.02)^2$$

$$= 0.0416 \text{ SF}$$

$$V_{wq} = \frac{0.006}{0.0416} = 0.144 \text{ FT/SEC}$$

PAGE OF

DEVCO engineering inc.

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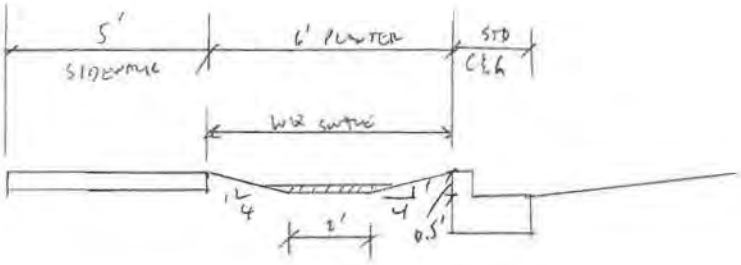
(541) 757-8991

PROJECT: 49th STREET ANNEXATION	PROJECT NO: 08-442	DESIGN: SH	DATE: 10/08

- CHECK LENGTH

$L = 540\ V_{avg} = 540\ (0.144) = 77.9' < 100'$ GOOD



PAGE OF

6.3 BIOFILTRATION FACILITY DESIGNS

This section presents the methods, details of analysis, and design criteria for biofiltration swales and filter strips. Included in this section are the following specific facility designs:

- "Basic Biofiltration Swales," Section 6.3.1
- "Wet Biofiltration Swales," Section 6.3.2 (p. 6-55)
- "Continuous Inflow Biofiltration Swales," Section 6.3.3 (p. 6-58)
- "Basic Filter Strips," Section 6.3.4 (p. 6-59)
- "Narrow Area Filter Strips," Section 6.3.5 (p. 6-66).

The information presented for each facility is organized into the following two categories:

1. **Methods of Analysis:** Contains a step-by-step procedure for designing and sizing each facility.
2. **Design Criteria:** Contains the details, specifications, and material requirements for each facility.

6.3.1 BASIC BIOFILTRATION SWALES

A *biofiltration swale* is an open, gently sloped, vegetated channel designed for treatment of stormwater (see the details in Figure 6.3.1.A through Figure 6.3.1.E beginning on page 6-52). The primary pollutant removal mechanisms are filtration by grass blades which enhance sedimentation, and trapping and adhesion of pollutants to the grass and thatch. Biofiltration swales generally do not remove dissolved pollutants effectively.

Applications and Limitations

A biofiltration swale is designed so that water will flow evenly across the entire width of a densely-vegetated area. A swale may be designed for both treatment and conveyance of onsite stormwater flow. This combined use can reduce development costs by eliminating the need for separate conveyance systems.

Biofiltration swales are best applied on a relatively small scale (generally less than 5 acres of impervious surface). They work well along roadways, driveways, and parking lots. Swales are more costly to apply in situations where the swale channel would be deep; in deep swales, self-shading can inhibit the necessary grass growth, resulting in poor pollutant removal performance. Some specific considerations for biofiltration swale applications are as follows:

- A biofiltration swale **shall not be located in a shaded area**. For healthy grass growth, a swale should receive a minimum of 6 hours of sunlight daily during the summer months throughout the length of the swale.
- To maintain healthy grass growth, a **swale must dry between storms**. It shall not receive continuous base flows (such as seepage from a hill slope throughout the winter) or be located in a high groundwater area, because saturated soil conditions will kill grass. If these conditions are likely to occur, design options given under "Design Criteria" (p. 6-43) shall be used, or the wet biofiltration swale design may be used (see Section 6.3.2, p. 6-55, for details).
- Stormwater runoff carrying **high concentrations of oil and grease** impairs the treatment capability of a swale. Oil control options given in Section 6.6 (p. 6-139) should be applied in these situations.
- **Modifying an existing drainage ditch** to create an engineered biofiltration swale may be difficult due to physical constraints and because ditches often serve as conveyance for flows from larger offsite areas.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.157

- **Utilities** may be located in swale side slopes above the WQ design depth. However, the repair or placement of utilities in swale side slopes requires aggressive implementation of erosion control practices to prevent soil and sediment from reaching the treatment area of the swale.

Note: Consult the water quality menus in Section 6.1 (p. 6-3) for information on how this facility may be used to meet Core Requirement # 8. Also see Table 6.1.1.A on page 6-5 for guidance on which type of biofiltration swale (basic, wet or continuous inflow) to use for a given set of ***site*** *characteristics.*

6.3.1.1 METHODS OF ANALYSIS

Biofiltration swale sizing is based on several variables, including the peak water quality design flow, longitudinal slope, vegetation height, bottom width, side slope, required hydraulic residence time (i.e., the time required for flow to travel the full length of the swale), and design flow depth. Swales sized and built using the method of analysis outlined in this section and the required design criteria presented in Section 6.3.1.2 are expected to meet the Basic Water Quality menu goal of 80% TSS removal. Procedures for sizing swales are summarized below.

Step 1: Calculate design flows. The swale design is based on the water quality design flow Q_{wq} (see Section 6.2.1, p. 6-17, for a definition of water quality design flow). If a biofilter is used for conveyance, the capacity requirements of Core Requirement #4 must be met. These flows must be estimated using the hydrologic analysis procedures described in detail in Chapter 3. If the swale is located downstream of an onsite detention facility, the swale design flow shall be the 2-year release rate from the detention facility.

Step 2: Calculate swale bottom width. The swale bottom width is calculated based on Manning's equation for open-channel flow. This equation can be used to calculate discharges as follows:

$$Q = \frac{1.49}{n} A R^{0.67} s^{0.5} \tag{6-1}$$

where
Q = flow rate (cfs)
n = Manning's roughness coefficient (unitless)
A = cross-sectional area of flow (sf)
R = hydraulic radius (ft) = area divided by wetted perimeter
s = longitudinal slope (ft/ft)

For shallow flow depths in swales, channel side slopes are ignored in the calculation of bottom width. Use the following equation (a simplified form of Manning's formula) to estimate the swale bottom width:

$$b = \frac{Q_{wq} n_{wq}}{1.49 y^{1.67} s^{0.5}} \tag{6-2}$$

where
b = bottom width of swale (ft)
Q_{wq} = water quality design flow (cfs)
n_{wq} = Manning's roughness coefficient for shallow flow conditions = 0.20 (unitless)
y = design flow depth (ft)
s = longitudinal slope (along direction of flow) (ft/ft)

See "Water Depth and Base Flow" (p. 6-44) to determine the allowable design water depth. Proceed to Step 3 if the bottom width is calculated to be between 2 and 10 feet.

A minimum 2-foot bottom width is required. Therefore, if the calculated bottom width is less than 2 feet, increase the width to 2 feet and recalculate the design flow depth y using Equation (6-3) as follows:

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.158

$$y = \left(\frac{Q_{wq} n_{wq}}{1.49 s^{0.5} b}\right)^{3/5} \tag{6-3}$$

where Q_{wq}, n_{wq}, and s are the same values as used in Equation (6-2), but $b = 2$ feet.

The maximum bottom width is 10 feet; therefore if the calculated bottom width exceeds 10 feet, then one of the following steps is necessary to reduce the design bottom width:

- Increase the longitudinal slope s to a maximum of 6 feet in 100 feet (0.06 feet per foot).
- Increase the design flow depth y to a maximum of 4 inches (0.333 feet).
- Reduce the design flow rate by rearranging the swale location with respect to detention facilities; a swale located downstream of a detention facility may have a lower flow rate due to flow attenuation in the detention facility. However, if a swale is located downstream of a detention facility providing Level 2 or Level 3 flow control, and it is located in till soils (according to the KCRTS soil group in Chapter 3), then the swale must be designed as a wet biofiltration swale (see Section 6.3.2, p. 6-55).
- Place a divider lengthwise along the swale bottom (cross section) at least three-quarters of the swale length (beginning at the inlet), without compromising the design flow depth and swale lateral slope requirements. See "Design Criteria" (p. 6-43) for swale divider requirements. A flow spreader must be provided at the inlet to evenly divide flows into each half of the swale cross section. See Section 6.2.6 (p. 6-33) for details on flow spreaders.

Step 3: Determine design flow velocity. To calculate the design flow velocity through the swale, use the flow continuity equation:

$$V_{wq} = \frac{Q_{wq}}{A_{wq}} \tag{6-4}$$

where V_{wq} = design flow velocity (fps)
A_{wq} = $by + Zy^2$ = cross-sectional area (sf) of flow at design depth
Z = side slope length per unit height (e.g., $Z = 3$ if side slopes are 3H:1V)

If the design flow velocity exceeds 1 foot per second, go back to Step 2 and modify one or more of the design parameters (longitudinal slope, bottom width, or flow depth) to reduce the design flow velocity to 1 foot per second or less. If the design flow velocity is calculated to be less than 1 foot per second, proceed to Step 4. *Note: It is desirable to have the design velocity as low as possible, both to improve treatment effectiveness and to reduce swale length requirements.*

Step 4: Calculate swale length. Use the following equation to determine the necessary swale length to achieve a hydraulic residence time of at least 9 minutes (540 seconds):

$$L = 540 V_{wq} \tag{6-5}$$

where L = minimum allowable swale length (ft)
V_{wq} = design flow velocity (fps)

The minimum swale length is 100 feet; therefore, if the swale length is calculated to be less than 100 feet, increase the length to a minimum of 100 feet, leaving the bottom width unchanged. If a larger swale could be fitted on the ***site***, consider using a greater length to increase the hydraulic residence time and improve the swale's pollutant removal capability. If the calculated length is too long for the ***site***, or if it would

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.159

cause layout problems, such as encroachment into shaded areas, proceed to Step 5 to further modify the layout. If the swale length can be accommodated on the ***site***, proceed to Step 6.

Step 5: Adjust swale layout to fit on site. If the swale length calculated in Step 4 is too long for the ***site***, the length may be reduced (to a minimum of 100 feet) by increasing the bottom width up to a maximum of 16 feet, **as long as the 9 minute retention time is retained**. However, the length cannot be increased in order to reduce the bottom width because Manning's depth-velocity-flow rate relationships would not be preserved. If the bottom width is increased to greater than 10 feet, a low dividing berm is needed to split the swale cross section in half.

Length can be adjusted by finding the top area of the swale and providing an equivalent top area with the adjusted dimensions.

a) Calculate the swale treatment top area based on the swale length calculated in Step 4:

$$A_{top} = (b_i + b_{slope})\, L_i \qquad (6\text{-}6)$$

where A_{top} = top area (sf) at the design treatment depth
b_i = bottom width (ft) calculated in Step 2
b_{slope} = the additional top width (ft) above the side slope for the design water depth (for 3:1 side slopes and a 4-inch water depth, $b_{slope} = 2$ feet)
L_i = initial length (ft) calculated in Step 4.

b) Use the swale top area and a reduced swale length L_f to increase the bottom width, using the following equation:

$$L_f = \frac{A_{top}}{(b_f + b_{slope})} \qquad (6\text{-}7)$$

where L_f = reduced swale length (ft)
b_f = increased bottom width (ft).

c) Recalculate V_{wq} according to Step 3 using the revised cross-sectional area A_{wq} based on the increased bottom width b_f. Revise the design as necessary if the design flow velocity exceeds 1 foot per second.

d) Recalculate to assure that the 9 minute retention time is retained.

Step 6: Provide conveyance capacity for flows higher than Q_{wq}. Biofiltration swales may be designed as flow-through channels that convey flows higher than the water quality design flow rate, or they may be designed to incorporate a high-flow bypass upstream of the swale inlet. A high-flow bypass usually results in a smaller swale size (see flow splitter options, page 6-29, for more information on designing bypasses). If a high-flow bypass is provided, this step is not needed. If no high-flow bypass is provided, proceed with the procedure below.

a) Check the swale sized using Steps 2 through 5 above to determine whether the swale can convey the 25-year and 100-year peak flows consistent with the conveyance requirements of Core Requirement #4 in Chapter 1. The roughness coefficient n in Manning's equation shall be selected to reflect the deeper flow conditions with less resistance provided by grass during these high-flow events. The bottom width (Step 2) should be calculated as per Section 4.4.1.2, "Methods of Analysis" for open channels.

b) The 100-year peak flow velocity ($V_{100} = Q_{100}/A_{100}$) based on the 100-year flow depth must be less than 3.0 feet per second. If V_{100} exceeds 3.0 feet per second, return to Step 2 and increase the bottom width or flatten the longitudinal slope as necessary to reduce the 100-year peak flow velocity to 3.0 feet per second or less. If the longitudinal slope is flattened, the swale bottom width must be recalculated (Step 2) and meet all design criteria.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.160

c) The conveyance requirements in Core Requirement #4 (see Section 1.2.4) must be met.

6.3.1.2 DESIGN CRITERIA

An effective biofiltration swale achieves uniform sheet flow over and through a densely vegetated area for a period of several minutes. Figure 6.3.1.A (p. 6-52) shows a typical biofiltration swale schematic. Basic design requirements for achieving proper flow conditions through a biofiltration swale are described below.

Swale Geometry

1. Swale **bottom width** shall be between 2 and 16 feet.[14]
   a) **Minimum bottom width** is 2 feet to allow for ease of mowing.
   b) If the bottom width exceeds 10 feet, a length-wise divider shall be provided. The divider shall extend from the flow spreader at the inlet for at least three-quarters of the swale length.
   c) **Maximum bottom width** is 16 feet, excluding the width of the divider.

   Note: Multiple swales may be placed side by side provided the flow to each swale is split at the inlet and spread separately for each swale. Adjacent swales may be separated with a vertical wall, but a low berm is preferred for easier maintenance and better landscape integration.
2. The **longitudinal slope** (along the direction of flow) shall be between 1 percent and 6 percent.
   a) If the longitudinal slope is less than 1.5 percent, **underdrains** must be provided (see next page and Figure 6.3.1.C, p. 6-53, for underdrain specifications).
   b) If the longitudinal slope is less than 1 percent, the swale must be designed according to the criteria presented in Section 6.3.2 (p. 6-55) for **wet biofiltration swales**.
   c) If the longitudinal slope exceeds 6 percent, **check dams** with vertical drops of 12 inches or less shall be provided to achieve a bottom slope of 6 percent or less between the drop sections.
3. The swale shall be **flat** in cross section (perpendicular to the flow direction) to promote even flow across the whole width of the swale.
4. The **minimum swale length** shall be 100 feet; no maximum length is set.
5. The **swale treatment area** (below the WQ design water depth) shall be trapezoidal in cross-section. If trapezoidal, **side slopes within the treatment area** should be 3H:1V or flatter whenever possible, but shall not steeper than 2H:1V.
6. **Side slope sections above the treatment area** may be steeper than 3H:1V, subject to the following provisions:
   a) If there is an interior side slope between 1H:1V and 2H:1V outside the treatment area, the slope shall be reinforced with **erosion control netting or matting** during construction.
   b) Any interior slope steeper than 1H:1V shall be constructed as a **rockery or structural retaining wall**[15] to prevent the swale slope from sloughing. To ensure that adequate sunlight reaches the swale bottom, **only one wall can be taller than 2 feet.** If possible, the higher wall should be on the northern or eastern side of the swale to maximize the amount of light reaching the swale bottom.

[14] Experience with biofiltration swales shows that when the width exceeds about 10 feet it is difficult to keep the water from forming low-flow channels. It is also difficult to construct the bottom level and without sloping to one side. Biofilters are best constructed by leveling the bottom after excavating, and after the soil is amended. A single-width pass with a front-end loader produces a better result than a multiple-width pass.

[15] Soil bioengineering techniques may be used as an alternative to a rockery or structural retaining wall.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.161

7. **Curved swales** are encouraged for aesthetic reasons, but curves must be gentle to prevent erosion and allow for vehicle access to remove sediment. Criteria for maintenance access road curves shall also be applied for swale curves (see Section 5.3.1.1 for design of access roads).

Water Depth and Base Flow

1. A swale that will be **frequently mowed**, as in commercial or landscaped areas, shall have a **design water depth** of no more than 2 inches (0.17 feet) under the water quality design flow conditions.
2. A swale that will **not be frequently mowed**, such as along roadsides or in rural areas, shall have a **design water depth** of no more than 4 inches (0.33 feet) under the water quality design flow conditions.
3. If a swale is located **downstream of a detention facility providing Level 2 or Level 3 flow control**, and it is located in till soils (according to the KCRTS soil group in Chapter 3), then the swale must be designed as a **wet biofiltration swale** (see Section 6.3.2, p. 6-55).
4. If a swale will receive **base flows** because of seeps and springs onsite, then either a low-flow drain shall be provided or a wet biofiltration swale shall be used. *Low-flow drains* are narrow surface drains filled with pea gravel that run lengthwise through the swale to bleed off base flows; they should not be confused with underdrains. In general, base flows less than 0.01 cfs per acre can be handled with a low-flow drain. If flows are likely to be in excess of this level, a wet biofiltration swale shall be used.
5. If a **low-flow drain** is used, it shall extend the entire length of the swale. The drain shall be a minimum of 6 inches deep, and its width shall be no greater than 5 percent of the calculated swale bottom width; the width of the drain shall be in addition to the required bottom width. If an anchored plate or concrete sump is used for flow spreading at the swale inlet, the plate or sump wall shall have a v-notch (maximum top width = 5% of swale width) or holes to allow preferential exit of low flows into the drain. See Figure 6.3.1.D (p. 6-54) for low-flow drain specifications and details.

Flow Velocity, Energy Dissipation, and Flow Spreading

1. The **maximum flow velocity** through the swale under the water quality design flow conditions shall not exceed 1.0 foot per second.
2. The **maximum flow velocity** through the swale under the peak 100-year flow conditions shall not exceed 3.0 feet per second.
3. A **flow spreader** shall be used at the inlet of a swale to dissipate energy and evenly spread runoff as sheet flow over the swale bottom. Flow spreaders are recommended but not required at mid-length. For details on various types of flow spreaders, see Section 6.2.6 (p. 6-33).
4. If **check dams** are used to reduce the longitudinal slope of the swale, a **flow spreader** shall be provided at the toe of each vertical drop. The spreader must span the width of the swale. An **energy dissipater** shall also be provided if flows leaving the spreader could be erosive.
5. If a swale **discharges flows to a slope** rather than to a piped system or confined channel, an **energy dissipater** shall be provided at the swale outlet. This requirement also applies to discharges from swale underdrains. The outlet energy dissipater may be a riprap pad sized according to the specifications described in Table 4.2.2.A for conveyance system outfalls.

Underdrains

If underdrains are required by Criterion 2 under "Swale Geometry" (p. 6-43), they must meet the following criteria:

1. Underdrains must be made of **PVC perforated pipe** (SDR 35), laid parallel to the swale bottom and backfilled and bedded as shown in Figure 6.3.1.C (p. 6-53).
2. For facilities to be maintained by the County, the underdrain pipe must be 6 inches or greater in **diameter**. (Six inches is the smallest diameter pipe that can be cleaned without damage to the pipe.)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.162

3. Six inches of clean **drain rock** ($^5/_8$-inch minus) must be above the top of the pipe.
4. The drain rock must be wrapped in **geotextile**. Geotextile requirements are summarized in Table 6.3.1.A below.
5. The underdrain **must infiltrate** into the subsurface **or drain freely** to an acceptable discharge point.

TABLE 6.3.1.A GEOTEXTILE MATERIAL MINIMUM REQUIREMENTS

Geotextile Property	Value	Test Method
Grab Tensile Strength, min in machine and x-direction	250 lbs/160 lbs min.	ASTM D4632
Grab Failure Strain, in machine and x-machine direction	<50%/>50%	ASTM D4632
Seam Breaking Strength (if seams are present)	220 lbs/140 lbs min.	ASTM D4632 and ASTM D4884 (adapted for grab test)
Puncture Resistance	80 lbs/50 lbs min.	ASTM D4833
Tear Strength, min. in machine and x-machine direction	80 lbs/50 lbs min.	ASTM D4533
Ultraviolet (UV) Radiation stability	50% strength min., after 500 hrs. in weather meter	ASTM D4355
AOS	.43 mm max. (#40 sieve)	ASTM D4751
Water Permitivity	.5 sec – 1 min.	ASTM D4491

Notes:

- Minimum values should be in the weaker principal direction. All numerical values represent minimum average roll value (i.e., test results from any sampled lot shall meet or exceed the minimum values in the table). Stated values are for noncritical and nonsevere applications.

AOS: Apparent Opening Size is the measure of the diameter of the pores on the geotextile.

Swale Divider

1. If a swale divider is used (such as when swale bottom widths are greater than 10 feet), the divider shall be constructed of a **firm material** that will resist weathering and not erode, such as treated lumber, concrete, plastic, or compacted soil seeded with grass. Selection of divider material shall take into consideration swale maintenance, especially mowing.
2. The divider shall have a **minimum height** of one inch higher than the water quality design water depth.
3. **Earthen berms** shall be no steeper than 2H:1V.
4. Materials other than earth (e.g. treated lumber, recycled plastic lumber, concrete, etc.) shall be embedded to a depth sufficient to be stable.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.163

Access

1. For swales to be maintained by King County, an **access road** shall be provided to the swale inlet and along one side of the swale according to the schedule shown in Table 6.3.1.B below. *Note: County streets and paved parking areas adjacent to the top of slope may be counted as access.*

TABLE 6.3.1.B REQUIREMENTS FOR BIOFILTRATION SWALE ACCESS ROAD	
Swale Bottom Area*: L x w (sf)	**Access Road Length**
200 - 1000	$^1/_2$ swale length L
1000 - 1600	$^2/_3$ swale length L
Over 1600	entire swale length L
* The swale area used for computing access road length may be the bottom area.	

2. In areas outside critical area buffers, **wheel strips** made of modular grid pavement may be built into the swale bottom for maintenance vehicle access instead of an access road. The subgrade for the strips must be engineered to support a vehicle weight of 16,000 pounds and installed according to the manufacturer's recommendations on firm native soil or structural fill, not on the amended topsoils. Each strip shall be 18 inches wide and spaced as shown in Figure 6.3.1.E (p. 6-54). The strip lattice should be filled or covered with native soil (no amendments required) and overseeded with grass. If a low-flow drain is also needed (see "Water Depth and Base Flow" on page 6-44), a portion of the wheel strip may be filled with pea gravel as appropriate to form the drain. Continuous vehicle access shall be provided to the wheel strips from the access road. If access to the wheel strips is over the flow-spreader, then a grate (or other DDES approved method) shall be placed over the flow-spreader for vehicle access. Wheel strips shall not be counted as treatment area; therefore, the swale bottom width must be increased accordingly.

Soil Amendment

1. Two inches (minimum) of **well-rotted compost** shall be tilled into the entire swale treatment area to amend the topsoil unless the soil already has an organic content of 1 percent or greater. This applies to both till soils as well as sandy soils. In very coarse soils (gravels or courser), **top soil** must be imported and amended to the required organic content.

   a) Compost must be tilled into the underlying native soil to a depth of 6 inches to prevent the compost from being washed out and to avoid creating a defined layer of different soil types that can prevent downward percolation of water.

   b) Compost shall not contain any sawdust, straw, green or under-composted organic matter, or toxic or otherwise harmful materials.

   c) Compost shall not contain unsterilized manure because it can leach fecal coliform bacteria into receiving waters.

2. **Soil or sod** with a clay content of greater than 10 percent should be avoided. If there is concern for contamination of the underlying groundwater, the swale bottom shall be lined with a treatment liner to prevent groundwater contamination. See Section 6.2.4 (p. 6-23) for details on treatment liner options.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.164

49th Street Annexation
February 8, 2013

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.165

Traffic Impact Study Review

CHARBONNEAU
ENGINEERING LLC

MEMORANDUM

Date: January 25, 2013

To: Jim Boeder
2022 SW 45th Street
Corvallis OR 97333

From: Frank Charbonneau, PE, PTOE

Subject: TIA Review FL1306
SW 49th Street Annexation Development
Corvallis

This memorandum will acknowledge your request for Charbonneau Engineering to perform a review the SW 49th Street Annexation traffic study dated March 2009, prepared by Lancaster Engineering.

The purpose of our review is to respond to the traffic comments presented in the City's memo dated 12/21/12. Item #1 in the City's memo indicated that a review letter should be prepared to address whether the TIA is still relevant to the current application.

To assess the previous work we have completed a review of the project documentation you furnished including;

- TIA report by Lancaster Engineering, March 9, 2009
- Traffic letter by Lancaster Engineering, April 28, 2009
- Letter from Brian Latta to Jim Boeder, December 2010
- All Traffic Data turn movement counts, May 2012
- Letter from Jim Boeder to Valerie Gregg Devis, December 2012
- Project Development Application, December 2012
- ODOT Historical ADTs, Corvallis-Newport Highway, years 2005-2011

The Lancaster Engineering TIA and letter update together documented that the study intersections with the exception of SW 53rd Street at Philomath Blvd (Hwy 20) will experience acceptable operating conditions through the year 2030 period. At SW 53rd Street and Highway 20 the signalized intersection will operate below acceptable standards (LOS 'F') in year 2030 under the background and total traffic scenarios. Specific mitigation including installing a separate northbound right turn lane was identified to improve the operations to acceptable levels (LOS 'D', v/c = 0.85).

A review of the historical traffic volume data indicated that the over the last several years the Average Annual Daily Traffic (AADT) on Highway 20 at 53rd Street has steadily decreased since 2007 as detailed in the following table. The data is based on traffic volumes available on ODOT's website.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.166

Year	AADT (0.02 mile east of SW 53rd Street)
2005	15,500
2006	15,400
2007	15,500
2008	14,600
2009	14,300
2010	13,700
2011	13,300

In effect the AADT has decreased by 14.2% from years 2007 through 2011. The AADT has decreased by 8.9% between year 2008 when the TIA was conducted and year 2011.

Peak hour traffic volume at the intersection of Highway 20 and 53rd Street was also compared between the September 2008 data included in the TIA and recent count data recorded in May 2012 and furnished by the City of Corvallis. The total PM peak hour volume entering the intersection used in the study was 2,230 vehicles. The PM peak hour total entering traffic in the May 2012 count was 2,118 vehicles. The difference represents a 5% decrease.

Based on the volume trends it has been established that the traffic study conducted by Lancaster Engineering in 2008 (updated in 2009) has analyzed higher traffic flow conditions than is now being experienced on Highway 20 at the intersection with SW 53rd Street. Conducting a new traffic study or update should not be necessary considering the traffic volume trends documented in this memorandum. The mitigation identified in the 2008 study would still be sufficient to satisfy the latest traffic demand.

Another review comment (listed as #4 in City's memo) stated that the TIA did not include an analysis of the existing conditions plus the site trips. Typically traffic analysis studies cover several main scenarios including existing traffic, background traffic, and total (future) traffic with the background conditions consisting of the existing traffic plus growth traffic and/or in-process traffic. In this case the Lancaster study applied a 2%/year growth factor to the existing volumes to project the year 2030 background volumes. A scenario for existing traffic plus site generated would not provide a realistic measure of the flow conditions unless it was determined that there would be no growth or in-process traffic. In any event the resulting impacts for existing plus site traffic would be less than that projected in the TIA which included growth.

If you should have any questions, please contact Frank Charbonneau, PE, PTOE at 503.293.1118 or email Frank@CharbonneauEngineer.com.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.167

49th Street Annexation
February 8, 2013

Traffic Impact Study

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.168

LANCASTER
ENGINEERING

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April 28, 2009

Lyle Hutchens
Devco Engineering
P.O. Box 1211
Corvallis, OR 97339

RE: 49th Street Annexation – Traffic Study Addendum

Dear Lyle:

We have received the City of Corvallis's comments regarding the traffic study of the proposed 49th Street annexation project. This letter is intended to address the City's concerns.

One of the City's concerns was regarding the traffic counts for the project, which had been obtained before school was in session. At the request of the City, new traffic counts were conducted for the study intersections. These counts were taken recently and include school traffic.

A comparison of the traffic counts showed that, with one exception, traffic volumes have decreased at the study intersections. The exception is the morning peak hour counts taken at the intersection of SW 53rd Street and Philomath Boulevard/Highway 20. However, the critical analysis period for this intersection is the evening peak hour and the mitigations discussed in the study reflect those which are necessary to improve evening peak hour operation.

Any revision to the analysis of the study intersections would show slightly improved operation at most of the study intersections. Since the volumes did not decrease substantially, any improvement based on the recent counts would be minimal; therefore, a revised analysis is unlikely to demonstrate that any of the mitigations proposed in the original traffic study become unnecessary.

There is no development proposal associated with the zone change project. A development proposal would be needed to identify the number of trips that would be added to the street system as a result of development of the property. For this reason, we analyzed only the planning horizon.

A review of the trip generation for the site did not reveal any discrepancy with the AM and PM peak hour totals. The trip distribution was based on both the morning and evening peak hour existing volumes. The distribution percentages account for difference in the morning and evening peak hour volumes.

Figures 4, 5, 6, and 7 show volumes for the PM peak hour only. The revised drawings are attached to this letter.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.169

The City uses a volume-to-capacity (v/c) ratio standard to determine level of service. A revised table showing the level of service based on the City's level of service definitions from the City's Transportation System Plan (TSP) is shown below.

LEVEL OF SERVICE SUMMARY

	PM Peak Hour		
	LOS	Delay	V/C
*SW Philomath Boulevard & SW 53rd Street**			
Existing Conditions	E	57	0.94
2030 Background Conditions	F	167	1.30
2030 Background + Site Trips	F	175	1.33
2030 Background Conditions[1]	F	174	1.32
2030 Background + Site Trips[1]	F	183	1.35
2030 Background + Site Trips[2]	F	164	1.21
2030 Background + Site Trips[3]	D	43	0.85
SW Country Club Drive & SW 53rd Street			
Existing Conditions	A	--	481
2030 Background Conditions	C	--	221
2030 Background + Site Trips	D	--	193
2030 Background Conditions[1]	C	--	212
2030 Background + Site Trips[1]	D	--	185
SW 53rd Street & Site Access			
2030 Background + Site Trips	A	--	781
2030 Background + Site Trips[1]	A	--	773

* Signalized intersection
LOS = Level of Service
Delay = Average Delay per Vehicle in Seconds
V/C = Volume-to-Capacity Ratio or Reserve Capacity
[1] with Cannon Applegate annexation traffic included
[2] with northbound right-turn lane
[3] with improvements as discussed in CAMPO report

1e

TECHNICAL APPENDIX

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.171

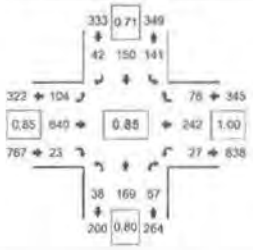
Type of peak hour being reported: System Peak

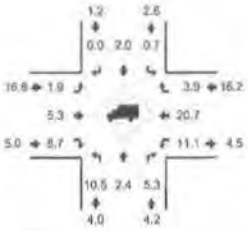
Method for determining peak hour: Total Entering Volume

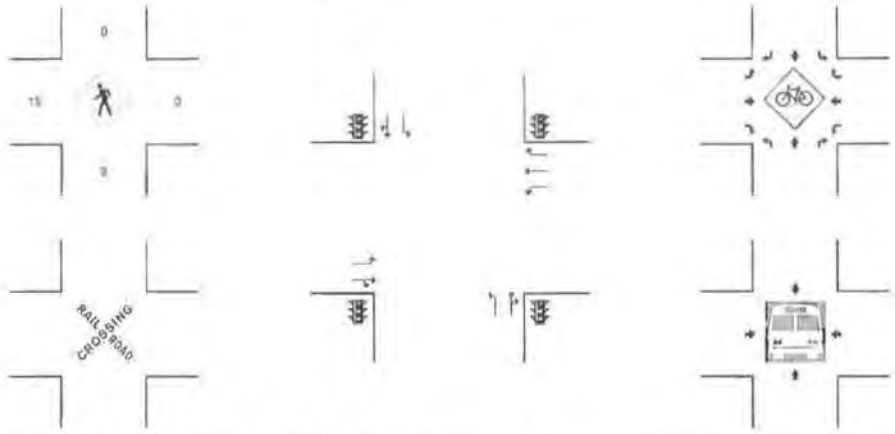
LOCATION: SW 53rd St -- OR 20
CITY/STATE: Corvallis, OR

QC JOB #: 10426907
DATE: 4/22/2009

Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:45 AM -- 8:00 AM







5-Min Count Period Beginning At	SW 53rd St (Northbound)				SW 53rd St (Southbound)				OR 20 (Eastbound)				OR 20 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	3	3	1	0	5	2	4	0	2	39	1	0	1	21	1	0	83	
7:05 AM	2	3	4	0	5	4	0	0	8	39	0	0	0	14	3	0	82	
7:10 AM	2	12	3	0	11	6	1	0	4	25	1	0	0	21	2	0	88	
7:15 AM	1	15	2	0	7	2	2	0	6	42	1	0	3	20	2	0	103	
7:20 AM	1	6	5	0	7	9	1	0	4	46	0	0	1	12	0	0	92	
7:25 AM	1	17	4	0	10	4	3	0	4	44	2	0	0	22	6	0	117	
7:30 AM	2	12	6	0	9	5	2	0	4	65	3	0	3	19	1	0	131	
7:35 AM	3	11	6	0	9	12	2	0	12	61	1	0	1	18	4	0	140	
7:40 AM	3	13	4	0	13	16	2	0	10	53	3	0	6	27	5	0	155	
7:45 AM	7	13	2	0	20	8	4	0	10	68	0	0	2	18	6	0	158	
7:50 AM	2	26	4	0	8	28	11	0	10	65	0	0	3	15	8	0	180	
7:55 AM	0	14	5	0	15	18	5	0	14	54	5	0	3	16	9	0	167	1496
8:00 AM	2	12	6	0	14	12	6	0	7	43	1	0	1	30	5	0	139	1552
8:05 AM	3	11	5	0	14	14	2	0	7	53	1	0	5	28	11	0	154	1624
8:10 AM	1	18	3	0	10	13	1	0	12	46	2	0	0	5	10	0	121	1657
8:15 AM	2	14	6	0	10	11	2	0	5	40	4	0	2	19	7	0	122	1676
8:20 AM	3	8	6	0	8	9	2	0	9	48	1	0	1	25	5	0	125	1709
8:25 AM	0	12	4	0	6	6	4	0	8	41	1	0	0	23	8	0	113	1705
8:30 AM	0	4	3	0	12	10	4	0	1	46	3	0	1	27	4	0	115	1689
8:35 AM	4	13	5	0	14	7	3	0	8	34	3	0	7	20	3	0	121	1670
8:40 AM	3	12	12	0	8	8	2	0	7	42	0	0	1	13	3	0	111	1626
8:45 AM	4	16	3	0	5	6	5	0	8	27	4	0	4	18	2	0	102	1570
8:50 AM	1	11	7	0	11	11	6	0	11	31	5	0	1	26	7	0	128	1518
8:55 AM	0	7	5	0	12	16	3	0	4	34	3	0	1	23	5	0	114	1465

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	72	212	44	0	176	216	80	0	136	748	20	0	32	196	88	0	2020
Heavy Trucks	0	0	4		0	4	0		4	28	0		4	40	0		84
Pedestrians		20				0				12				0			32
Bicycles																	
Railroad																	
Stopped Buses																	

Comments:

Report generated on 4/24/2009 2:55 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.172

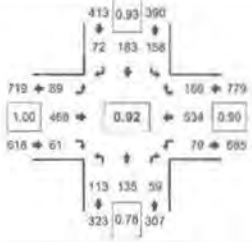
Type of peak hour being reported: System Peak

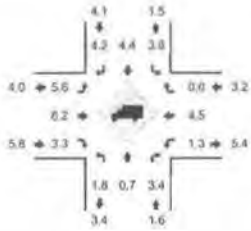
Method for determining peak hour: Total Entering Volume

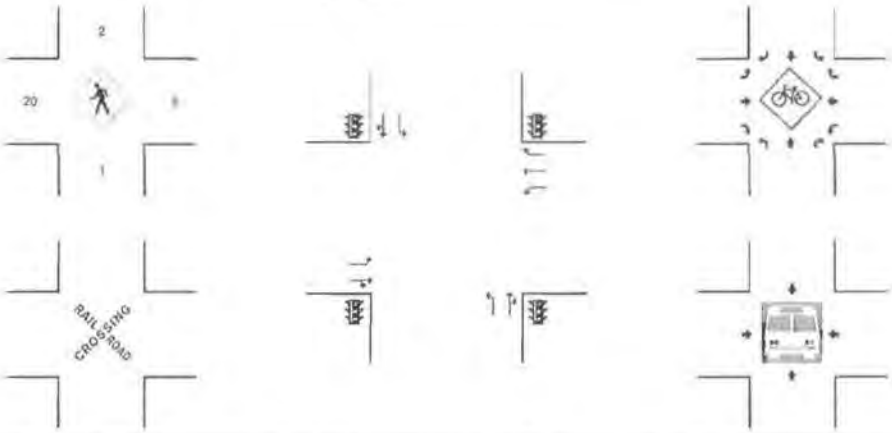
LOCATION: SW 53rd St -- OR 20
CITY/STATE: Corvallis, OR

QC JOB #: 10426908
DATE: 4/21/2009

Peak-Hour: 4:35 PM -- 5:35 PM
Peak 15-Min: 5:05 PM -- 5:20 PM







5-Min Count Period Beginning At	SW 53rd St (Northbound)				SW 53rd St (Southbound)				OR 20 (Eastbound)				OR 20 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	6	8	2	0	10	8	6	0	5	41	6	0	7	41	12	0	152	
4:05 PM	7	13	4	0	6	17	7	0	8	36	7	0	2	43	15	0	165	
4:10 PM	6	15	5	0	6	12	7	0	12	48	7	0	8	46	7	0	181	
4:15 PM	9	17	8	0	13	10	2	0	7	36	4	0	5	60	11	0	182	
4:20 PM	16	15	3	0	14	16	9	0	7	40	3	0	1	47	10	0	181	
4:25 PM	7	16	4	0	7	7	9	0	5	37	1	0	4	37	7	0	141	
4:30 PM	12	8	9	0	8	8	9	0	10	43	4	0	4	31	8	0	154	
4:35 PM	6	13	3	0	16	13	6	0	4	41	5	0	4	40	15	0	166	
4:40 PM	7	10	5	0	8	12	5	0	12	53	4	0	5	49	14	0	184	
4:45 PM	7	17	5	0	12	21	8	0	4	45	6	0	5	39	8	0	177	
4:50 PM	11	10	6	0	12	10	5	0	7	49	8	0	9	45	14	0	186	
4:55 PM	14	7	2	0	17	16	5	0	11	37	3	0	6	29	7	0	154	2023
5:00 PM	3	8	7	0	6	15	7	0	6	39	6	0	3	40	17	0	157	2028
5:05 PM	15	9	7	0	19	14	4	0	7	30	6	0	7	35	21	0	180	2043
5:10 PM	9	21	8	0	13	18	8	0	6	27	4	0	8	53	15	0	188	2050
5:15 PM	12	12	5	0	14	16	7	0	11	46	4	0	11	52	15	0	205	2073
5:20 PM	5	9	3	0	12	13	5	0	6	39	6	0	10	57	16	0	181	2073
5:25 PM	14	9	1	0	18	14	5	0	8	28	4	0	4	51	11	0	167	2099
5:30 PM	10	10	7	0	11	21	9	0	7	28	5	0	7	44	13	0	172	2117
5:35 PM	8	23	3	0	8	12	5	0	1	46	3	0	5	51	14	0	179	2130
5:40 PM	12	15	4	0	9	5	7	0	3	29	1	0	3	29	28	0	145	2091
5:45 PM	11	17	9	0	12	17	8	0	8	26	5	0	3	48	21	0	185	2099
5:50 PM	12	14	6	0	12	13	0	0	5	24	4	0	7	22	9	0	128	2041
5:55 PM	9	15	8	0	7	11	2	0	1	20	6	0	4	37	6	0	126	2013

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	144	168	80	0	184	192	68	0	96	436	56	0	104	560	204	0	2292
Heavy Trucks	4	4	0		0	12	0		0	16	0		0	20	0		56
Pedestrians		4				0				40				8			52
Bicycles																	
Railroad																	
Stopped Buses																	

Comments:

Report generated on 4/24/2009 2:57 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

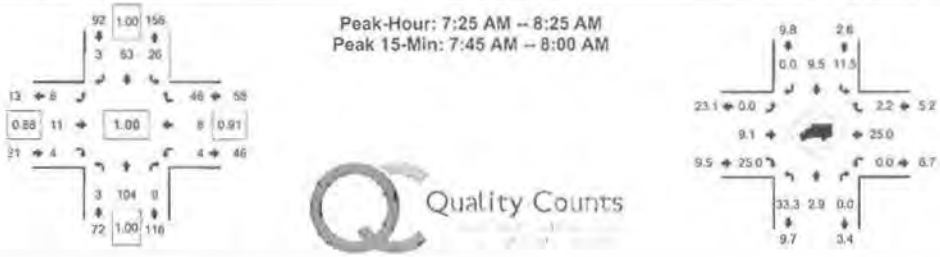
Type of peak hour being reported: System Peak

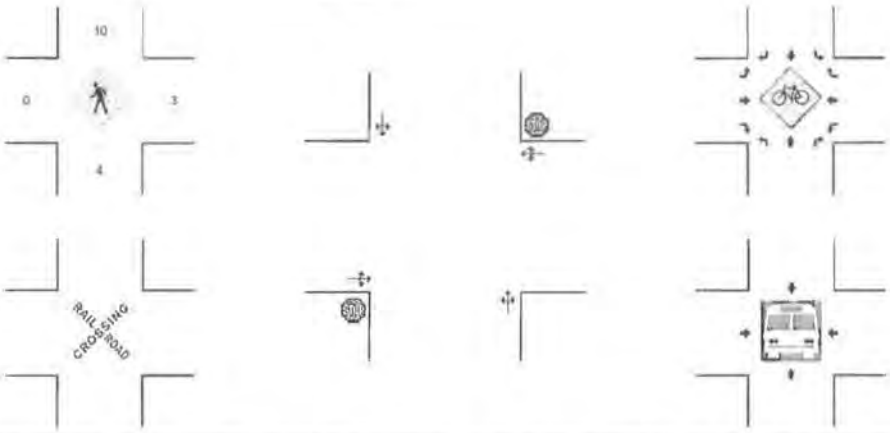
Method for determining peak hour: Total Entering Volume

