Normal Neighborhood Working Group

September 4,' 2014
4:30-5:50

Community Development Building
Siskiyou Room
51 Winburn Way

I. CALL TO ORDER:

- 4:30 Community Development Building, 51 Winburn Way

II. CONSENT AGENDA

- **Approval of Minutes**
  - Aug 21, 2014 Meeting.

III. DISCUSSION ITEMS

- Housing and Land Use
- Concept Land Use and Transportation Map
  - Housing concentrations – locations and zoning
  - Projected number of units
  - Mixed use
  - Transportation/land use integration

IV. PUBLIC FORUM

- 10 minutes

V. NEXT MEETING

- September 18, 2014 4:30-6:30
  - Meeting organization
    - Panel representatives
  - Quorum Check

VI. ADJOURNMENT

MINUTES FOR THE NORMAL NEIGHBORHOOD WORKING GROUP
Thursday, August 21, 2014
Siskiyou Room, 51 Winburn Way

Chair Pam Marsh called the meeting to order at 4:35 p.m. in the Siskiyou Room, 51 Winburn Way.

Mayor Stromberg, Michael Morris, Michael Dawkins, Rich Kaplan, Bill Molnar, Brandon Goldman, Mike Faught, and Scott Fluery were present.

Marsh gave overview of the previous meeting topics and what is on today's agenda.

Stromberg explained that Dave Chapman had been invited to tell the group about the Transportation Systems Plan but was unable to attend due to family obligations.

1. Discussion items

Goldman introduced the traffic plan as originally proposed. Explained that the streets were established based on the densities in the plan, 300-400 foot blocks, and modifications around the wetland areas. Molnar noted that the "concept" plan in the packet reflects density changes previously discussed by the group and that with any additional density discussions the plan would need to be altered.

Marsh stated that the discussions today would surround three topics:

- Improvements on East Main Street
- Internal circulation, including the possible extension of Normal Avenue to East Main Street
- Railroad crossing

<u>Railroad Crossing and East Main Street Improvements</u>

Group discussed the railroad crossing and the Planning Commission's intention that annexation only be approved when/if the State give approval to change the crossing from private to public and the City has a financing plan in place to make the required improvements. Dawkins did note that this was a conflict with the Transportation Commission recommendation.

Group discussed financing strategies for both the railroad crossing and East Main Street improvements. Fifty percent of the cost for the railroad crossing could be covered by SDC funds, while only fifteen percent could be covered by SDCs for the East Main Street improvements. The rest of the costs could be borne by the developer with the new Advanced Financing option the Council recently approved.

Faught explained some of the discussions he's had with ODOT Rail regarding the change from a private crossing to a public one. He will try to get the requirements for that change in writing.

Faught also discussed Advanced Financing and how it has a time limit (with Council projects it's 10 years plus a 10-year extension). Because of this time limit, the City should time the project so that we have the best chance of seeing those reimbursements. He also reminded the group that the location of the crossing cannot change.

Group discussed challenge of deciding what the City should take on for the public good versus what a developer could/should take on. The group expressed concern that requiring a developer to take

on both the railroad crossing and East Main Street as that would likely eliminate small developers from developing in this area.

Internal Circulation
The current plan, which does not have Normal Avenue connect up to East Main Street was approved by the Planning Commission because it wanted as much traffic calming as possible. A straight Normal Avenue would lack calming influences and would change the current character of nearby neighborhoods.

Group discussed how older neighborhoods in town are frequently the most desirable and they are all built on a grid system. This is probably something to emulate.

Group discussed preferring four connections into the neighborhood from East Main Street, as well as the additional East-West connections shown in the concept plan. Group discussed possible traffic calming measures (traffic circles, no left turn, a wider collector street nearby, etc.) which could be used on Normal Avenue. Faught explained that the traffic engineer was highly concerned that, no matter what traffic calming measures are put in place, if Normal Avenue connects to East Main Street it will become a main collector street taking on lots of extra traffic beyond just those who live in the neighborhood. The group requested time to review the engineer's opinion.

2. Public Input
Debbie Miller: is concerned with how the traffic on Normal is calmed. Also concerned that there are no Clay Street improvements required. Wondered if anyone had talked to the Later Day Saints church to see how they felt about a road running through their ball fields. Was concerned about changes caused by the new streets effecting the safety of school bus travel and turnarounds.

Howdy Miller: Was concerned that the exits onto E. Main Street from the neighborhood are all on a curve and a hill, and therefore difficult and dangerous.

Barry Vitcov: Believes the density discussion needed to take place before this traffic discussion.

Randy Jones: Is in favor of the 20 year plan for financing, as it would help them develop and be reimbursed. Recognizes that there has to be enough logical, developable land to make this work financially.

Nancy Boyer: Like she stated in her e-mail, only talking to the Normal Avenue neighbors is too limiting. Why aren't we calling it the "Urban Growth Boundary" group to interest residents from around town to participate? Also wants all documents submitted available for everyone to read.

Bryce Anderson: With new changes, extra density, etc. we need public transportation in this area. Wondered if East Main Street at its present size would be able to accommodate the changes planned on Clay Street. With the current plan of only having sidewalk and bike lane on one side of East Main Street, entrances will need to have lights for the safety of bike riders going the wrong direction in the bike lane.

Julie Matthews: Wants the street shown as currently cutting through the Latter Day Saints church lot to be removed from the plan as it will never exist, so you can see the real lack of connection. Is concerned with whether stop signs will be located in certain areas of the plan. Wondered why the railroad isn't in use, would like to see light rail in operation.

Dale Swire: Traffic circles and curvilinear streets have been used effectively for traffic calming in other places, wants them considered here.

3. Next Meeting
September 4, 4:30 – 6:00. Topic for discussion will be density
September 18, 4:30 – 6:30. Marsh would like to have a "panel of experts" share their views and interact with the Group to help mold the plan. This is a balance between keeping the discussions only within the Group, and allowing everyone from the public to have longer discussions. Reminded everyone they always read whatever is submitted in writing. On the panel she would like to have:

1 Neighborhood representative from within the Normal Neighborhood
1 Neighborhood representative from the nearby neighborhoods
1 developer
2 "good observers" from the community

The group agreed to this plan and to allow Marsh to work with staff to determine the participants.

Meeting adjourned at 6:01 p.m.

Respectfully submitted,
Diana Shiplet
Executive Secretary

CITY OF ASHLAND

Memo

Normal Neighborhood Plan
Working Group 9/04/2014

TO: Normal Neighborhood Plan Working Group

FROM: Brandon Goldman, Senior Planner
Brandon.Goldman@ashland.or.us

RE: Normal Neighborhood Plan
Housing Concentration Discussion.

Summary
On July 10, 2014, the Normal Neighborhood Plan working group began a discussion regarding the housing concentrations proposed within the plan and each member individually developed a map to identify potential plan alterations. The group requested that staff assemble a "joint" map, using these maps provided by the group. This joint map will allow the group to examine the impacts of such changes on properties within, and adjacent to, the plan area, evaluate changes in the number of housing units that could be accommodated, and further discuss the integration of transportation, land use, and open space within the neighborhood.

Staff has created a Working Group Alternative Discussion Draft map (dated 9/04/2014 -attached) which addresses the items of common interest as reflected in the July 10 working group minutes:

- **Transition from south to north in density (i.e. higher densities closer to Ashland Street and amenities)**
  The plan's highest density area initially designated as NN-03 (15 units per acre) has been reclassified as NN-2 which would be comparable to the City's existing R-2 zoning (low-density multifamily at 13.5 units per acre) and has been relocated to be adjacent to the railroad tracks in the southern plan area.
  The southwest corner of the plan area, the 13 acre -7-lot Greene Subdivision, has been retained as a single family residential zone given the prior development of the area as large lot single family homes. An evaluation of the future re-development potential of the Greene Subdivision area indicates that a density of 4.5 units per acre in this area could accommodate up to 35 additional lots without necessitating removal of existing residences, provided access issues were addressed through the installation of new local streets.