LOCATION: SW 53rd St -- SW Country Club Dr
CITY/STATE: Corvallis, OR

QC JOB #: 10426901
DATE: 4/22/2009

Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:45 AM -- 8:00 AM





5-Min Count Period Beginning At	SW 53rd St (Northbound)				SW 53rd St (Southbound)				SW Country Club Dr (Eastbound)				SW Country Club Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	19	2	0	3	9	1	0	3	1	1	0	0	1	1	0	41	
7:05 AM	0	5	2	0	1	7	1	0	2	1	0	0	2	3	5	0	32	
7:10 AM	0	10	1	0	0	6	0	0	1	3	1	0	2	1	5	0	30	
7:15 AM	1	12	0	0	3	9	0	0	1	3	1	0	1	0	1	0	32	
7:20 AM	0	7	0	0	3	5	0	0	0	0	1	0	3	2	4	0	25	
7:25 AM	0	12	0	0	5	2	0	0	1	2	1	0	1	1	7	0	32	
7:30 AM	0	15	1	0	2	7	0	0	0	2	0	0	0	0	2	0	29	
7:35 AM	0	4	0	0	3	6	0	0	0	1	0	0	0	4	6	0	24	
7:40 AM	1	9	0	0	2	2	0	0	0	0	0	0	0	0	4	0	18	
7:45 AM	0	12	0	0	1	4	0	0	2	1	1	0	1	1	3	0	26	
7:50 AM	0	6	4	0	1	7	0	0	0	0	1	0	1	0	4	0	24	
7:55 AM	0	5	1	0	2	6	0	0	0	1	0	0	0	0	6	0	22	335
8:00 AM	0	7	0	0	2	8	1	0	0	3	0	0	0	0	0	0	21	315
8:05 AM	0	9	1	0	3	3	0	0	1	1	1	0	0	0	2	0	21	304
8:10 AM	0	7	1	1	0	4	0	0	0	0	0	0	1	0	6	0	20	294
8:15 AM	1	6	0	0	2	6	2	0	1	0	0	0	0	2	3	0	23	285
8:20 AM	0	11	1	0	3	8	0	0	1	0	0	0	0	0	3	0	27	287
8:25 AM	0	4	1	0	3	5	1	0	0	0	0	0	0	0	7	0	21	276
8:30 AM	0	7	0	0	0	6	0	0	0	1	0	0	2	1	2	0	19	266
8:35 AM	0	5	1	0	2	7	1	0	0	1	0	0	0	1	3	0	21	263
8:40 AM	0	9	0	0	5	3	1	0	0	4	1	0	0	1	2	0	26	271
8:45 AM	0	13	0	0	0	3	1	0	0	0	1	0	0	0	0	0	18	263
8:50 AM	0	8	0	0	3	5	1	0	1	0	1	0	0	0	4	0	23	262
8:55 AM	0	9	2	0	2	4	0	0	1	0	0	0	1	0	1	0	20	260

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	96	20	0	16	68	0	0	8	8	8	0	8	4	52	0	268
Heavy Trucks	0	0	0		0	8	0		0	4	0		0	4	4		20
Pedestrians		0				24				0				0			24
Bicycles																	
Railroad																	
Stopped Buses																	

Comments

Report generated on 4/24/2009 2:55 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.174

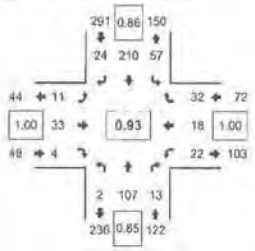
Type of peak hour being reported: System Peak

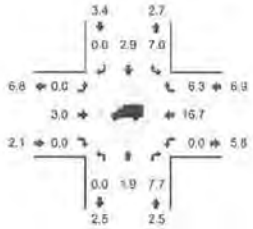
Method for determining peak hour: Total Entering Volume

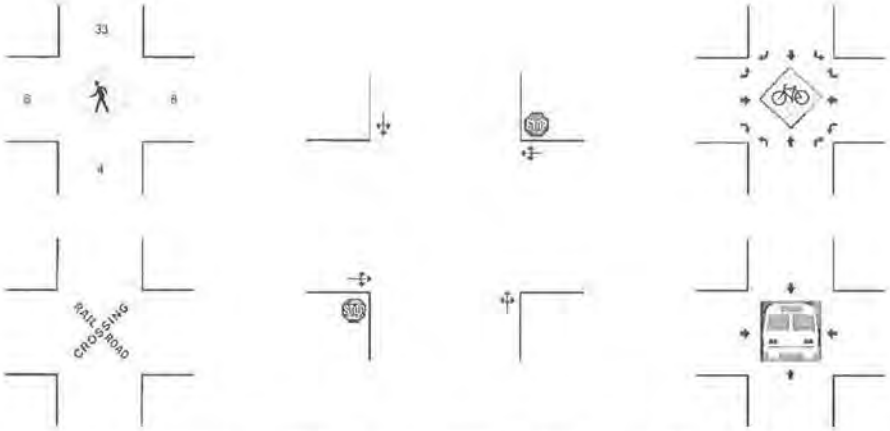
LOCATION: SW 53rd St -- SW Country Club Dr
CITY/STATE: Corvallis, OR

QC JOB #: 10426902
DATE: 4/21/2009

Peak-Hour: 4:35 PM -- 5:35 PM
Peak 15-Min: 5:05 PM -- 5:20 PM







5-Min Count Period Beginning At	SW 53rd St (Northbound)				SW 53rd St (Southbound)				SW Country Club Dr (Eastbound)				SW Country Club Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	9	2	0	1	10	1	0	0	3	1	0	2	0	4	0	33	
4:05 PM	0	13	0	0	3	15	2	0	2	2	0	0	2	0	5	0	44	
4:10 PM	0	15	2	0	6	17	1	0	3	4	0	0	1	0	7	0	56	
4:15 PM	0	11	0	0	3	13	2	0	0	1	2	0	3	0	5	0	40	
4:20 PM	1	7	2	0	8	12	0	0	0	1	1	0	0	1	3	0	36	
4:25 PM	0	13	2	0	3	14	0	0	2	2	0	0	0	3	1	0	40	
4:30 PM	0	8	0	0	2	10	0	0	0	3	0	0	2	0	7	0	32	
4:35 PM	2	11	1	0	3	19	2	0	0	4	1	0	2	0	2	0	47	
4:40 PM	0	16	2	0	4	11	0	0	2	3	0	0	0	2	4	0	44	
4:45 PM	0	6	0	0	9	13	3	0	4	4	0	0	1	3	7	0	50	
4:50 PM	0	10	2	0	2	8	3	0	1	1	1	0	5	0	2	0	35	
4:55 PM	0	4	1	0	6	14	2	0	0	2	0	0	0	3	1	0	33	490
5:00 PM	0	8	2	0	4	13	4	0	0	3	0	0	4	3	2	0	43	500
5:05 PM	0	12	1	0	7	23	2	0	0	2	0	0	0	0	3	0	50	506
5:10 PM	0	15	1	0	2	21	0	0	2	1	0	0	2	1	2	0	47	497
5:15 PM	0	6	1	0	7	22	1	0	0	5	1	0	1	1	1	0	46	503
5:20 PM	0	3	2	0	6	22	1	0	0	3	0	0	0	1	0	0	38	505
5:25 PM	0	7	0	0	6	24	2	0	1	1	0	0	1	0	4	0	46	511
5:30 PM	0	9	0	0	1	20	4	0	1	4	1	0	6	4	4	0	54	533
5:35 PM	0	4	1	0	3	13	0	0	3	3	0	0	2	2	3	0	34	520
5:40 PM	0	17	2	0	2	12	1	0	0	2	0	0	2	1	3	0	42	518
5:45 PM	0	16	0	0	1	19	1	0	0	1	0	0	0	1	0	0	39	507
5:50 PM	0	7	0	0	2	13	2	0	1	1	0	0	0	3	4	0	33	505
5:55 PM	0	8	1	0	5	14	3	0	1	0	1	0	0	3	7	0	43	515

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	132	12	0	64	264	12	0	8	32	4	0	12	8	24	0	572
Heavy Trucks	0	0	0		4	4	0		0	0	0		0	0	4		12
Pedestrians		4				28				4				20			56
Bicycles																	
Railroad																	
Stopped Buses																	

Comments:

Report generated on 4/24/2009 2:57 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.175

Type of report: Tube Count - Volume Data

LOCATION: SW 53rd north of Plymounth Dr
SPECIFIC LOCATION: 500 ft from
CITY/STATE: Corvallis, OR

QC JOB #: 10426909
DIRECTION: NB
DATE: Apr 21 2009 - Apr 23 2009

Start Time	Mon	Tue 21-Apr-09	Wed 22-Apr-09	Thu 23-Apr-09	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM			5	3		4			4	
1:00 AM			1			1			1	
2:00 AM			0			0			0	
3:00 AM			5			5			5	
4:00 AM			5			5			5	
5:00 AM			23			23			23	
6:00 AM			65			65			65	
7:00 AM			183			183			183	
8:00 AM			163			163			163	
9:00 AM			106			106			106	
10:00 AM			84			84			84	
11:00 AM			96			96			96	
12:00 PM			90			90			90	
1:00 PM			76			76			76	
2:00 PM			108			108			108	
3:00 PM			128			128			128	
4:00 PM			122			122			122	
5:00 PM		111	99			105			105	
6:00 PM		86	79			82			82	
7:00 PM		43	61			52			52	
8:00 PM		40	46			43			43	
9:00 PM		28	14			21			21	
10:00 PM		15	5			10			10	
11:00 PM		6	3			4			4	
Day Total		329	1567	3		1576			1576	
% Weekday Average		20.9%	99.4%	0.2%						
% Week Average		20.9%	99.4%	0.2%		100.0%				
AM Peak Volume			7:00 AM 183	12:00 AM 3		7:00 AM 183			7:00 AM 183	
PM Peak Volume		5:00 PM 111	3:00 PM 128			3:00 PM 128			3:00 PM 128	

Comments:

Report generated on 4/24/2009 11:23 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

LOCATION: SW 53rd north of Plymounth Dr
SPECIFIC LOCATION: 500 ft from
CITY/STATE: Corvallis, OR

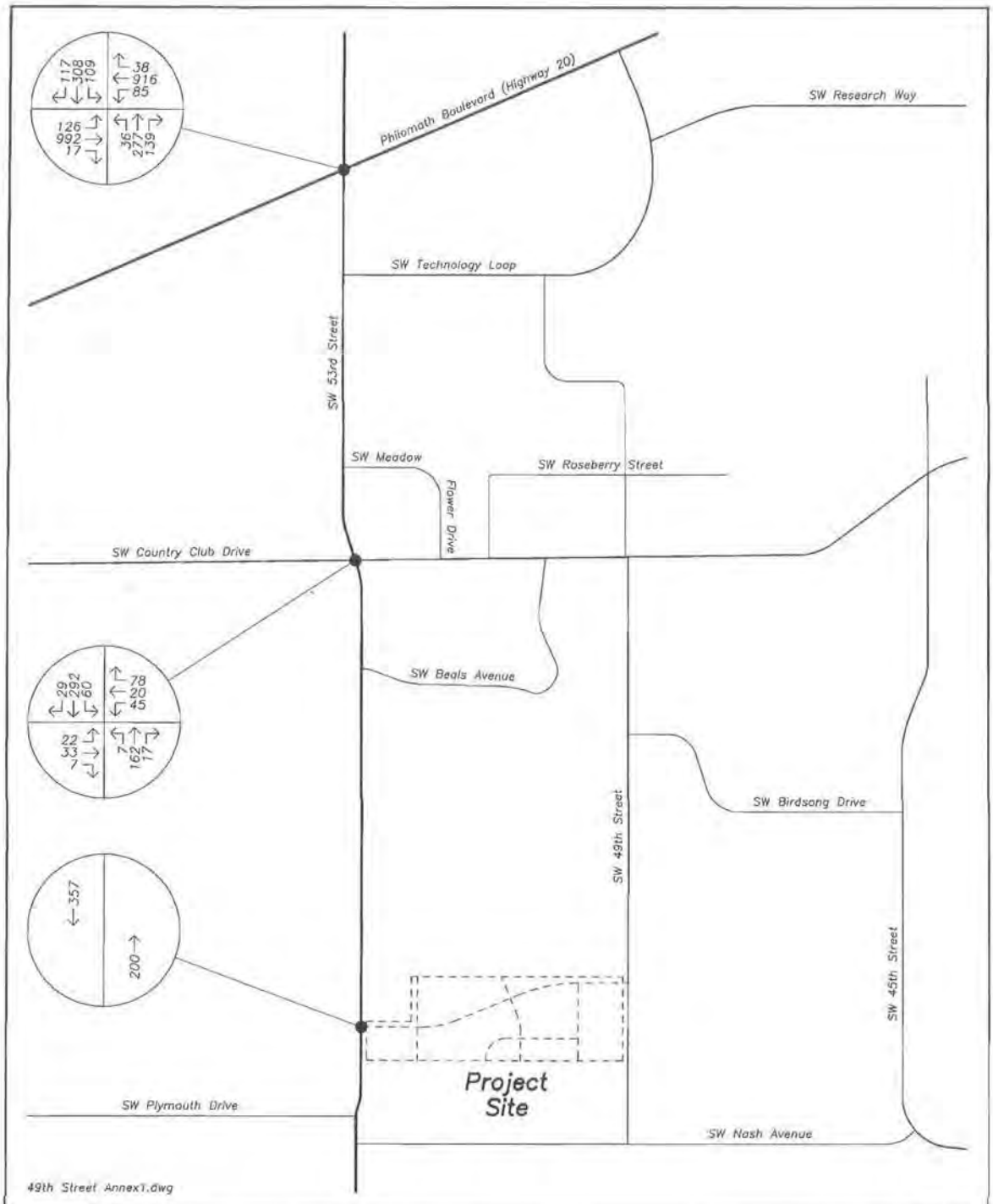
QC JOB #: 10426909
DIRECTION: SB
DATE: Apr 21 2009 - Apr 23 2009

Start Time	Mon	Tue 21-Apr-09	Wed 22-Apr-09	Thu 23-Apr-09	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM			5	7		6			6	
1:00 AM			0			0			0	
2:00 AM			1			1			1	
3:00 AM			0			0			0	
4:00 AM			3			3			3	
5:00 AM			12			12			12	
6:00 AM			25			25			25	
7:00 AM			53			53			53	
8:00 AM			82			82			82	
9:00 AM			66			66			66	
10:00 AM			79			79			79	
11:00 AM			**84**			**84**			**84**	
12:00 PM			102			102			102	
1:00 PM			110			110			110	
2:00 PM			121			121			121	
3:00 PM			129			129			129	
4:00 PM			169			169			169	
5:00 PM		**227**	**228**			**227**			**227**	
6:00 PM		137	125			131			131	
7:00 PM		89	92			90			90	
8:00 PM		55	72			63			63	
9:00 PM		63	56			59			59	
10:00 PM		27	24			25			25	
11:00 PM		8	6			7			7	
Day Total		606	1644	7		1644			1644	
% Weekday Average		36.9%	100.0%	0.4%						
% Week Average		36.9%	100.0%	0.4%		100.0%				
AM Peak Volume			11:00 AM 84	12:00 AM 7		11:00 AM 84			11:00 AM 84	
PM Peak Volume		5:00 PM 227	5:00 PM 228			5:00 PM 227			5:00 PM 227	

Comments:

Report generated on 4/24/2009 11:23 AM

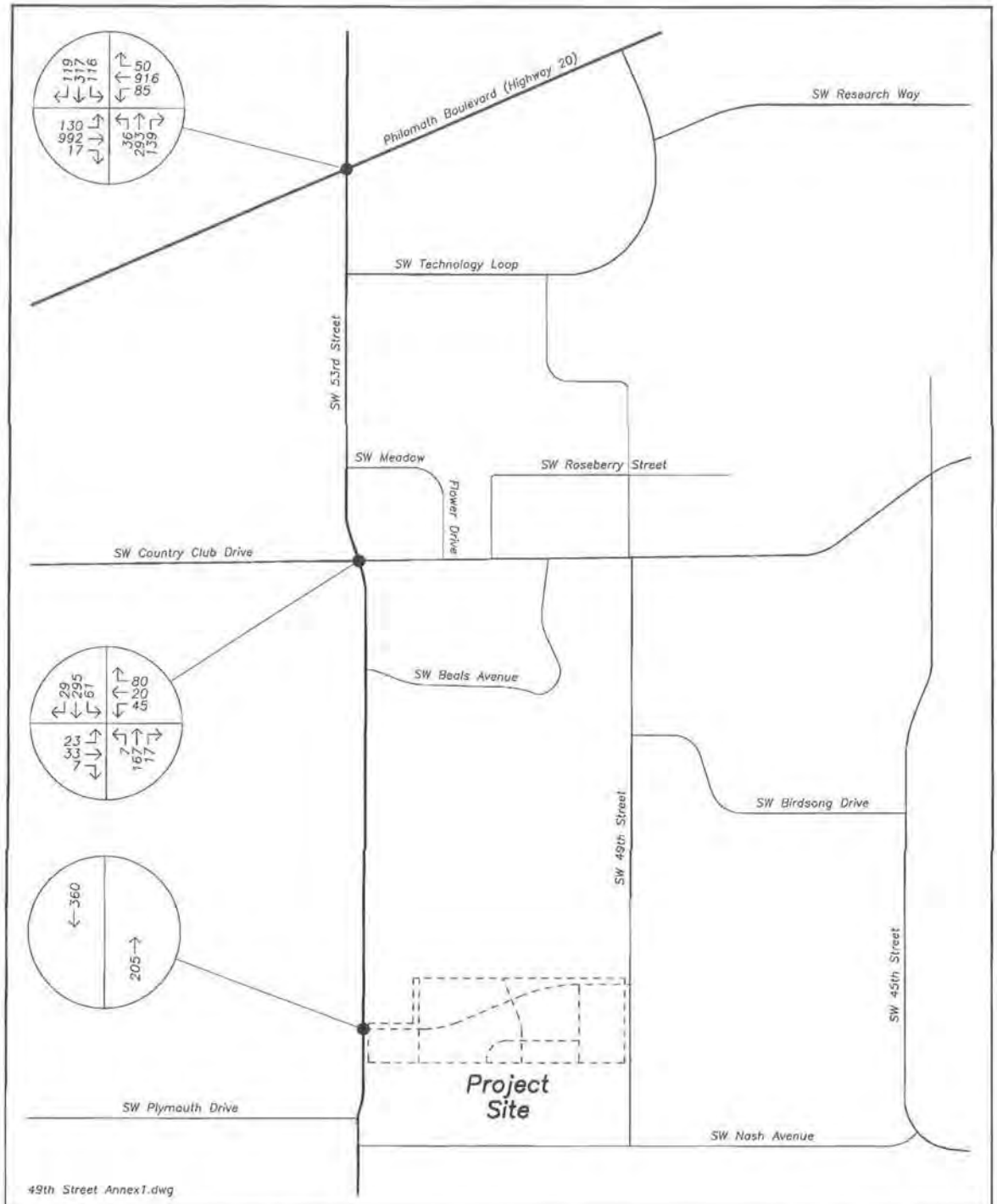
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)



TRAFFIC VOLUMES
Year 2030 Background Conditions
PM Peak Hour

no scale

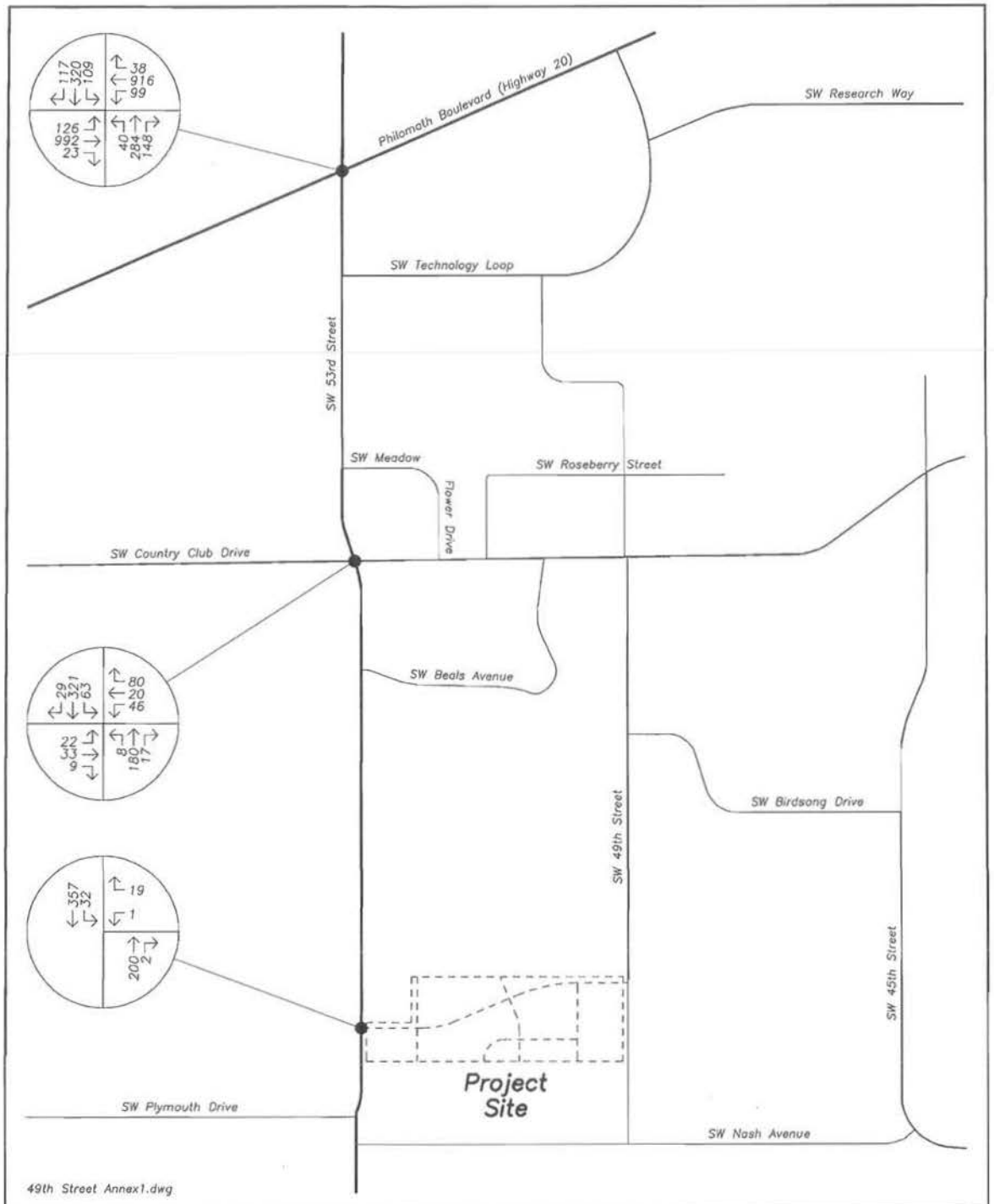
FIGURE 4



TRAFFIC VOLUMES (w/ Cannon Applegate)
Year 2030 Background Conditions
PM Peak Hour

no scale

FIGURE 5

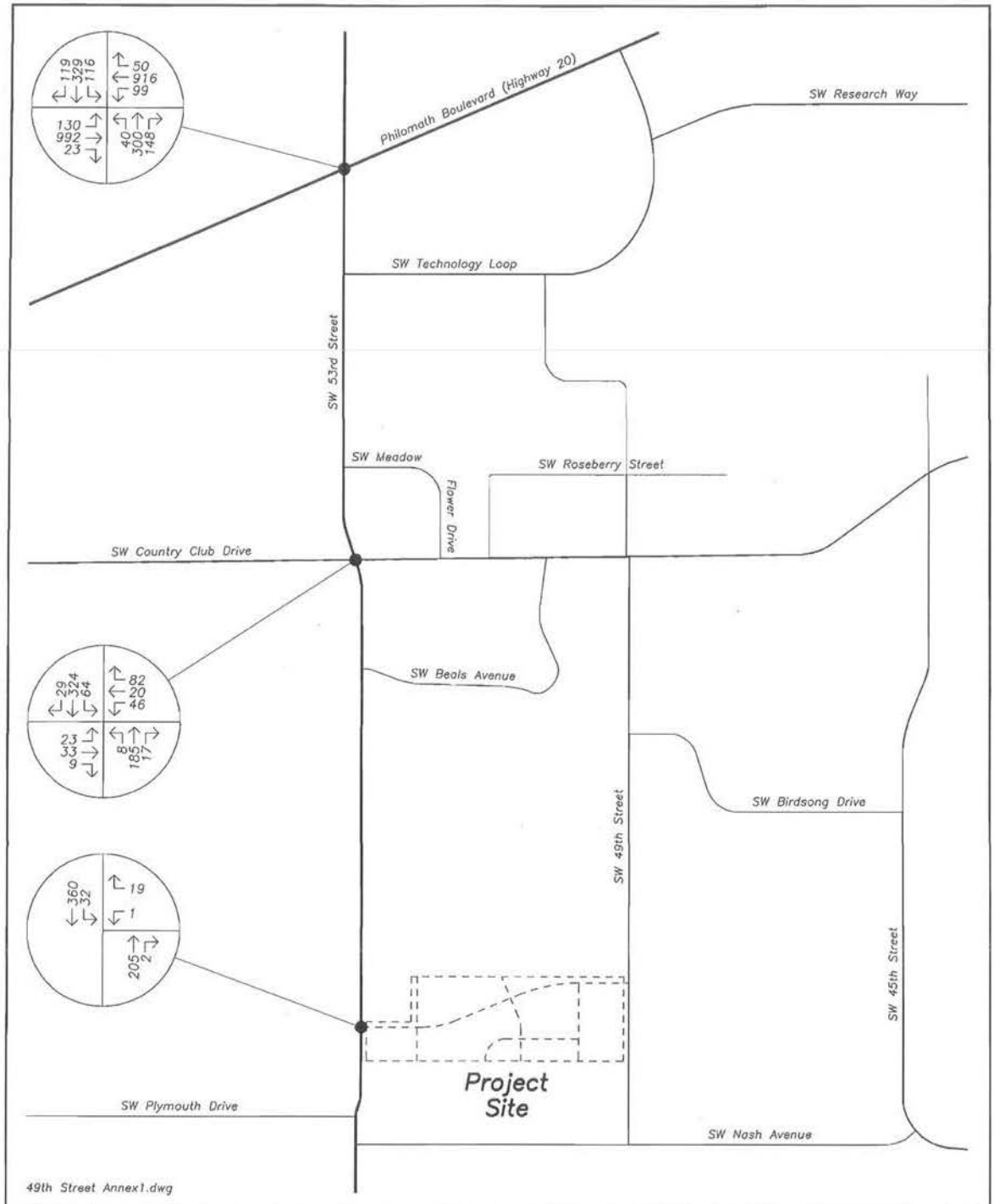


TRAFFIC VOLUMES
Year 2030 Background plus Site Trips
PM Peak Hour

no scale

FIGURE 6

PAGE 15



TRAFFIC VOLUMES (w/ Cannon Applegate)
Year 2030 Background plus Site Trips
PM Peak Hour

no scale

FIGURE 7

HCM Signalized Intersection Capacity Analysis
3: Highway 20/34 (Philomath Blvd) & SW 53rd Street

4/28/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1662	1630		1646	1667	1458	1662	1733	1373	1646	1646	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1662	1630		1646	1667	1458	1662	1733	1373	1646	1646	
Volume (vph)	130	992	23	99	916	50	40	300	148	116	329	119
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	146	1115	26	111	1029	56	45	337	166	130	370	134
RTOR Reduction (vph)	0	1	0	0	0	7	0	0	127	0	12	0
Lane Group Flow (vph)	146	1140	0	111	1029	49	45	337	39	130	492	0
Confl. Peds. (#/hr)			2									1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	7%	3%	1%	5%	2%	0%	1%	6%	1%	2%	0%
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	8.0	57.0		6.0	55.0	55.0	3.2	22.8	22.8	9.0	28.6	
Effective Green, g (s)	8.0	57.0		6.0	55.0	55.0	3.2	22.8	22.8	9.0	28.6	
Actuated g/C Ratio	0.07	0.51		0.05	0.50	0.50	0.03	0.21	0.21	0.08	0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	120	839		89	827	724	48	357	283	134	425	
v/s Ratio Prot	c0.09	c0.70		0.07	0.62		0.03	0.19		c0.08	c0.30	
v/s Ratio Perm						0.03			0.03			
v/c Ratio	1.22	1.36		1.25	1.24	0.07	0.94	0.94	0.14	0.97	1.16	
Uniform Delay, d1	51.4	26.9		52.4	27.9	14.5	53.7	43.4	36.0	50.8	41.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	151.7	169.2		175.8	120.1	0.0	105.3	35.4	1.0	68.3	94.4	
Delay (s)	203.1	196.1		228.2	148.0	14.6	159.0	78.7	37.0	119.1	135.5	
Level of Service	F	F		F	F	B	F	E	D	F	F	
Approach Delay (s)		196.9			149.2			72.7			132.2	
Approach LOS		F			F			E			F	

Intersection Summary

HCM Average Control Delay	151.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	107.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.182

SW 49TH STREET ANNEXATION
TRAFFIC IMPACT STUDY

CORVALLIS, OREGON

DATE:
March 25, 2009

PREPARED FOR:
Devco Engineering

PREPARED BY:
Lancaster Engineering

REGISTERED PROFESSIONAL ENGINEER
54853
OREGON
JULY 9, 2001
TODD E. MOBLEY
3/25/09

EXPIRES: 12/31/2010

LANCASTER
ENGINEERING

321 SW 4th Ave., Suite 400 | Portland, OR 97204 | 503.248.0313 | lancasterengineering.com

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.183

TABLE OF CONTENTS

Executive Summary 3

Project Description 4

Trip Generation & Distribution 8

Safety Analysis 11

Operational Analysis 12

Appendix 21

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.184

EXECUTIVE SUMMARY

1. A site comprising three parcels and located between SW 53rd Street and SW 49th Street in SW Corvallis is proposed to be annexed into the City Limits. The site could be developed with up to 63 homes under the City's R-6 zoning. The site fronts onto SW 53rd Street and SW 49th Street and access is possible to both streets.

2. The site could generate up to 47 trips during the morning peak hour, 64 trips during the evening peak hour, and 602 trips during the weekday.

3. The intersection of SW Philomath Boulevard (Highway 20/34) and SW 53rd Street is presently exceeding acceptable standards. Mitigating the impact of the annexation will fulfill TPR requirements. Installing protected/permissive left-turn phasing on the northbound and southbound approaches will mitigate the impact of the annexation.

4. The intersection of SW Country Club Drive and SW 53rd Street is presently functioning within satisfactory criteria and will continue to function satisfactorily with the proposed annexation.

5. Access onto SW 53rd Street or SW 49th Street is forecast to operate with very low delays.

6. Sight distance along the site frontage on SW 53rd Street is adequate, but improves the farther north the access is located. For this reason, access is recommended to be as far north as practical.

7. Sight distance along the site frontage on SW 49th Street is adequate if the access is located at the crest of the road or somewhat south of the crest.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.185

1e

PROJECT DESCRIPTION

INTRODUCTION

A site located between SW 53rd Street and SW 49th Street and north of SW Nash Avenue is proposed to be annexed into the City of Corvallis's City Limits. The site comprises three tax lots and could be developed with up to 63 homes under the City's R-6 zoning designation.

The site fronts both SW 53rd Street and SW 49th Street. Access is likely onto both streets.

The purpose of this study is to assess the traffic impact of the proposed annexation on the nearby street system and to recommend any required mitigative measures. The analysis will include level of service calculations.

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

LOCATION DESCRIPTION

Three tax lots are proposed to be annexed into Corvallis's City Limits. The site is located between SW 53rd Street and SW 49th Street somewhat north of SW Nash Avenue and would be residentially zoned. There is no application yet to develop the parcels; the traffic study will review the worst-case residential development.

The site fronts onto both SW 53rd Street and SW 49th Street. Access is possible to both streets. In addition, road stubs could be provided to the adjacent parcels for future connectivity in the area.

The City of Corvallis requires analysis of intersections with 30 or more site trips. These intersections are: SW 53rd Street/site access, SW 53rd Street/SW Country Club Drive, and SW 53rd Street/SW Philomath Boulevard/Highway 34. Figure 1 on page six is a vicinity map showing the existing lane configurations and traffic control devices at the study area intersections.

Highway 20/34, also known as SW Philomath Boulevard, is under the jurisdiction of the Oregon Department of Transportation (ODOT) and is classified as a Statewide Highway. It is also designated a Freight Route and Truck Route in the vicinity of the site. It is a three-lane facility near the site with a travel lane in each direction and a center turn lane, which generally becomes a left-turn lane at intersections. There are curbs and sidewalks along sections with recent development, although shoulders are typical on most sections of the highway. The posted speed is 45 mph.

SW 53rd Street is also under the jurisdiction of the City of Corvallis and is classified as an Arterial in the City's 1999 Transportation System Plan (TSP). It is generally a two-lane facility, widening to three lanes at major intersections. There is a detached sidewalk/walkway on the western side of the

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.186

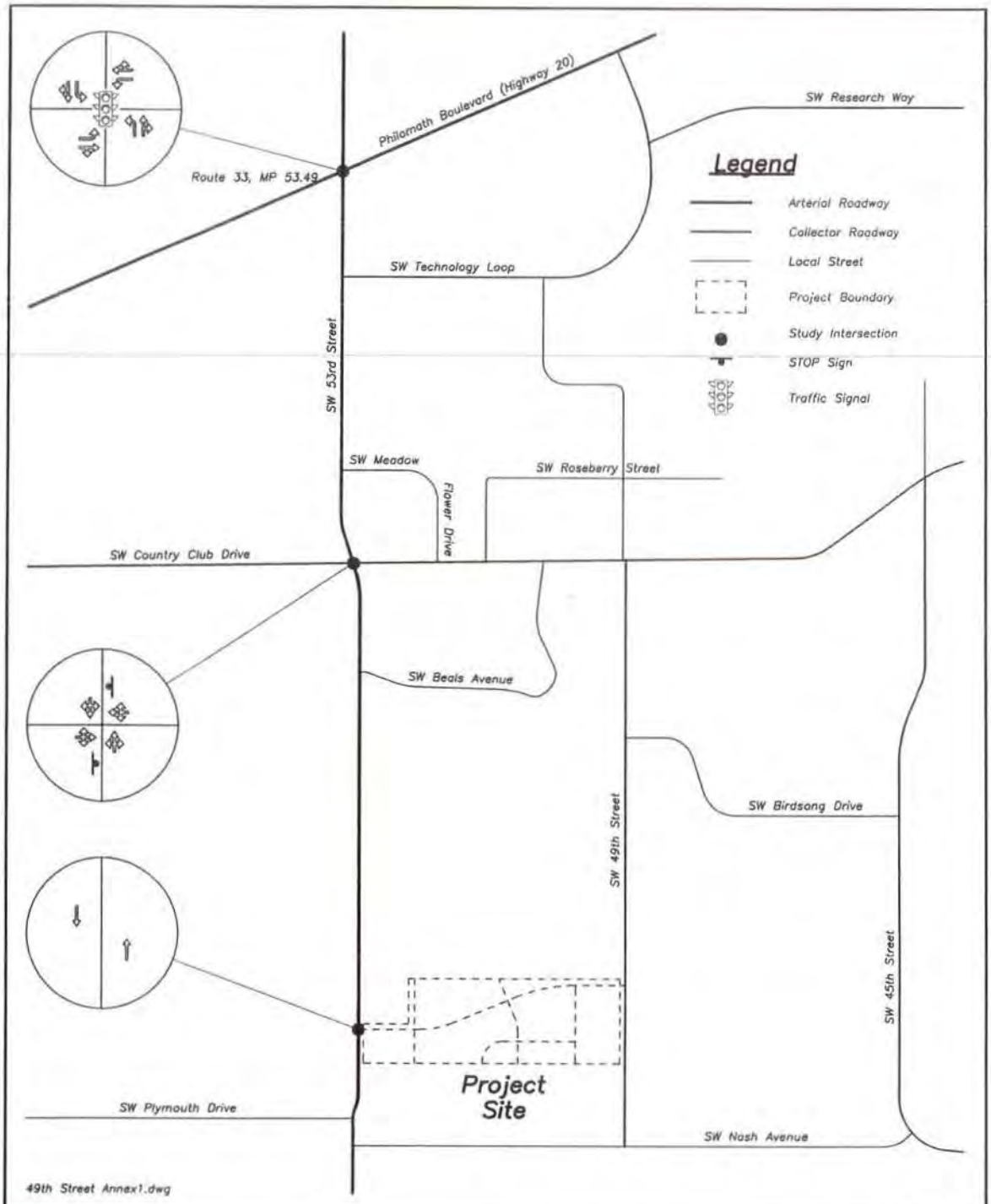
road, but generally no pedestrian facilities on the eastern side. The posted speed is 45 mph in the vicinity of the site.

SW Country Club Road is under the jurisdiction of the City of Corvallis and is classified as a Collector in the 1999 TSP. The facility is generally two lanes, widening to three lanes only at SW 47th Place. There are curbs and sidewalks in areas of recent developments and generally shoulders elsewhere. The posted speed is 35 mph east of SW 53rd Street and 45 mph west of SW 53rd Street.

Corvallis Transit Service (CTS) provides transit service in the vicinity of the site. Limited Service Route PC, Jefferson/osu/west hills/53rd st, travels between downtown Corvallis and the southwest area. Service is from about 6:30 a.m. to about 7:00 p.m. with buses running approximately every hour during the peak periods and one bus during the midday period. There is no weekend service. There are several additional routes that travel within one-half of a mile of the site. Routes 3, 8, and C3 also travel between downtown Corvallis and the Technology Loop area with weekday service generally every half hour between 7:00 a.m. and 7:00 p.m.

Manual turning movement counts were made at the study intersections during September 2008 from 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m. The peak hours typically occur from about 7:15 to 8:15 a.m. and from about 4:45 to 5:45 p.m. The volumes for the morning and evening peak hours are shown in Figure 2 on page seven.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.187

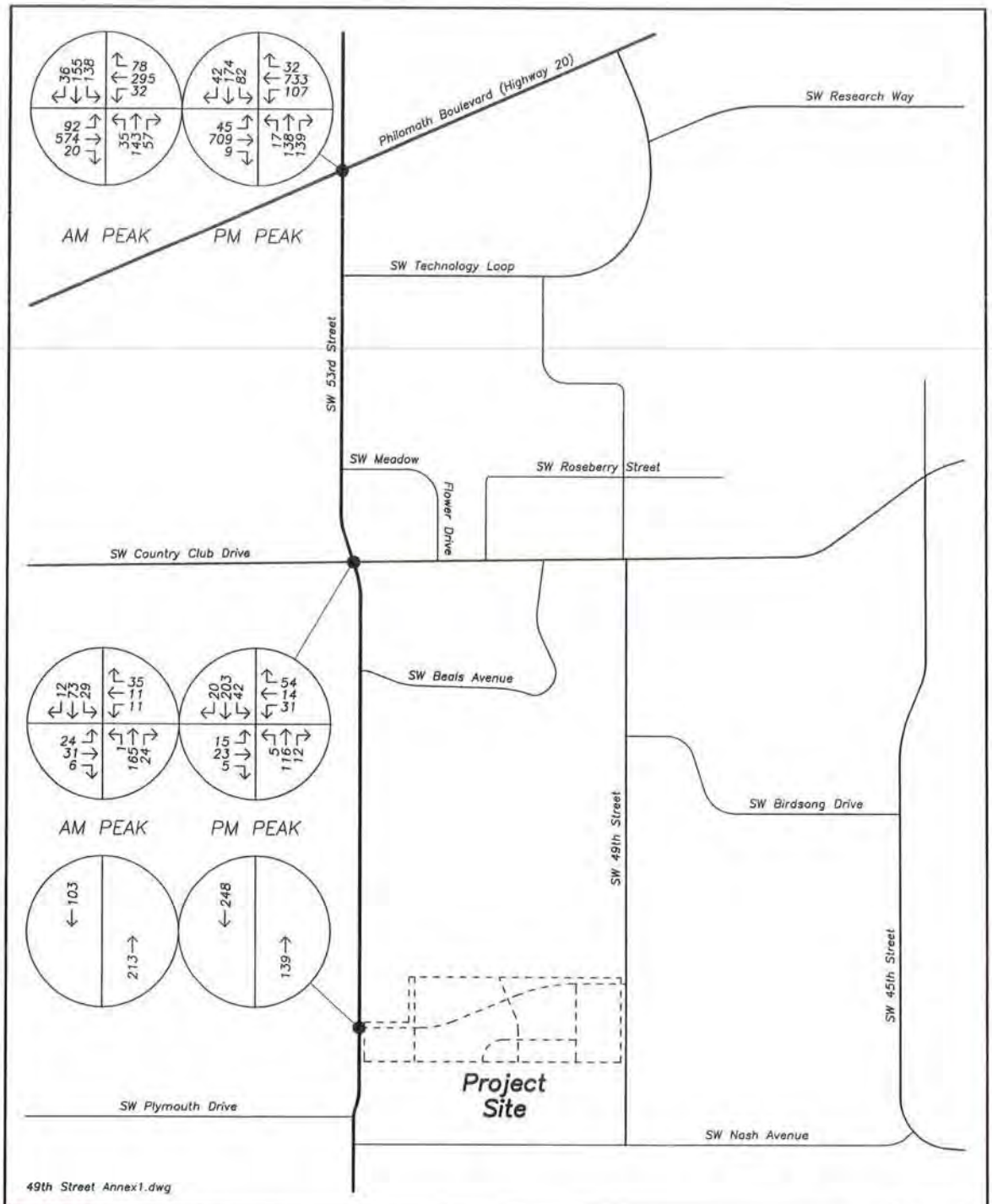


VICINITY MAP

no scale

FIGURE 1

PAGE 6



TRAFFIC VOLUMES
Existing Conditions
AM & PM Peak Hours

no scale

FIGURE 2

PAGE 7

TRIP GENERATION & DISTRIBUTION

TRIP GENERATION

Because the site is proposed as an annexation, long-term conditions need to be examined. Recent LUBA decisions have stated that annexation projects involve a zone change from the County's zoning designation to the City's Comprehensive Plan or zoning designation. There is no Comprehensive Plan amendment associated with the project; therefore, the trips generated by the annexation should be included in the City's planning model, which is used to develop the transportation data used to identify future transportation needs. However, to comply with the LUBA decisions, an analysis of the impacts of a zone change from the County's UR-5 (Urban Residential, 5-acre minimum) to the City's R-6 (Low-Density Residential) has been conducted.