- **Maintaining the East Main Street view plain (i.e. lower densities along East Main Street)**
  The originally proposed NN-03 (15 units per acre) for the East Main Street frontage of the Baptist Church property has been reduced to a 7.2 units per acre NN-1-3.5 zone in the Working

Group Alternative discussion draft map. This "suburban residential" zone, assigned to both this property and the Latter Day Saints church property to the east, is consistent with the property's existing comprehensive plan designation. All other properties fronting on East Main Street have been classified as NN-1-5, which would be a single family zone consistent with the City's existing R-1-5 zone.

- **Moderate density levels in the interior of the plan**
  The Working Group Alternative discussion draft map shows the interior of the plan area zoned as NN-1-3.5, which would be comparable to the City's R-1-3.5 zone with 7.2 units per acre as a base density. The draft Normal Plan's NN-02 zone was established with a base density of 10 units per acre, therefore this density change would constitute a reduction in the number and type of housing units that could be achieved.

- **More grid-like streets for better connectivity**
  The street network reflected in the joint discussion map establish a more rectilinear grid that the original "modified grid" shown in the original proposed map. The street grid presented is largely consistent with the map presented to the working group on August 21 for discussion purposes. Some key elements include:
  - A reduction in meandering street paths
  - Greater alignment of east-west local streets.
  - Elimination of one shared street adjacent to the center wetlands
  - Normal Ave to extend only to the Tempe Emek Shalom parking area, and would not connect to East Main St. A multi-use path for pedestrians and bicyclists is proposed to connect this street terminus to East Main Street.
  - A newly proposed East/West connection from the existing Normal Ave. to the middle school in the south west corner of the plan area is included. Additionally north south road running along the eastern boundary of the middle school property has been presented for consideration.
    - These newly proposed roads would enable the future development of the large lot single facility homes (Greene Subdivision) at single family densities consistent with the City's existing R-1-5 zone.
  - Members of the working group voiced concerns regarding an off-set presented in the street grid in the vicinity of this new east west connection.
    In further evaluating these potential intersections there is a distance of 125' between the centerlines of the two streets. An off-set of this distance is consistent with Ashland's existing

minimum standards regarding street alignment (18.80.020.B2).

- At the time of annexation and development of a property the relocation of streets and paths to accommodate physical constraints, design efficiency, access management, and engineering recommendations is anticipated and permitted in the draft Normal Neighborhood Plan land use code. Refining a road's location by less than 50' in any direction requires no amendment to the plan, however if the relocation is greater than 50' then a minor amendment would be necessary. The removal of a multi-use path or street would trigger a major amendment to the plan so the issues of access and connectivity could be examined fully.

- **Use of zoning language more typical of the rest of the city's zoning labels**
  As noted in the sections above the joint discussion map presents zoning classifications that have densities comparable to existing City zones (NN-1-5 = R-1-5; NN-1-3.5 = R-1-3.5; NN-2 = R-2). However, Staff suggests retention og the "NN" preface designation to explicitely identify properties within the district. The draft Normal Neighborhood Plan overlay district land use code coordinates the land uses, street framework, conservation areas, building types, and general design standards for the area. Staff believes that recognition of the district within the zoning labels is essential to ensure development occurs in accordance with the Normal Neighborhood Plan which sets clear expectations for housing types, storm water management, and existing policy objectives.

- **Neighborhood Serving commercial uses.**
  A market analysis of the plan area completed by Leland Consulting Group showed that it is a weak location for retail. Traffic volumes in the area are currently low and the projections based upon the plan indicate that traffic volumes will continue to be low – even when the neighborhood is fully developed. The draft plan shows the potential for approximately 500 dwelling units so small scale retail and commercial space, such as a coffee shop, corner store, daycare center, or growers market will eventually be feasible. Such neighborhood serving businesses would be located within a limited commercial overlay area.