Under the County's UR-5 designation, the site would support three homes, generating a negligible number of trips. Therefore, the impact of the annexation would be the development potential of the site under the City's zoning designation.

To estimate the number of trips that will be generated by the proposed annexation, trip rates from Trip Generation, Seventh Edition, published by the Institute of Transportation Engineers (ITE), were used. When the subject property is annexed, the zoning designation for the property will become R-6 (Low-Density Residential). The ITE trip rates used were for land-use code 210, Single-Family Detached Housing. The trip generation rates are based on the number of dwelling units and were calculated for a developable maximum of 63 homes.

The trip generation calculations indicate that there will be up to 47 trips generated by the proposed annexation during the morning peak hour. Of these, 12 will be entering and 35 will be exiting the site. During the evening peak hour, there are up to 64 trips expected, with 40 entering and 24 exiting the site. Up to 602 weekday trips are expected, with half entering and half exiting.

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

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.190

1e

TRIP GENERATION SUMMARY

SW 49th Street Annexation

	Entering Trips	Exiting Trips	Total Trips
Single-Family Detached Housing (63 homes)			
AM Peak Hour	12	35	47
PM Peak Hour	40	24	64
Weekday	301	301	602

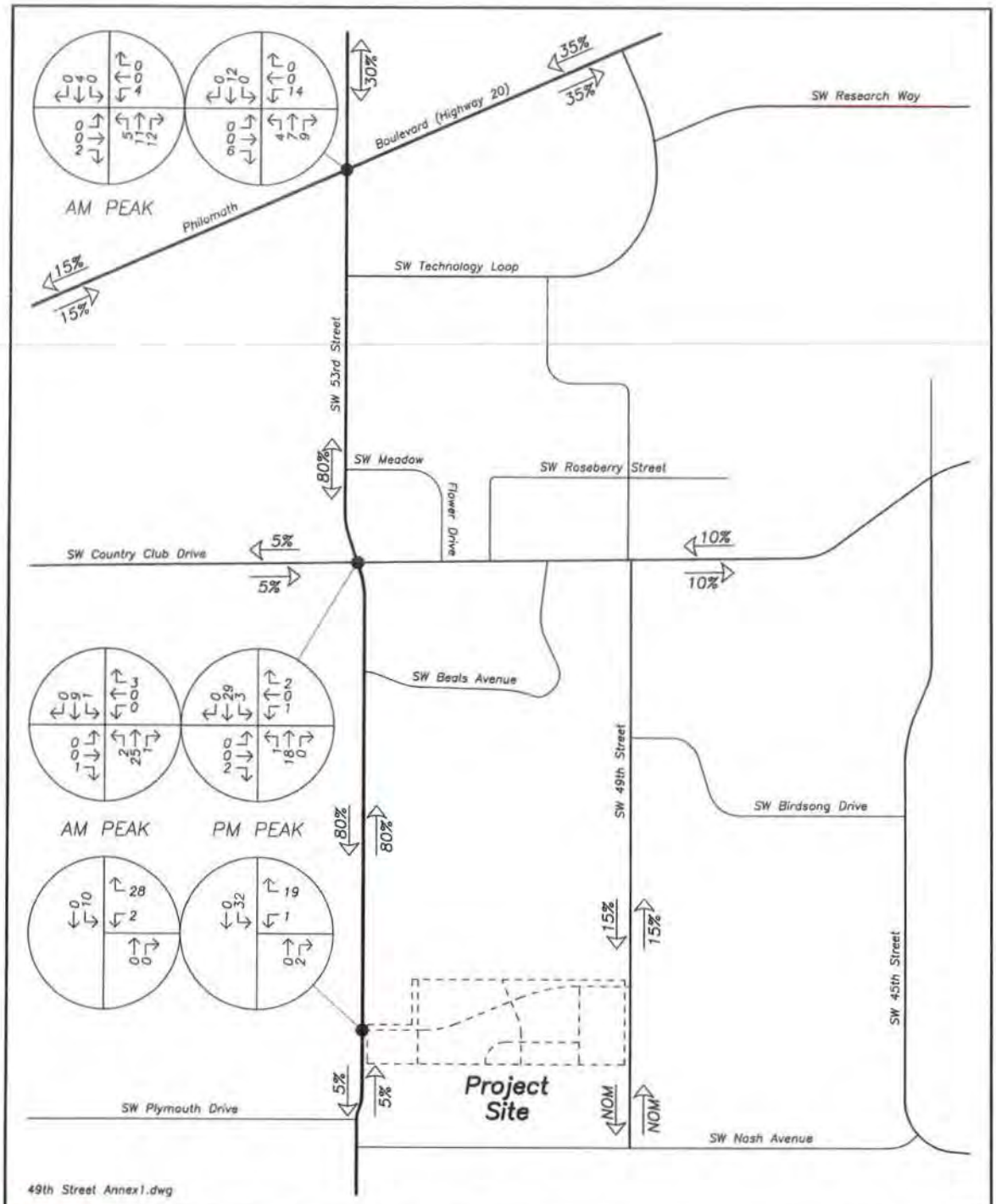
Because a residential development is typically an origin or destination for trips, no reduction was taken for pass-by trips. Also, because the closest transit services are greater than one-mile from the site, no reduction was made for transit use.

TRIP DISTRIBUTION

Since the proposed land use is residential and is located amongst other residential land uses, it is expected that the trip distribution patterns will be similar to the existing patterns. For this reason, the existing traffic volumes at the study intersections were used to determine the distributional patterns of the proposed development.

Figure 3 on page 10 shows the distribution and assignment of the site trips to the roadway network during the morning and evening peak hours.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.191



SITE TRIP DISTRIBUTION AND ASSIGNMENT
Inbound and Outbound Percentages & Site Trips
AM & PM Peak Hours

no scale

FIGURE 3

PAGE 10

SAFETY ANALYSIS

SIGHT DISTANCE

Intersection sight distance was calculated from the equations given in A Policy on Geometric Design of Highways and Streets, published in 2004 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 oncoming driver's eye height of 3.5 feet, with the driver's eye 15 feet behind the edge of the near-side travel lane. Access to the site was assumed to both SW 53rd Street and SW 49th Street.

SW 53rd Street has a posted speed on 45 mph in the vicinity of the site. Based on this speed, minimum intersection sight distance required is 500 feet in either direction. SW 53rd Street is generally straight and level and sight distance to the north is unobstructed. Sight distance to the south could be obscured by the curve in the road south of the site. If site access is located near the northern boundary, sight distance to the south is in excess of 550 feet. It is recommended that site access be placed as far north as practical to provide adequate sight distance.

SW 49th Street does not have a posted speed. Based on Oregon Basic Rule, ORS 811, the statutory speed is 25 mph, requiring a minimum of 280 feet of sight distance in either direction. The road is generally level to the south, although the grade lowers farther north. It is recommended that site access be located near the crest of the road or slightly north of the crest.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.193

OPERATIONAL ANALYSIS

BACKGROUND TRAFFIC

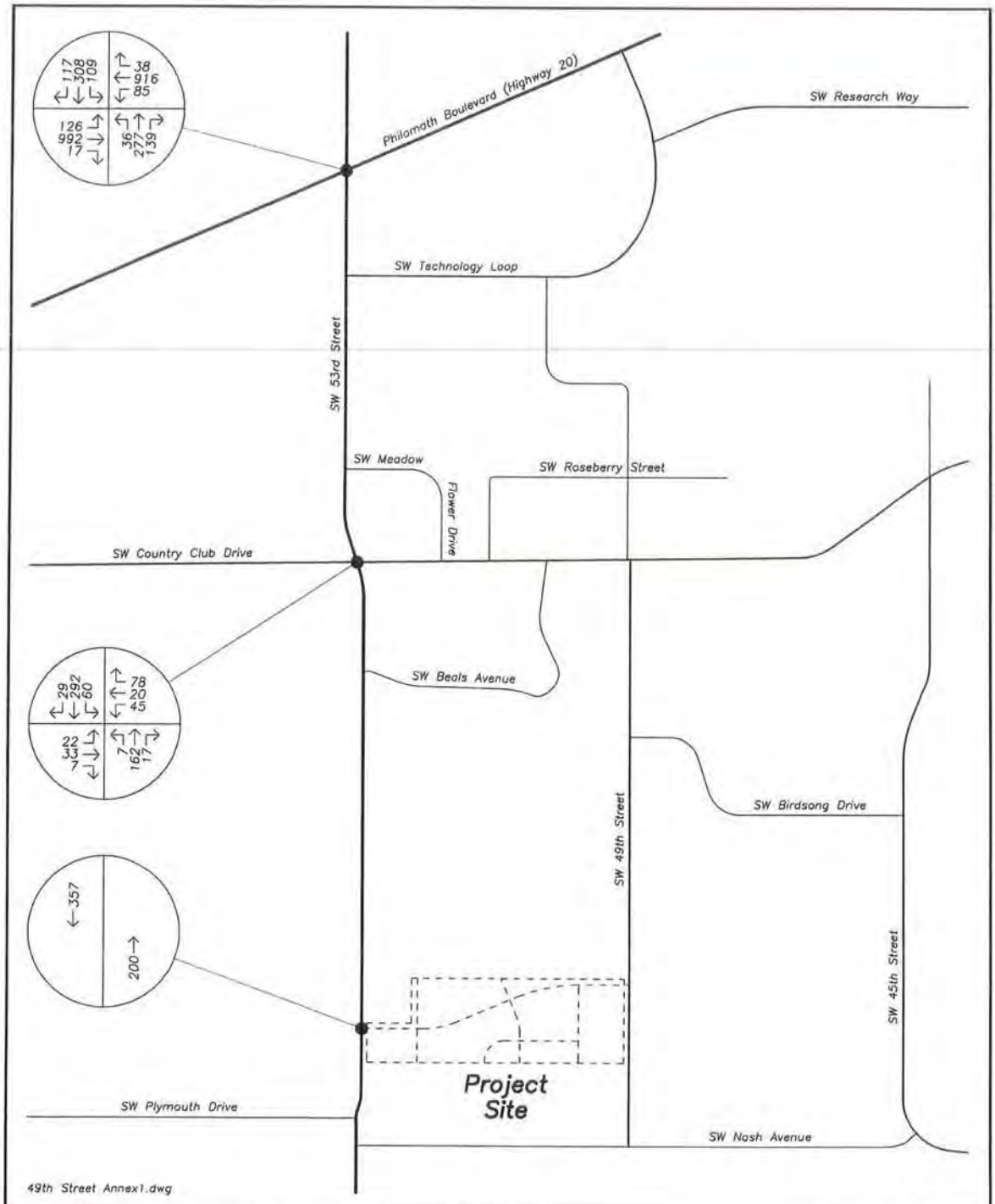
ODOT requires an analysis of the planning horizon year or 15 years, whichever is greater. The Corvallis Area Metropolitan Planning Organization (CAMPO) Transportation Plan established a planning year of 2030. Year 2030 conditions were examined in this report.

The City's TSP indentifies a two-percent per year growth rate. This growth rate was applied to the traffic volumes to project year 2030 conditions. The Philomath Boulevard/53rd Street intersection was analyzed in the CAMPO report. Year 2030 traffic volumes for this intersection were taken from that report.

The 2030 background traffic volumes comprise the existing traffic volumes with the growth rates applied. Figure 4 on page 13 shows the background traffic volumes during the morning and evening peak hours. Figure 5 on page 14 shows the background traffic with the site trips added.

There is a second annexation project in the southwest area of the City and both projects could conceivably be approved. In order to determine if the street system could support both proposed annexations, a scenario was added that included trips from the Cannon Applegate annexation. Figure 6 on page 15 shows the background traffic volumes during the morning and evening peak hours. Figure 7 on page 16 shows the background traffic with the site trips added.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.194

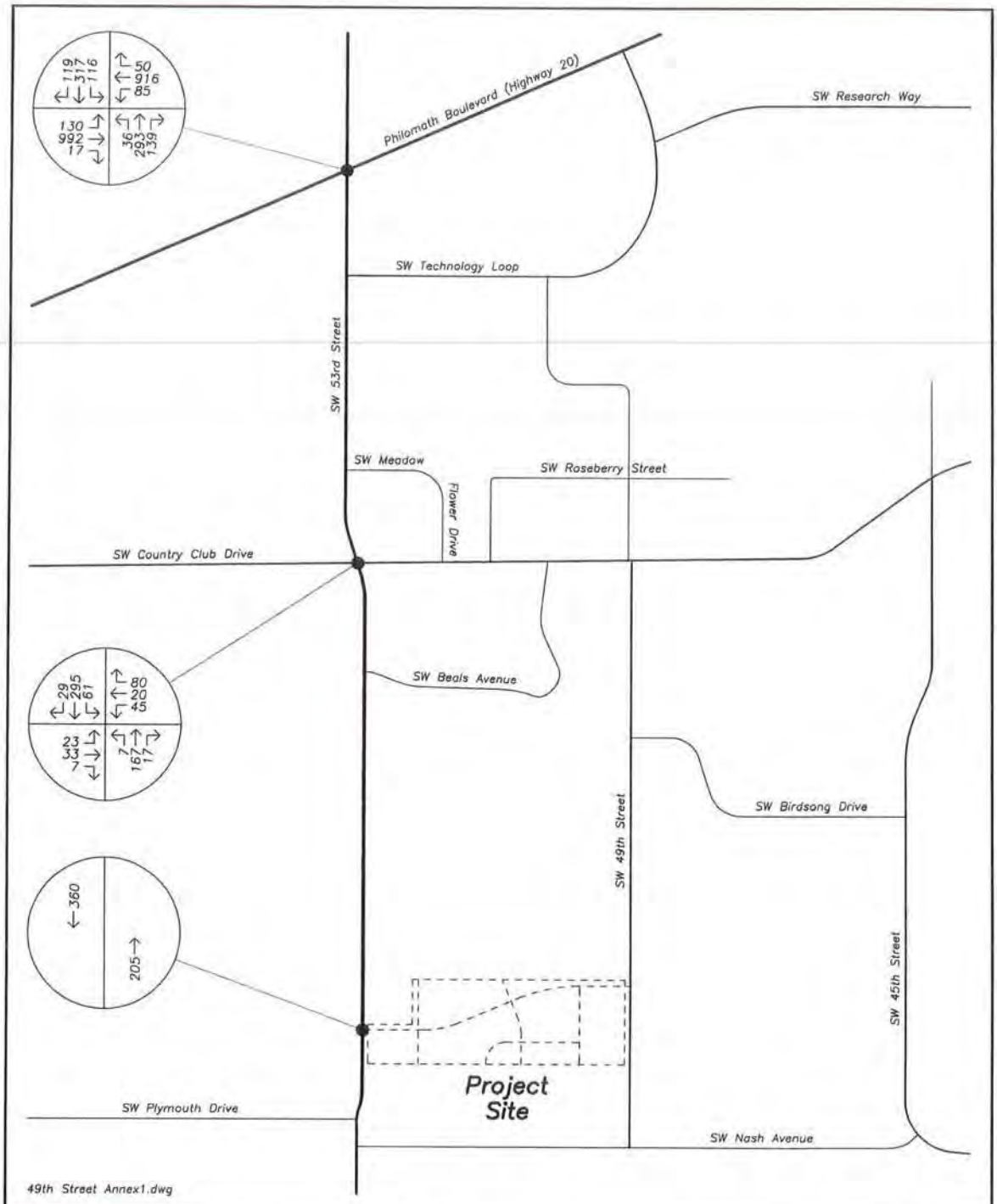


TRAFFIC VOLUMES
Year 2030 Background Conditions
AM & PM Peak Hours

no scale

FIGURE 4

PAGE 13

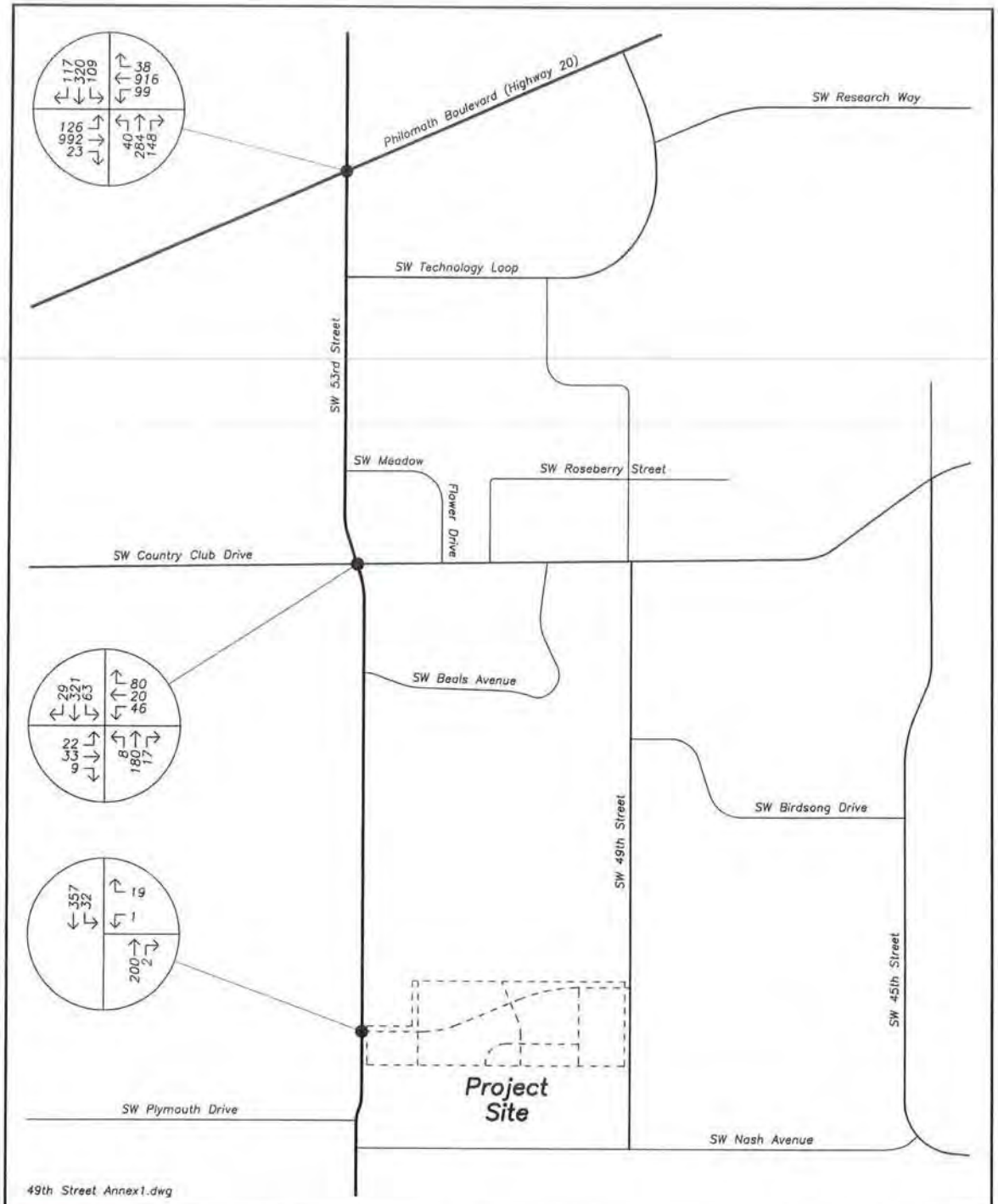


TRAFFIC VOLUMES (w/ Cannon Applegate)
Year 2030 Background Conditions
AM & PM Peak Hours

no scale

FIGURE 5

PAGE 14

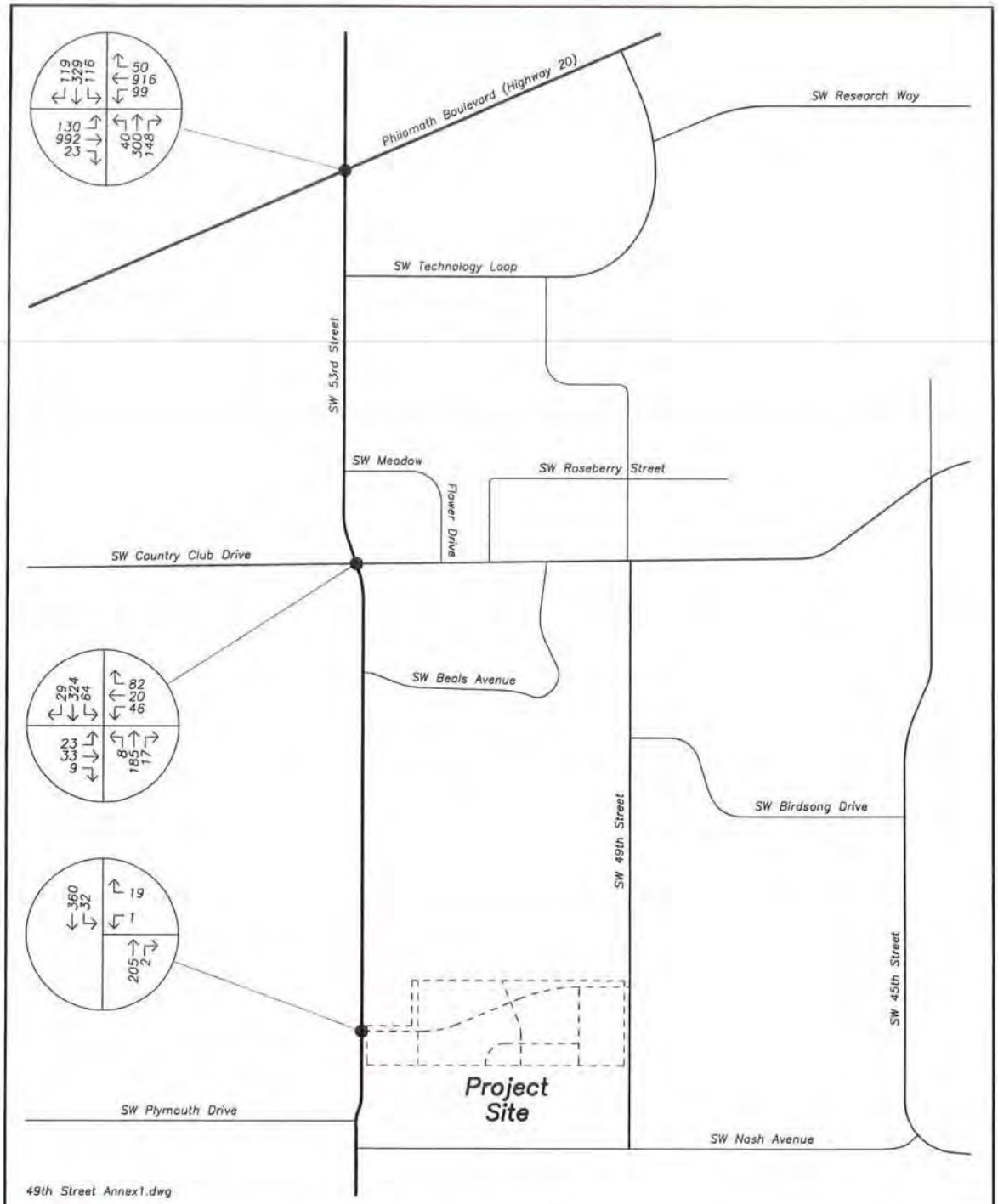


TRAFFIC VOLUMES
Year 2030 Background plus Site Trips
AM & PM Peak Hours

no scale

FIGURE 6

PAGE 15



TRAFFIC VOLUMES (w/ Cannon Applegate)
Year 2030 Background plus Site Trips
AM & PM Peak Hours

no scale

FIGURE 7

PAGE 16

1e

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) and Synchro, 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 morning and evening peak hours. The intersections of SW Country Club Drive/SW 53rd Street and SW 53rd Street/site access are under the jurisdiction of the City of Corvallis and therefore must operate at level of service D or better.

The intersection of SW Philomath Boulevard (Highway 34) and SW 53rd Street is under the jurisdiction of ODOT. ODOT standards are based on volume-to-capacity (v/c) ratio rather than level of service. The v/c ratio compares the actual (or demand) volumes to the potential capacity to determine the available capacity of the intersection. The maximum allowable v/c ratio for Highway 34 is 0.80 during the peak period. This means that up to 80-percent of the capacity of the intersection can be used during the peak period.

The signalized intersection of SW Philomath Boulevard (Highway 20/34) and SW 53rd Street is currently operating at level of service E during the evening peak hour. The level of service becomes F during the peak hour by 2030. The level of service remains F with the proposed annexation.

The unsignalized intersection of SW Country Club Drive and SW 53rd Street is presently operating at level of service B during the evening peak hour. The level of service describes the delay experienced by the eastbound traffic on SW Country Club Drive. The level of service becomes C for the 2030 projected traffic and remains C with the proposed annexation. If both projects (49th Street and Cannon Applegate) are approved, the level of service becomes D during the evening peak hour.

An access onto SW 53rd Street is forecast to operate between level of service A and B during the evening peak hour. The level of service refers to the delay for the westbound movements on the site access road.

It is expected that an access onto SW 53rd Street would have higher traffic volumes than an access onto SW 49th Street. For this reason, access onto only SW 53rd Street was analyzed. With lower volumes, an access onto SW 49th Street would function as well as or better than SW 53rd Street.

Any mitigation installed for the subject site will provide sufficient capacity for both annexations.

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.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.199

LEVEL OF SERVICE SUMMARY

	PM Peak Hour		
	LOS	Delay	V/C
*SW Philomath Boulevard & SW 53rd Street**			
Existing Conditions	E	57	0.94
2030 Background Conditions	F	167	1.30
2030 Background + Site Trips	F	175	1.33
2030 Background Conditions[1]	F	174	1.32
2030 Background + Site Trips[1]	F	183	1.35
2030 Background + Site Trips[2]	F	164	1.26
2030 Background + Site Trips[3]	D	43	0.85
SW Country Club Drive & SW 53rd Street			
Existing Conditions	B	14	--
2030 Background Conditions	C	21	--
2030 Background + Site Trips	C	25	--
2030 Background Conditions[1]	C	22	--
2030 Background + Site Trips[1]	D	25	--
SW 53rd Street & Site Access			
2030 Background + Site Trips	A/B	10	--
2030 Background + Site Trips[1]	A/B	10	--

* Signalized intersection
LOS = Level of Service
Delay = Average Delay per Vehicle in Seconds
V/C = Volume-to-Capacity ratio
[1] with Cannon Applegate annexation traffic included
[2] with protected/permitted left-turn phasing
[3] with improvements as discussed in CAMPO report

The CAMPO report identifies the need for improvement along Highway 20/34, including the intersection of SW 53rd Street. The report examined northbound and southbound right-turn lanes as well as improving Philomath Boulevard to a four-lane facility with left-turn lanes. Signal modifications are easier to achieve than obtaining right-of-way for road widening and for this reason, signal modifications were evaluated. The result of the analysis showed that installing protected/permissive left-

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.200

turn phasing for the northbound and southbound left turns will mitigate the impact of the annexation (including the Cannon Applegate annexation).

Protected/Permissive Left-Turn Phasing

Philomath Boulevard and SW 53rd Street exceeds the operational standards established for the intersection. In order to identify an appropriate mitigation, the protected/permissive left-turn phasing guidelines in ODOT's Traffic Signal Policy and Guidelines were examined.

Traffic volumes indicate protected/permissive phasing is applicable at the Philomath Boulevard/SW 53rd Street intersection. If this phasing is used, in order to maintain acceptable operation, both the northbound and southbound left-turn phasing should be modified for protected/permissive phasing.

Transportation Planning Rule

The Transportation Planning Rule is Oregon Administrative Rules (OAR) 660, Division 12. OAR 660-012-0060 governs proposals for plan and land-use regulation amendments. It applies when an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation would significantly affect an existing or planned transportation facility. The land use action would significantly affect the transportation system if it worsens the performance of the facility projected to operate below acceptable standards. The goal also states that a local government may approve an amendment that would significantly affect an existing transportation facility where:

> (3)(c) Development resulting from the amendment will, at a minimum, mitigate the impacts of the amendment in a manner that avoids further degradation to the performance of the facility by the time of the development through one or a combination of transportation improvements or measures;

The unsignalized study intersections will continue to function within acceptable City standards with the proposed annexation.

The intersection of SW Philomath Boulevard (Highway 20/34) and SW 53rd Street will exceed ODOT's operational criteria, although it should be mentioned that the intersection is currently exceeding the maximum allowable v/c ratio. Modifying the signal phasing to allow protected/permissive left-turn phasing for the northbound and southbound left turns will mitigate the impact of the annexation.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.201

CONCLUSIONS

The unsignalized intersections are forecast to operate within acceptable City standards with the proposed annexation. The signalized intersection of Philomath Boulevard (Highway 20/34) and SW 53rd Street will exceed ODOT's operational standards, but the impact of the annexation can be mitigated with changes to the signal's left-turn phases.

There were no other safety or operational issues associated with the proposed annexation.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.202

APPENDIX

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.203

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

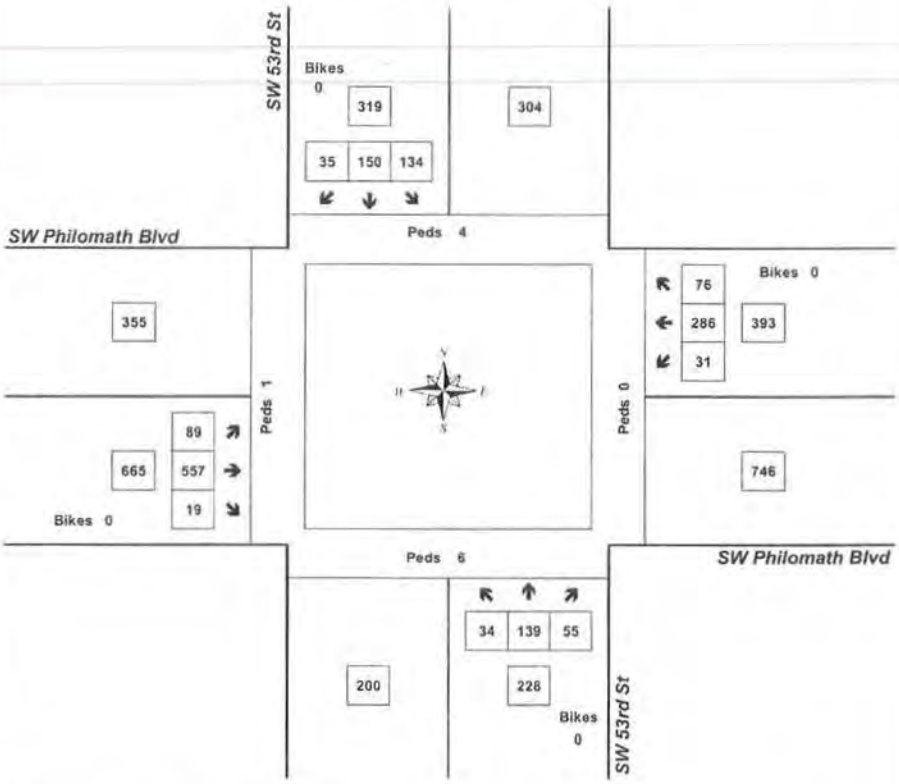
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

SW 53rd St & SW Philomath Blvd

7:25 AM to 8:25 AM
Thursday, September 18, 2008



Approach	PHF	HV%	Volume
EB	0.90	6.3%	665
WB	0.89	18.3%	393
NB	0.86	3.9%	228
SB	0.71	5.0%	319
Intersection	0.86	8.7%	1,605

Count Period: 7:00 AM to 9:00 AM

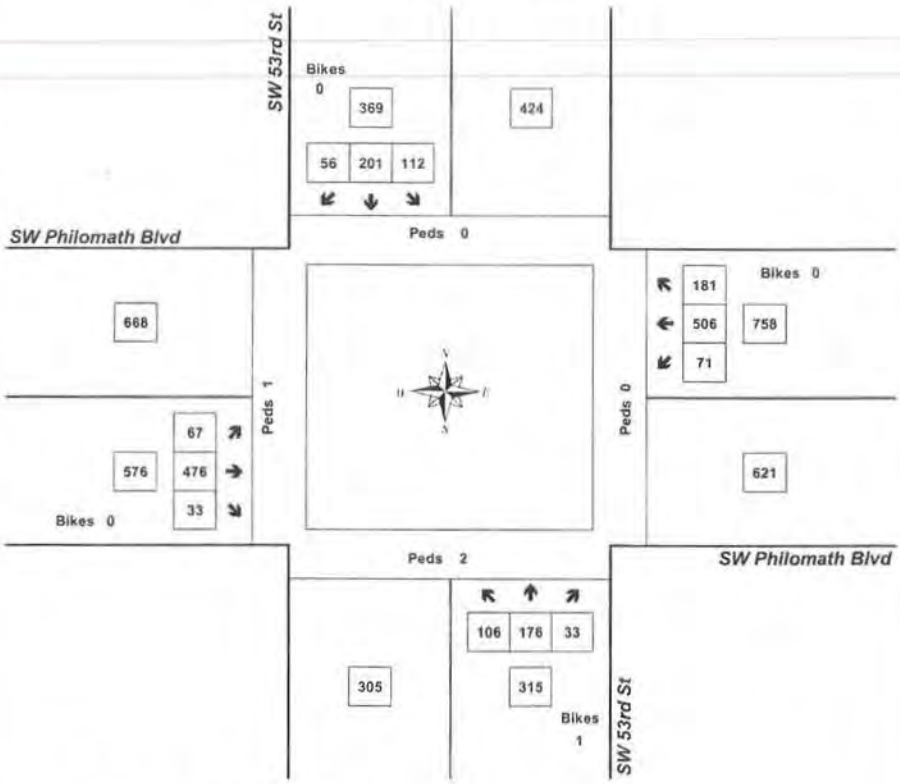
Peak Hour Summary

All Traffic Data
Services Inc.

Clay Carney
(503) 833-2740

SW 53rd St & SW Philomath Blvd

5:00 PM to 6:00 PM
Wednesday, September 17, 2008



Approach	PHF	HV%	Volume
EB	0.89	5.9%	576
WB	0.89	3.6%	758
NB	0.81	1.3%	315
SB	0.72	1.4%	369
Intersection	0.89	3.5%	2,018

Count Period: 4:00 PM to 6:00 PM

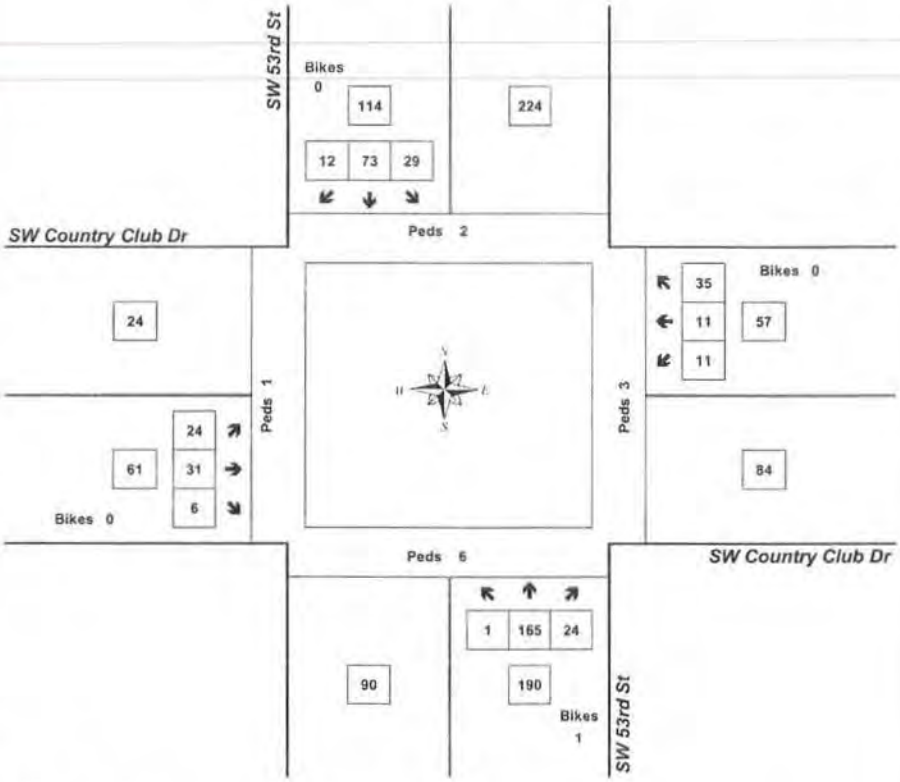
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

SW 53rd St & SW Country Club Dr

7:15 AM to 8:15 AM
Thursday, September 18, 2008



Approach	PHF	HV%	Volume
EB	0.66	4.9%	61
WB	0.89	5.3%	57
NB	0.67	3.2%	190
SB	0.79	7.9%	114
Intersection	0.80	5.0%	422

Count Period: 7:00 AM to 9:00 AM

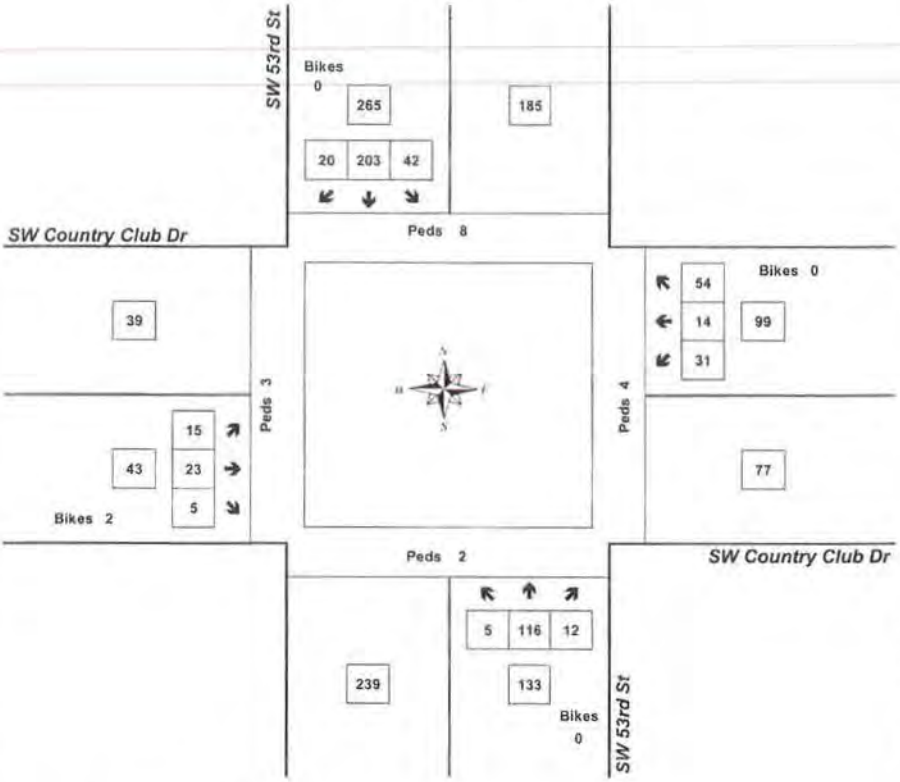
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

SW 53rd St & SW Country Club Dr

4:40 PM to 5:40 PM
Wednesday, September 17, 2008



Approach	PHF	HV%	Volume
EB	0.77	2.3%	43
WB	0.71	1.0%	99
NB	0.81	1.5%	133
SB	0.74	3.4%	265
Intersection	0.85	2.4%	540

Count Period: 4:00 PM to 6:00 PM

All Traffic Data Services, Inc.
15105 SE 17th St.
Vancouver, WA. 98683
PH. 503-833-2740

Site Code: 1

SW 53rd St N-O SW Plymouth Dr

Start Time	17-Sep-08 Wed	NB	SB	Total
12:00 PM		*	*	*
12:15		*	*	*
12:30		*	*	*
12:45		*	*	*
01:00		*	*	*
01:15		*	*	*
01:30		*	*	*
01:45		*	*	*
02:00		*	*	*
02:15		*	*	*
02:30		*	*	*
02:45		*	*	*
03:00		*	*	*
03:15		*	*	*
03:30		*	*	*
03:45		25	47	72
04:00		24	46	70
04:15		**39**	44	83
04:30		**23**	48	71
04:45		**33**	46	**79**
05:00		**45**	**66**	**111**
05:15		25	**80**	**105**
05:30		36	**56**	**92**
05:45		23	**51**	74
06:00		29	39	68
06:15		26	37	63
06:30		31	31	62
06:45		19	27	46
07:00		23	30	53
07:15		16	28	44
07:30		19	20	39
07:45		20	18	38
08:00		12	17	29
08:15		8	26	34
08:30		10	16	26
08:45		18	22	40
09:00		5	19	24
09:15		6	15	21
09:30		4	6	10
09:45		7	7	14
10:00		4	7	11
10:15		0	5	5
10:30		2	7	9
10:45		1	3	4
11:00		2	0	2
11:15		2	0	2
11:30		4	2	6
11:45		0	5	5
Total		541	871	1412
Percent		38.3%	61.7%	
Peak		16:15	17:00	16:45
Vol.		140	253	387
P.H.F.		0.778	0.791	0.872

All Traffic Data Services, Inc.
15105 SE 17th St.
Vancouver, WA. 98683
PH. 503-833-2740

Site Code: 1

SW 53rd St N-O SW Plymouth Dr

Start Time	18-Sep-08 Thu	NB	SB	Total
12:00 AM		0	0	0
12:15		3	3	6
12:30		1	0	1
12:45		0	0	0
01:00		0	0	0
01:15		1	0	1
01:30		0	1	1
01:45		0	0	0
02:00		2	1	3
02:15		0	0	0
02:30		0	0	0
02:45		0	1	1
03:00		0	0	0
03:15		2	0	2
03:30		1	1	2
03:45		0	0	0
04:00		1	1	2
04:15		0	0	0
04:30		0	0	0
04:45		1	0	1
05:00		3	1	4
05:15		4	2	6
05:30		11	2	13
05:45		8	8	16
06:00		11	5	16
06:15		12	6	18
06:30		19	6	25
06:45		24	12	36
07:00		41	12	53
07:15		**51**	**20**	**71**
07:30		**46**	**26**	**72**
07:45		**68**	**28**	**96**
08:00		**48**	**29**	**77**
08:15		42	20	62
08:30		43	14	57
08:45		42	21	63
09:00		32	18	50
09:15		15	9	24
09:30		*	*	*
09:45		*	*	*
10:00		*	*	*
10:15		*	*	*
10:30		*	*	*
10:45		*	*	*
11:00		*	*	*
11:15		*	*	*
11:30		*	*	*
11:45		*	*	*
Total		532	247	779
Percent		68.3%	31.7%	
Peak		07:15	07:15	07:15
Vol.		213	103	316
P.H.F.		0.783	0.888	0.823
Grand Total		1073	1118	2191
Percent		49.0%	51.0%	
ADT	Not Calculated			

2e

TRIP GENERATION CALCULATIONS

Land Use: Single-Family Detached Housing
Land Use Code: 210
Variable: Dwelling Units
Variable Value: 63

AM PEAK HOUR

Trip Rate: 0.75

	Enter	Exit	Total
Directional Distribution	25%	75%	
Trip Ends	**12**	**35**	**47**

PM PEAK HOUR

Trip Rate: 1.01

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	**40**	**24**	**64**

WEEKDAY

Trip Rate: 9.57

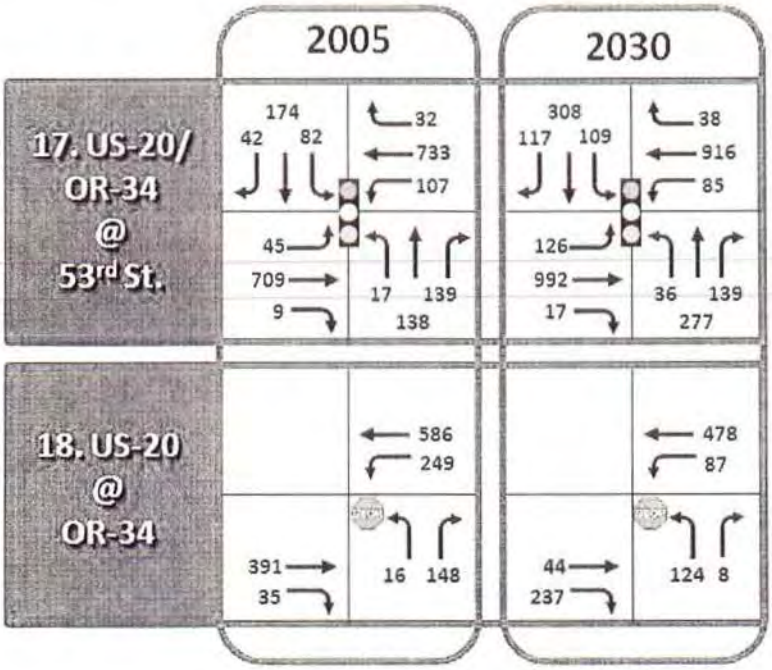
	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**301**	**301**	**602**

SATURDAY

Trip Rate: 10.10

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**318**	**318**	**636**

Source: TRIP GENERATION, Seventh Edition


2005
2030
17. US-20/ OR-34 @ 53rd St.
174
42
82
32
733
107
45
709
9
17
139
138
308
117
109
38
916
85
126
992
17
36
139
277
18. US-20 @ OR-34
586
249
391
35
16
148
478
87
44
237
124
8

Projected Future Traffic Volumes

Analyst: C Sumrain
Intersection: SW Country Club Drive & SW 53rd Street
Project: SW 49th Street Annexation
Time Period: PM Peak Hour
Scenario: 2030 Background
Date: 10/13/2008

Growth Rates

east/west street: 2.6%
north/south street: 1.5%
number of years: 22

TEV 540

Base traffic counts

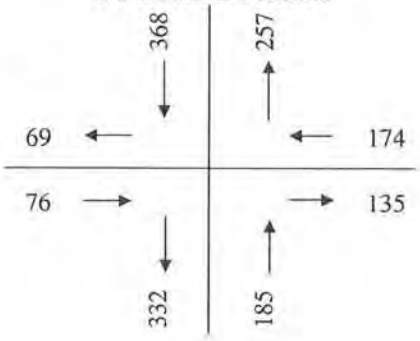
			265		185	
			20	203	42	
	39	15				54	99
		23				14	
	43	5				31	77
			5	116	12	
			239		133	

Future traffic counts

			364		257	
			30	267	68	
	69	21				85	172
		46				30	
	75	8				57	135
			9	151	22	
			332		182	

TEV 792

Future Link Volumes



Total Entering Volume: 802
Total Exiting Volume: 792

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.214

HCM Signalized Intersection Capacity Analysis
3: Highway 20/34 (Philomath Blvd) & SW 53rd Street

3/25/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1662	3098		1646	3167	1458	1662	1733	1385	1646	1716	1467
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1662	3098		1646	3167	1458	1662	1733	1385	1646	1716	1467
Volume (vph)	130	992	23	99	916	50	40	300	148	116	329	119
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	146	1115	26	111	1029	56	45	337	166	130	370	134
RTOR Reduction (vph)	0	2	0	0	0	14	0	0	63	0	0	46
Lane Group Flow (vph)	146	1139	0	111	1029	42	45	337	103	130	370	88
Confl. Peds. (#/hr)			2									1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	7%	3%	1%	5%	2%	0%	1%	6%	1%	2%	0%
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			6
Actuated Green, G (s)	12.1	42.3		9.5	39.7	39.7	3.9	28.1	28.1	11.2	35.4	35.4
Effective Green, g (s)	12.1	42.3		9.5	39.7	39.7	3.9	28.1	28.1	11.2	35.4	35.4
Actuated g/C Ratio	0.11	0.39		0.09	0.37	0.37	0.04	0.26	0.26	0.10	0.33	0.33
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	188	1224		146	1174	540	61	455	363	172	567	485
v/s Ratio Prot	c0.09	c0.37		0.07	0.32		0.03	c0.19		c0.08	0.22	
v/s Ratio Perm						0.03			0.07			0.06
v/c Ratio	0.78	0.93		0.76	0.88	0.08	0.74	0.74	0.28	0.76	0.65	0.18
Uniform Delay, d1	46.2	31.0		47.7	31.4	21.8	51.1	36.2	31.5	46.6	30.6	25.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	18.0	12.5		20.5	7.6	0.1	36.8	10.4	2.0	17.1	5.8	0.8
Delay (s)	64.2	43.5		68.2	39.0	21.9	87.9	46.5	33.4	63.7	36.4	26.3
Level of Service	E	D		E	D	C	F	D	C	E	D	C
Approach Delay (s)		45.9			40.9			46.0			39.8	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	43.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	107.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.215

HCM Signalized Intersection Capacity Analysis
3: Highway 20/34 (Philomath Blvd) & SW 53rd Street 3/25/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.95		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1630		1646	1667	1458	1662	1609		1646	1646	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.14	1.00		0.14	1.00	
Satd. Flow (perm)	1662	1630		1646	1667	1458	252	1609		242	1646	
Volume (vph)	130	992	23	99	916	50	40	300	148	116	329	119
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	146	1115	26	111	1029	56	45	337	166	130	370	134
RTOR Reduction (vph)	0	1	0	0	0	7	0	16	0	0	12	0
Lane Group Flow (vph)	146	1140	0	111	1029	49	45	487	0	130	492	0
Confl. Peds. (#/hr)			2									1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	7%	3%	1%	5%	2%	0%	1%	6%	1%	2%	0%
Turn Type	Prot			Prot		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8	2			6		
Actuated Green, G (s)	8.0	57.0		6.0	55.0	55.0	31.0	27.8		32.6	28.6	
Effective Green, g (s)	8.0	57.0		6.0	55.0	55.0	31.0	27.8		32.6	28.6	
Actuated g/C Ratio	0.07	0.51		0.05	0.50	0.50	0.28	0.25		0.29	0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	120	839		89	827	724	111	404		122	425	
v/s Ratio Prot	c0.09	c0.70		0.07	0.62		0.01	c0.30		c0.04	0.30	
v/s Ratio Perm						0.03	0.10			0.27		
v/c Ratio	1.22	1.36		1.25	1.24	0.07	0.41	1.21		1.07	1.16	
Uniform Delay, d1	51.4	26.9		52.4	27.9	14.5	32.9	41.5		55.6	41.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	151.7	169.2		175.8	120.1	0.0	2.4	114.0		100.1	94.4	
Delay (s)	203.1	196.1		228.2	148.0	14.6	35.3	155.5		155.7	135.5	
Level of Service	F	F		F	F	B	D	F		F	F	
Approach Delay (s)		196.9			149.2			145.6			139.7	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	163.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	111.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.216

HCM Signalized Intersection Capacity Analysis
3: Highway 20/34 (Philomath Blvd) & SW 53rd Street 3/25/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.95		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1630		1646	1667	1458	1662	1609		1646	1646	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	1630		1646	1667	1458	1662	1609		1646	1646	
Volume (vph)	130	992	23	99	916	50	40	300	148	116	329	119
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	146	1115	26	111	1029	56	45	337	166	130	370	134
RTOR Reduction (vph)	0	1	0	0	0	7	0	16	0	0	11	0
Lane Group Flow (vph)	146	1140	0	111	1029	49	45	487	0	130	493	0
Confl. Peds. (#/hr)			2									1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	7%	3%	1%	5%	2%	0%	1%	6%	1%	2%	0%
Turn Type	Prot			Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	7.0	54.0		6.0	53.0	53.0	3.2	28.8		6.0	31.6	
Effective Green, g (s)	7.0	54.0		6.0	53.0	53.0	3.2	28.8		6.0	31.6	
Actuated g/C Ratio	0.06	0.49		0.05	0.48	0.48	0.03	0.26		0.05	0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	105	794		89	797	697	48	418		89	469	
v/s Ratio Prot	c0.09	c0.70		0.07	0.62		0.03	c0.30		c0.08	c0.30	
v/s Ratio Perm						0.03						
v/c Ratio	1.39	1.44		1.25	1.29	0.07	0.94	1.16		1.46	1.05	
Uniform Delay, d1	51.9	28.4		52.4	28.9	15.6	53.7	41.0		52.4	39.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	223.7	203.6		175.8	140.3	0.0	105.3	97.2		258.7	55.4	
Delay (s)	275.6	232.0		228.2	169.2	15.6	159.0	138.2		311.1	95.0	
Level of Service	F	F		F	F	B	F	F		F	F	
Approach Delay (s)		236.9			167.5			139.9			139.3	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	182.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	111.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.217

HCM Signalized Intersection Capacity Analysis 2/13/2009
3: Highway 20/34 (Philomath Blvd) & SW 53rd Street 5:00 pm

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.95		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1632		1646	1667	1458	1662	1612		1646	1644	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	1632		1646	1667	1458	1662	1612		1646	1644	
Volume (vph)	130	992	17	85	916	50	36	293	139	116	317	119
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	146	1115	19	96	1029	56	40	329	156	130	356	134
RTOR Reduction (vph)	0	1	0	0	0	7	0	16	0	0	12	0
Lane Group Flow (vph)	146	1133	0	96	1029	49	40	469	0	130	478	0
Confl. Peds. (#/hr)			2									1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	7%	3%	1%	5%	2%	0%	1%	6%	1%	2%	0%
Turn Type	Prot			Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	7.0	55.0		5.0	53.0	53.0	3.2	27.8		7.0	31.6	
Effective Green, g (s)	7.0	55.0		5.0	53.0	53.0	3.2	27.8		7.0	31.6	
Actuated g/C Ratio	0.06	0.50		0.05	0.48	0.48	0.03	0.25		0.06	0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	105	810		74	797	697	48	404		104	469	
v/s Ratio Prot	c0.09	c0.69		0.06	0.62		0.02	c0.29		c0.08	c0.29	
v/s Ratio Perm						0.03						
v/c Ratio	1.39	1.40		1.30	1.29	0.07	0.83	1.16		1.25	1.02	
Uniform Delay, d1	51.9	27.9		52.9	28.9	15.6	53.5	41.5		51.9	39.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	223.7	187.2		203.5	140.3	0.0	70.4	96.8		169.8	46.4	
Delay (s)	275.6	215.1		256.4	169.2	15.6	123.9	138.3		221.7	86.0	
Level of Service	F	F		F	F	B	F	F		F	F	
Approach Delay (s)		222.0			169.0			137.2			114.5	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	173.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	109.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.218

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.95		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1630		1646	1667	1458	1662	1604		1646	1645	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	1630		1646	1667	1458	1662	1604		1646	1645	
Volume (vph)	126	992	23	99	916	38	40	284	148	109	320	117
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	142	1115	26	111	1029	43	45	319	166	122	360	131
RTOR Reduction (vph)	0	1	0	0	0	6	0	17	0	0	12	0
Lane Group Flow (vph)	142	1140	0	111	1029	37	45	468	0	122	479	0
Confl. Peds. (#/hr)			2									1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	7%	3%	1%	5%	2%	0%	1%	6%	1%	2%	0%
Turn Type	Prot			Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	7.0	55.0		6.0	54.0	54.0	3.2	27.8		6.0	30.6	
Effective Green, g (s)	7.0	55.0		6.0	54.0	54.0	3.2	27.8		6.0	30.6	
Actuated g/C Ratio	0.06	0.50		0.05	0.49	0.49	0.03	0.25		0.05	0.28	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	105	809		89	812	711	48	402		89	454	
v/s Ratio Prot	c0.09	c0.70		0.07	0.62		0.03	c0.29		c0.07	c0.29	
v/s Ratio Perm						0.03						
v/c Ratio	1.35	1.41		1.25	1.27	0.05	0.94	1.16		1.37	1.06	
Uniform Delay, d1	51.9	27.9		52.4	28.4	14.9	53.7	41.5		52.4	40.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	208.6	191.5		175.8	130.0	0.0	105.3	97.6		222.8	57.8	
Delay (s)	260.5	219.4		228.2	158.4	15.0	159.0	139.1		275.2	97.9	
Level of Service	F	F		F	F	B	F	F		F	F	
Approach Delay (s)		223.9			159.7			140.8			133.2	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	175.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.33		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	110.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.219

HCM Signalized Intersection Capacity Analysis 2/13/2009
3: Highway 20/34 (Philomath Blvd) & SW 53rd Street 5:00 pm

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.95		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1632		1646	1667	1458	1662	1607		1646	1643	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	1632		1646	1667	1458	1662	1607		1646	1643	
Volume (vph)	126	992	17	85	916	38	36	277	139	109	308	117
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	142	1115	19	96	1029	43	40	311	156	122	346	131
RTOR Reduction (vph)	0	0	0	0	0	6	0	16	0	0	12	0
Lane Group Flow (vph)	142	1134	0	96	1029	37	40	451	0	122	465	0
Confl. Peds. (#/hr)			2									1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	7%	3%	1%	5%	2%	0%	1%	6%	1%	2%	0%
Turn Type	Prot			Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	7.0	56.0		5.0	54.0	54.0	3.2	26.8		7.0	30.6	
Effective Green, g (s)	7.0	56.0		5.0	54.0	54.0	3.2	26.8		7.0	30.6	
Actuated g/C Ratio	0.06	0.51		0.05	0.49	0.49	0.03	0.24		0.06	0.28	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	105	825		74	812	711	48	389		104	454	
v/s Ratio Prot	c0.09	c0.69		0.06	0.62		0.02	c0.28		c0.07	c0.28	
v/s Ratio Perm						0.03						
v/c Ratio	1.35	1.37		1.30	1.27	0.05	0.83	1.16		1.17	1.02	
Uniform Delay, d1	51.9	27.4		52.9	28.4	14.9	53.5	42.0		51.9	40.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	208.6	175.9		203.5	130.0	0.0	70.4	96.8		142.2	48.4	
Delay (s)	260.5	203.3		256.4	158.4	15.0	123.9	138.8		194.1	88.5	
Level of Service	F	F		F	F	B	F	F		F	F	
Approach Delay (s)		209.7			161.2			137.6			110.0	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	166.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	107.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.220

HCM Signalized Intersection Capacity Analysis 2/13/2009
3: Highway 20/34 (Philomath Blvd) & SW 53rd Street 5:00 pm

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.92		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1633		1646	1667	1458	1662	1547		1646	1665	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	1633		1646	1667	1458	1662	1547		1646	1665	
Volume (vph)	45	709	9	107	733	32	17	138	139	82	174	42
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	51	797	10	120	824	36	19	155	156	92	196	47
RTOR Reduction (vph)	0	1	0	0	0	6	0	33	0	0	7	0
Lane Group Flow (vph)	51	806	0	120	824	30	19	278	0	92	236	0
Confl. Peds. (#/hr)			2									1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	7%	3%	1%	5%	2%	0%	1%	6%	1%	2%	0%
Turn Type	Prot			Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	4.0	55.0		9.0	60.0	60.0	1.6	25.4		7.0	30.8	
Effective Green, g (s)	4.0	55.0		9.0	60.0	60.0	1.6	25.4		7.0	30.8	
Actuated g/C Ratio	0.04	0.49		0.08	0.53	0.53	0.01	0.23		0.06	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	59	799		132	890	778	24	350		103	456	
v/s Ratio Prot	0.03	c0.49		c0.07	0.49		0.01	c0.18		c0.06	0.14	
v/s Ratio Perm						0.02						
v/c Ratio	0.86	1.01		0.91	0.93	0.04	0.79	0.80		0.89	0.52	
Uniform Delay, d1	53.9	28.7		51.3	24.1	12.5	55.2	41.1		52.3	34.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	70.2	34.2		51.0	15.1	0.0	94.5	16.9		55.8	4.1	
Delay (s)	124.1	62.9		102.3	39.3	12.5	149.8	58.0		108.1	38.7	
Level of Service	F	E		F	D	B	F	E		F	D	
Approach Delay (s)		66.5			46.0			63.3			57.7	
Approach LOS		E			D			E			E	

Intersection Summary

HCM Average Control Delay	56.9	HCM Level of Service	E
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	112.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.221

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	C Sumrain	Intersection	Country Club/53rd
Agency/Co.	Lancaster	Jurisdiction	Corvallis
Date Performed	9/26/2008	Analysis Year	Existing (2008)
Analysis Time Period	PM Peak		

Project Description: SW 49th Street Annexation - #08136

East/West Street: SW Country Club Drive | North/South Street: SW 53rd Street

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	5	116	12	42	203	20
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	5	136	14	49	238	23
Percent Heavy Vehicles	0	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	15	23	5	31	14	54
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	17	27	5	36	16	63
Percent Heavy Vehicles	0	4	0	0	7	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (veh/h)	5	49		115			49	
C (m) (veh/h)	1309	1421		596			437	
v/c	0.00	0.03		0.19			0.11	
95% queue length	0.01	0.11		0.71			0.38	
Control Delay (s/veh)	7.8	7.6		12.5			14.3	
LOS	A	A		B			B	
Approach Delay (s/veh)	--	--	12.5			14.3		
Approach LOS	--	--	B			B		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	C Sumrain	Intersection	Country Club/53rd
Agency/Co.	Lancaster	Jurisdiction	Corvallis
Date Performed	1/28/2009	Analysis Year	Background (2030)
Analysis Time Period	PM Peak		

Project Description	SW 49th Street Annexation - #08136
East/West Street: SW Country Club Drive	North/South Street: SW 53rd Street
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	9	151	22	68	267	30
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	10	177	25	79	314	35
Percent Heavy Vehicles	0	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	21	46	8	57	30	85
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	24	54	9	67	35	99
Percent Heavy Vehicles	0	4	0	0	7	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (veh/h)	10	79		201			87	
C (m) (veh/h)	1215	1360		421			308	
v/c	0.01	0.06		0.48			0.28	
95% queue length	0.02	0.18		2.51			1.13	
Control Delay (s/veh)	8.0	7.8		21.1			21.2	
LOS	A	A		C			C	
Approach Delay (s/veh)	--	--	21.1			21.2		
Approach LOS	--	--	C			C		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	C Sumrain	Intersection	Country Club/53rd
Agency/Co.	Lancaster	Jurisdiction	Corvallis
Date Performed	1/28/2009	Analysis Year	Background + Site (2030)
Analysis Time Period	PM Peak		

Project Description	SW 49th Street Annexation - #08136
East/West Street: SW Country Club Drive	North/South Street: SW 53rd Street
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	10	169	22	71	296	30
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	11	198	25	83	348	35
Percent Heavy Vehicles	0	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	21	46	10	58	30	87
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	24	54	11	68	35	102
Percent Heavy Vehicles	0	4	0	0	7	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (veh/h)	11	83		205			89	
C (m) (veh/h)	1181	1337		385			282	
v/c	0.01	0.06		0.53			0.32	
95% queue length	0.03	0.20		3.01			1.31	
Control Delay (s/veh)	8.1	7.9		24.5			23.5	
LOS	A	A		C			C	
Approach Delay (s/veh)	--	--	24.5			23.5		
Approach LOS	--	--	C			C		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	C Sumrain	Intersection	Country Club/53rd
Agency/Co.	Lancaster	Jurisdiction	Corvallis
Date Performed	1/28/2009	Analysis Year	Background (2030)
Analysis Time Period	PM Peak		

Project Description	SW 49th Street Annexation - #08136 (w/ Cannon Applegate)
East/West Street: SW Country Club Drive	North/South Street: SW 53rd Street
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	9	156	22	69	270	31
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	10	183	25	81	317	36
Percent Heavy Vehicles	0	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	22	46	8	57	30	87
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	25	54	9	67	35	102
Percent Heavy Vehicles	0	4	0	0	7	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (veh/h)	10	81		204			88	
C (m) (veh/h)	1211	1353		416			300	
v/c	0.01	0.06		0.49			0.29	
95% queue length	0.02	0.19		2.63			1.19	
Control Delay (s/veh)	8.0	7.8		21.7			21.9	
LOS	A	A		C			C	
Approach Delay (s/veh)	--	--	21.7			21.9		
Approach LOS	--	--	C			C		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	C Sumrain	Intersection	Country Club/53rd
Agency/Co.	Lancaster	Jurisdiction	Corvallis
Date Performed	1/28/2009	Analysis Year	Background + Site (2030)
Analysis Time Period	PM Peak		

Project Description: SW 49th Street Annexation - #08136 (w/ Cannon Applegate)

East/West Street: SW Country Club Drive | North/South Street: SW 53rd Street

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	10	174	22	72	299	31
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	11	204	25	84	351	36
Percent Heavy Vehicles	0	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	22	46	10	58	30	89
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	25	54	11	68	35	104
Percent Heavy Vehicles	0	4	0	0	7	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (veh/h)	11	84		207			90	
C (m) (veh/h)	1177	1331		379			275	
v/c	0.01	0.06		0.55			0.33	
95% queue length	0.03	0.20		3.15			1.38	
Control Delay (s/veh)	8.1	7.9		25.4			24.3	
LOS	A	A		D			C	
Approach Delay (s/veh)	--	--	25.4			24.3		
Approach LOS	--	--	D			C		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	C Sumrain	Intersection	53rd/Site
Agency/Co.	Lancaster	Jurisdiction	Corvallis
Date Performed	1/28/2009	Analysis Year	Background + Site (2030)
Analysis Time Period	PM Peak		

Project Description: SW 49th Street Annexation - #08136

East/West Street: Site Access | North/South Street: SW 53rd Street

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		180	2	32	330	
Peak-Hour Factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87
Hourly Flow Rate, HFR (veh/h)	0	206	2	36	379	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				1		19
Peak-Hour Factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87
Hourly Flow Rate, HFR (veh/h)	0	0	0	1	0	21
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	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		36		22				
C (m) (veh/h)		1375		803				
v/c		0.03		0.03				
95% queue length		0.08		0.08				
Control Delay (s/veh)		7.7		9.6				
LOS		A		A				
Approach Delay (s/veh)	--	--	9.6					
Approach LOS	--	--	A					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	C Sumrain	Intersection	53rd/Site
Agency/Co.	Lancaster	Jurisdiction	Corvallis
Date Performed	1/28/2009	Analysis Year	Background + Site (2030)
Analysis Time Period	PM Peak		

Project Description: SW 49th Street Annexation - #08136 (w/ Cannon Applegate)

East/West Street: Site Access | North/South Street: SW 53rd Street

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		185	2	32	335	
Peak-Hour Factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87
Hourly Flow Rate, HFR (veh/h)	0	212	2	36	385	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				1		19
Peak-Hour Factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87
Hourly Flow Rate, HFR (veh/h)	0	0	0	1	0	21
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	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		36		22				
C (m) (veh/h)		1368		795				
v/c		0.03		0.03				
95% queue length		0.08		0.09				
Control Delay (s/veh)		7.7		9.7				
LOS		A		A				
Approach Delay (s/veh)	--	--	9.7					
Approach LOS	--	--	A					

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Letter from Benton County Public Works Department

PUBLIC WORKS DEPARTMENT
360 SW Avery Avenue
Corvallis, OR 97333-1192

(541) 766-6821
FAX (541) 766-6891
www.co.benton.or.us/pw/index.html

March 24, 2008

Matt Grassel
City of Corvallis Development Review
P.O. Box 1083
Corvallis, Oregon 97339-1083

RE: Annexation Proposal
North of Nash Avenue between 49th and 53rd Streets
T12S – R5W – Section 9CB – Tax Lots 600, 700 & 801
SW 53rd Street – County Road Number: 25271

Matt,

I was recently contacted by Trish Weber of Devco Engineering regarding the proposed annexation of the lots noted above (see enclosed aerial view). Ms. Weber inquired as whether Benton County would accept pre-payment for improvements to 53rd Street. Actually, the County would ***prefer*** prepayment in this circumstance. The County anticipates the eventual urbanization of the segment of 53rd Street between Country Club Drive and Nash Avenue. This project would be similar to the urbanization of 53rd Street between Technology Loop and Country Club Drive 2 years ago. Rather than perform improvements piecemeal and by half street, the County would prefer to establish a fund that would supplement a future Capital Improvement or MPO project.

Ms. Weber also inquired as to whether County ditches could be used as a discharge point for storm drain runoff. The County has no objection to this as long as the City's storm water discharge standards for water quality and quantity are met. The County will defer to the City's storm water standards, although we request that the design package and calculations be provided to our staff for review.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.230

Please be sure to provide the County with three sets of engineering drawings for review when design of the proposed subdivision reaches the 80% stage. The County will provide comments to the City of Corvallis to be incorporated into their comments to the engineer. I have enclosed a list of the requirements and documentation to be provided to our office prior to start of construction.

Please feel free to contact if there are questions or concerns.

Sincerely,

Gordon P. Kurtz
Associate Engineer

Encl

Cc: Patricia J. Weber, Devco Engineering, Inc.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.232

Summary of Amendments to the Transportation Planning Rule (TPR), LCDC

Oregon
John A. Kitzhaber, M.D., Governor

Land Conservation and Development Commission
635 Capitol Street NE, Suite 150
Salem, Oregon 97301-2540
503-373-0050
www.oregon.gov/LCD

Summary of Amendments to the Transportation Planning Rule (TPR) Regarding Plan and Land Use Regulation Amendments

Oregon Administrative Rule 660-012-0060

Summary of New Sections

Rezoning Consistent with Comprehensive Plan Map – Section (9)
If a proposed rezoning is consistent with the existing comprehensive plan map designation, and consistent with the acknowledged transportation system plan, then it can be approved without considering the effect on the transportation system. Special provisions in subsection (c) apply if the area was added to the urban growth boundary (UGB).

Compact Urban Development – Section (10)
Local governments can designate areas where traffic congestion (e.g., v/c ratio) does not have to be considered when rezoning property, amending comprehensive plan designations or amending development regulations.

- Subsection (b) lists the requirements for these multimodal mixed-use areas (MMA):
  - Must allow a range of uses, including residential (allowing at least 12 units per acre), offices, retail, services, restaurants, parks, plazas, civic, cultural and multi-story commercial buildings.
  - Must have appropriate development standards, including building entrances oriented to the street, a connected street network within and to the MMA, pedestrian-oriented street design, transit stops (if transit exists) and reduced requirements for off-street parking.
  - Must limit or prohibit low-intensity uses such as industrial, automobile sales, automobile services and drive-throughs.
  - Must be entirely within a UGB.
- If the MMA is near a freeway interchange, then the potential for backups on the off-ramps must be considered (see subsection (c)) and concurrence from the Oregon Department of Transportation (ODOT) is required.

Economic Development – Section (11)
If a proposed rezoning qualifies as economic development, then it can be approved without mitigating the full effect on traffic.

- Two definitions of economic development in subsection (a):
  - General definition: "Industrial or traded-sector jobs created or retained," with details for these terms in paragraph (a)(C).
  - Smaller cities outside the Willamette Valley can use a broader definition that adds "prime industrial land" and "other employment uses" (which could include retail).
- Subsection (b) allows "partial mitigation," but does not define how much mitigation is required because it will be different in every case based on the balance of economic benefit and traffic impacts.
  - Local government determines if benefits outweigh negative effects on the local system.
  - ODOT, coordinating with Business Oregon, makes the determination for the state system.
- Subsection (c) requires coordination with state, regional and other local governments.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.233

Summary of Changes within Existing Sections

Transportation Demand Management – Subsection (1)(c)
When determining whether or not there is a "significant effect," transportation demand management – or any other enforceable, ongoing condition of approval that would reduce the amount of traffic generated – can be factored in to eliminate or diminish the significant effect.

Other Modes, Facilities or Locations – Subsection (2)(e)

- Three new options for addressing a significant effect, including improvements to:
  - Other modes (example: the significant effect is motor vehicle traffic congestion, the mitigation could be adding sidewalks and bicycle lanes).
  - Other facilities (example: the significant effect occurs along one street, the mitigation could be on another parallel street).
  - Other locations (example: the significant effect occurs at one intersection, the mitigation could be at other intersections along the same highway).
- If the significant effect occurs on a state highway, then these options are only allowed with ODOT concurrence. If on a county road within a city, then county concurrence is required.

Failing Facilities – Subsection (3)(a)
If a facility is projected to fail to meet the performance standards at the planning horizon, and if there are no funded improvements that would fix this, then a proposed rezoning must avoid further degradation at the time of development, but is not required to provide mitigation to meet the performance standards.

Additional Information

Complete Rule Text as Amended
www.oregon.gov/LCD/docs/rulemaking/2009-11/TPR/TPR_Amendments-Legislative_Style.pdf

Rulemaking Process
These amendments were adopted by the Land Conservation and Development Commission December 8, 2011 and took effect January 1, 2012.
www.oregon.gov/LCD/Rulemaking_TPR_2011.shtml

Oregon Highway Plan
The Oregon Transportation Commission adopted amendments to Oregon Highway Plan in coordination with the TPR amendments.
www.oregon.gov/ODOT/TD/TP/OHP2011.shtml

Staff Contact
Matt Crall, Land Use and Transportation Planner
matthew.crall@state.or.us – 503-373-0050 x272

Disclaimer
This brief summary does not explain all of the requirements. Applying these rules to any specific situation requires careful consideration of the full text of the rule, other administrative rules, local regulations, the Oregon Highway Plan and relevant case law.

January 18, 2012

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.234

Amendments to the Transportation Planning Rules
Oregon Administrative Rules 660-012-0005 & 0060

Adopted by the Oregon Land Conservation and Development Commission December 9, 2011.
Filed with the Secretary of State December 30, 2011. Effective January 1, 2012.
Additions are **bold and underlined**. Deletions are [~~struck through in brackets~~].

660-012-0005
Definitions

….

(7) "Demand Management" means actions which are designed to change travel behavior in order to improve performance of transportation facilities and to reduce need for additional road capacity. Methods may include**,** but are not limited to**,** the use of alternative modes, ride-sharing and vanpool programs, [~~and~~]trip-reduction ordinances**, shifting to off-peak periods, and reduced or paid parking**.

…

660-012-0060
Plan and Land Use Regulation Amendments

(1) **[**~~Where~~]**If** an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation **(including a zoning map)** would significantly affect an existing or planned transportation facility, **then** the local government **must**[~~shall~~] put in place measures as provided in section (2) of this rule**, unless the amendment is allowed under section (3), (9) or (10) of this rule**[~~ to assure that allowed land uses are consistent with the identified function, capacity, and performance standards (e.g. level of service, volume to capacity ratio, etc.) of the facility~~]. A plan or land use regulation amendment significantly affects a transportation facility if it would:

(a) Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);

(b) Change standards implementing a functional classification system; or

(c) **Result in any of the effects listed in paragraphs (A) through (C) of this subsection based on projected conditions** [~~As~~]measured at the end of the planning period identified in the adopted [~~transportation system plan~~]**TSP. As part of evaluating projected conditions, the amount of traffic projected to be generated within the area of the amendment may be reduced if the amendment includes an enforceable, ongoing requirement that would demonstrably limit traffic generation, including, but not limited to, transportation demand management. This reduction may diminish or completely eliminate the significant effect of the amendment.**[~~:~~]

(A) [~~Allow land uses or levels of development that would result in t~~]**T**ypes or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;

(B) **Degrade**[~~Reduce~~] the performance of an existing or planned transportation facility **such that it would not meet the** [~~below the minimum acceptable~~]-performance standard**s** identified in the TSP or comprehensive plan; or

(C) **Degrade**[~~Worsen~~] the performance of an existing or planned transportation facility that is otherwise projected to **not meet the** [~~perform below the minimum acceptable~~]performance standard**s** identified in the TSP or comprehensive plan.

(2) **[**~~Where~~]**If** a local government determines that there would be a significant effect, [~~compliance with section (1) shall be accomplished~~]**then the local government must ensure that allowed**

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.235

land uses are consistent with the identified function, capacity, and performance standards of the facility measured at the end of the planning period identified in the adopted TSP through one or a combination of the [~~following:~~]**remedies listed in (a) through (e) below, unless the amendment meets the balancing test in subsection (2)(e) of this section or qualifies for partial mitigation in section (11) of this rule. A local government using subsection (2)(e), section (3), section (10) or section (11) to approve an amendment recognizes that additional motor vehicle traffic congestion may result and that other facility providers would not be expected to provide additional capacity for motor vehicles in response to this congestion.**

(a) Adopting measures that demonstrate allowed land uses are consistent with the planned function, capacity, and performance standards of the transportation facility.

(b) Amending the TSP or comprehensive plan to provide transportation facilities, improvements or services adequate to support the proposed land uses consistent with the requirements of this division; such amendments shall include a funding plan or mechanism consistent with section (4) or include an amendment to the transportation finance plan so that the facility, improvement, or service will be provided by the end of the planning period.

[~~(c) Altering land use designations, densities, or design requirements to reduce demand for automobile travel and meet travel needs through other modes.~~]

(**c**[~~d~~]) Amending the TSP to modify the planned function, capacity or performance standards of the transportation facility.

(**d**[e]) Providing other measures as a condition of development or through a development agreement or similar funding method, including**, but not limited to,** transportation system management measures[~~, demand management~~] or minor transportation improvements. Local governments shall**,** as part of the amendment**,** specify when measures or improvements provided pursuant to this subsection will be provided.

(e) Providing improvements that would benefit modes other than the significantly affected mode, improvements to facilities other than the significantly affected facility, or improvements at other locations, if the provider of the significantly affected facility provides a written statement that the system-wide benefits are sufficient to balance the significant effect, even though the improvements would not result in consistency for all performance standards.

(3) Notwithstanding sections (1) and (2) of this rule, a local government may approve an amendment that would significantly affect an existing transportation facility without assuring that the allowed land uses are consistent with the function, capacity and performance standards of the facility where:

[~~(a) The facility is already performing below the minimum acceptable performance standard identified in the TSP or comprehensive plan on the date the amendment application is submitted;~~]

(**a**[~~b~~]) In the absence of the amendment, planned transportation facilities, improvements and services as set forth in section (4) of this rule would not be adequate to achieve consistency with the identified function, capacity or performance standard for that facility by the end of the planning period identified in the adopted TSP;

(**b**[~~c~~]) Development resulting from the amendment will, at a minimum, mitigate the impacts of the amendment in a manner that avoids further degradation to the performance of the facility by the time of the development through one or a combination of transportation improvements or measures;

(**c**[~~d~~]) The amendment does not involve property located in an interchange area as defined in paragraph (4)(d)(C); and

(**d**[e]) For affected state highways, ODOT provides a written statement that the proposed funding and timing for the identified mitigation improvements or measures are, at a

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.236

minimum, sufficient to avoid further degradation to the performance of the affected state highway. However, if a local government provides the appropriate ODOT regional office with written notice of a proposed amendment in a manner that provides ODOT reasonable opportunity to submit a written statement into the record of the local government proceeding, and ODOT does not provide a written statement, then the local government may proceed with applying subsections (a) through (**c**[~~d~~]) of this section.

(4) Determinations under sections (1)-(3) of this rule shall be coordinated with affected transportation facility and service providers and other affected local governments.

(a) In determining whether an amendment has a significant effect on an existing or planned transportation facility under subsection (1)(c) of this rule, local governments shall rely on existing transportation facilities and services and on the planned transportation facilities, improvements and services set forth in subsections (b) and (c) below.

(b) Outside of interstate interchange areas, the following are considered planned facilities, improvements and services:

(A) Transportation facilities, improvements or services that are funded for construction or implementation in the Statewide Transportation Improvement Program or a locally or regionally adopted transportation improvement program or capital improvement plan or program of a transportation service provider.

(B) Transportation facilities, improvements or services that are authorized in a local transportation system plan and for which a funding plan or mechanism is in place or approved. These include, but are not limited to, transportation facilities, improvements or services for which: transportation systems development charge revenues are being collected; a local improvement district or reimbursement district has been established or will be established prior to development; a development agreement has been adopted; or conditions of approval to fund the improvement have been adopted.

(C) Transportation facilities, improvements or services in a metropolitan planning organization (MPO) area that are part of the area's federally-approved, financially constrained regional transportation system plan.

(D) Improvements to state highways that are included as planned improvements in a regional or local transportation system plan or comprehensive plan when ODOT provides a written statement that the improvements are reasonably likely to be provided by the end of the planning period.

(E) Improvements to regional and local roads, streets or other transportation facilities or services that are included as planned improvements in a regional or local transportation system plan or comprehensive plan when the local government(s) or transportation service provider(s) responsible for the facility, improvement or service provides a written statement that the facility, improvement or service is reasonably likely to be provided by the end of the planning period.

(c) Within interstate interchange areas, the improvements included in (b)(A)-(C) are considered planned facilities, improvements and services, except where:

(A) ODOT provides a written statement that the proposed funding and timing of mitigation measures are sufficient to avoid a significant adverse impact on the Interstate Highway system, then local governments may also rely on the improvements identified in paragraphs (b)(D) and (E) of this section; or

(B) There is an adopted interchange area management plan, then local governments may also rely on the improvements identified in that plan and which are also

identified in paragraphs (b)(D) and (E) of this section.

(d) As used in this section and section (3):

(A) Planned interchange means new interchanges and relocation of existing interchanges that are authorized in an adopted transportation system plan or comprehensive plan;

(B) Interstate highway means Interstates 5, 82, 84, 105, 205 and 405; and

(C) Interstate interchange area means:

(i) Property within **one-quarter**[~~one-half~~] mile **of the ramp terminal intersection** of an existing or planned interchange on an Interstate Highway[~~as measured from the center point of the interchange~~]; or

(ii) The interchange area as defined in the Interchange Area Management Plan adopted as an amendment to the Oregon Highway Plan.

(e) For purposes of this section, a written statement provided pursuant to paragraphs (b)(D), (b)(E) or (c)(A) provided by ODOT, a local government or transportation facility provider, as appropriate, shall be conclusive in determining whether a transportation facility, improvement or service is a planned transportation facility, improvement or service. In the absence of a written statement, a local government can only rely upon planned transportation facilities, improvements and services identified in paragraphs (b)(A)-(C) to determine whether there is a significant effect that requires application of the remedies in section (2).

(5) The presence of a transportation facility or improvement shall not be a basis for an exception to allow residential, commercial, institutional or industrial development on rural lands under this division or OAR 660-004-0022 and 660-004-0028.

(6) In determining whether proposed land uses would affect or be consistent with planned transportation facilities as provided in **sections** [~~0060~~](1) and (2), local governments shall give full credit for potential reduction in vehicle trips for uses located in mixed-use, pedestrian-friendly centers, and neighborhoods as provided in **subsections** (a)-(d) below;

(a) Absent adopted local standards or detailed information about the vehicle trip reduction benefits of mixed-use, pedestrian-friendly development, local governments shall assume that uses located within a mixed-use, pedestrian-friendly center, or neighborhood, will generate 10% fewer daily and peak hour trips than are specified in available published estimates, such as those provided by the Institute of Transportation Engineers (ITE) Trip Generation Manual that do not specifically account for the effects of mixed-use, pedestrian-friendly development. The 10% reduction allowed for by this section shall be available only if uses which rely solely on auto trips, such as gas stations, car washes, storage facilities, and motels are prohibited;

(b) Local governments shall use detailed or local information about the trip reduction benefits of mixed-use, pedestrian-friendly development where such information is available and presented to the local government. Local governments may, based on such information, allow reductions greater than the 10% reduction required in **subsection** (a) **above**;

(c) Where a local government assumes or estimates lower vehicle trip generation as provided in **subsection** (a) or (b) above, it shall assure through conditions of approval, site plans, or approval standards that subsequent development approvals support the development of a mixed-use, pedestrian-friendly center or neighborhood and provide for on-site bike and pedestrian connectivity and access to transit as provided for in **OAR 660-012-**0045(3) and (4). The provision of on-site bike and pedestrian connectivity and access to transit may be accomplished through application of acknowledged ordinance provisions which comply with **OAR 660-012-**0045(3) and (4) or through conditions of approval or findings adopted with the plan

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.238

amendment that assure compliance with these rule requirements at the time of development approval; and

(d) The purpose of this section is to provide an incentive for the designation and implementation of pedestrian-friendly, mixed-use centers and neighborhoods by lowering the regulatory barriers to plan amendments which accomplish this type of development. The actual trip reduction benefits of mixed-use, pedestrian-friendly development will vary from case to case and may be somewhat higher or lower than presumed pursuant to **subsection** (a) above. The Commission concludes that this assumption is warranted given general information about the expected effects of mixed-use, pedestrian-friendly development and its intent to encourage changes to plans and development patterns. Nothing in this section is intended to affect the application of provisions in local plans or ordinances which provide for the calculation or assessment of systems development charges or in preparing conformity determinations required under the federal Clean Air Act.