In the event neighborhood serving commercial uses are to be incorporated into the district staff believes an overlay zone adjacent to East Main Street and the new Normal Collector is preferred to provide the visibility, traffic volumes, and ready access needed for such mixed-use development. For consideration the Working Group Alternative map includes such an overlay for discussion purposes.

- **Maintaining of open space**
  This item was discussed by the working group on July 24th. The discussion map presented has retained the Open space/Conservation Areas originally identified in the proposed plan based upon the 2007 Local Wetland Inventory (LWI), FEMA 100 year floodplain, Ashland Floodplain, and associated riparian and wetland protection buffer areas.
    - Following the development of the original plan, in the last month the City has received two wetland delineation reports that indicate the extent of wetlands on the covered properties is not as extensive as was identified in the 2007 LWI. These full technical reports are available online at www.ashland.or.us/normalplan, and the summary information provided in these reports is provided as an attachment.

Plan Alternatives, housing unit comparisons

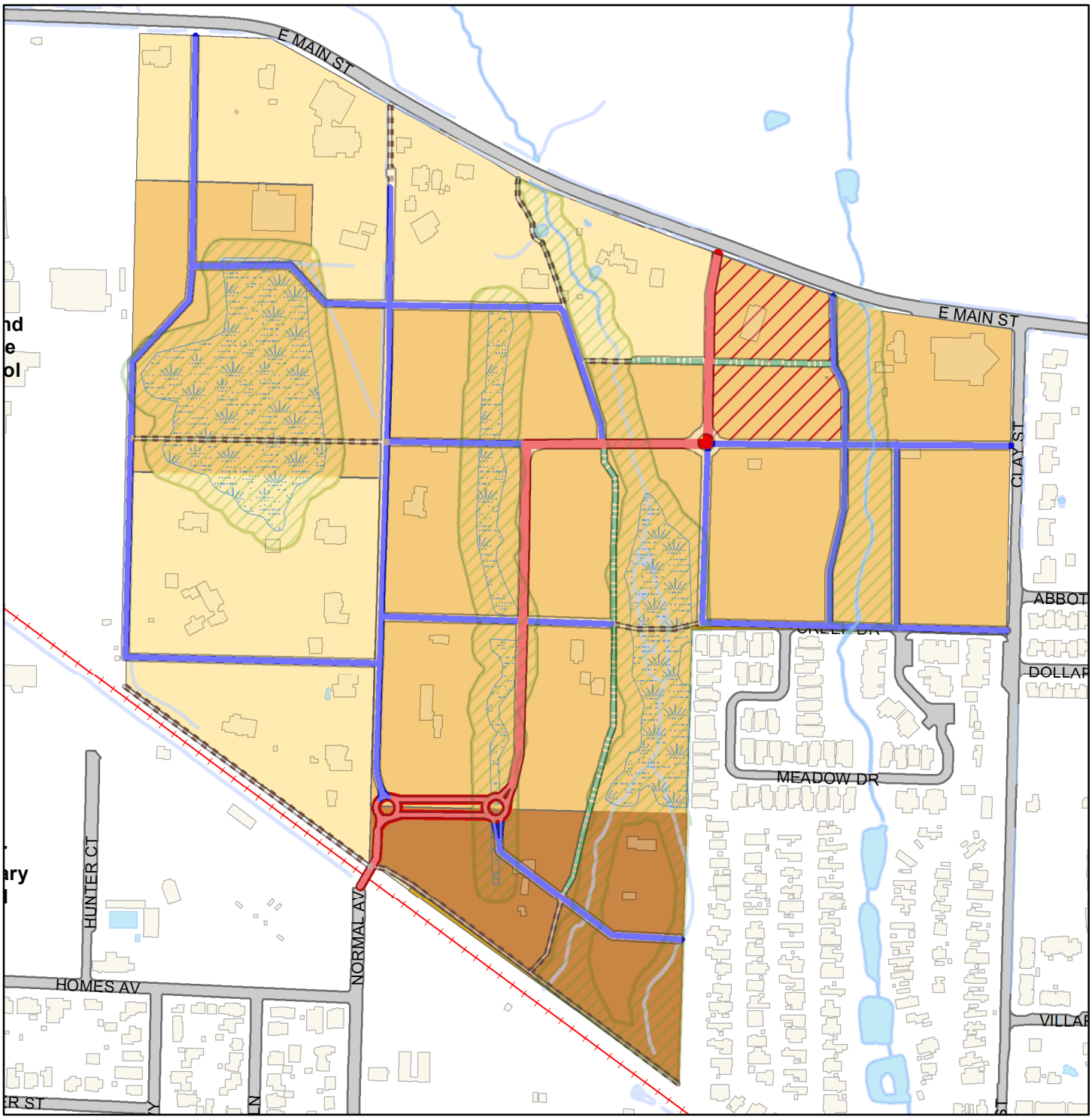
The gross estimates of potential housing units in the table below are intended to provide an "apples to apples" comparison to help the Working Group evaluate differences between the alternatives. These estimates are calculated using the "base density" of the underlying zone only, and do not factor in reductions due to pre-existing developments, or added density potential through application of eligible density bonuses.