(7) Amendments to acknowledged comprehensive plans and land use regulations which meet all of the criteria listed in **subsections** (a)-(c) below shall include an amendment to the comprehensive plan, transportation system plan the adoption of a local street plan, access management plan, future street plan or other binding local transportation plan to provide for on-site alignment of streets or accessways with existing and planned arterial, collector, and local streets surrounding the site as necessary to implement the requirements in [~~Section~~]**OAR 660-012-**0020(2)(b) and [~~Section~~]**660-012-**0045(3)[~~ of this division~~]:

(a) The plan or land use regulation amendment results in designation of two or more acres of land for commercial use;

(b) The local government has not adopted a TSP or local street plan which complies with [~~Section~~]**OAR 660-012-**0020(2)(b) or, in the Portland Metropolitan Area, has not complied with Metro's requirement for street connectivity as contained in Title 6, Section 3 of the Urban Growth Management Functional Plan; and

(c) The proposed amendment would significantly affect a transportation facility as provided in **section** [~~0060~~](1).

(8) A "mixed-use, pedestrian-friendly center or neighborhood" for the purposes of this rule, means:

(a) Any one of the following:

(A) An existing central business district or downtown;

(B) An area designated as a central city, regional center, town center or main street in the Portland Metro 2040 Regional Growth Concept;

(C) An area designated in an acknowledged comprehensive plan as a transit oriented development or a pedestrian district; or

(D) An area designated as a special transportation area as provided for in the Oregon Highway Plan.

(b) An area other than those listed in **subsection** (a)**above** which includes or is planned to include the following characteristics:

(A) A concentration of a variety of land uses in a well-defined area, including the following:

(i) Medium to high density residential development (12 or more units per acre);

(ii) Offices or office buildings;

(iii) Retail stores and services;

(iv) Restaurants; and

(v) Public open space or private open space which is available for public use, such as a park or plaza.

(B) Generally include civic or cultural uses;

(C) A core commercial area where multi-story buildings are permitted;

(D) Buildings and building entrances oriented to streets;

(E) Street connections and crossings that make the center safe and conveniently accessible from adjacent areas;

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.239

(F) A network of streets and, where appropriate, accessways and major driveways that make it attractive and highly convenient for people to walk between uses within the center or neighborhood, including streets and major driveways within the center with wide sidewalks and other features, including pedestrian-oriented street crossings, street trees, pedestrian-scale lighting and on-street parking;

(G) One or more transit stops (in urban areas with fixed route transit service); and

(H) Limit or do not allow low-intensity or land extensive uses, such as most industrial uses, automobile sales and services, and drive-through services.

(9) Notwithstanding section (1) of this rule, a local government may find that an amendment to a zoning map does not significantly affect an existing or planned transportation facility if all of the following requirements are met.

(a) The proposed zoning is consistent with the existing comprehensive plan map designation and the amendment does not change the comprehensive plan map;

(b) The local government has an acknowledged TSP and the proposed zoning is consistent with the TSP; and

(c) The area subject to the zoning map amendment was not exempted from this rule at the time of an urban growth boundary amendment as permitted in OAR 660-024-0020(1)(d), or the area was exempted from this rule but the local government has a subsequently acknowledged TSP amendment that accounted for urbanization of the area.

(10) Notwithstanding sections (1) and (2) of this rule, a local government may amend a functional plan, a comprehensive plan or a land use regulation without applying performance standards related to motor vehicle traffic congestion (e.g. volume to capacity ratio or V/C), delay or travel time if the amendment meets the requirements of subsection (a) of this section. This section does not exempt a proposed amendment from other transportation performance standards or policies that may apply including, but not limited to, safety for all modes, network connectivity for all modes (e.g. sidewalks, bicycle lanes) and accessibility for freight vehicles of a size and frequency required by the development.

(a) A proposed amendment qualifies for this section if it:

(A) is a map or text amendment affecting only land entirely within a multimodal mixed-use area (MMA); and

(B) is consistent with the definition of an MMA and consistent with the function of the MMA as described in the findings designating the MMA.

(b) For the purpose of this rule, "multimodal mixed-use area" or "MMA" means an area:

(A) with a boundary adopted by a local government as provided in subsection (d) or (e) of this section and that has been acknowledged;

(B) entirely within an urban growth boundary;

(C) with adopted plans and development regulations that allow the uses listed in paragraphs (8)(b)(A) through (C) of this rule and that require new development to be consistent with the characteristics listed in paragraphs (8)(b)(D) through (H) of this rule;

(D) with land use regulations that do not require the provision of off-street parking, or regulations that require lower levels of off-street parking than required in other areas and allow flexibility to meet the parking requirements (e.g. count on-street parking, allow long-term leases, allow shared parking); and

(E) located in one or more of the categories below:

(i) at least one-quarter mile from any ramp terminal intersection of existing or planned interchanges;

(ii) within the area of an adopted Interchange Area Management Plan

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.240

(IAMP) and consistent with the IAMP; or

(iii) within one-quarter mile of a ramp terminal intersection of an existing or planned interchange if the mainline facility provider has provided written concurrence with the MMA designation as provided in subsection (c) of this section.

(c) When a mainline facility provider reviews an MMA designation as provided in subparagraph (b)(E)(iii) of this section, the provider must consider the factors listed in paragraph (A) of this subsection.

(A) The potential for operational or safety effects to the interchange area and the mainline highway, specifically considering:

(i) whether the interchange area has a crash rate that is higher than the statewide crash rate for similar facilities;

(ii) whether the interchange area is in the top ten percent of locations identified by the safety priority index system (SPIS) developed by ODOT; and

(iii) whether existing or potential future traffic queues on the interchange exit ramps extend onto the mainline highway or the portion of the ramp needed to safely accommodate deceleration.

(B) If there are operational or safety effects as described in paragraph (A) of this subsection, the effects may be addressed by an agreement between the local government and the facility provider regarding traffic management plans favoring traffic movements away from the interchange, particularly those facilitating clearing traffic queues on the interchange exit ramps.

(d) A local government may designate an MMA by adopting an amendment to the comprehensive plan or land use regulations to delineate the boundary following an existing zone, multiple existing zones, an urban renewal area, other existing boundary, or establishing a new boundary. The designation must be accompanied by findings showing how the area meets the definition of an MMA. Designation of an MMA is not subject to the requirements in sections (1) and (2) of this rule.

(e) A local government may designate an MMA on an area where comprehensive plan map designations or land use regulations do not meet the definition, if all of the other elements meet the definition, by concurrently adopting comprehensive plan or land use regulation amendments necessary to meet the definition. Such amendments are not subject to performance standards related to motor vehicle traffic congestion, delay or travel time.

(11) A local government may approve an amendment with partial mitigation as provided in section (2) of this rule if the amendment complies with subsection (a) of this section, the amendment meets the balancing test in subsection (b) of this section, and the local government coordinates as provided in subsection (c) of this section.

(a) The amendment must meet paragraphs (A) and (B) of this subsection or meet paragraph (D) of this subsection.

(A) Create direct benefits in terms of industrial or traded-sector jobs created or retained by limiting uses to industrial or traded-sector industries.

(B) Not allow retail uses, except limited retail incidental to industrial or traded sector development, not to exceed five percent of the net developable area.

(C) For the purpose of this section:

(i) "industrial" means employment activities generating income from the production, handling or distribution of goods including, but not limited to, manufacturing, assembly, fabrication, processing, storage, logistics, warehousing, importation, distribution and

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.241

transshipment and research and development.

(ii) "traded-sector" means industries in which member firms sell their goods or services into markets for which national or international competition exists.

(D) Notwithstanding paragraphs (A) and (B) of this subsection, an amendment complies with subsection (a) if all of the following conditions are met:

(i) The amendment is within a city with a population less than 10,000 and outside of a Metropolitan Planning Organization.

(ii) The amendment would provide land for "Other Employment Use" or "Prime Industrial Land" as those terms are defined in OAR 660-009-0005.

(iii) The amendment is located outside of the Willamette Valley as defined in ORS 215.010.

(E) The provisions of paragraph (D) of this subsection are repealed on January 1, 2017.

(b) A local government may accept partial mitigation only if the local government determines that the benefits outweigh the negative effects on local transportation facilities and the local government receives from the provider of any transportation facility that would be significantly affected written concurrence that the benefits outweigh the negative effects on their transportation facilities. If the amendment significantly affects a state highway, then ODOT must coordinate with the Oregon Business Development Department regarding the economic and job creation benefits of the proposed amendment as defined in subsection (a) of this section. The requirement to obtain concurrence from a provider is satisfied if the local government provides notice as required by subsection (c) of this section and the provider does not respond in writing (either concurring or non-concurring) within forty-five days.

(c) A local government that proposes to use this section must coordinate with Oregon Business Development Department, Department of Land Conservation and Development, area commission on transportation, metropolitan planning organization, and transportation providers and local governments directly impacted by the proposal to allow opportunities for comments on whether the proposed amendment meets the definition of economic development, how it would affect transportation facilities and the adequacy of proposed mitigation. Informal consultation is encouraged throughout the process starting with pre-application meetings. Coordination has the meaning given in ORS 197.015 and Goal 2 and must include notice at least 45 days before the first evidentiary hearing. Notice must include the following:

(A) Proposed amendment.

(B) Proposed mitigating actions from section (2) of this rule.

(C) Analysis and projections of the extent to which the proposed amendment in combination with proposed mitigating actions would fall short of being consistent with the function, capacity, and performance standards of transportation facilities.

(D) Findings showing how the proposed amendment meets the requirements of subsection (a) of this section.

(E) Findings showing that the benefits of the proposed amendment outweigh the negative effects on transportation facilities.

Stat. Auth.: ORS 183 & 197.040
Stats. Implemented: ORS 195.025, 197.040, 197.230, 197.245, 197.610 - 197.625, 197.628 - 197.646, 197.712, 197.717 & 197.732

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.242

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.243

Letter from John deTar, ODOT

07-419

Oregon
Theodore R. Kulongoski, Governor

Department of Transportation
Corvallis Office
3700 SW Philomath Blvd.
Corvallis, OR 97333-1147
Telephone 541.757.4211
Fax 541.757.4290

May 29, 2009

Kevin Young, Senior Planner
Corvallis Community Development Department
Corvallis City Hall
P. O. Box 1083
Corvallis, OR 97339-1083

Subject: Cannon-Applegate Annexation and Rezone (ANN-09-00001 and ZDC-09-00002) and South 49th Street Annexation and Rezone (ANN-09-00002; ZDC-09-00001)

Dear Mr. Young:

Thank you for providing ODOT with the notice of these land use actions and for the application materials. Your undated letter notifying ODOT that the City of Corvallis has decided to apply OAR 660-012-0060(3) was received May 18, 2009. The time frame specified in your letter did not provide ODOT with a reasonable amount of time to reply, so ODOT is providing this letter into the public hearing record before the Planning Commission's hearing. As a participant in the public hearing, ODOT should be notified of any delays or continuances in the public hearing. ODOT also should be entitled to a copy of the land use decision in this matter when one occurs.

ODOT's May 15, 2009 letter establishes that OAR 660-012-0060 applies to this annexation and change in zoning because there would be a significant affect, as that term is used in OAR 660-012-0060, at the US-20/53rd Street Intersection. It also states that the intersection is already performing at conditions that are worse than the applicable mobility standard. The applicant's revised TIA dated April 28, 2009, states that construction of a northbound right-turn lane at the intersection would be sufficient mitigation to avoid further degradation. ODOT agrees this mitigation would be sufficient for the proposed changes.

OAR 660-012-0060(3)(e) calls for ODOT to consider whether the proposed funding and timing of mitigation improvements are sufficient to avoid further degradation to the performance of the state highway. The applicant proposes to provide funding, but this funding is described as a proportionate share of the total funding needed to provide the right-turn lane. In other words, funding from the development would not be adequate to construct the mitigation. ODOT funding is not reasonably likely to be provided by the time of development or within the planning horizon. ODOT's May 15, 2009 letter identifies that other funding could be used to provide the needed mitigation or to supplement the funding proposed by the applicant, but there has been no

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.244

commitment of these other funds. ODOT therefore cannot conclude that the mitigation needed to avoid further degradation of the US-20/53rd Street intersection will be constructed by the time of development.

Please contact me if you have any questions about this letter. If available funding for the mitigation changes, please notify ODOT.

Yours truly,

John G. deTar
Senior Region Planner

Electronic copies provided to:

Gerry Juster, ODOT
Erik Havig, ODOT
Ed Moore, DLCD
Ali Bonakdar, CAMPO
Kathy Lincoln, DOJ

Lyle Hutchins, DEVCO Engineering
Todd Mobley, Lancaster Engineering
Jim Boeder, applicant
Steve Rogers, Corvallis Public Works
Roger Irvin, Benton County Public Works

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.246

Letter to Valerie Grigg Devis, ODOT

December 7, 2012

Valerie Grigg Devis
Senior Planner
Oregon Department of Transportation
Corvallis Office
3700 SW Philomath Blvd.
Corvallis, OR 97333

Dear Ms. Devis:

I'm writing for your assistance in an annexation application I will be submitting to the City of Corvallis on Tuesday, December 11th.

The annexation is titled "49th St. Annexation." This application was previously submitted to the City on April 26, 2010. The application was denied by the Corvallis Planning Commission on June 2, 2010, primarily because the development plans required by ODOT for mitigation compliance and financial security—Conceptual/Detailed Development Plans—were judged to be lacking in sufficient detail, and potentially would commit the City to strict adherence of those plans if the annexation were approved. Annexations applications have typically not been required to present development plans, rather a General Land Use Plan is sufficient. The additional burden of a Conceptual/Detailed Development Plan for an annexation of this size (10.48 acres) was, to my knowledge, unprecedented in Corvallis land use applications.

At the time of original application submission, the Transportation Planning Rule (TPR—OAR 660-012-0060) required developer mitigation of ODOT transportation facilities that were failing that were impacted by additional traffic from a development when a zone change occurred on the subject property (see attached for letter from John DeTar, ODOT Senior Region Planner, to City of Corvallis).

In January 2012, the TPR (OAR 660-012-0060) has been amended to no longer require either ODOT consideration or mitigation requirements if rezoning is consistent with a city's Comprehensive Plan Map. The subject property is entirely within the Corvallis Urban Growth Boundary, is zoned Residential – Low Density (see attachment maps); and we are proposing to annex the property into the City under RS-6 zoning, low-density residential. Hence we believe we, and ODOT, are not required to consider the annexation's effect on the State's transportation system.

I sincerely hope you agree with my interpretation of the amended TPR as it relates to our annexation application; and, if so, I would appreciate your written concurrence in a letter emailed to:

Kevin Young, Senior Planner
Corvallis Community Development Department
Corvallis City Hall
P.O. Box 1083
Corvallis, OR 97339-1083
kevin.young@ci.corvallis.or.us

Please let me know as soon as possible if you need further information, or if you have any questions regarding my request. And please copy me on any correspondence with the City.

Best regards,

Jim Boeder, Representative
49th Street Annexation Partners
2022 SW 45th St.
Corvallis, OR 97333
jimboeder@comcast.net
541.760.1592

Attachments:
- ODOT letter to City of Corvallis, May 29, 2009
- Maps: Site location; Existing Zone designations; Comprehensive Plan designations

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.249

Corvallis Gazette Times Articles, Editorial, Letter to the Editor

Corvallis Gazette-Times

Corvallis schools face $4.5 million budget cut

MARCH 13, 2012 7:30 AM • BY BENNETT HALL, CORVALLIS GAZETTE-TIMES

The Corvallis School Board got its first official look at a likely budget scenario for next year at Monday night's meeting, and the news was not encouraging.

Faced with declining enrollment numbers, rising retirement contributions and flat state support, a district task force is recommending more than $4 million in spending cuts.

The tentative plan includes eliminating up to 19 full-time-equivalent teaching positions and bumping class sizes by an average of two to three students per room.

"We have identified about a $49.5 million budget to shoot for, and that means about a $4.5 million reduction," Superintendent Erin Prince told the board.

Prince stressed that the recommendations are preliminary. After fully evaluating the task force's report, Prince will bring a formal budget proposal to the board's budget committee next month. The board has until June 30 to adopt a budget for the 2012-13 school year.

In her report to the board, Prince outlined a three-part budget-cutting strategy.

• One-time savings: Tap 40 percent of rainy-day reserves and 50 percent of department and building carry-over budgets next year. This would save almost $1.4 million.

• Renewable savings: Negotiate furlough days with employee unions. This could save about $175,000 per furlough day, depending on the number of employees taking unpaid days off. More days could be negotiated in future years.

• Sustainable savings: This part of the plan aims for long-term reductions that would produce ongoing savings. Cutting teachers and increasing class sizes in line with enrollment declines would save about $1.2 million per year, Prince said, as would slashing department discretionary spending by 8 to 10 percent (including some administrative and non-union staff positions).

Cutting building discretionary budgets by 5 to 7 percent would produce another $240,000 in annual cost reductions, and chopping athletics and activities budgets at each high school by $25,000 would save $50,000 a year.

Additional savings could come from steps such as reducing energy use, making transportation more efficient and combining some high school programs.

While the superintendent did not discuss specifics of potential job cuts at Monday night's School Board meeting, she offered a number of details earlier in the day in a talk to the Corvallis City Club.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.250

Prince told the civic group the task force recommended cutting anywhere from 10 to 19 FTE teaching jobs next year, and perhaps some classified staff and administrative positions as well.

That means class sizes would have to go up and programs might have to be cut back.

"When we are in reduction mode and we are in challenging times, we can't do absolutely everything well," she said.

Ultimately, Prince added, the best way to address the district's budget woes over the long haul is to reverse the ongoing enrollment decline — and that means addressing Corvallis' housing issues.

"We do not have affordable housing for our young families," Prince told the City Club.

"There's no one to blame. It's just that we have to address this if we want to ... invite young families into the community."

Contact Bennett Hall at 541-758-9529 or bennett.hall@gazettetimes.com.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.251

Corvallis Gazette-Times

Community share views on 509J budget

MARCH 21, 2012 8:00 AM • RAJU WOODWARD, CORVALLIS GAZETTE-TIMES

About a dozen people attended a community budget forum hosted by the Corvallis School District on Tuesday evening.

During the 90-minute event held at Linus Pauling Middle School, superintendent Erin Prince discussed the 2012-13 budget.

District officials anticipate having to work with a budget of about $49.5 million next year, a $4.5 million reduction from this year.

Prince's budget task force has recommended a plan that includes eliminating up to 19 full-time-equivalent teaching positions and increasing teacher-student ratios, which may increase some class sizes.

Crescent Valley High School junior Erynne van Zee spoke in support of extra-curricular activities such as art and music.

"These classes are so beneficial because they allow students from different backgrounds and demographics to interact with each other," van Zee said. "I think that's so beneficial to all students."

Kristy Rolen, who has two children attending Corvallis Schools, said she appreciated that district officials are talking about the budget situation early on and being transparent about the process with community members.

"I have confidence that once people hear about the needs, they will step up and support programs," Rolen said. This is a community that cares."

Rolen said she was worried about the focus on math and science at the high school level and that students who don't excel in those subjects could fall behind in school and become discouraged.

As a result, Rolen also spoke in favor of elective classes and career and technical education opportunities.

Other questions that were raised by audience members ranged from enrollment to curriculum material purchases.

One issue that came up repeatedly during discussions about the district's declining enrollment was the lack of affordable housing in the Corvallis area. Fewer students means less state funding for the district.

"We are working with city leaders on ways to address this," said assistant superintendent Kevin

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.252

Bogatin. "They know it would help our enrollment."

Following the forum, van Zee said she felt more reassured and that the cuts won't be as bad as she feared.

"You hear the number $4.5 million and you start freaking out," van Zee said. "But I feel better knowing that the superintendent is doing her best to make decisions that will directly impact students as little as possible. In the end it's us students who are impacted by these decisions the most."

Prince said that she's in the process of gathering more input from staff, students and community members.

She's scheduled to present a formal budget proposal to the district's budget committee next month. The school board then has until June 30 to adopt a budget for the 2012-13 school year.

Raju Woodward can be contacted at 758-9526 or raju.woodward@lee.net

2012-12 Corvallis School District budget

For more information, see http://dnn.csd509j.net and then click on the "FY 2012-13 Budget Challenges" link on the right side of the page.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.253

Corvallis Gazette-Times

Editorial: School budget woes bring larger issues into focus

MARCH 22, 2012 9:15 AM • CORVALLIS GAZETTE-TIMES

Tuesday night was dreary and cold, complete with a chilling rain.

And it wasn't much more cheerful inside the big lunchroom at Linus Pauling Middle School, where Erin Prince, the superintendent of the Corvallis School District, was briefing a small group of curious citizens who braved the weather about the district's fiscal challenges.

Prince didn't work all that hard to sugarcoat the district's situation, and that's probably because there isn't enough sugar to do that.

As you've probably picked up already from previous Gazette-Times stories, the school district is working to trim some $4.5 million from its budget, to bring its expenses in line with an estimated $49.5 million in revenue. It works out to about an 8 percent cutback.

The overall goal, Prince explained, is to begin to build a sustainable budget for the school district, reversing a recent trend in which the district has been spending more than it brings in. That works only as long as the reserves hold out; it's not any kind of long-term solution.

(In some ways, the task Prince and her colleagues face is similar to the task facing Corvallis City Manager Jim Patterson; both Prince and Patterson are in their first years on the job here, and both came from similar jobs in Sherwood.)

Prince has not yet made her final recommendations on the budget. That process will play out over the next few weeks. But here's one pretty good bet: The district will have fewer employees next year, and could lose as many as 19.

Although district enrollments have been declining for a decade now (down more than 11 percent over the last 10 years), the number of district employees has remained roughly the same. (According to the district's website, the district has about 650 FTEs.) Since state funding to schools is based largely on enrollment, a decline in enrollment translates to fewer dollars: Enrollment numbers that came in under projections this school year alone will cost the district $2.1 million.

But this isn't just a school district issue: Prince and her fellow administrators say that one critical reason why enrollments have been declining is because Corvallis doesn't have enough affordable housing to attract the younger families that feed our schools.

Of course, that's not the only reason, but it's a big one, and the sobering message underlying Tuesday's budget session is that all of these pieces such as our stagnant economy and our affordable housing issues are connected, with real ramifications for real people.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.254

Prince and the school district have plenty of work to do in the next few weeks; it would have been easy for them to ignore the bigger picture. It's a good thing for all of us that they have chosen not to do that.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.255

Corvallis Gazette-Times

Letter: Young families are being edged out in push for student housing

JULY 16, 2012 9:00 AM

One has to have lived in Corvallis for awhile to answer the following question: What do the words Dixie, Harding, Fairplay, Inavale, Western View and Highland View have in common?

The first four are elementary schools that have closed in the past 30 years or so. The latter two are middle schools that were combined into one.

Simultaneously during those 30 or so years, the population of Corvallis doubled, led in part by the doubling of Oregon State University's student enrollment. Twice as many people; twice as many students — and a third fewer elementary and middle schools. Why?

If you've lived in Corvallis for a while, you know some of the reasons. However, one of the major forces driving the decline in K-6 enrollment has been the decline in affordable housing for young families with children. Increasingly, these families have chosen to live in and commute from Albany, Tangent, Lebanon or even Sweet Home.

Affordable family housing in Corvallis has been converted to student housing, while older neighborhood units have recently been demolished and replaced by behemoths with five-bedroom apartments renting for $3,000 per apartment.

The OSU administration is championing an increase in student enrollment equal to that of the previous 30 years. Besides providing 23 more miles of parked cars, 100 million pounds of additional carbon dioxide in the air, and any number of new facilities for student athletes, how does this benefit Corvallis, whose schools used to be a draw for people to come and work here?

Michael Coolen, Corvallis

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.256

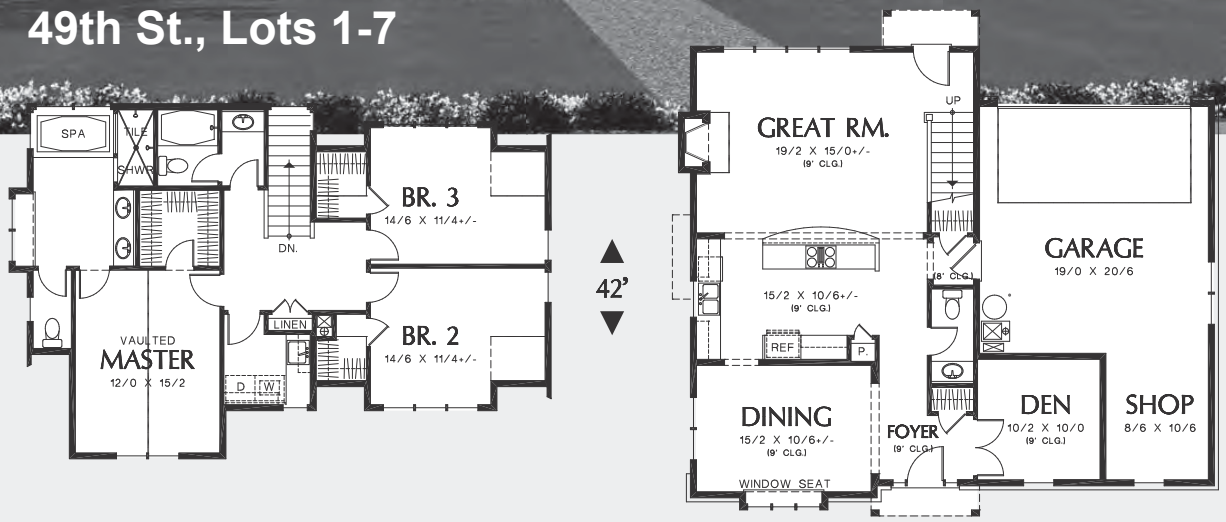
49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.257

Representative Dwellings: Renderings and Floor Plans

Price Category D

Plan 22176
Dakota

49th St., Lots 1-7



Upper Floor	1052 Sq. Ft.
Main Floor	1014 Sq. Ft.
Sub Total	2066 Sq. Ft.
Width: 45'	Depth: 39'
Height: 30'	Crawlspace

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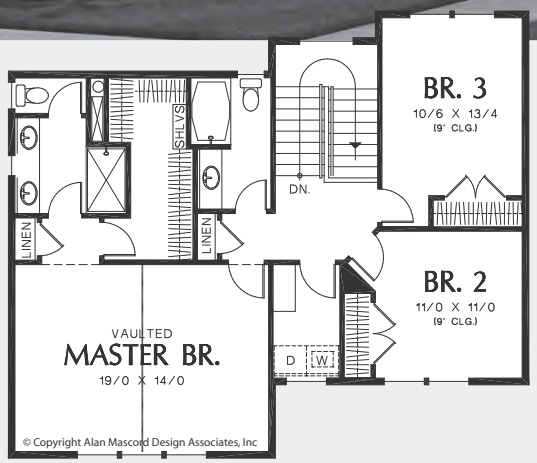
Price Category C

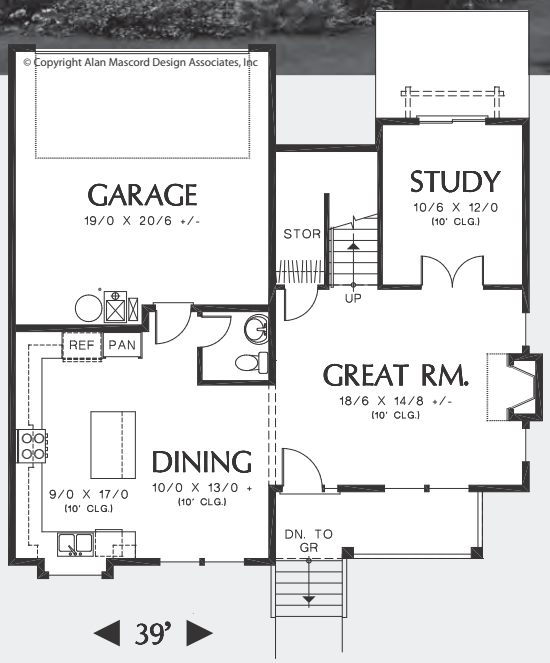
Plan 21138

The Bracken Bank

49th St. Lots, 8-10



39'



39'

Upper Floor	1017 Sq. Ft.
Main Floor	903 Sq. Ft.
Total Area	1920 Sq. Ft.
Width 39'	Depth 39'
Height: 30'-8"	Crawlspace

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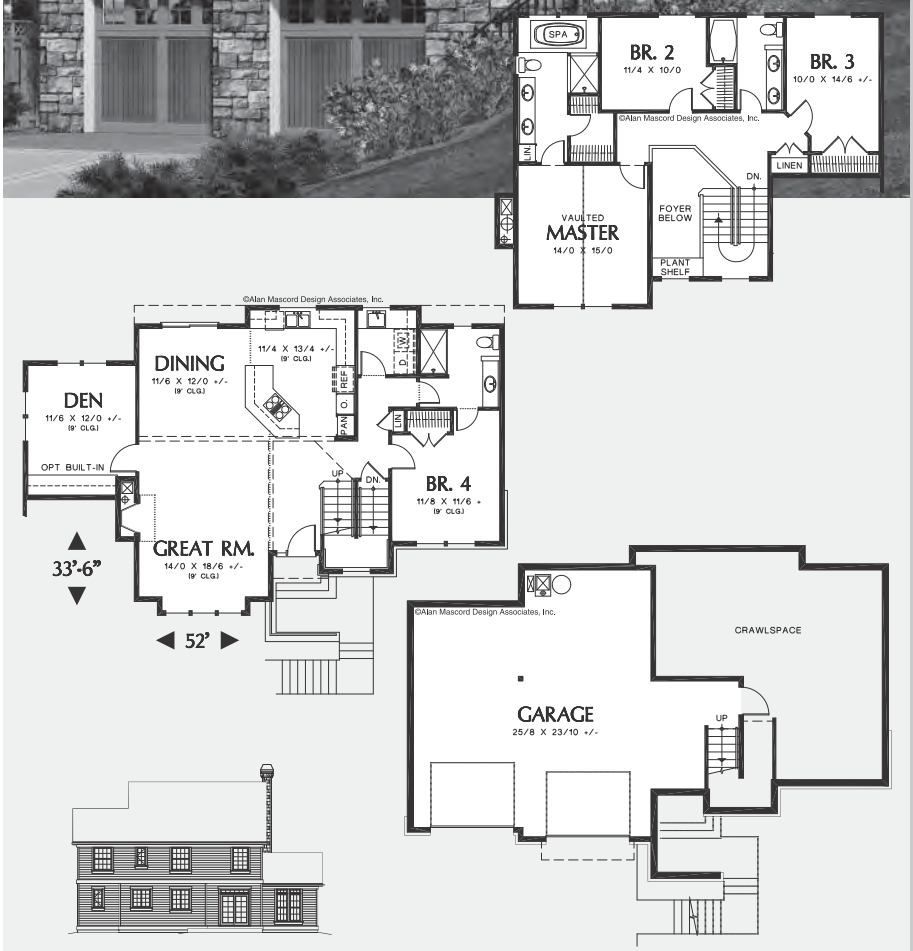
Price Category D

Plan 22147
Hillview

49th St., Lots 11-12, 23-24



Upper Floor	912 Sq. Ft.
Main Floor	1309 Sq. Ft.
Total Area	2221 Sq. Ft.
Width 52'	Depth 33'6"
Height 31'	Slab/Crawlspace

Plan designed for sloping lot.

AIRY, BRIGHT TRADITIONAL

A sloped lot is no challenge for this comely design—it easily accommodates a site that slopes to the side or to the front. The two floors above hold a very comfortable floor plan. The main level provides commodious living and dining spaces, plus a gourmet-style kitchen, large den with built-ins and a bedroom with full bath. The great room features a gas fireplace. The kitchen has a pantry and a window sink. Sliding glass doors in the dining area lead out to the back yard. A laundry room lies just outside Bedroom 4. Note that all rooms on this level have nine-foot ceilings.

Three more bedrooms upstairs include a master suite and two family bedrooms. The master salon has a scissor-vaulted ceiling; the master bath has a spa tub, walk-in closet and separate shower. Family bedrooms share a full bath with two lavatories.

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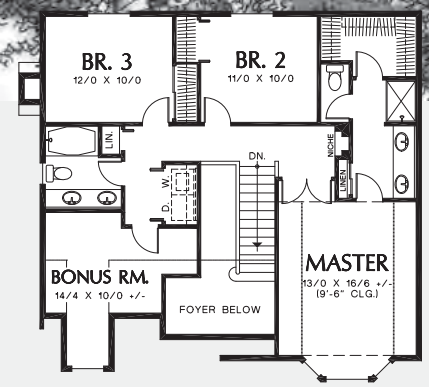
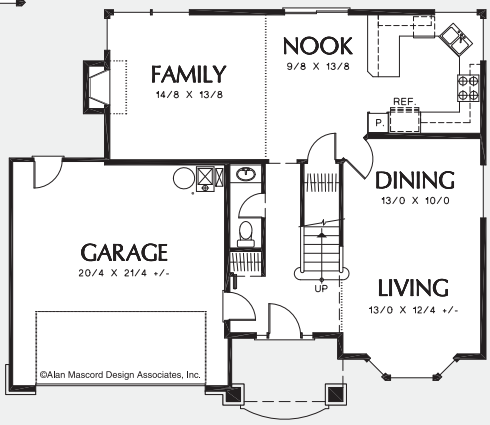
Exhibit VI.260

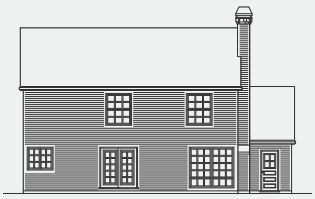
Price Category C

Plan 2138
Stayton

Upper Floor	843 Sq. Ft.
Main Floor	972 Sq. Ft.
Sub-Total	1845 Sq. Ft.
Bonus Room	+153 Sq. Ft.
Width 45'	Depth 37'
Height 28'	Crawlspace







EFFICIENT KITCHEN

Although moderate in size and affordable to build, this home plan probably includes every amenity on your wish list. The exterior is traditionally styled with a gabled entry and stacked bay windows. Inside, a two-story foyer extends a dramatic welcome. Formal and casual spaces accommodate both entertaining and everyday family life.

The family area extends across the back of the house, allowing for a wealth of windows and sliding patio doors. Family members also will appreciate the highly efficient kitchen and the fireplace.

The master suite, two bedrooms, a bath, and laundry facilities are housed on the top level. Surprise! This level also houses a bonus room with a dormer window. Furnish the bonus room to meet your family needs: home office, children's playroom, hobby or game room, teen sanctuary, guest room.

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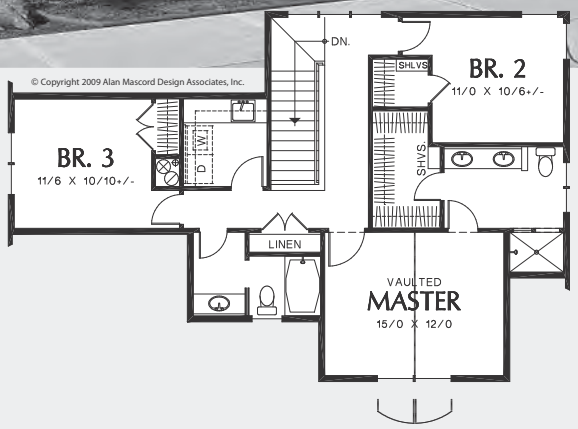
Price Category C

Plan 2102AE
The Gutenburg



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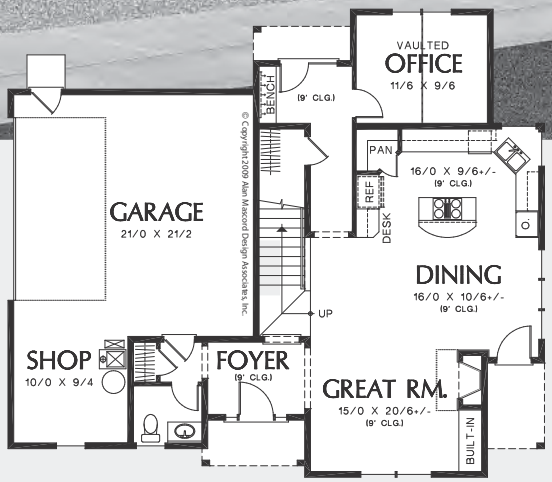
41'



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47'

Upper Floor	963 Sq. Ft.
Main Floor	988 Sq. Ft.
Total Area	1951 Sq. Ft.
Width 47'	Depth 41'
Height: 29'-4"	Crawlspace

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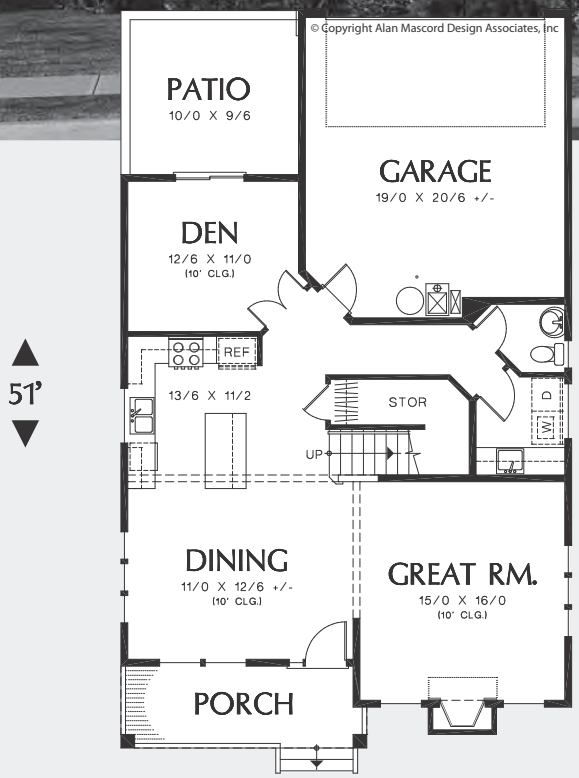
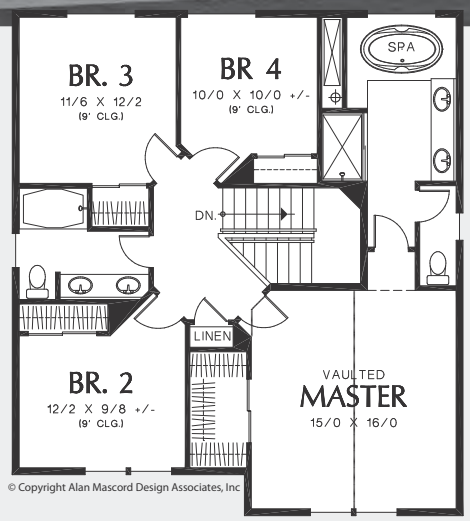
Price Category

Plan 21139A

The Fountainview

49th St., Lots 33, 42,





Upper Floor	1106 Sq. Ft.
Main Floor	1049 Sq. Ft.
Total Area	2155 Sq. Ft.
Width 33'	Depth 51'
Height: 34'	Crawlspace

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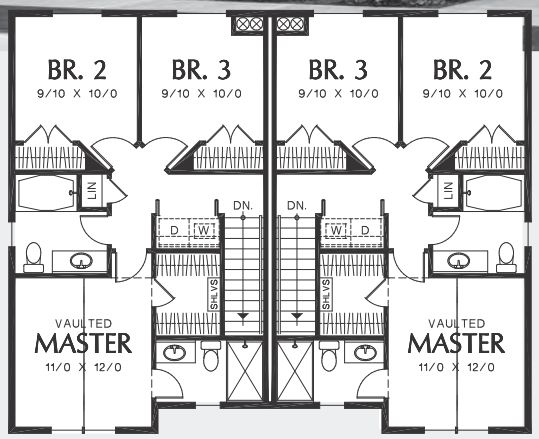
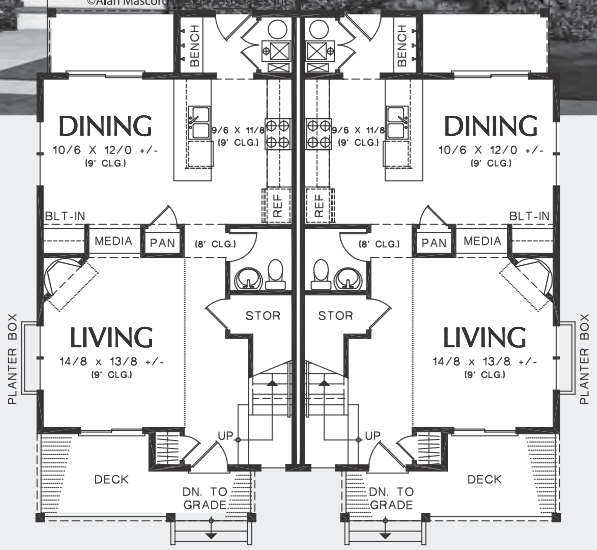
(ANN10-00002 ZDC10-00002)
Exhibit VI.263

Price Category C

Plan 4027C
Chelsea

Lots





◀ 21' ▶ ◀ 21' ▶

◀ 42' ▶

Upper Floor	661 Sq. Ft.
Main Floor	695 Sq. Ft.
Total Area (each unit)	1356 Sq. Ft.
Width: 42'	Depth: 41'
Height: 26'	Crawlspace

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49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.264

Triplex, example

Lots 34-39, 43-48.

Lots 34-39, 43-48.