	Existing Comprehensive Plan 1989			**Proposed Normal Plan 3/11/2014**			**Working Group Alternative 9/04/2014**		
	Zone	Gross acreage	Base units	Zone	Gross acreage	Base units	Zone	Gross acreage	Base units
Single Family Residential	R-1-5 (4.5 du/acre)	51.5	231	NN-01 (5 du/acre)	31.2	156	NN-1-5 (4.5 du/acre)	26	117
Suburban Residential	R-1-3.5 (7.2 du/acre)	42.4	305	NN-02 (10 du/acre)	31	310	NN-1-3.5 (7.2 du/acre)	36	259
Multi-family Residential	NA	NA	NA	NN-03 (15 du/acre)	5.3	80	NN-2 (13.5 du/acre)	5.5	74
Open space Areas	NA	NA	NA	various	26.4	0	various	26.4	0
Gross housing unit potential	536			546			450		

ATTACHMENTS:

- Working Group Alternative Discussion Draft map dated 9/4/2014
- Working Group Members individual concept maps (presented 7/04/2014)
- Wetland Report summary – Mahar Homes
- Wetland Report summary – Magnolia Homes
- Future Traffic Report summary (SJC Alliance dated 11/19/2013)

CITY OF ASHLAND



Normal Neighborhood Plan
Working Group Alternaitive Discussion Draft

0 200 400 800 Feet

Zone

- NN-1-5
- NN-1-3.5
- NN-1-3.5-C
- NN-2

- Openspace Area
- significant wetlands (2007 LWI)