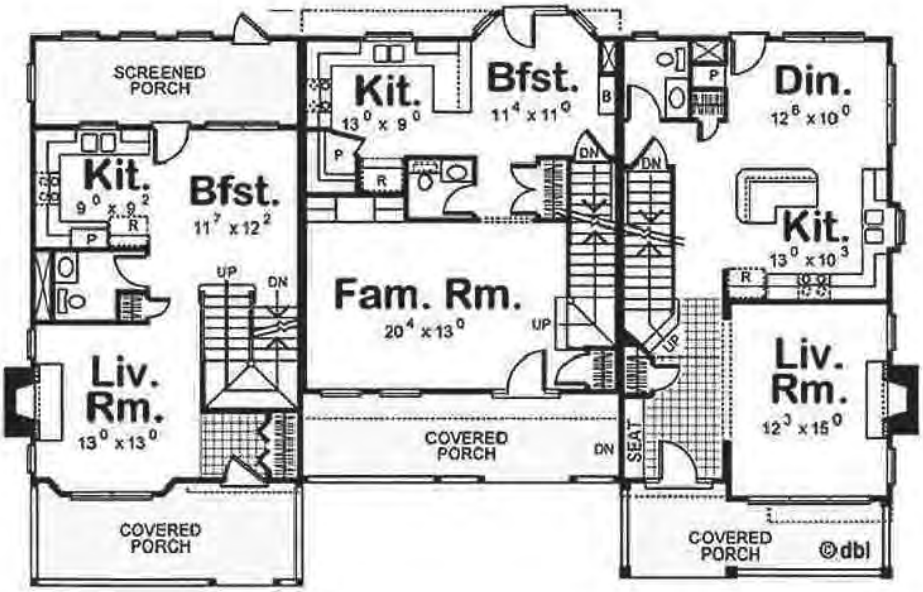
Design 031M-0029
www.thehouseplanshop.com

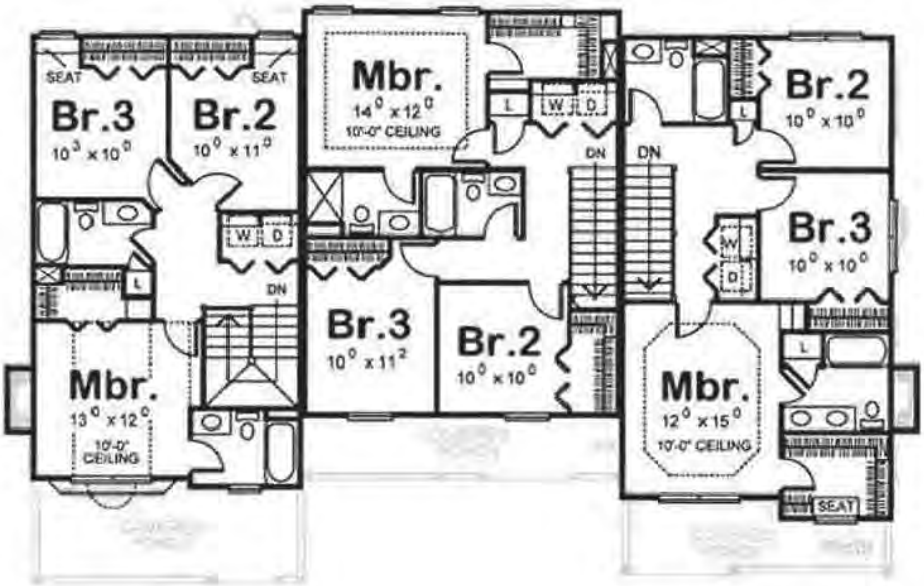
Unit A: 1st Floor – 607 sf, 2nd Floor – 693 sf, Total – 1300 sf, 3 bedrooms, 2 ½ baths

Unit B: 1st Floor – 716 sf, 2nd Floor – 747 sf, Total – 1463 sf, 3 bedrooms, 2 ½ baths

Unit C: 1st Floor – 743 sf, 2nd Floor – 755 sf, Total – 1508 sf, 3 bedrooms, 2 ½ baths

4261 sf total; width: 67'; depth: 48'





49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.266

RECEIVED

MAR - 7 2013

CHARBONNEAU ENGINEERING LLC

MEMORANDUM

Date: February 27, 2013

To: Jim Boeder
2022 SW 45th Street
Corvallis OR 97333

From: Frank Charbonneau, PE, PTOE

Subject: **SW 49th Street Annexation Development** FL1316
Response to TPR Requirements
Corvallis

We have reviewed the City's comments dated 2/22/13 issued by Ted Reese in Public Works & Engineering regarding the traffic impact analysis for the 49th Street Annexation Development.

The City stated that the TIA did not address the current TPR and needs to document how the requirements are met. In a recent follow-up telephone discussion with Mr. Reese he indicated that section 9 of the TPR must be addressed.

In order to respond it is suggested that you reply directly to the City regarding the TPR Section 9 criteria. Since this section also references Section 1 we are addressing this area.

The Plan and Land Use Regulation Amendments in 660-012-0060 (1) describe in paragraphs a-c when a plan or land use significantly affects a transportation facility.

(a) Change the functional classification of an existing or planned transportation facility.
Response: The proposed development did not warrant or propose a change in the standards of the functional classification system. Appropriate mitigation of the impacted transportation facility (failing intersection of SW 53rd Street at Highway 20) was identified in order to meet acceptable performance standards. No change in the functional classification is warranted or proposed.

(b) Change the standards implementing a functional classification system.
Response: The proposed development did not warrant or propose a change in the functional classification of the existing transportation system. Appropriate mitigation of the impacted transportation facility (failing intersection of SW 53rd Street at Highway 20) was identified in order to meet acceptable performance standards. No change in the standards was proposed.

(c) Result in any of the effects listed in paragraphs (A) through (C) based on projected conditions.

- (A) Types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility.

Response: The TIA analyzed future traffic projections through year 2030 that included background traffic and site generated traffic. The proposed type and level of travel and access are consistent with the functional classification of the existing and planned transportation facility.

- (B) Degrade the performance of an existing or planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.267

Response: Appropriate mitigation of the impacted transportation facility (failing intersection of SW 53rd Street at Highway 20) was identified in the TIA in order to meet acceptable performance standards. Therefore, the required performance standards will be met.

- (C) Degrade the performance of an existing or planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.

Response: Appropriate mitigation of the impacted transportation facility (failing intersection of SW 53rd Street at Highway 20) was identified in the TIA in order to meet acceptable performance standards. Therefore, the existing and planned transportation facilities will not be degraded beyond the standards.

This completes our response to the Section 1 TPR supporting that with the proposed mitigation identified in the TIA there will not be a significant impact to the transportation facility in conjunction with the 49th Street Annexation development.

If you should have any questions, please contact Frank Charbonneau, PE, PTOE at 503.293.1118 or email Frank@CharbonneauEngineer.com.

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.268

RECEIVED

MAR 11 2013

March 11, 2013

Brian Latta
Associate Planner
City of Corvallis
Corvallis, OR 97333

Mr. Latta,

Below is our response to your request to clarify the 49th Street Annexation site's relationship to Oregon's amended Transportation Planning Rule (TPR). I trust the explanation will suffice. Please let me know if you require further documentation.

Introduction:

"DLCD and ODOT recognized that the TPR and OHP were having unintended consequences on planning and development objectives and took this opportunity to better balance transportation mobility with other important goals. The agencies worked together through a coordinated process to make revisions to the TPR and OHP consistent with the recommendations of the Joint Subcommittee and the requirements of SB 795."[1]

"Amendments to the TPR to streamline the regulatory process include a new section (9) that will allow local governments to rezone land without analyzing traffic if the rezoning is consistent with the comprehensive plan map designation and the transportation system plan"[2]

Oregon Administrative Rule 660-012-0060 (adopted December 8, 2011 by Oregon Land Conservation and Development Commission (LCDC); effective January 1, 2012):

Plan and Land Use Regulation Amendments
(1) If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule.

Section (9), Rezoning Consistent with Comprehensive Plan Map :

If a proposed rezoning is consistent with the existing comprehensive plan map designation, and consistent with the acknowledged transportation system plan, then it can be approved without considering the effect on the transportation system.

(9) Notwithstanding section (1) of this rule, a local government may find that an amendment to a zoning map does not significantly affect an existing or planned transportation facility if all of the following requirements are met.

(a) The proposed zoning is consistent with the existing comprehensive plan map designation and the amendment does not change the comprehensive plan map;

[1] "Report to the Oregon Legislative Assembly from the Oregon Land Conservation and Development Commission, Transportation Planning Rule Amendments as Required by Senate Bill 795 (2011), February 1, 2012, 2. www.oregon.gov/LCD/Rulemaking_TPR_2011.shtml
[2] Ibid, 1.

(b) The local government has an acknowledged TSP and the proposed zoning is consistent with the TSP; and

(c) The area subject to the zoning map amendment was not exempted from this rule at the time of an urban growth boundary amendment as permitted in OAR 660-024-0020(1)(d), or the area was exempted from this rule but the local government has a subsequently acknowledged TSP amendment that accounted for urbanization of the area[3].

Applicants' response:

The Corvallis Transportation System Plan (TSP) was approved and adopted by the Corvallis City Council on August 5, 1996 and incorporated into the Corvallis Comprehensive Plan by Ord. 96-26 on August 15, 1996. The Comprehensive Plan zoning for all of the 49th Street Annexation tax lots was designated Low Density Residential (LDR) in both 1978 (adopted 1980) and 1998.

The Corvallis Comprehensive Plan, including the TSP, was subsequently acknowledged on June 6, 2000 by the Oregon LCDC. The Comprehensive Plan zoning designation for the site was LDR at the time of review and adoption of the TSP.

Regards,

Jim Boeder
Manager, Representative
49th St. Annexation Partners
2022 SW 45th St.
Corvallis, OR 97333

[3] Oregon Administrative Rule 660-012-0060 (9)

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MAR 15 2013
Comm. Development
(Planning Division)

CHARBONNEAU ENGINEERING LLC

MEMORANDUM

Date: March 14, 2013

To: Jim Boeder
2022 SW 45th Street
Corvallis OR 97333

From: Frank Charbonneau, PE, PTOE

Subject: **SW 49th Street Annexation Development** FL1320
TPR Response - Update

The Traffic Impact Analysis (TIA) for the 49th Street Annexation was prepared in response to the Transportation Planning Rule (TPR) in effect at the time, which required traffic analysis and a mitigation plan for impacts to State facilities for a zone change; hence, the TIA addressed projected impacts to, and proposed mitigation for, the State facilities at Hwy 20/34 & 53rd Street. The more recent amended TPR requires neither traffic analysis nor mitigation considerations for State facilities, if the rezoning is consistent with the comprehensive plan map designation and the transportation system plan (OAR 660-012-0060 (9)). Also, the trip volume at this intersection would not reach the >30 trip City of Corvallis threshold that would trigger intersection analysis.

Therefore, assuming the 49th Street Annexation site meets the requirements of the new TPR—specifically OAR 660-012-0060 (9)—it is my opinion that the applicants are no longer required to either address or mitigate for traffic impacts at the Hwy 20/34 & 53rd St. intersection."

If you should have any questions, please contact Frank Charbonneau, PE, PTOE at 503.293.1118 or email Frank@CharbonneauEngineer.com.

10211 SW Barbur Blvd, Suite 210A, Portland, OR 97219 Phone: (503) 293-1118

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VI.271

March 27, 2013

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MAR 29 2013

Community Development
Planning Division

Brian Latta
Associate Planner, City of Corvallis, Planning Division
PO Box 1083
Corvallis, OR 97339

Rel Case: 49th St Annexation ANN10-00002; ZDC10-00002; PD(RS-6)

Review of an Annexation application and appeal of the Planning Commission's decision to deny a Zone Change and Conceptual and Detailed Development Plan

Dear Associate Planner Latta:

Tl.is appeal is so frustrating.

I would like to say that I am opposed to this annexation at this time. It is not needed right now. Our economy is down. There are hundreds of homes for sale and rent all over Corvallis. Why do we need another housing development outside the city limits? There is a housing development area on County Club Drive near Starker Park and Dunawi Creek that are not being built at this time. On the corner of 53rd St and Highway 34 across from Bi-Mart is another area that is on hold for apartments. CORVALLIS DOES NOT NEED THIS ANNEXATION AT THIS TIME.

Before deciding on this annexation please come out in the area to see what it really is. If it is annexed the rest of 49th will need to be widened. Nash Street will need to be widened. Some kind of traffic change will need to be done where the Suburban Christian Church is on the corner of 53rd and S.W. Plymouth. Even today with no new annexation it is a driving nightmare at this corner. As I am sure you know the Church is expanding. When Church is in session it is even worse. The Church has gotten to the point where they have people out on the streets directing traffic. An evening event is an adventure unto itself. Eventually, there will need to be some sort of traffic control system. What with all of the housing development up by the Country Club many people try to bypass some of the congestion by coming around and going up Nash Street. When two SUVs try to pass each other on Nash it is quite a feat—almost like a dance to get by each other. Is this annexation taking that into consideration and will pay for widening Nash?

This annexation will destroy what is left of the rural or country feel of this area. And this is what I don't understand about people. They want to move to the rural areas or "the country" then they want to turn where they move to into another California Housing Development. **This annexation will drive even deeper the loss of what makes Corvallis the livable place it is now.**

Where will the wild animals go? They cannot pack up and move. The wild animals have so little space now that they are forced to try to get across the area to another fragmented place to live and are killed every week on 53rd St. I don't see any mention of any kind of park or wild space in this annexation so will there be any place in this annexation for the wild animals that are left?

49th Street Annexation
(ANN10-00002 ZDC10-00002)
Exhibit VII.1

The most crushing blow of all is that the owners of the space to be annexed are not even Corvallis residents. They will probably be making lots of money from this annexation and none of it will stay in Corvallis or benefit Corvallis. Who or what entity pays for all the necessary infrastructure, such as fire protection, sewers, etc? Will it. be the owners of this proposed annexation or will it be the Corvallis taxpayers.

I oppose, oppose, and oppose this annexation. Corvallis does not need this annexation at this time. We need to learn to live simply so that others may simply live..

Violet Campbell

Violet Campbell
4665 S.W. 53rd St.
Corvallis, OR 97333

Gazette Times 3/26/2013

LETTERS TO THE EDITOR

Some day, cars might play 'chicken' at roundabout

Re: "U.S. lags behind the British in its adoption of roundabouts," Letters, March 18: Just when we thought that "stop signs and traffic lights" served the general safety and health of everyone encountering those installations, John Rawlinson is setting us straight with his little-known facts.

He points out that infantile ("candy from a baby") American motorists "love" stopping at traffic lights because they can then satisfy their prodigious appetites for engaging in ingestion, texting, cosmetology, oral health and domestic violence. He gets to "slap" his kid in his back seat!

And his Brit friend offered the amazing insight that freeways in the U.S. are actually "roundabouts that have been straightened out." E.g., imagine the future done-deal roundabout on Southwest West Hills Road. If the Brit straightened it out, he would have a one-lane, one-way freeway! Lots of those in the U.S.A.!

Like most roundabout enthusiasts, Mr. Rawlinson is silent about safety at West Hills Road and 53rd Street. I hope that someday he and his Brit friend drive on West Hills Road to the roundabout. There they can attempt to merge with two bunches (or columns) of tailgating vehicles moving north and south on 53rd at 25 to 30 mph in the roundabout.

Is playing "chicken" with cars popular in England? I hope it is, because experience with vehicular "chicken" will be invaluable in the roundabout! If they drive on 53rd and try a left turn in the roundabout, they will get to play "chicken" then, too.

Leo Quirk
Corvallis

The 'E' section is light on news of local arts scene

I've sadly and mostly silently watched your arts+entertainment section slide into irrelevancy in recent years, but after this week's "E" (March 21) I can no longer hold my nose or bite my tongue.

Where's the local news? Of the 10 actual stories, seven are about out-of-town subjects, two are syndicated movie reviews, and one is a half-page interview with a visiting Portland hip-hopper.

In the meantime, all the local A&E news from your entire two-county circulation area is crammed into a list of 8- or 9-point type less than a page long.

The staff's disinterest in local arts news is further demonstrated by the insertion — in the tiny type of the "Hot Picks" list — of the names of five local arts supporters honored recently for their contributions to local culture. Also listed there are four local students who won national art and writing awards. But nothing more, nothing but the names, incomprehensibly shoehorned into a weekend events list with Decibel and Crimson Guardian.

This kind of editorial decision-making tells me that the "E" is written more to satisfy those writing it rather than those reading it. Do you really think the few readers you haven't already turned off are more interested in out-of-town club musicians than local artists, performers and our own students who've just been nationally recognized?

Please, consider what the people who actually read your paper would be interested in. They, and the local arts community, deserve better local coverage than we're getting.

Rich Bergeman
Corvallis

U.S. must offer publicly funded, privately delivered health care

I appreciated Dr. Mike Huntington's letter showing how the recent cuts in programs at Linn-Benton Community College would not be necessary if our Legislature would enact the proposed Health Care For All bill.

As an LBCC employee, I have been very concerned, not just for the financial health of our institution, but how the cost of health care is hurting all employers across the state and, therefore, employment opportunities of all Oregonians.

Ours may be the only country on Earth that ties health and employment, bringing great financial strain on businesses and public institutions, alike. Most large employers, public and private, have been regularly reducing positions of full-time employment in order to avoid paying for health insurance, the rates for which take sharp rises every year.

But without full employment, many lose their health, their homes, and, sadly, some lose their lives while insurance executives and drug companies make millions of dollars. Indeed, the highest-paid professionals in health care provide no health care and work for no health care organization. They are CEOs of drug and insurance companies, sucking millions of dollars away from health care for our citizens

What's needed is a publicly funded, privately delivered system of health care. Over 20 countries now use this kind of system and their health care costs average about half of those in the United States, and all of their health outcomes are stronger than ours.

Let's tell our Legislature and governor that it's time for this kind of change.

Mark J. Weiss
Corvallis

City should just abandon its tiny, troublesome traffic circle

I am dismayed by the city's persistence in viewing tiny traffic circles as a way to provide safe, efficient traffic flow.

I live close to the 10th Street and Grant Avenue circle. Like other letter writers, I have had a number of near misses. Regardless of the reasons — a different definition of "yield," impatience, or an inclination to play chicken — our munchkin circle seems to require something that some drivers lack.

The city apparently has its own doubts. There are 16 traffic signs that explain how to travel through.

When I'm walking, I avoid the intersection altogether, having closely escaped being side-swiped. If I need to cross 10th, I jaywalk a half block away.

In contrast, the four-way stops to the north and south are safe and effective.

I grew up and learned to drive within a mile of two large traffic circles in Philadelphia.

Traffic safely goes around these circles, and right-of-way is obvious. Both have pedestrian/bicycle overpasses. That's in contrast to our pseudo circle, where cars slalom through, and pedestrians and bicycles proceed at their own risk.

In these financially challenging times, it seems foolish to spend more money for a traffic device that is of questionable benefit and is considered treacherous by so many.

Anna Ellendman
Corvallis

LETTERS

LETTERS should be limited to 400 words or less. Letters must include the author's name, address and daytime contact number. Writers are limited to two published letters a month.

Gazette Times
3/28/2013

LETTERS TO THE EDITOR

ticle about band director's ndiscretions' was unnecessary

It must have been a slow news day for e Gazette-Times on Saturday, March .

The prominent feature article about arshall Price's indiscretions was unecessary, and the color picture was uch larger than the ones usually posted for accused murderers and thieves.

Angela Carlson
Corvallis

/hy stop at just making it a crime o smoke in a car with minors?

I was just reading an article today bout a study done in Europe that conluded that 14 percent of childhood sthma cases were caused by near road ir pollution (European Respiratory ournal, 22 March).

The World Health Organization estinates the asthma rate for children living n smoking households to be between 4 ercent and 18 percent. I was just hopng our state legislators have time to uplate their new bill (making it a crime to moke in a car with minors) in order to nake it illegal to use a stroller on a sidewalk that's next to traffic.

Come to think of it, perhaps we should ticket anyone with a minor in the car.

Alicia Allen
Corvallis

Don't give up on roundabouts because of the traffic circle

After doing a half-hour informal survey of the roundabout at 10th Street and Grant Avenue, I found roughly equal cars from Grant (52.5 percent) and 10th (47.5 percent), more than 200 cars, nine cyclists and one pedestrian.

There was a wide variety of reactions and approaches to this circular intersection. Most people slowed down significantly and went through smoothly and properly. Two did not.

One driver nearly hit a cyclist who was halfway through the roundabout, a near miss. The cyclist, coming from Grant on the left, clearly had the right of way. The driver in a black pickup came roaring from out of sight and nearly clipped the cyclist, who braked quickly, rode up on his handlebars and came off his bicycle seat onto the top tube.

The issue now is not this roundabout think a 3- to 10- year learning period with extra signs would be prudent, until people can properly negotiate these intersections safely and effectively.

People in Bend apparently have little problem with their well-designed rounds, driving regularly and safely through them. It's quite possible. Let's not give up because of bad experiences based on one admittedly poorly designed roundabout.

Chris C. Foulke
Corvallis

Renting jail beds might indeed be cheaper than building a new jail

It's sobering, if not downright depressing, to consider how much of our public-sector treasure is spent on interest. We pay interest on bonds issued by city, county, state and federal agencies. It adds up to a big pile of money, no matter who you are and virtually all of those expenses are tax-exempt to the rich people who own the bonds.

So I would judge the March 26 editorial, "A new jail is essential for Benton County" to be irresponsible.

Yes, it's painful to spend a million dollars a year to send inmates to other facilities. But has anyone bothered to figure the cost, in tax-exempt interest, of building a new jail with borrowed money? I think not. My guess is that the interest would far exceed the current costs associated with a full jail.

I could present a fairly long list of essential government services we lack. How about building a decent home for our homeless population, most of whom have issues (mental or drugs) that need immediate attention? What about feeding all the at-risk kids in our community who regularly go without three healthy meals a day? The list could be very long indeed.

The solution, I believe, is to end the tax-exempt status of certain local enterprises that, despite their exemptions, use city, county and state services. But that change will take political will which is in short supply today. Until the exemptions are ended, we'll go without essential services.

Kirk Nevin
Corvallis

Delaying decision on wastewater discharge is costing us money

As many readers of these letters are

municipal bonds started going up last December. (You can find graphs of interest rates trends on the Internet.) If we continue to dawdle, the ratepayers will end up paying more to complete this project than necessary.

In my opinion the city should go with the "east" alternative and go with it now to get the lowest interest rate from lenders that we can get in the not-to-distant future. At any reasonable interest rate the east alternative is the best choice. In January I did a sensitivity analysis of alternative versus interest rate which can be found on my website: www.peak.org/~detweij.

As of March 25, I estimated that the cost of our dawdling — assuming we go with the east alternative — to be an effective increase of $12,500 (in upfront costs) per day due to the increasing municipal bond interest rates. The mechanics of this computation can also be found on my website.

John H. Detweiler
Corvallis

Remember that humans passed along the words in the Bible

In a recent letter, Roger Paul says that "Ancient writings are nothing more than people in those times trying to explain their world with the tools and knowledge that they had at the time."

In a subsequent letter, David R. Prichard says that Mr. Paul's statement belittles the Bible.

Says Prichard, "The biblical writers all recognize and emphasize that the one God who created and sustains them is a God who speaks, and God has spoken through divine revelation in their writings."

Mr. Paul makes a good point (though the rest of his letter pushed it too far).

No doubt many of the writers involved in producing the Bible as it exists today were divinely inspired, but they were human beings and, therefore, fallible.

If God spoke to them, they might not have always heard correctly, or they might have misunderstood the message.

Today's Bible is a very special book, but it comes down to us after various translations, which always involve (possibly erroneous) human judgments about how to say the same thing in a different language. Its earliest stories rest on history passed along — not always precisely — as oral tradition for many

Gazette Times
4/2/13

Don't like Walmart? State your objections with more specifics

My wife and I enjoyed going to Walmart's party last Saturday. We found the employees to be quite busy and enjoying what they were doing in this very big, busy store.

We tried to check out prices with other stores we shop at: Trader Joe's are higher; Safeway a bit higher, WinCo and Grocery Outlet lower and Market of Choice and Fred Meyer about the same.

So what's the beef?

The positive side is Walmart employed a lot of new people who might otherwise go jobless.

Fess up, liberal letter writers. Where did that $8,000 go that helped put on the Walmart bash?

Tell more on "terrible on labor" statement. Do they water-board or otherwise persecute their employees?

By "terrible on health care," do I assume they ignore employees illnesses or forbid them medical care? Be more specific!

For heaven's sake, what is wrong with an entrepreneur being successful in a flourishing business that employs thousands of people? Why shouldn't they make money — a lot of it? It seems only the government can make a lot of money and give it away, as long as it lasts.

Sorry; I'm a simple man, and don't understand the figures Greg Kise added to his letter. I need it explained to me.

The letter sounded to me like disseminations of organized labor.

Is this the problem: Walmart is an equal opportunity employer; a non-union shop?

Chuck Wenström
Corvallis

Supporters of traffic circle have yet to offer a truly simple fix

It continues to amaze me that when 10th Street and Grant Avenue traffic circle supporters do respond, they invariably start their letter with a "simple" fix and then launch into a detailed, complex and costly opinion.

Case in point: A recent letter starts out with "A few simple adjustments are in order" and then launches into a seven-point dissertation on how to "simplify" things:

- Replace the structure with a Frisbee
- New center stripes.
- Shave off intersection corners
- Paint pedestrian crosswalks. (That is not new.)
- Create a whole new circular street unrelated to 10th Street or Grant Avenue
- Turn on your turn signals. (We already do that.)
- We should use Lincoln's Gettysburg Address as our guide, since Grant Avenue is named after one of Lincoln's generals. (Really? Wouldn't "President" Grant carry more weight?)

Another writer took a half hour out of his schedule to actually view first-hand what is going on. He witnessed two close calls, but even then was supportive if the circle had bright fluorescent warning lights and eight to 10 years of public indoctrination.

I am at a total loss as to why this is still being discussed. Anything this controversial and confusing that can be fixed so easily is beyond my comprehension.

Please try to attend the next public meeting at 5 p.m. today, 500 S.W. Madison Ave. Your input is always valued.

Jerry Duerksen
Corvallis

Lots of people knew retired band director as a good guy

I was appalled by the giant splashy story about a well-loved band director in Corvallis. Yes, it must indeed have been a slow news day.

Let's *not* mention the fact that band and choir directors have more contact with students since they typically know each other over years rather than semesters.

Let's *not* mention the fact that arts programs in schools often keep kids in school who might otherwise drop out.

Let's *not* mention that it was, in part, this band teacher who supported and encouraged my son to pursue a DMA in music.

Let's *not* mention all the people who know him as a good guy and a good teacher.

Stephanie Mehlenbacher
Corvallis

Legalize drugs, and you won't need a new Benton County jail

No, Benton County does not need a new jail. Health care for all, better funding for the library and for schools, more food security, yes, but a new jail, no.

The majority of people incarcerated by Benton County are there for drug crimes, so the answer is to legalize drugs. Prohibition did not work for alcohol, and it does not work for drugs.

During Prohibition, crime surrounding alcohol sales was rampant as the price of alcohol rose, and only criminals would dare sell it.

The war on drugs has similarly created rampant crime by making the profit for drug sales so very great. Legalize drugs, and the incentive to crime drops dramatically.

The regulated sale of drugs in a legal, ordinary store at reasonable prices would take away the need for addicts to steal and burglarize to support their habit, and take away the incentive for disadvantaged young men to enter a life of crime via selling drugs.

The money saved by ending the war on drugs by cities, counties, states and the federal government would be great enough to provide drug treatment centers, education and disincentives and have plenty left over to fund the programs that really benefit society.

No, we don't need a new jail; we need to legalize drugs.

Molly Hannah
Corvallis

Who is paying op-ed writers is none of anybody's business

Ed Wasserman asks a good question: "Who pays the bills of 'unpaid' writers?" But he generalizes too much in discussing it.

For example he complains about how newspaper op-ed "articles written by outsiders for little or no pay offered policy perspectives under the guise of expert analysis, when they actually were sponsored by clients and paymasters who were rarely identified ..."

Some op-eds by "outsiders" (people not employed by the newspaper) are clearly ax-grinding for some interest group, but others are not.

I have written many op-eds which have appeared not only in Corvallis but in Portland, Detroit, and elsewhere. I do not write on behalf of any "paymaster." My articles try to help people understand issues and are based on my education and experience as a political scientist.

Wasserman also complains that "outside" writers "are being denied a fair wage for their work." And he asks, "who's paying their rent?"

Again, I can speak from personal experience. The Detroit Free Press used to pay $100 for every op-ed and the Oregonian paid me $85 for my first article used about 12 years ago.

The Free Press and the Oregonian then stopped paying. Nobody else has paid me a dime, which is understandable given the economic pressures now afflicting newspapers.

So how do I eat? I have income from other sources, including my pension and Social Security.

If people like me chose to use free time to write op-eds pro bono publico, it is none of Wasserman's business.

Paul deLespinasse
Corvallis

Gazette Times 4/3/2013

LETTERS TO THE EDITOR

A 4-way stop the better alternative to a traffic circle

I attended the city's recent Grant Avenue and 10th Street traffic circle meeting.

The circle was installed to calm (slow) traffic. The city has traffic data on this location both before and with the circle but no comparable data on what a four way stop sign would do to calm traffic.

A number of people spoke of many near misses at this intersection.

Attendees advised; yield to vehicles on the right, a four way yield must be treated as a four-way stop sign, yield to vehicles in the circle (DMV manual), yield to vehicles on the street to your left even though they are not yet in the circle (city staff), or just take turns and be courteous.

Letters to the editor also reflect much confusion as to right of way at this intersection.

City staff advise the exact same paving and curb rounding will be done at this intersection whether a traffic circle or stop signs are installed.

The traffic circle and related striping will be installed after all paving and curb work is finished.

People understand stop signs, and stopped traffic is as calm as you can get.

Before the city spends $8,600 to reinstall the circle, I suggest a four-way stop (also a traffic calming device) be installed for a year or two so data can be collected for this option.

The $8,600 expense may not be needed.

Michael Brantley
Corvallis

'Cool kids' on Corvallis council pushed through the bag ban

Do you remember back in school when the popular, cool group of kids ruled over every one?

What they thought was cool everyone else followed because, it had to be! You had to agree or you would be rejected — an outcast, labeled stupid or a nerd.

They would use these unspoken fears to get what they wanted.

supports the ban!

But remember when the old establishment refused to discuss new ideas, review evidence and explore new ways of thinking, like equal rights?

How we swore that would not happen to our generation. We felt that if an issue had merits, we'd keep an open mind, promote communication and discussion. So why is the City Council refusing to look at their misleading information, at evidence challenging majority support, and the major problems with the bag ban. What have the councilors become?

Milt Weaver
Corvallis

It's worth considering more effective alternatives to prison

Thank you for your excellent March 13 editorial "Reforms could lessen need for prisons."

As our state legislators grapple with the challenge of providing adequate services while cutting costs, they would do well to heed the recommendations of the state's Commission on Public Safety.

These reforms would reduce prison growth and reinvest the savings into other parts of the public safety system.

Too many people currently in our prisons are individuals who could be safely and more cost-effectively supervised in our communities.

For example, youth who are being tried as adults would be better served if judges were involved in determining their appropriate placement.

Another example of effective reform, highlighted in your editorial, is strengthening the re-entry services and programs for the 4,500 prisoners who are released annually and are trying to re-enter society. Such programs would decrease the chances of their return to prison.

With prison the most costly option in our state's correctional system, it makes good sense for us to focus on cost-cutting reforms that will also improve the system.

John Swanson
Corvallis

And the "E" lead feature on the young artists who make up the Temporary Artists Guild showed just how widespread and integral the visual arts are so many people's lives.

It's this kind of local coverage I was begging for in my previous letter to the editor. Keep up the good work "E."

Now, if you could only grow a couple more pages.

Rich Bergeman
Corvallis

Repeating false info doesn't validate global warming denial

Bill Brandt keeps repeating the same nonsense about climate change ("Evidence of global warming's ending 16 years ago is available", Letters, March 29).

This time, he cites his source as the Daily Mail, a British newspaper.

First, his claim is not true; see the UK Met Office's own site at metofficenews.wordpress.com/2012/10/14/. Global surface temperature indices show warming during that period: the original UK Met Office statement concerned "statistically significant" warming. There is a difference.

Second, it is well-known that El Nino and La Nina affect global surface temperature. El Nino years are warmer than average, and La Nina years are cooler. (See http://tinyurl.com/cw9qgcc.)

The 16 years leading up to 2012 started with one of the largest El Nino (warm) events on record; the last half of the record is dominated by La Nina (cool) events.

When scientists correct for these short-term effects, the apparent slowdown in surface warming goes away.

When we get the next El Nino, it's going to be hot. CO2 effects keep ticking along.

Third, most of the excess heat trapped by increasing greenhouse gases ("global warming") goes into the ocean, not the atmosphere. Scientists use thermometers on drifting floats to measure contin-

Gazette Times
4/8/2013

LETTERS TO THE EDITOR

Get with it, drivers; traffic circles aren't that confusing

Good grief! I think that many Corvallis drivers operate in a state of confusion. I've noted that "right turn on red after stop" confuses drivers, the blinking yellow left turn signal at Kings/Buchanan confuses drivers.

Yield signs invariably confuse drivers when several arrive at the same time. I suspect that some are confused by stop signs — intersection accidents do occur at four-way stops.

As Corvallis contemplates more signs and stops, some cities in Europe (e.g., Portishead, England; Drachen, Holland from "The City Fix," Oct. 18, 2010, and many others) have found that the removal of *all* signs and signals have drastically reduced intersection accidents and facilitate traffic flow because people pay increased attention to what's happening.

The DMV Handbook clearly states that traffic *entering* traffic circles yield to autos *in* the circle.

What could be simpler? Traffic circles are widely used in the rest of the world without confusion.

Get with it! Read your drivers handbook and perform — or surrender your keys.

Samuel H. Clarke
Corvallis

Public has a right to know about conduct of school employees

It appears that Michael Coolan (Letters, April 4, "Price article indicative of an overall decline in newspaper's quality"), wasn't impressed by the article printed by the Gazette-Times (March 23, "Retired band teacher loses license," page A3) concerning Corvallis High School former band director Marshall Price.

Mr. Coolan proceeded to bash the paper for its content, citing heavy reliance on national and world affairs via news services.

One could assume that he would prefer more local news but evidently if that news spotlights the bad behavior of a (former) local employee of the school district, he doesn't like that, either.

Sorry, but the police logs that he mentioned are there to alert the public to unlawful acts which might involve any one of us.

Local, area and state news is adequately covered in the G-T.

I vehemently disagree with writers who have had letters published praising Price.

I do not care whether people employed by our local schools are full-blown sexual predators, gropers or fanny patters; the people have every right to know about it.

Far too often, in the past, such people were not disciplined in any way but were simply allowed to relocate to a school elsewhere in the area or within the state to continue their offensive behavior.

Beverly Caron
Corvallis

Obesity is unhealthy — and a threat to national security

The recent article "County slips in health rankings" that ran on March 21, 2013, highlighted where counties ranked in comparison to their neighbors and the rest of the state in terms of health.

Amid all of the numbers, I was struck most by the high obesity rates.

As a retired general and member of "Mission: Readiness," I'm concerned about obesity for national security reasons. It's the leading medical disqualifier for military service, with 1 in 4 young Americans — almost 6 million 17- to 24-year-olds — too overweight to join the military.

Our nation's security relies on having military members who are fit to serve.

Fortunately, there is something we can do.

The U.S. Department of Agriculture is in the process of updating guidelines for what types of foods are sold in schools' vending machines and a la carte lines. Updated guidelines that reflect the latest nutrition science will ensure that children have access to healthier foods.

Unfortunately, previous efforts to update standards for healthier foods were compromised by food industry lobbyists. As a result, schools around the nation can now count the tomato sauce on a slice of pizza as a serving of vegetables.

Strong science-based guidelines would be a big step toward reducing the 400 billion calories that students consume in junk food every year in school. With 33 percent of U.S. children already at risk to become overweight or obese and 25 percent of children ages five to 10 already exhibiting early warning signs for heart disease, we need to keep these guidelines free of food industry interference.

If nothing else, the food and beverage industry needs to join parents and their children, schools and government in the war on obesity.

Our children deserve nothing less.

Norman R. Seip
Lt. Gen. (retired), U.S. Air Force
Alexandria, Va.

LETTERS TO THE EDITOR

Gazette Times 4/12/21

Adjustments needed to data for careful monitoring of climate

Bill Brandt takes climate scientist Laurence Padman to task for "adjusting" the data (Letters, April 9, "Adjustments to short-term data don't add up to global warming").

Suppose tomorrow morning you checked your thermometer and found that the temperature was rising. Would you conclude that the climate was warming? And if you checked again in the evening and the temperature was falling, would you decide that it was all a hoax?

Of course not.

We know about the daily cycle of warming and cooling, and the cycle of the seasons, and many other natural cycles, and we adjust for these before drawing any conclusions about long term trends. We would be poor scientists if we did not.

The "adjustments" that Dr. Padman describes and Mr. Brandt derides are exactly the right thing to do if one wants the most accurate possible assessment of long-term climate change.

Bill Smyth
Corvallis

Let's consider the weighty issue of airline costs, capacity

Let me weigh in on this issue of the airlines considering charging their customers by the pound.

The scales appear to have tipped in favor of this approach. After all, is not the carrying capacity of the plane referred to as a "payload"? And why should passengers be treated any different from the rest of the cargo?

No doubt there will be more than a few who will throw their weight around to make sure this idea will not get off the ground.

However, for those of us of average weight, it will equalize the field with those who carry excess "baggage."

On the other hand, cramming more seats in coach will not gain the airlines too many friends.

Leo deVogel
Corvallis

Stay with the traffic circle; people are used to it by now

Concerning the controversial mini-circle at 10th Street and Grant Avenue in Corvallis:

I did not like it when it was first installed, and tried to avoid it. But now I have gotten used to it and navigate it very cautiously.

I don't think the city should spend another large amount of money to remove it. Most people have learned to navigate through it. Just leave it as it is; perhaps trim some of the vegetation in the center to increase visibility. Don't spend any more money; you cannot improve that intersection.

Al Haunold
Corvallis

Checks shouldn't always exclude felons from gun ownership

It's common sense that the purchase — or transfer of ownership — of a firearm from one person to another should require a background check.

To me, it is also common sense that a felon convicted of a nonviolent crime — and who has done his time — should be able to own a firearm for legal hunting, after having completed an appropriate waiting period without another conviction. Such folks should also be allowed to vote.

Jepson Lonnquist
Corvallis

Article on license revocation of retired teacher was 'sensational'

As a subscriber to your newspaper, I am looking for material which is more relevant, less trivial and certainly less sensational than the article you shamefully published on a fine teacher who made many contributions in this community. You owe Mr. (Marshall) Price an apology and the rest of us something with a lot more class.

Marybetts Sinclair
Corvallis

LETTERS

LETTERS should be original and no longer than 250 words. Letters under include the author's complete street address and a daytime telephone number.

Most letters are published unless they are obscene, libelous, copied from Web sites or attacks other writers personally. All letters are subject to editing.

Writers are limited to two published letters a month.

AS I SEE IT columns must be no longer than 600 words. Local authors addressing local topics are preferred.

Publication is at the Gazette-Times's sole discretion.

Dear Councilor Sorte: 3/27/13

I have been monitoring the ongoing discussion about the traffic circle at the intersection of Grant
and 10th. Up till now I have successfully kept my opinions to myself. Alas no more.

I personally use the circle about 6 times a week, Grant being one of only 3 east-west arterial streets in northwest Corvallis - Harrison and Circle being the other two. My wife will not drive through it using adjacent streets instead. This, by the way, is a very common approach which explains why use of the intersection is down based on the Study by 25 to 30 per cent. I consider it to be, in its design, the most dangerous intersection in Corvallis. It is especially dangerous for pedestrians and cyclists as the Study also shows. One of the points that advocates seem to miss is that, while it is simple in concept, in fact very few drivers know what to do when they use it. Forget the yield to the right rule. On the ground the real method is to look all 4 ways as you approach, assess which drivers are most aggressive and/or confused and act accordingly. As often as not everybody will stop and then go one at a time - just like a 4 way stop.

Having said all this my biggest concern is that, if the we insist on spending on a reconstruction of the circle in the face of so much opposition, we are using up valuable voter good will at a time when we desperately need all the good will we can get.

As a Library Board member and Vice President of the Corvallis-Benton County Public Library Foundation I am very worried about the long term fiscal health of our excellent Library. I will soon be working to be sure that the 3 year Levy is renewed in for 2014. As you know, we will be cutting the Library budget for a 4th year in a row even with the passage of the Levy in 2011. Hours of service are, if memory serves, less than they were when I moved to Covallis 41 years ago!

I understand that the money that would be used for circle reconstruction is not available for Library use. My concern is a political one. The traffic circle is at best a weak and expensive solution to a simple problem. Others may disagree. Whatever the merits, however, the circle is strongly opposed by many. Many will believe, rightly or wrongly, if the circle is reinstalled it will be "just another example" of the Council "not listening to the people" and wasting money.

Pave it. Put up 4 stop signs. Save some money. Create some yes votes for other more vital community needs.

Thank you for your patience and concern.

Martin "Steve" Stephenson

)peak.org

MAYOR & COUNCIL EMAIL

Re: Traffic circle removal

- *To*: "Ward 6 Joel Hirsch" <ward6@xxxxxxxxxxxxxxxxxxxxxxxxxxx>
- *Subject*: Re: Traffic circle removal
- *From*: "Bibi Momsen" <be.momsen@xxxxxxxxx>
- *Date*: Tue, 2 Apr 2013 23:20:17 -0700

I understand that the Urban Services Committee for the city of Corvallis voted to recommend that the city council replace the traffic circle at 10th and Grant with a four way stop, the recommendation to be voted on at the next city council meeting on April 15. As I will be unable to attend the meeting, I want to write that I hope you will agreed that a 4-way stop is the best way to go!

Thanks!

:-)
Bibi Momsen

be.momsen@xxxxxxxxx

- Prev by Date:**Traffic circle at 10th and Grant**
- Next by Date:**all taxes should be put to a vote of the people**
- Previous by thread:**Traffic circle at 10th and Grant**
- Next by thread:**all taxes should be put to a vote of the people**
- Index(es):
  - **Date**
  - **Thread**

MAYOR & COUNCIL EMAIL

[Date Prev][Date Next][Thread Prev][Thread Next][Date Index][Thread Index]

Traffic circle at 10th and Grant

- *To*: "mayorandcitycouncil@xxxxxxxxxxxxxxxxxxx" <mayorandcitycouncil@xxxxxxxxxxxxxxxxxxx>
- *Subject*: Traffic circle at 10th and Grant
- *From*: Slong <oneofthechix@xxxxxxxxx>
- *Date*: Tue, 2 Apr 2013 20:07:47 -0700

Dear Mayor Manning and City Councilors:
This evening I attended the Urban Services Committee meeting and was glad to hear the Councilors on the committee vote unanimously to recommend putting a way stop instead of reinstalling the traffic circle to the entire council.

I strongly encourage all city Councilors to follow this recommendation and v to permanently remove the circle. It is evident from city staff's report on the circle that the circle should not be replaced due to higher accident rat vs a 4 way stop, cost, bicycle and pedestrian safety concerns, and flat or declining traffic volumes. Since corvallis has grown since 1996 , this indicates that traffic is bleeding onto residential streets as drivers avoid the circle. This is in direct violation of the City'sTransportation Plan wh states that collector streets such as Grant and Highland should have higher volumes to draw traffic away from residential streets. The circle is having the opposite effect on 11th street. If the city had counted cars on the wes side of 11th street on Grant, I believe data would show that cars are turnin north or south on 11 th to avoid the circle.

Regarding the cost of the project: the staff report states that the cost for replacing the traffic circle is $8400. However, when questioned, city staff admitted that since this is part of a larger project that has not been put o for bid, they don't really know the cost of the complete revamp of the intersection. I think this is a serious problem in these days of tight budg

Thank you for your service to the community.
Stephanie Mehlenbacher

MAYOR & COUNCIL EMAIL

[Date Prev][Date Next][Thread Prev][Thread Next][Date Index][Thread Index]

Grant St. traffic circle

- *To*: ward8@xxxxxxxxxxxxxxxxxxxxxxxxxxxx
- *Subject*: Grant St. traffic circle
- *From*: Ann Kimerling <ann.kimerling@xxxxxxxxx>
- *Date*: Wed, 3 Apr 2013 09:01:25 -0700
- *Cc*: "A. Jon Kimerling" <kimerlia@xxxxxxxxxxxxxxxxxxx>

Biff - I'd like to add my experience to the ongoing Corvallis traffic circle debate. Having a Sunriver house, Jon and I are experienced drivers of the large Sunriver and Bend, OR traffic circles. We visit family in Las Vegas several times a year and are competent users of those multi-lane traffic circles. However, the Grant Ave./10th St. (Highland) traffic circle is so small and the other drivers so unpredictable, that I mostly avoid using those streets around that intersection. When approaching that circle, I come to a full stop if there are any other drivers in sight. I only drive through slowly without stopping if there area is empty-- which was not the idea of the traffic-calming circle. I recommend that the City of Corvallis replace this intersection with a 4-way stop.

And, on the discussion of a traffic circle on 53rd St., please have the City measure the diameter of the Bend and Sunriver traffic circles. If the City wishes to install a circle of such size with bike lanes, I would support that. My guess is that the property owners of the 4 corners would be horrified at the loss of that much of their land. Even the Sunriver traffic circles confuse visitors who make illegal left turns, as noted each month in the Sunriver Scene newspaper.

Lastly, I'm pleased that we live in such a pleasant town that one of the ongoing public debates is over a traffic circle, not like Las Vegas where we spent winter of 2012 (crime, foreclosures, unemployment) or Los Osos, CA where we spent this winter ($$$$ installation of the city sewer system after a 45 year fight with the state goverment).

Thank you for your service to Ward 8,

Ann Kimerling

- Prev by Date:**Improve the Current State of Your Print Environment with Adobe LeanPrint**

Louie, Kathy

Subject: RE: FW: Traffic circle removal

From: joelhirsch
Sent: Wednesday, April 03, 2013 11:48 PM
To: Louie, Kathy
Subject: Fwd: FW: Traffic circle removal

Hi.
--
Sent from my Android phone with GMX Mail. Please excuse my brevity.

Laurie & Frank Chaplen wrote:
Joel
Hi, Both Frank and I would like you to vote for the removal of the traffic circle on 10th and Grant as we use this route daily. I can't tell you how many near misses I've had as a pedestrian, cyclist and driver going through the intersection. I see people daily just flying through the circle, turn the wrong way, failure to yield right away. We also think it is a better cost savings for the city in the long run esp. during these tight fiscal times. Neither of us can make it to the council meeting as one is out of town and I have child care and work commitments . Please don't hesitate to share with the rest of the council.
Best Regards
Laurie & Frank Chaplen

From: Stewart Wershow
Sent: Tuesday, April 02, 2013 10:07 PM
To: stewart01 wershow01
Subject: Traffic circle removal

Association members,
Today the Urban Services Com mittee for the city of Corvallis voted to recommend that the city council replace the traffic circle at 10th and Grant with a four way stop. The recommendation will be voted on at the next city council meeting. That meeting will be on April 15 at 6pm. The council meets at the downtown fire station. Any comments you have can be sent to your city councilor, Joel Hirsch. If you wish to address the council in person, you will have to do that at visitor's propositions. It starts at a little after 6pm.
Stewart Wershow
President
Garfield Park Neighborhood Association

MAYOR & COUNCIL EMAIL

[Date Prev][Date Next][Thread Prev][Thread Next][Date Index][Thread Index]

Roundabout

- *To*: "ward6@xxxxxxxxxxxxxxxxxxxxxxxxxxxx" <ward6@xxxxxxxxxxxxxxxxxxxxxxxxxxxx>
- *Subject*: Roundabout
- *From*: Gordon <gsteffensmeier@xxxxxxxxxxx>
- *Date*: Mon, 8 Apr 2013 14:36:37 -0700

Sent from my iPad. Please vote to retain the roundabout. I find it easy to
and not at all dangerous. I do not want to have to come to a complete stop
every time I go through that intersection. Thank you, Gordon Steffensmeier

- Prev by Date:**FW: Proposed Change to OSU Master Plan Adjustment**
- Next by Date:**Re: Pancake flipper**
- Previous by thread:**FW: Proposed Change to OSU Master Plan Adjustment**
- Next by thread:**Monthly CUSCA Board Meeting April 11, 2013 at the Korvis Building**
- Index(es):
  - **Date**
  - **Thread**

PUBLIC WORKS
Received
APR 09 2013

John C. Rawlinson

Corvallis, OR 97333
541-
gmail.com

Dear Sir(s),

I attended the 5 P. M. meeting on 4/2/13. There was no opportunity to discuss any comments and I'm sorry your decision had to be made so abruptly. I'm still hoping a thread is out there to grab onto.

What would happen if the emphasis could be shifted from a roundabout for cars shared by bicyclists to a roundabout for bicyclists shared by cars? I recall a person at the meeting mentioned Corvallis is well known as a bicycle friendly community and thought of how Portland, by its encouragement of bicycle use in the downtown area, has special lanes for them in the middle of some streets. I won't go into the specifics as you probably know about this already.

I'm not proposing their idea should be used, just that a whole new strategy with a different slant could be taken.

A carefully thought out step by step plan might work with the proper signage in place. I know a way you might get signs free of cost if that is a limiting factor. If you think there is a remote possibility, I'd be willing to help in any way I can.

Thank you.

John Rawlinson

Manley, Aaron

From: Steckel, Mary
Sent: Wednesday, April 10, 2013 8:14 AM
To: Manley, Aaron
Subject: FW: Traffic Circle

For the record.

From: Susan Wheeler McNutt
Sent: Wednesday, April 10, 2013 6:43 AM
To: Steckel, Mary
Cc: Stewart Wershow
Subject: Traffic Circle

For the record, I have lived on Highland Drive almost 35 years. My vote would be to remove the dangerous traffic circle on Highland and replace it with either stop signs or stop signs and a flashing light. People do NOT know how to yield right of way and flow smoothly through.
I nearly got hit by a driver in a pick up truck last night moving rapidly without stopping to look for anyone else who might be coming to the circle.
I was moving West to turn onto Highland, he was coming from the South traveling North on Highland and another car was approaching the circle from the West headed East. We all converged and since he was in a big red pick up - he bullied his way through leaving us to be careful not to be hit.

This behavior happens a lot and I try to avoid that intersection, but it is on my way home.
Thanks for listening,
Susan McNutt

Manley, Aaron

From: Steckel, Mary
Sent: Wednesday, April 10, 2013 8:15 AM
To: Manley, Aaron
Subject: FW: Traffic Circle

For the record.

From: McCaffery, Loretta
Sent: Wednesday, April 10, 2013 7:52 AM
To: Steckel, Mary
Cc: Stewart Wershow
Subject: Traffic Circle

When the original survey was done, and I said "No.", the person taking the survey did not include any of my comments in the survey . I remember thinking at the time, that is pretty one-sided. I still say "No traffic circle." I ,for one, as do others I know, would rather use another street to avoid the traffic circle even though I live just off Highland a few blocks away.
The intersection was wired with lights. The problem was two of them were red going one way and the two going the other way were yellow. The vehicles at the red light didn't know the other way was yellow. The solution at the time would have been to make all of the lights red or to have made them regular traffic lights.
Now, with the traffic circle there are still **many, many** 'near misses', most officially unreported. There are other problems as other people have mentioned – cars not paying attention to pedestrians, inability to see clearly, etc. Even a four-way stop would be a better solution for now. I suspect traffic will increase on Highland with all the newer shopping centers nearby....
Loretta McCaffery

Manley, Aaron

From: Steckel, Mary
Sent: Thursday, April 11, 2013 8:27 AM
To: Manley, Aaron
Subject: FW: Traffic Circle

For the record.

From: Steve Lindsey
Sent: Wednesday, April 10, 2013 5:05 PM
To: Steckel, Mary
Subject: Traffic Circle

I use this intersection daily and support the traffic circle, especially if the other option is a 4 way stop or signal.

I support this on principle but I recognize I am not aware of all the facts that may suggest there are problems with this particular instillation. (I have seen problems: 1) uneducated citizens have zoomed unsafely through this circle or they stop when there is no need. 2) Twice on dark, rainy nights I've had difficulties seeing pedestrians).

My thought would be to add more circles so people learn how to use them and to have better night lighting when these are used on busy streets. Also, I really value the green area instead of all hard surface. Therefore, I'd keep the tree (its great) and use just ground-cover plantings (typically 12" high or less) so visibility over the vegetation is good.

I've been in Europe and other US communities where circles work better than 4 way stops and signals. As you probably know, Springfield put a nice one in out by their new hospital.

MY OTHER MAJOR CONCERN: If we remove this one, I'd worry that the populous would generalize and conclude this approach is bad and we'd have difficulties establishing circles elsewhere. Also, since it could require more dedicated land to implement correctly, developers might resist this approach and use this case to influence future City Council's. What if the timing of removal (if needed) were concurrent with the correct establishment of a few others within the City and/or concurrent with regulations requiring new developments to provide them.

Sincerely,
Steve Lindsey,

Manley, Aaron

From: Steckel, Mary
Sent: Thursday, April 11, 2013 8:33 AM
To: Manley, Aaron
Subject: FW: Grant & 10th traffic circle

For the record.

From: Bibi Momsen
Sent: Wednesday, April 10, 2013 9:29 PM
To: Steckel, Mary
Subject: Grant & 10th traffic circle

Subject: Grant & 10th traffic circle

I live several blocks north of this circle, and try to avoid it at all times because it is unsafe. The Grant traffic barrels through regardless of where Highland/10th traffic may be in the circle. I do not feel that making that circle bigger or more attractive in any way will be of help. A 4-way stop sign would be much better; if not, then stop signs on Highland/10th, thereby allowing Grant traffic to flow through without stopping might be a second option. What is there now is by no means safe, and the only reason there are no accidents can be laid at the realization of drivers having to use that traffic circle that Highland/10th has to think in terms of never having the right of way. Please go back to two-way or four-way stop signs. Thank you.

Bibi Momsen

MAYOR & COUNCIL EMAIL

[Date Prev][Date Next][Thread Prev][Thread Next][Date Index][Thread Index]

Re: Traffic circle removal

- *To*: <ward6@xxxxxxxxxxxxxxxxxxxxxxxxxxxx>
- *Subject*: Re: Traffic circle removal
- *From*: "Bibi Momsen" <be.momsen@xxxxxxxxx>
- *Date*: Thu, 11 Apr 2013 12:23:36 -0700

I am glad most people want it out - except, perhaps, for those coming down Grant and not yielding!
Thanks for your help!

:-)
Bibi Momsen

----- Original Message ----- From: <ward6@xxxxxxxxxxxxxxxxxxxxxxxxxxxx>
To: "Bibi Momsen" <be.momsen@xxxxxxxxx>
Sent: Thursday, April 11, 2013 9:15 AM
Subject: Re: Traffic circle removal

> THANK YOU!
> Bibi,
> You are in the majority by a very large margin. It is quite remarkable to me how seriously so many citizens take the traffic circle. Although it is on the Ward 6/Ward 5 border it seems that we are getting input from everywhere - and almost everyone wants it out. I will forward your email to staff so it is part of the record for when we vote.
> Thanks for weighing in. Citizen participation is such a necessary, even vital component of the decision making process in our community.
> Sincerely,
> Joel

Manley, Aaron

From: Steckel, Mary
Sent: Friday, April 12, 2013 10:31 AM
To: Manley, Aaron
Subject: FW: Traffic circle

For the record.

From: ___
Sent: Friday, April 12, 2013 6:34 AM
To: Steckel, Mary
Subject: Traffic circle

To whom it may concern,

We would like to go on record as being against the 10th and Grant circle. I wish we had kept track of the near misses we have encountered at that crossing. I, personally, avoid it if at all possible. When I do go that way, I treat it as almost a 4 way stop. I've witnessed too many close calls. We request that you just save the ppl of Corvallis money and when removing the circle, put in four way stop signs.

Joe and Connie West

To: City Council

Copy: Julie Manning, Mayor
Jim Patterson, City Manager

From: Betty Griffiths Betty Griffiths

Re: Local Option Levy and Public Safety Tax

Date: April 15, 2013

I urge you to begin preparation now for the renewal of the current local option levy for parks and library services. This levy expires June 2014 and would best be placed on the November 2013 ballot so that the results can be included in the budget process and these services continued. The levy was highly successful with the electorate and should be renewed for five years for the existing amounts. There are a large and diverse group of residents prepared to work on a successful renewal of this levy

I believe that the public safety tax idea needs more investigation and information given to the people of Corvallis before it moves forward. In addition to more work on the idea, there needs to be positive indicators from the public that they would support this tax and at what amount. Therefore, I do not support linking the public safety tax to the local option levy renewal.

I have previously expressed my concerns about the actual increase in staffing proposed both by the Fire Department and the Police Department detailed again below:

- What is the demonstrated need for reopening Fire Station Five?
- When Fire Station Five was closed the full 9 FTE for staffing that station <u>were not eliminated.</u> Only three FTE were eliminated with the remaining 6 FTE simply moved o another station in another capacity. So now the proposal to reopen Fire Station Five means adding 9 FTE plus keeping the 6 FTE originally from Fire Station Five and transferred. So the net impact is an additional 15 staff; plus 2 additional FTE for a <u>total increase of 17 FTE over previous years</u>. This is a huge increase and is not sustainable.
- If police are to be added to alleviate the problems in the neighborhoods, they need to be specialized with targeted duties like our traffic control officers. Just adding officers without having a strategy in place to target the officers for the police to work the days and places that they are need does not help. They will just get absorbed in to the general police duties. They are needed Thursdays to Sundays for ten hours each day. With 2 per shift, plus 2-3 backup officers, this would require only 4-5 new officers.

<u>Please move forward now to recommend a renewal of the existing levy for parks and library services for a full five years and spend more time determining the services that are needed for the police and fire along with the dollar amount and the timing of a separate Public Safety Levy.</u>

Thank you for your service and consideration of my input on this issue.

4-15-2013

Most of the letters and opinions regarding the Grant Avenue traffic circle have been from vehicle drivers' perspectives. As a pedestrian who crosses through the circle almost daily, as do my children on their way to elementary school and back, I find the circle hazardous and would welcome a four way stop rather than simply moving the crosswalks farther away from the circle.

Currently, the crosswalks are too close to the line of traffic. As vehicles enter the circle, they often enter the parallel path of the crosswalk, and as a pedestrian, it's a scary notion when you can't see what is behind you. It wouldn't take much for a texting, cell phone-talking, or book-reading driver (Believe me, I've seen it.) to side-swipe a pedestrian or a child walking through with her bike. Pedestrians just waiting at the curb are out there--easily vulnerable to any quick moving, wayward vehicle.

Another hazard is the current corner curb placement, which creates a tight corner for particularly big vehicles to turn. One time, my daughter and I, while waiting to cross west on the north side of the circle, had to quickly jump out of the way when the rear dual tires of a large box truck hopped the curb as it turned right from Grant to Highland. It was very frightening as we were almost run over.

The city plans to address pedestrian safety by moving the crosswalks out, away from the circle. A four way stop, such as what is at Garfield and Highland would be a better choice. There, drivers are required to stop and look. Simply moving the crosswalks out from the circle would place the pedestrian in further jeopardy since the pedestrian would be less visible to a vehicle turning right.

Several years ago, during a community meeting held at the Osborn Aquatic Center, Mr. David Nelson addressed a request to move the crosswalks out from the circle. He noted he didn't think it was a good idea, since most pedestrian/vehicle collisions occur on right turns. Since cars will not have to halt unless for oncoming traffic to the left, I envision high rates of speed right-hand turns. And based on what I've seen in the past, it could be a texting, cell-phone talking, or even book-reading driver.

Please put safety first: remove the circle and install a four way stop.

Sincerely,

Maria D. Gutoski

Maria Gutoski

Corvallis, OR 97330

541-

MEMORANDUM

From: Brian Latta, Associate Planner

To: Mayor and City Council

Date: April 15, 2013

Re: Public Testimony for 49th Street Annexation

Attached to this memorandum are three pieces of public testimony for the 49th Street Annexation. The testimony was received after the staff report was completed, but prior to the public hearing.

Oregon
John A. Kitzhaber, M.D., Governor

Department of Transportation
Region 2 Planning
3700 SW Philomath Boulevard
Corvallis, OR 97333
541.757.4197

Submitted via email only

April 10, 2013

Brian Latta, Associate Planner
Corvallis Community Development
Corvallis City Hall
P.O. Box 1083
Corvallis, OR 97339 – 1083

ODOT File #4080

RE: Annexation and Rezone (revised application) for the 49th Street Annexation (ANN10-00002; ZDC10-00002).

Dear Mr. Latta:

Thank you for providing ODOT with notice regarding this proposed land-use actions and the revised application materials. We would like to make the following comments:

(1.) The current Transportation Planning Rule (TPR) requires consideration of development impacts on transportation facilities for this proposed annexation and rezoning action.

The Transportation Planning Rule (OAR 660-012-0060) was amended in January 2012. Section 9 reads as follows (*emphasis added*):

> **660-012-0060: Plan And Land-Use Regulation Amendments - Section (9):**
>
> **Notwithstanding section 1 of this rule, a local government may find that an amendment to a zoning map does not significantly affect an existing or planned transportation facilities *if all of the following requirements are met:***
>
> **(a) The proposed zoning is consistent with the existing comprehensive plan map designation and the amendment does not change the comprehensive plan map;**
>
> **(b) The local government has an acknowledged TSP *and the proposed zoning is consistent with the TSP*; and**
>
> **(c) The area subject to the zoning map amendment was not exempted from this rule at the time of an urban growth boundary amendment as permitted in OAR 660–024–0020 (1)(d) , or the area was exempted from this rule but the local government has a subsequently acknowledged TSP amendment that accounted for urbanization of the area.**

The application states that the "the subject property and the city of Corvallis meet all of the above requirements" and is therefore exempt from compliance with the TPR. ODOT is unable to concur with this conclusion because the application has not demonstrated that the proposed zoning is consistent with the acknowledged City of Corvallis TSP. At this time, the CAMPO Regional Transportation Plan has not been acknowledged, so the only TSP that can be relied upon is the City's 1997 TSP.

ODOT finds that there is no information in the application to demonstrate that the 1997 Corvallis TSP assumed the property would be zoned as the City's Comprehensive Plan now calls for it to be zoned. So how is the "proposed zoning consistent with the TSP" as required to Section 9 (b)? If this information can be provided, then the zoning application would be consistent with Section (9) of the TPR. Otherwise, the application must address 0060 Sections (1), (2) or (3) with regard to mitigation of the impacts on transportation facilities.

(2.) There are no "reasonably likely" or other planned highway improvements that will address the degraded Highway conditions on US 20/34.

ODOT has reviewed the current provisions of the TPR and concludes that there are no provisions which would exempt the proposed development from addressing mitigation of impacts.

OAR 660-012-0060 (4) establishes which facilities can be relied upon to determine whether a significant effect would result from a change in land use regulations. State transportation facilities, improvements or services funded for construction in the Statewide Transportation Improvement Program (STIP) can be relied upon in determining whether there is a significant effect, but there is no project in the current 2012-2015 STIP or in the draft 2015-2018 STIP that would add capacity needed to accommodate this proposed zoning change. Funding collected by a local government to improve the transportation system could be used to provide the needed capacity, but it has not been demonstrated to ODOT that funding collected by the City of Corvallis would be sufficient to build the needed improvements to the state highway system within the planning horizon. The Corvallis Area Metropolitan Planning Organization (CAMPO)'s financially constrained regional transportation plan also includes transportation facilities that can be considered as "planned" within the MPO, but there is no projects within the CAMPO Destination 2035 plan that that would address these impacts and have been determined to be "reasonably likely" within the 20 year planning horizon.

Therefore ODOT cannot conclude that the intersection improvements needed to accommodate the zoning changes are reasonably likely to be provided within the planning horizon. Given this circumstance, the City must determine whether the applicant is able to demonstrate how the impact to transportations facilities will be mitigated.

It should be noted that the Corvallis TSP was adopted 10 years before the completion of the CAMPO long-range plan in 2006. OAR 660-012-0015(3) requires local transportation plans to be consistent with regional transportation plans developed by an MPO, but Corvallis has not yet updated the 1996 City TSP as required.

(3.) Development Impacts and Traffic Conditions on Highway US 20/OR34

As noted above, there are no projects that can currently be relied upon to provide relief of worsening traffic conditions at the intersection of 53rd St. and Highway US 20/Oregon 34 within the foreseeable future. The Oregon Highway Plan provides mobility targets for each highway within the state system. The current volume to capacity ratio target for a freight route on a Statewide Highway within an MPO is 0.85. The Transportation Impact Analysis (TIA) which accompanies this application shows that the peak hour traffic conditions at this intersection reached a volume to capacity ratio of 0.94 at 2009. The TIA indicates that the volume to capacity ratio in 2030 would be 1.30 without this development and 1.33 if the site is developed:

	PM Peak Hour		
	LOS	Delay	V/C
*SW Philomath Boulevard & SW 53rd Street**			
Existing Conditions	E	57	0.94
2030 Background Conditions	F	167	1.30
2030 Background + Site Trips	F	175	1.33
2030 Background Conditions[1]	F	174	1.32
2030 Background + Site Trips[1]	F	183	1.35
2030 Background + Site Trips[2]	F	164	1.21
2030 Background + Site Trips[3]	D	43	0.85

This demonstrates that further degradation of the transportation facility will result from this development. Subsection (3)(a) of the TPR requires that if a facility is projected to fail to meet the performance standards at the planning horizon, and if there are no funded improvements that would fix this, then a proposed rezoning must avoid further degradation at the time of development.

A 2012 crash analysis of US 20/Oregon 34 provides additional information regarding current highway conditions. Recent crash trends in the US20/OR34 study corridor on Philomath Boulevard (from Newton Creek in Philomath to 35th Street in Corvallis) were analyzed using data for the years 2006 through 2010. Crash rates east of 53rd Street crash rates ranged from 1.48 to as high as 3.96, essentially matching the statewide average rate for two out of five years and significantly exceeding it in the most recent year of 2010 (see Table 6). The 53rd Street intersection had the highest crash rate of the intersections in this highway segment. The study indicates that the higher crash rate in the segment east of 53rd Street likely is related to the concentration of higher volume intersections where vehicle conflicts regularly occur.

Table 6: US20/OR34 Crash Rates between 53rd Street and 35th Street

Year	2006	2007	2008	2009	2010
Statewide Average Crash Rate (MVM)	2.39	2.49	2.37	2.36	2.49
US20/OR34 Crash Rate (MVM)	**2.40**	2.24	1.48	**2.37**	**3.96**

MVM = crash rate per million vehicle miles traveled
Bold text indicates crash rate is above the statewide average for similar facilities

The study concludes that crash trends from the last five years for the Philomath Boulevard corridor show that crashes are most prevalent between 53rd Street and 35th Street. It also found that 69% of the crashes in the entire corridor were rear-end type collisions and resulted in injuries. When this project was initially proposed, the City of Corvallis supported traffic mitigation in the form of a northbound right turn lane at 53rd Street. Provision of a right turn lane would not only aid in relieving future congestion but could significantly reduce rear end collisions at the intersection.

Please contact me if you have any questions about this letter. If the available funding for mitigation changes, please notify ODOT. We request that you enter this letter into the public hearing record for this land use action.

As a party to the proceedings, ODOT should receive notification of any changes in the public hearing schedule and be provided with a notice of the final land use decision. ODOT prefers such notices to be sent electronically to ODOTR2PLANMGR@ODOT.STATE.OR.US. If necessary to meet your notice requirements, a paper notice may be mailed to me at the address provided above. If questions arise regarding this matter, you may contact me at the phone number above or via my email address, Valerie.GriggDevis@odot.state.or.us.

Thank you for your consideration.

Valerie Grigg Devis
Senior Region Planner
Oregon Department of Transportation

Courtesy copies provided electronically to:

Jim Boeder, applicant
Ali Bonakdar, CAMPO
Duane James Liner, ODOT
Jeff McConnell, Corvallis Public Works
Ed Moore, DLCD
Roger Irvin, Benton County Public Works

Latta, Brian

From: GRIGG DEVIS Valerie [Valerie.GRIGGDEVIS@odot.state.or.us]
Sent: Friday, April 12, 2013 2:04 PM
To: Latta, Brian
Subject: RE: 49th Street Annexation Partners - Zoning Appeal & Final Annexation Action

Hello Brian -

It would not be correct to say that our "concerns have been addressed" with regard to this development. Our position remains that there IS a significant impact to the highway facility. Both the Traffic Impact Analysis and our letter substantiate this position. The TPR reads as follows:

".... A local government MAY find that an amendment to zoning map does not significantly affect an existing or planned transportation facility..."

So the TPR provides the City Council with the opportunity to consider the impact of this project on US 20 / OR 34 and they MAY determine that the project DOES in fact have a significant impact. Please be advised that public funding for highway improvements continues to decline every year. This was not the case the City's TSP was adopted in 1996. The Council can choose to consider the realities of our transportation system as it exists today. If the City Council is concerned about the future function of highway - including the conditions outlined in my letter - they have the opportunity to act accordingly and can determine that mitigation measures are appropriate. If so, the TIA identifies the construction of a north-bound right turn lane to relieve intersection congestion as an appropriate solution. We certainly hope this is something they are willing consider.

Please include both this email and ODOT's comment letter in the public record.

Thank you for your consideration.

Valerie Grigg Devis
Senior Region Planner
Oregon Department of Transportation
541-757-4197

-----Original Message-----
From: Latta, Brian [mailto:Brian.Latta@corvallisoregon.gov]
Sent: Thursday, April 11, 2013 3:32 PM
To: GRIGG DEVIS Valerie
Subject: RE: 49th Street Annexation Partners - Zoning Appeal & Final Annexation Action

Valerie,

Thanks again for speaking with me today about the 49th Street Annexation project and compliance with the TPR. In reading through your letter again, I noticed one thing for which I want to follow up with you. In the letter you state that the letter should be included in the public record for the hearing. Is that still the case, given now that your concerns have been addressed? Please let me know if you'd still like me to include your letter in the public record for the hearing. I don't need you to write a supplemental letter, but I would like you to give me something in writing, an e-mail is great. If you'd like me to still

include the original letter, then I would like a letter/e-mail that says the issues identified in the letter have been resolved.

Thanks,

Brian Latta
Associate Planner
City of Corvallis
541-766-6576

-----Original Message-----
From: GRIGG DEVIS Valerie [mailto:Valerie.GRIGGDEVIS@odot.state.or.us]
Sent: Wednesday, April 10, 2013 12:53 PM
To: Latta, Brian
Cc: 'Jim Boeder'; 'Ali Bonakdar'; LINER Duane J; Benton County--Roger Irvin; MOORE Ed W; McConnell, Jeff
Subject: 49th Street Annexation Partners - Zoning Appeal & Final Annexation Action

Hello Brian -

Here is our comment letter regarding the proposed rezoning and annexation. Thank you for your consideration.

With Best Regards,

Valerie Grigg Devis
Senior Region Planner
Oregon Department of Transportation
3700 SW Philomath Boulevard, Corvallis, OR 97333
Office: 541-757-4197 Fax: 541-757-4290

Valerie's Regular Office Hours:
Monday to Thursday: 7:30 a.m. to 5 p.m. & Friday: 7:30 a.m. to 11:30 a.m.

John W. Foster

Corvallis, OR, 97330

15 April, 2013

Testimony on the 49th St Annexation

The staff reports seems to suggest that you should make your decision without regard to some issues.

"Consequently, the lack of detail provided on the Co[n]ceptual and Detailed Development Plan, as cited by the Planning Commission, is no longer an issue."

"Because Annexation and Zone change applications cannot be conditioned, the typical mechanism for satisfying the need for traffic mitigation is not feasible."

These are, if fact, issues that you must consider. In determining whether an annexation should be put on the ballot, you need to consider everything. There are no limits on what you can consider. If the developer has given you too little information, or you cannot ensure that harmful effects will be mitigated, you should reject this annexation.

For example, this annexation is being sold to you on the basis of lower cost housing, with six houses per acre, a total of 61 houses. At one point (page 6) the developer argues that he is building duplexes and triplexes. You should remember that the minimum density for this zone is two houses per acre—the same as the old 3.5 zone. You may get only about 20 houses on good sized lots. You need only to look back as far as the treatment of the wetlands in the Sather annexation to see that what you think you are approving is not necessarily what you will get.[1]

Some of the need arguments of the developer seems to be very selective with his figures. He has a chart showing 222 vacant lots approved for low density development, which he believes is insufficient. Some of these lots were approved years ago because of a claimed pressing need for housing, but have not been developed. The developer also ignores property currently zoned for low density. For example, the city approved 221 lots on Witham Oaks, and

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[1] As everyone discovered several years ago after the city approved a zone change for 7th Street Station, the developer can jettison any development plan whenever he wants. Nevertheless, if a developer goes to the expense and effort of producing a detailed development plan he has made some sort of commitment to that plan. The general land use plan presented with this application represents almost no expense or effort and hence no commitment to anything.

discounting Witham Oaks assumes Council approval of a zone change application still under staff review.

He also brings up the well rehearsed arguments about how Corvallis has higher housing prices than Albany. Developers limit what they put on the market to make the greatest profit,so more lots won't solve this problem. The same argument was made for each of the vacant lots he cites in his table. The difference in price is due solely to Corvallis being a more attractive place to live than Albany. The way to remedy this difference is to make Corvallis a less attractive place to live, something many developers are working at.

This particular property also fails the Comprehensive Plan in being too far from a neighborhood center. The comprehensive plan makes half a mile the outer range from shopping with a quarter mile closer to the ideal. The developer finds the development is .68 miles away-- for him "close enough." Staff more realistically calculates the distance as .81 miles. Some lots, of course, would be even farther and much shopping in the neighborhood center would also be farther. If you think of this is terms of traffic speeds, 50 mph is the speed limit, 68 mph is close enough, and 81 isn't enough to do anything about it.

In a larger context, I question whether you should ever rezone or annex a tract as large as this as a single zone. The Comprehensive plan makes it very clear that the city's goal is to form comprehensive neighborhoods that include a variety of housing densities as well as commercial activity. Making a 10 acre block a single zone moves us away from our goal. Probably the best general rule to get to our goal would be the rezone or annex only with mixed use zoning or multiple zones for a property.

Louise Marquering

Corvallis OR 97330

April 15, 2013
To the Corvallis City Council

Re: 49th Street annexation

I am opposed to bringing this annexation to the voters at this time.

- **Reviewing the 2013 - 2014 Council Goal for housing**

"By the end of 2013, the Council will have access to comprehensive and objective information about the demands for housing in the Corvallis Urban Growth Boundary and the causes of the current housing mix. By the end of 2014, the Council will create policies, regulations, and strategies to help meet the housing needs of those who live here or wish to live here."

The current housing and buildable lands information is 15 years old. Until we have current information, it is difficult to evaluate new development proposals. Without a current Buildable Lands Inventory this becomes just a piecemeal annexation.

- **From the Land Development Code Table 2.6-1, Livability Indicators**

Adjacency to the city. "It is an advantage if more than 50% of the perimeter of an annexation site is enclosed within the city limits."

Less than 15% of this property is adjacent to the city. This property is adjacent to the city on only one narrow edge. Annexing this property would create a huge piece of county land surrounded on three sides by city. The county land would be a peninsula. At the same time it would create a finger of the city jutting into the county.

- **From the Comprehensive Plan:**

10.2.b Public utilities, facilities and services, plans and programs need to be developed for the maintenance and expansion of urban services in a logical and orderly manner.

This is not a logical and orderly manner in which to annex land to the city. It is referred to as leap-frogging. I repeat the statements I made in the previous paragraph about peninsulas of property.

- **Recommending this property for annexation would set a precedent.**

If you recommend this annexation proposal be brought to the voters, what happens when another property owner want to annex a piece of property that is only minimally contiguous to the city? Will you recommend that annexation be brought to the voters? How could you justify one and then start denying others?

Annexing peninsulas of property to the city is not a logical and orderly manner in which to extend city services. Recommending this annexation go forward could lead to creation of an island of city surrounded by county or an island of county surrounded by city.

Recommending this piece of property for annexation would set a bad precedent.

I ask that you deny the requested 49th Street Annexation.

49th Street Annexation

An Application for Annexation and Zone Change

Appeal of Planning Commission denial of Zone Change and recommendation against Annexation.

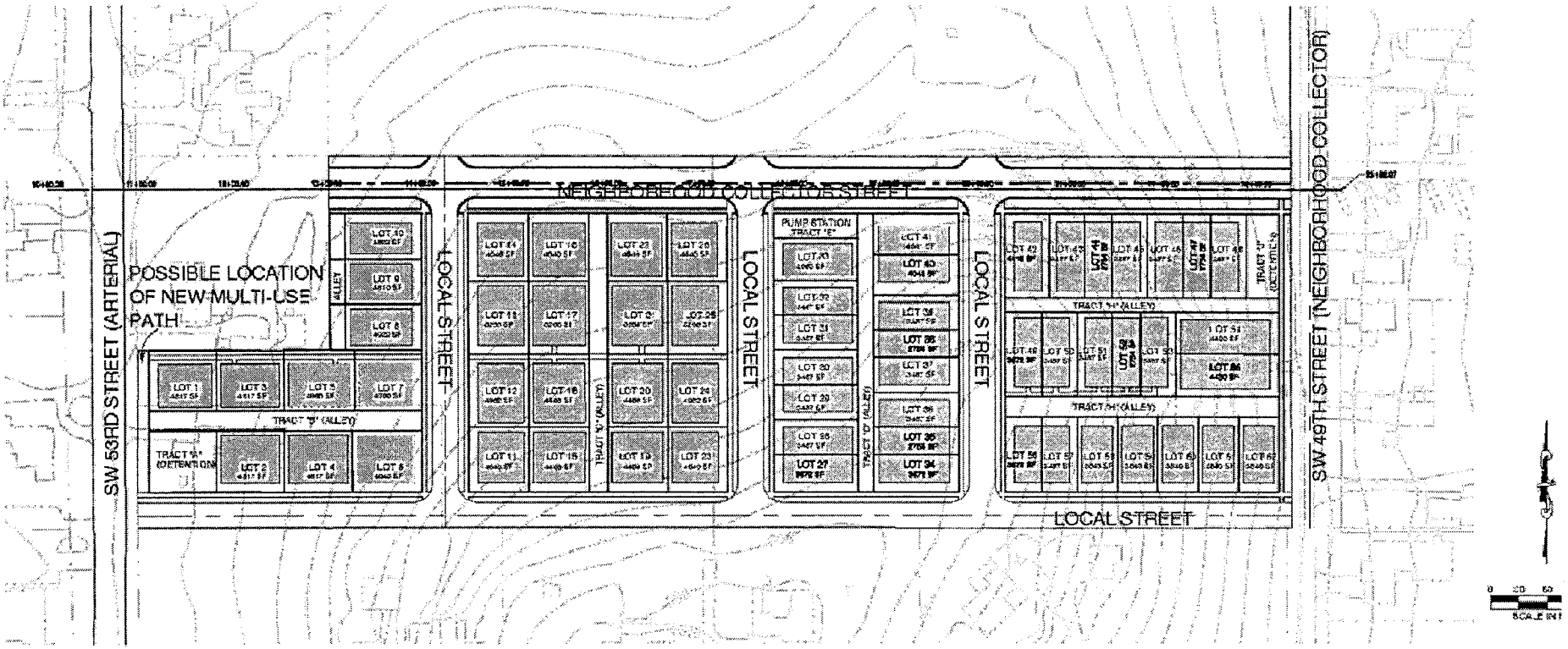
2650 SW 49th Street

Corvallis, Oregon

49th Street Annexation Site

City Recorder

General Land Use Plan



62 UNITS = 5.9 du/acre DENSITY
SINGLE FAMILY DETACHED = 33 (53.3%)
DUPLEX = 14 (22.5%)
TRIPLEX = 15 (24.2%)
2500-3500 SF LOT = 24 (38.7%)

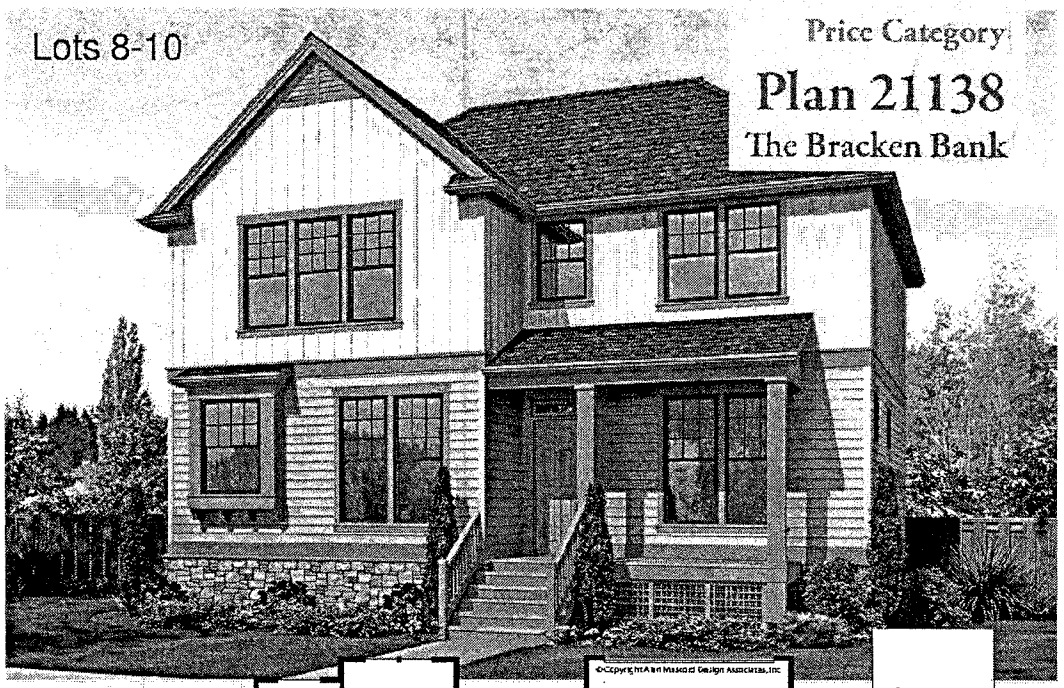
BUILDING ENVELOPES BASED ON SETBACKS;
ACTUAL BUILDING DIMENSIONS TO COMPLY WITH
LOT COVERAGE & GREEN AREA REQUIREMENTS

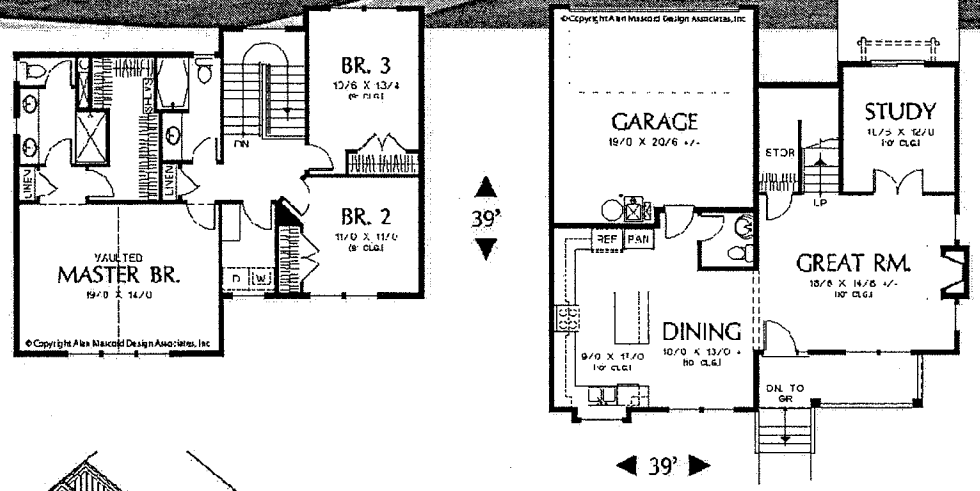
Lots 8-10

Price Category

Plan 21138

The Bracken Bank





Upper Floor	1017 Sq. Ft.
Main Floor	903 Sq. Ft.
Total Area	1920 Sq. Ft.
Width 39'	Depth 39'
Height: 30'-8"	Crawlspace

Alan Mascord Design Associates Inc.
1305 NW 18th Ave., Portland, OR 97209 · 503.225.9161 · Fax 503.225.0933
www.mascord.com

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State Transportation Planning Rule (TPR) (pre-2012) OAR 660-012-0060

- Amendments to land use regulations that would reduce the performance standards of an existing transportation facility below the minimum acceptable level identified in the transportation system plan (TSP) shall address that affect.

- Compliance shall be accomplished by amending the TSP to provide transportation facilities adequate to support the proposed land uses consistent with the requirements of this division.

- Local governments shall consider improvements to regional and local roads that are included as planned in a regional or local TSP where the affected local government(s) agree that the improvements are reasonably likely to be provided within the planning period.