Street Types

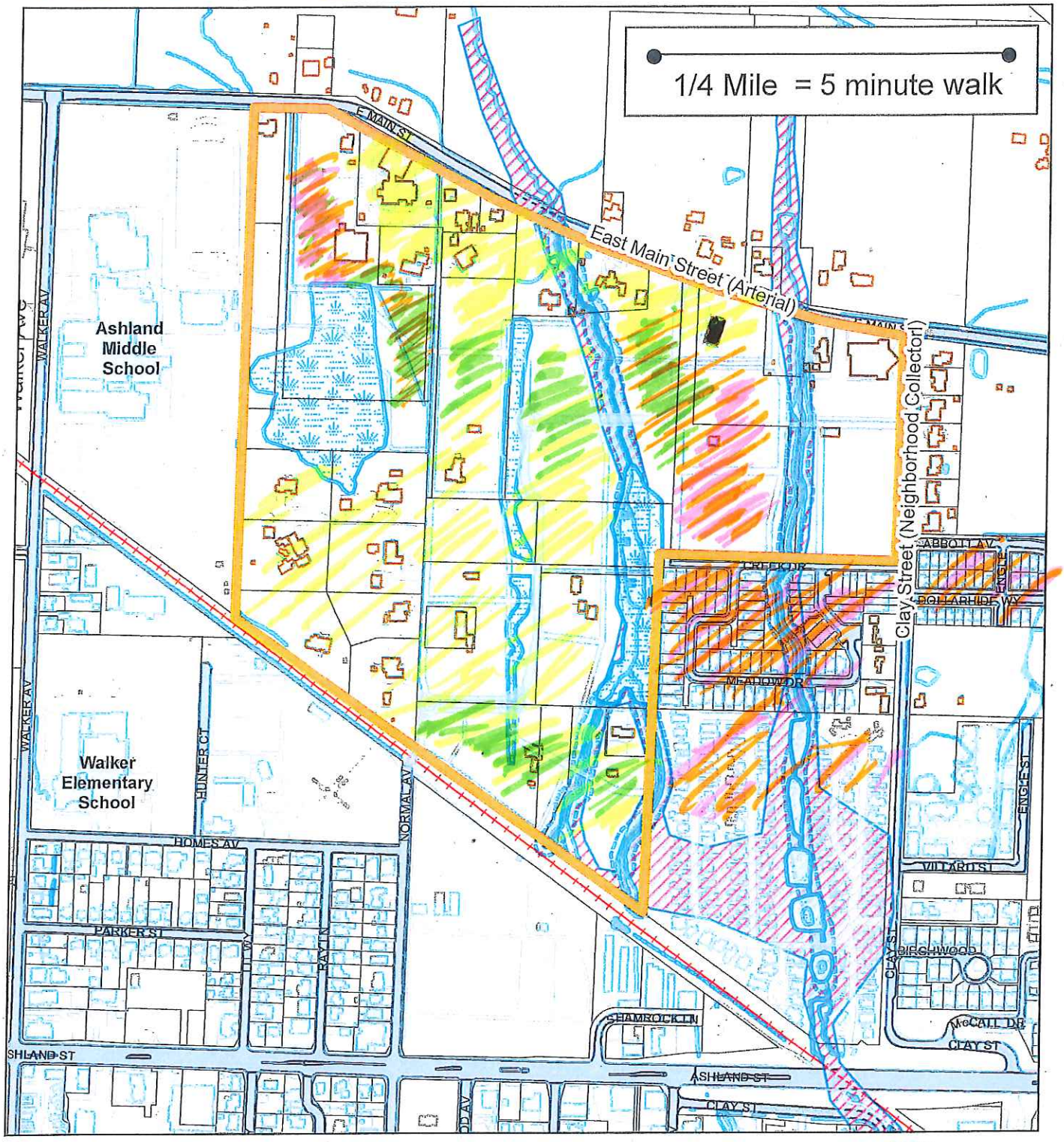
- collector
- path
- street
- shared street

9/04/2014

CITY OF ASHLAND

Michael

Normal Neighborhood Plan



- Single Dwellings (5 units per acre)
- Clustered Housing (10 units per acre)
- Multiple Dwellings (15 units per acre)
- Openspace
- Proposed Street (draft plan streets in light gray)
- Wetlands (2007 LWI)
- Riparian Buffer
- Ashland Floodplains
- Buildings in Plan area