Annexation => Zone Change from UR-5 to PD(RS-6)

Zone Change Increases Traffic + Intersection @ 53rd & Philomath Blvd. operates at less than an acceptable level of service = ⇨ ODOT requires mitigation of the impact on intersection with zone change per TPR

Annexation + Zone Change = ⇨ No "Condition of Approval" to require mitigation of intersection; ODOT not satisfied

Annexation + Zone Change with PD Overlay and CDDP

= Imposed Condition of Approval #2 Requiring Intersection Mitigation with Future Development Phase(s) + Developer financially secures and/or constructs Phase 1 improvements which fixes the CDDP and PD (Overlay) to the property = ⇨ **ODOT SATISFIED**

State TPR, post-2012

- In January, 2012, the TPR was amended to no longer require a local government to address impacts of development on a State transportation facility, as long as it meets all of the following requirements:

  (a) The proposed zoning is consistent with the existing comprehensive plan map designation and the amendment does not change the comprehensive plan map;

  (b) The local government has an acknowledged TSP and the proposed zoning is consistent with the TSP; and

  (c) The area subject to the zoning map amendment was not exempted from this rule at the time of an urban growth boundary amendment as permitted in OAR 660-024-0020(1)(d), or the area was exempted from this rule but the local government has a subsequently acknowledged TSP amendment that accounted for urbanization of the area.

Corvallis Transportation System Plan (TSP) and Comprehensive Plan acknowledged by State of Oregon

- The Corvallis Transportation System Plan (TSP) was approved and adopted by the Corvallis City Council on August 5, 1996 and incorporated into the Corvallis Comprehensive Plan by Ord. 96-26 on August 15, 1996. The Comprehensive Plan zoning for all of the 49th Street Annexation tax lots was designated Low Density Residential (LDR) in both 1978 (adopted 1980) and 1998.

- The Corvallis Comprehensive Plan, including the TSP, was subsequently acknowledged on June 6, 2000 by the Oregon Land Conservation and Development Commission (LCDC). The Comprehensive Plan zoning designation for the site was LDR at the time of review and adoption of the TSP.

- Therefore, the subject property and the City of Corvallis meet the requirements of the amended TPR.

Background

- June 2, 2010: Planning Commission hearing
  - Annexation
  - Zone Change
  - Planned Development: Conceptual/Detailed Development Plan (CDDP)
    - To satisfy ODOT/address TPR for 53rd & Highway 20/34 impacts
      - Mechanism for condition of approval that assured ODOT that TPR provisions would be addressed
      - CDDP: Public improvement that would satisfy ODOT = storm drain extension & new street approach @ $135K financial security to complete

Background

- June 2, 2010: Planning Commission results
  - Annexation
    - Recommended not placing on the ballot
      - Public need not sufficiently demonstrated
      - Not a strong case for additional land for development
      - Low market demand
  - Zone Change
    - Denied
      - Given the recommendation to deny the annexation
  - Planned Development: Conceptual/Detailed Development Plan
    - Denied
      - Does not meet the application requirements

Public Need

- Schools

  "The best way to address the [school] district's budget woes...means addressing Corvallis' housing issues. We do not have affordable housing for our young families"
  Erin Prince, PhD, Corvallis Schools Superintendent

  "We are working with city leaders on ways to address this [lack of affordable housing]. They know it would help our enrollment."
  Kevin Bogatin, Corvallis Schools Assistant Superintendent

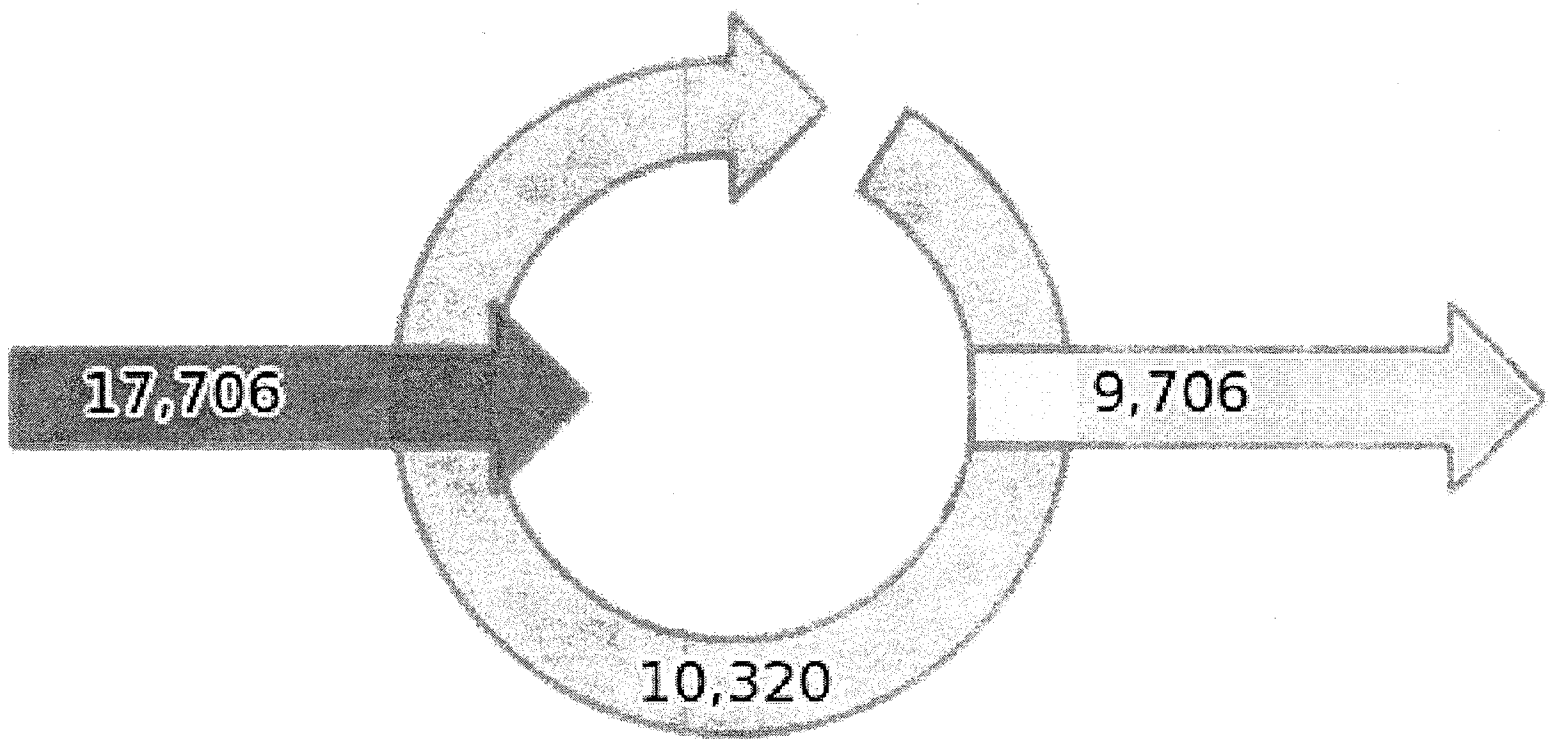
  "Enrollment numbers that came in under projections this school year alone will cost the district $2.1 million."
  GT Editorial

Public Need

- Corvallis homeowner vacancy rate: 1.6%*
  - National average, 2.1%
- Vacancy rate: 2.3%*
  - National average, 8.6%*
  - Renters competing for single family homes

*U.S. Census Bureau, second quarter, 2012
* Willamette Neighborhood Housing, 2012 Corvallis Area Rental Market Analysis. US Census Bureau reports 3.9% in 2010
*U.S. Census Bureau, second quarter, 2012

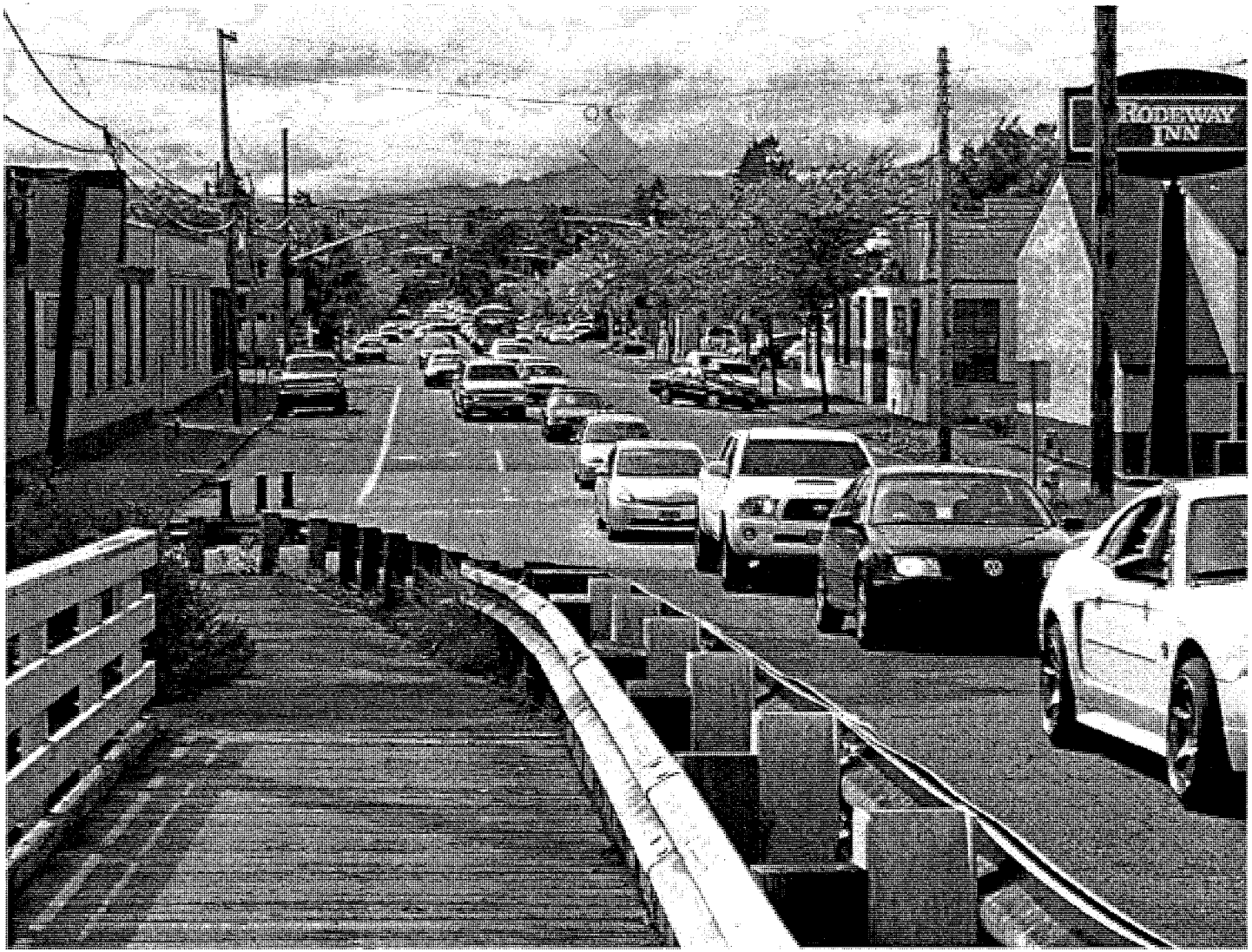
Market Demand



Market Demand

- 17,706—**63%**—of Corvallis' 28,026 workers live outside the City*. Net inflow = 8,000.
- Corvallis ranked as 2nd most expensive housing market in Oregon by Coldwell Banker.*
- "Bedroom communities" Albany & Lebanon $100K less asking price for comparable house.*

* U.S. Census Bureau, 2013
*Coldwell Banker, Real Estate Home Listing Report, based on average home listing price for 4BR, 2BA home on coldwellbanker.com, January to June 2012.
•WVMLS, 11/1/2012 – 1/1/2013



PM Rush Hour Traffic Waiting to Leave Corvallis

16

Available Land

2011 Land Development Information Report, Corvallis Vacant Lands

- Percent of vacant land in the City is at its lowest point—**14.9%**—in recent history (since 1977).
- Mean for 1977-2011: **20.5%**

Available Land

2011 Land Development Information Report, Corvallis Vacant Lands

	Minimum	Maximum	% TOTAL AREA PER ZONE/TOTAL AREA IN CITY
RS-3.5	81	101	30.0%
RS-5	157	227	8.7%
RS-6	**157**	**195**	**5.7%**
Total	395	523	

Available Land

2011 Land Development Information Report, Approved Vacant Lots, Low Density Residential

Subdivision	Remaining lots	Zoning	Typical lot, sf
Brooklane Heights	42	RS-3.5	13,000
Oakmont Addition	24	RS-3.5	13,000
Meadowridge	16	RS-3.5, 5	12,500
Cascade Crest	10	RS-3.5	11,500
Coronado	46	RS-3.5, 5, 12	8,000
Sparrow Hill	11	RS-6	8,500
Suncrest I & II	42	RS-6	5,300
Megan's Addition	13	RS-6	5,200
Ashwood Preserve	28	RS-6	2,800
Total	222		8,000

49th St. (GLUP)	61	RS-6	4,000

Available Land

2011 Land Development Information Report, Approved Vacant Lots, RS-6

Subdivision	Remaining lots	Zoning	Typical lot, sf
Brooklane Heights	42	RS-3.5	13,000
Oakmont Addition	24	RS-3.5	13,000
Meadowridge	16	RS-3.5, 5	12,500
Cascade Crest	10	RS-3.5	11,500
Coronado	46	RS-3.5, 5, 12	8,000
Sparrow Hill	11	RS-6	8,500
Suncrest I & II	42	RS-6	5,300
Megan's Addition	13	RS-6	5,200
Ashwood Preserve	28	RS-6	2,800
Total	94		4,900

49th St. (GLUP)	61	RS-6	4,000

SITE IS READILY SERVED BY ALL REQUIRED INFRASTRUCTURE

- Water, Sanitary Sewer, Storm Drain
- Franchise Utilities
- Transportation System, including Streets, Bicycle, Pedestrian, and Transit
- Schools

NEED FOR ANNEXATION IS AMPLY DEMONSTRATED

- Existing supply of buildable land not either serviceable or not made available for development, as indicated by current market
- RS-6 vacant lands in very short supply, yet in high demand
- RS-6 land good candidate for entry-level housing & mixed housing types
- More jobs in Corvallis than dwelling units
- Median house price—$253K—requires $30/hour income to be affordable
- Homeowner vacancy rate at 1.6%
- Renters occupying single family homes
- Cost of medium-sized home in Corvallis is approximately $100K greater than comparable home in Albany or Lebanon
- 17,706—**63%**—of Corvallis' 28,026 workers live outside the City

Annexation Criteria

Compliance with Livability Benchmarks = 57%*

- **Fully Complies with 10 Livability Benchmarks**
  - Annexation Density, Rural Development Potential, Development Plans, Public transit Improvements, Balance of Jobs & Housing, Natural Features, Distance to Transit, Distance to Sewer & Water, Planned Public Utilities, Distance to Downtown

- **Partially Complies with 5 Livability Benchmarks**
  - Distance to Bicycle & Pedestrian Access, Connectivity & Extension of Bicycle & Pedestrian Facilities, Distance to Major Street, Intersection, Local School Capacity/Travel Distance

- **Does Not Comply with 7 Livability Benchmarks**
  - Adjacent to City, Distance to Shopping, Affordable Housing, Police Response Time, Distance from Fire Station, Public Improvements, Distance to Parks

* Weighing Partially Compliant Benchmarks at ½ Positive and ½ Negative

Approved, Vacant Lots, Low-Density Residential[5]

Subdivision	Remaining lots[6]	Zoning	Typical lot, sf
Brooklane Heights	42	RS-3.5	13,000
Oakmont Addition	24	RS-3.5	13,000
Meadowridge	16	RS-3.5, 5	12,500
Cascade Crest	10	RS-3.5	11,500
Coronado	~~48~~ 9	RS-3.5, 5, 12	8,000
Sparrow Hill	~~11~~ 0	RS-6	8,500
Suncrest I & II	~~42~~ 4	RS-6	5,300[7]
Megan's Addition	~~18~~ 1	RS-6	5,200
Ashwood Preserve	28	RS-6[8]	2,800
Total	222		8,000[9]

49th St, General Land Use Plan, Proposed Lots (for comparison)

49th St. (GLUP)	61	RS-6	4,000[10]

[5] "*2011 Corvallis Land Development Information Report*", *op. cit.*, 25
[6] *Ibid*, 26
[7] ~2/3 of lots >5,200 sf
[8] RS-9 building types and density, due to wetlands/open space density transfer
[9] Mean lot size, rounded off to nearest 100 sf
[10] " "

Coronado Lots Available/Under Contract									
Stat	MLS #	Price	Address	City	Acres	Days On MLS	LotSqft	Zoning	Closing Date
ACT	630827	$90,000	3545 NW Veracruz Pl	Corvallis	0.2	987	8,712	RES	
ACT	630845	$105,000	696 NW Aztec Av	Corvallis	0.18	987	7,841	RES	
ACT	630847	$110,000	682 NW Aztec Av	Corvallis	0.19	987	8,275	RES	
ACT	630839	$115,000	3509 NW Veracruz Pl	Corvallis	0.19	987	8,276	RES	
ACT	630834	$125,000	579 NW Mirador Pl	Corvallis	0.19	987	8,276	RES	
ACT	632117	$135,000	644 NW Mirador Pl	Corvallis	0.18	962	7,841	RES	
ACT	632116	$135,000	638 NW Mirador Pl	Corvallis	0.19	962	8,276	RES	
ACT	632114	$135,000	626 NW Mirador Pl	Corvallis	0.19	962	8,276	RES	
ACT	632113	$135,000	614 NW Mirador Pl	Corvallis	0.19	962	8,276	RES	
PND	632124	$95,000	3460 NW Coronado St	Corvallis	0.18	587	7,841	RES	4/5/2013
Average		$118,000							

Suncrest SFD Available/Under Contract											
Stat	Price	Address	City	MLS #	Bd	Ba	Acres	SqFt	Year Built	Days On MLS	Price per SqFt
ACT	$389,900	2868 NW Margarita Pl	Corvallis	648154	3	2	0.13	1823	2012	460	$213.88
ACT	$557,000	2747 NW Romancier Dr	Corvallis	661089	4	2.5	0.13	2763	0	52	$201.59
ACT	$599,900	4736 NW Veronica Pl	Corvallis	644738	5	3.5	0.14	4016	2011	590	$149.38
ACT	$610,000	4788 NW Veronica Pl	Corvallis	656314	6+	3.5	0.16	4212	2004	231	$144.82
ACTUC	$369,350	4862 NW Lavender Cl	Corvallis	662431	3	2.5	0.11	2421	2000	14	$152.56
ACTUC	$395,000	4938 NW Lavender Cl	Corvallis	662362	3	2.5	0.09	2334	2002	17	$169.24
ACTUC	$330,000	4903 NW Zinnia Pl	Corvallis	661480	4	2.5	0.09	2182	2004	41	$151.24
Average	$464,450										

Megan's Addition SFD Available/Under Contract												
Stat	Price	Address	City	MLS #	Bd	Ba	Acres	SqFt	Year Built	Days On MLS	Price per SqFt	
ACT	$264,900	2011 SW Kendra St	Corvallis	662234	4	3	0.12	2082	2013	20	$127.23	
ACTUC	$253,900	2042 SW Kendra St	Corvallis	657307	4	3	0	2097	2012	200	$121.08	
Average	$259,400											

Coronado Lots Sold										
Stat	MLS #	Price	Address	City	Acres	Days On MLS	LotSqft	Zoning	Closing Date	Sold Price per Acre
SLD	632121	$80,000	688 NW Mirador Pl	Corvallis	0.18	915	7,841	RES	2/27/2013	$444,444.44
SLD	652101	$119,000	590 NW Mirador Place	Corvallis	0.19	268	8,276	RS	1/31/2013	$626,315.79
SLD	630833	$95,000	593 NW Mirador Pl	Corvallis	0.19	819	8,276	RES	10/29/2012	$500,000.00
SLD	630840	$85,000	3521 NW Veracruz Pl	Corvallis	0.2	707	8,712	RES	7/9/2012	$425,000.00
SLD	659555	$89,000	534 NW Mirador Pl (Lot 23)	Corvallis	0.21	0	9,082	-	4/12/2012	$423,809.52
SLD	632120	$186,031	670 NW Mirador Pl	Corvallis	0.18	560	11,761	RES	3/9/2012	$1,033,505.56
SLD	630835	$186,000	565 NW Mirador Pl	Corvallis	0.19	585	8,276	RES	3/9/2012	$978,947.37
SLD	630826	$90,000	607 NW Mirador Pl	Corvallis	0.19	564	8,276	RES	2/17/2012	$473,684.21
SLD	635160	$75,000	3516 NW Coronado	Corvallis	0.19	204	8,276	RES	6/22/2011	$394,736.84
SLD	632110	$75,000	3504 NW Coronado St	Corvallis	0.19	299	8,276	RES	6/22/2011	$394,736.84
SLD	632105	$80,000	3546 NW Veracruz Pl	Corvallis	0.27	166	11,761	RES	2/9/2011	$296,296.30
Average		$105,457								

Coronado SFD Sold												
Stat	Price	Address	City	MLS #	Bd	Ba	Acres	SqFt	Year Built	Days On MLS	Closing Date	Price per SqFt
SLD	$360,000	3522 NW Veracruz Pl	Corvallis	655883	4	2.5	0.19	2017	2012	220	3/21/2013	$184.68
SLD	$336,500	694 NW Gonzalez Av	Corvallis	655739	3	2	0.25	1801	2012	219	3/15/2013	$188.51
SLD	$366,000	3394 NW Coronado St	Corvallis	646842	3	2.5	0.19	2100	2011	281	8/24/2012	$180.90
SLD	$432,500	3517 NW Coronado St	Corvallis	645250	3	2.5	0.3	2941	2011	282	6/29/2012	$152.67
SLD	$432,941	3493 NW Coronado St	Corvallis	648780	3	2.5	0.3	1468	2012	76	4/16/2012	$312.67
SLD	$416,000	548 NW Mirador Pl	Corvallis	641833	4	2.5	0.19	2732	2011	188	12/19/2011	$153.37
SLD	$429,000	602 NW Mirador Pl	Corvallis	641835	4	2.5	0.19	2625	2011	169	11/30/2011	$163.43
SLD	$458,561	562 NW Mirador Pl	Corvallis	635500	4	2.5	0.19	2619	2011	195	6/23/2011	$175.26
Average	$403,938											

Suncrest SFD Sold												
Stat	Price	Address	City	MLS #	Bd	Ba	Acres	SqFt	Year Built	Days On MLS	Closing Date	Price per SqFt
SLD	$520,000	4988 NW Lavender Cl	Corvallis	644739	4	3.5	0.12	3237	2007	290	6/19/2012	$169.88
SLD	$359,000	4762 NW Veronica Pl	Corvallis	641599	3	2	0.16	2441	1999	55	8/1/2011	$147.07
SLD	$295,000	4915 NW Lavender Cl	Corvallis	634066	3	2.5	0.08	2020	2003	199	5/13/2011	$148.47
SLD	$415,000	4956 NW Lavender Cl	Corvallis	632733	3	2.5	0.09	2949	2003	184	3/18/2011	$144.12
Average	$397,250											

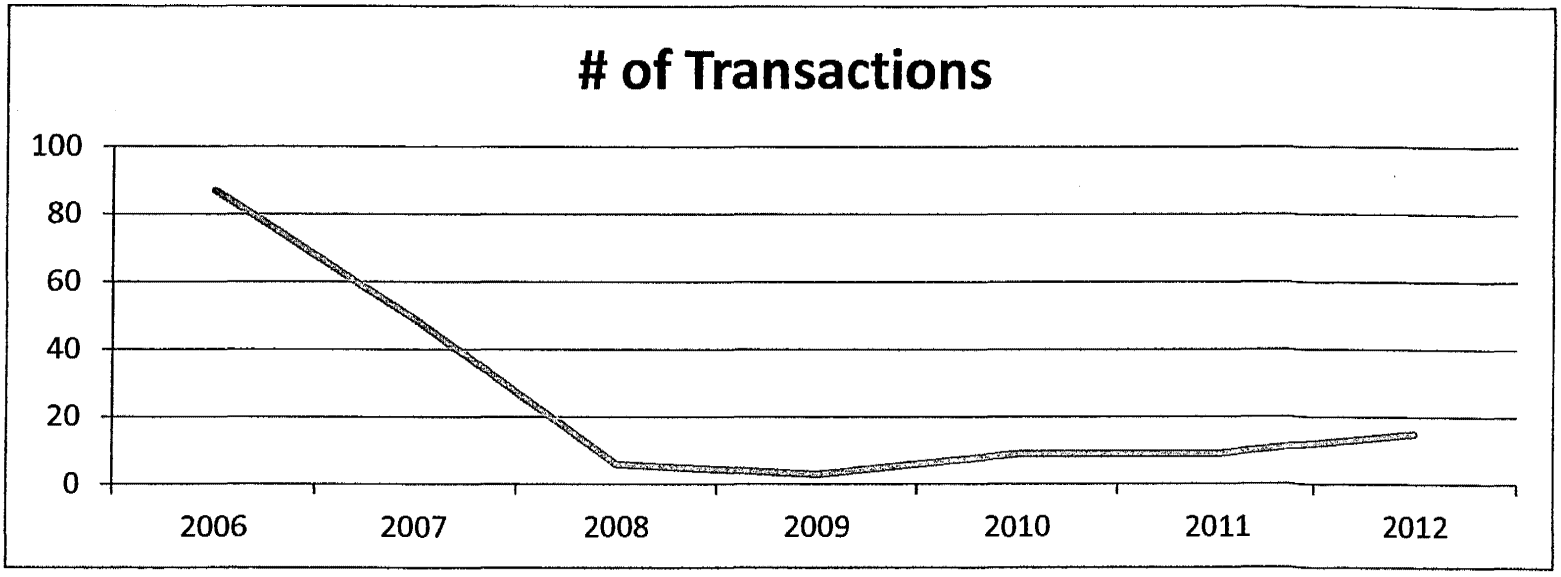
Megan's Addition SFD Sold												
Stat	Price	Address	City	MLS #	Bd	Ba	Acres	SqFt	Year Built	Days On MLS	Closing Date	Price per SqFt
SLD	$244,000	2060 SW Kendra St	Corvallis	647286	4	3	0.12	2097	2010	153	5/7/2012	$112.02
SLD	$225,000	2078 SW Kendra St	Corvallis	633463	4	3	0.12	2011	2010	265	6/29/2011	$116.81
SLD	$250,000	2043 SW Kendra	Corvallis	603965	3	2	0.12	2184	2008	394	11/20/2009	$120.19
Average	$239,667											

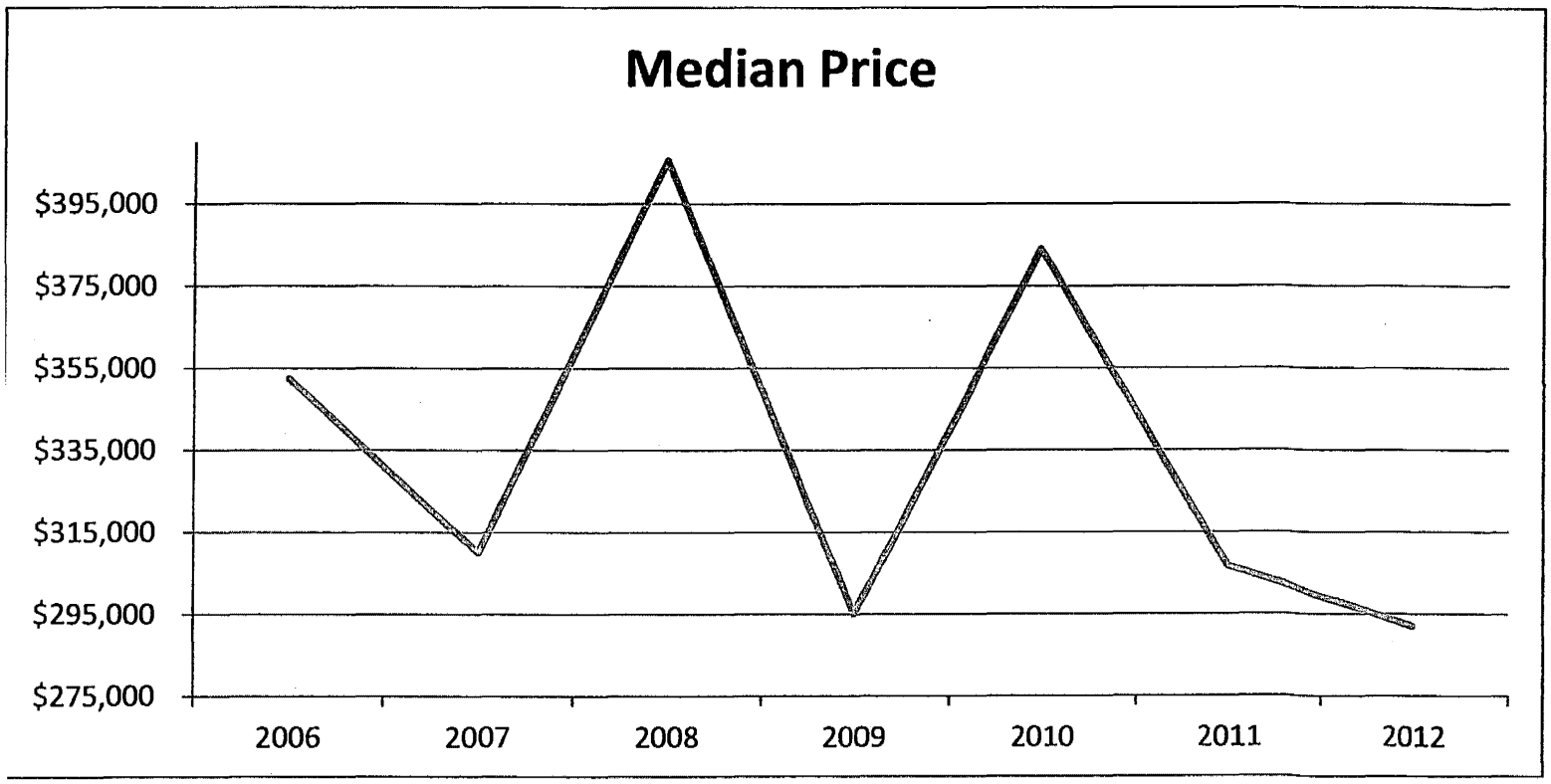
Megan's Addition Lots Sold										
Stat	MLS #	Price	Address	City	Acres	Days On MLS	LotSqft	Zoning	Closing Date	Sold Price per Acre
SLD	645625	$40,000	2061 SW Kendra St	Corvallis	0.12	443	5,227	RS6	12/21/2012	$333,333.33
SLD	645622	$40,000	2011 SW Kendra St	Corvallis	0.12	443	5,227	RS6	12/21/2012	$333,333.33
SLD	645624	$42,500	2024 SW Kendra St	Corvallis	0.15	359	6,534	RS6	9/28/2012	$283,333.33
SLD	645623	$42,500	2042 SW Kendra St	Corvallis	0.12	345	5,227	RS6	9/14/2012	$354,166.67
SLD	645626	$44,900	2037 SW Kendra St	Corvallis	0.12	196	5,227	RS6	4/18/2012	$374,166.67
Average		$41,980								

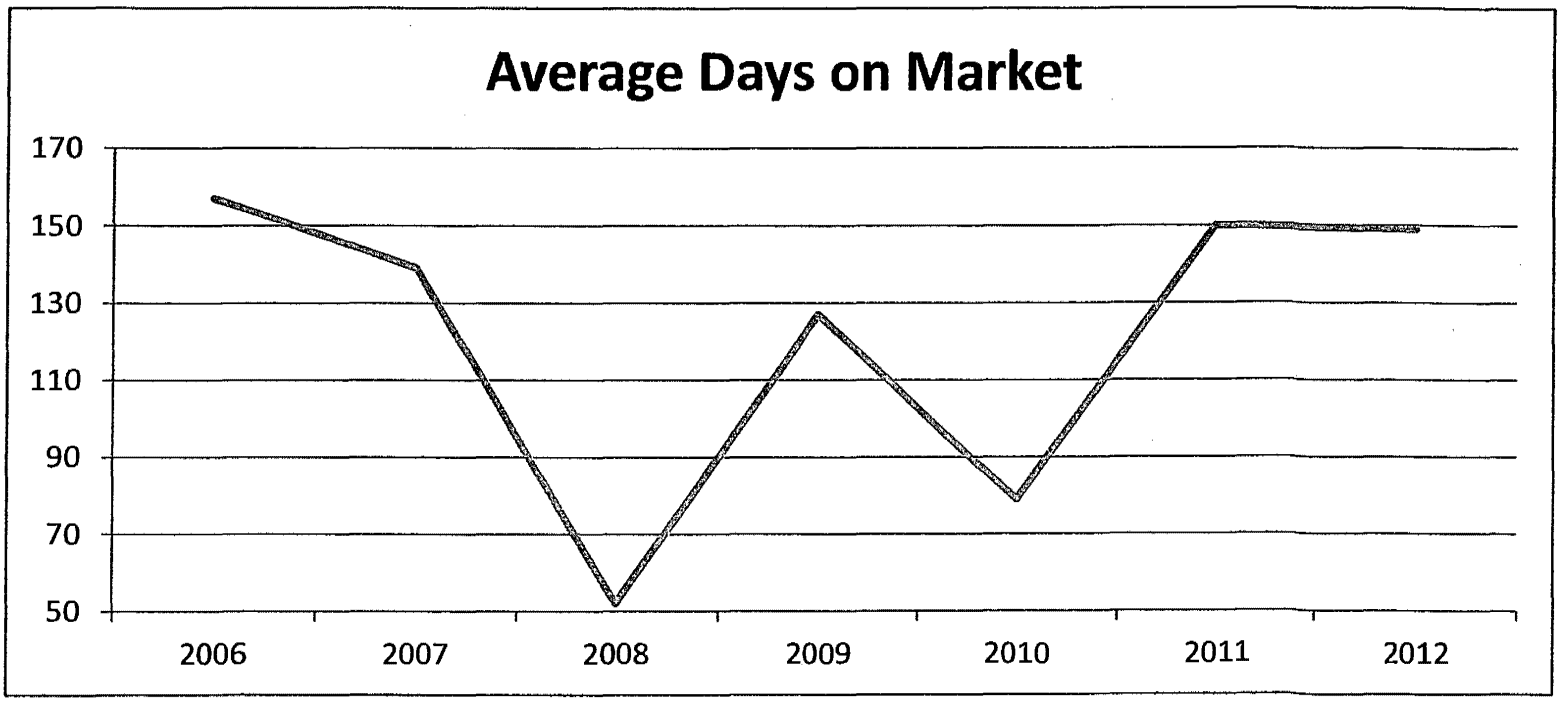
Sparrow Hill SFD Sold												
Stat	MLS #	Price	Address	City	Bd	Ba	SqFt	$/SqFt	Yr Blt	Acres	DOM	Closing Date
SLD	652354	$292,000	737 SW 57th St	Corvallis	3	2	1811	$162.84	2012	0.14	220	12/21/2012
SLD	654354	$427,500	5809 SW Englewood Av	Corvallis	5	3.5	3086	$140.93	2008	0.32	69	9/10/2012
SLD	651773	$379,500	5703 SW Englewood Av	Corvallis	4	2.5	2680	$141.60	2006	0.11	57	6/26/2012
SLD	637817	$300,000	773 SW 57th St	Corvallis	3	2	1810	$173.98	2011	0.14	307	12/27/2011
SLD	629972	$344,500	5793 SW Englewood Av	Corvallis	4	2.5	2944	$124.93	2007	0.32	202	1/31/2011
Average		$348,700										

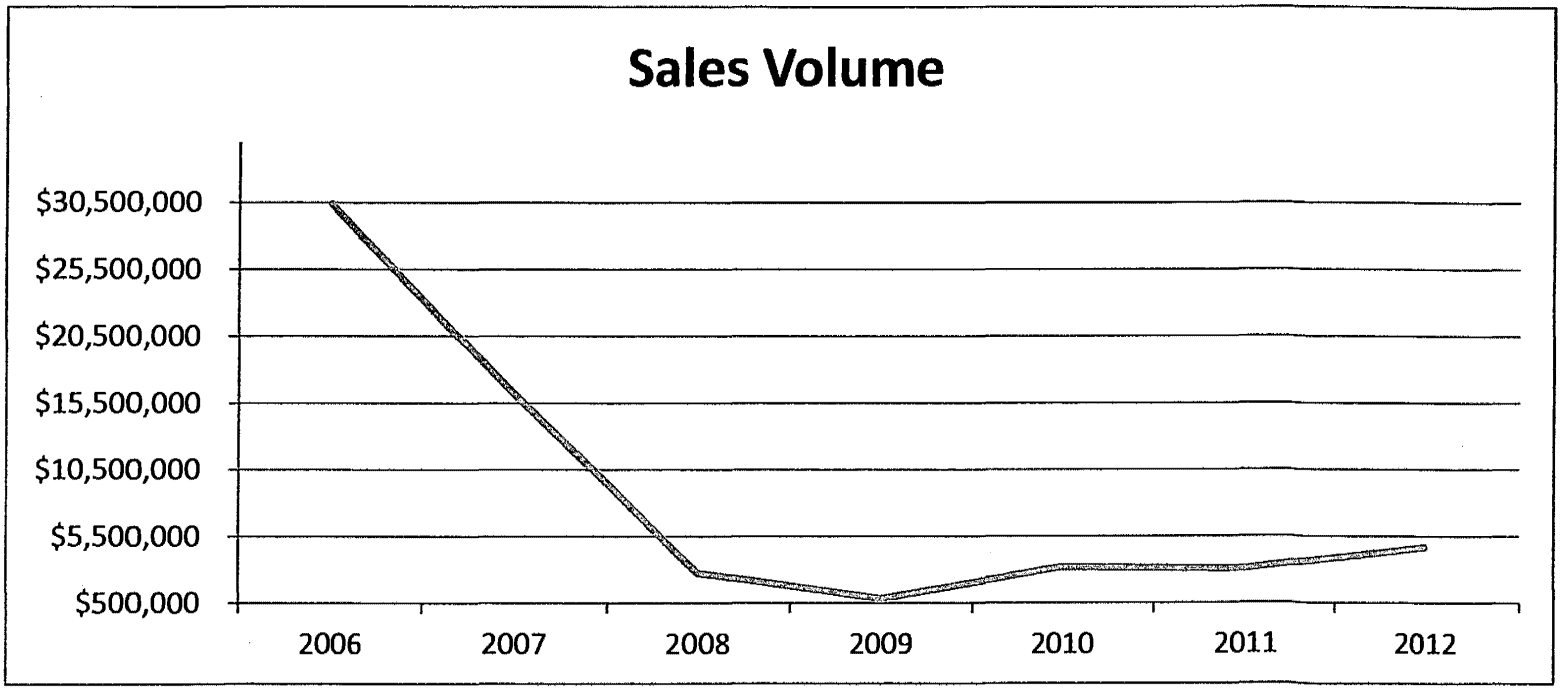
Corvallis 2012 (min.) New Construction Available											
Stat	Price	Address	City	MLS #	Bd	Ba	Acres	SqFt	Year Built	Days On MLS	Price per SqFt
ACT	$234,494	3061 SE Everglade St	Corvallis	656987	3	2.5	0.06	1405	2012	210	$166.90
ACT	$237,130	3084 SE Everglade St	Corvallis	660229	2	2.5	0.07	1405	2013	80	$168.78
ACT	$247,500	3045 SE Everglade St	Corvallis	661755	2	2.5	0.06	1570	2013	33	$157.64
ACT	$248,309	3085 SE Everglade St	Corvallis	655255	3	2.5	0.06	1570	2012	262	$158.16
ACT	$251,395	3060 SE Everglade St	Corvallis	658079	3	2.5	0.07	1570	2013	173	$160.12
ACT	$252,500	3053 SE Everglade St	Corvallis	661765	3	2.5	0.06	1646	2013	33	$153.40
ACT	$254,038	3092 SE Everglade St	Corvallis	660226	3	2.5	0.06	1646	2013	80	$154.34
ACT	$254,289	3052 SE Everglade St	Corvallis	658081	2	2.5	0.06	1646	2013	173	$154.49
ACT	$264,900	2011 SW Kendra St	Corvallis	662234	4	3	0.12	2082	2013	20	$127.23
ACT	$293,801	972 SE Bayshore Cl	Corvallis	661083	3	2.5	0.11	1942	2013	52	$151.29
ACT	$324,910	3631 SE Dockside Dr	Corvallis	656988	3	2.5	0.1	2284	2012	210	$142.25
ACT	$389,900	2868 NW Margarita Pl	Corvallis	648154	3	2	0.13	1823	2012	460	$213.88
ACT	$399,900	3716 SW Deon Dr	Corvallis	662089	5	3	0.12	2187	2013	25	$182.85
ACT	$414,524	3643 SE Shoreline Dr	Corvallis	656989	4	3	0.13	2903	2012	210	$142.79
ACT	$458,978	3667 SE Shoreline Dr	Corvallis	661084	5	3	0.15	3287	2013	52	$139.63
Average	$301,771								Average	138	

Corvallis New Construction Real Estate Statistics by Year				
Year	*# Trans*	*Median Price*	*Average DOM*	*Sales Volume*
2006	87	$ 352,400	157	$ 30,405,817
2007	49	$ 310,000	139	$ 16,221,256
2008	6	$ 405,475	52	$ 2,747,325
2009	3	$ 295,000	127	$ 828,900
2010	9	$ 383,957	79	$ 3,178,088
2011	9	$ 306,582	150	$ 3,068,143
2012	15	$ 292,000	149	$ 4,669,069


# of Transactions
100
80
60
40
20
0
2006
2007
2008
2009
2010
2011
2012


Median Price
$395,000
$375,000
$355,000
$335,000
$315,000
$295,000
$275,000
2006
2007
2008
2009
2010
2011
2012


Average Days on Market
170
150
130
110
90
70
50
2006
2007
2008
2009
2010
2011
2012


Sales Volume
$30,500,000
$25,500,000
$20,500,000
$15,500,000
$10,500,000
$5,500,000
$500,000
2006
2007
2008
2009
2010
2011
2012