Working Group
Alternative Mapping Excercise
July 10, 2014

KAPLAN 7/10/2014

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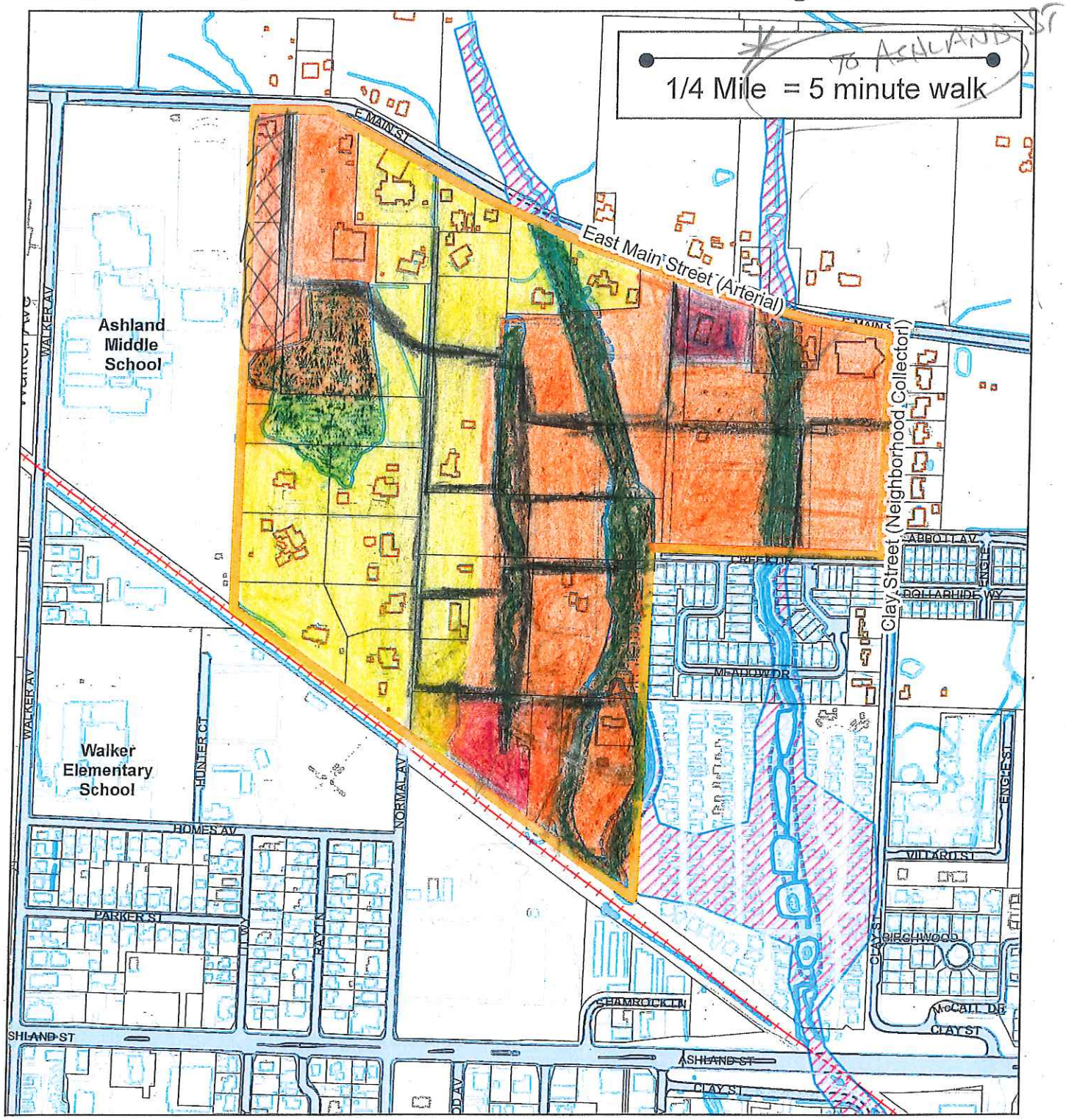
Normal Neighborhood Plan



500 Feet

NN-01 Single Dwellings (5 units per acre)

NN-02 Clustered Housing (10 units per acre)

NN-03 Multiple Dwellings (15 units per acre)

NN-03-C Openspace

Proposed Street (draft plan streets in light gray)

Wetlands (2007 LWI)

Riparian Buffer

Ashland Floodplains

Buildings in Plan area

XX NO BOLD

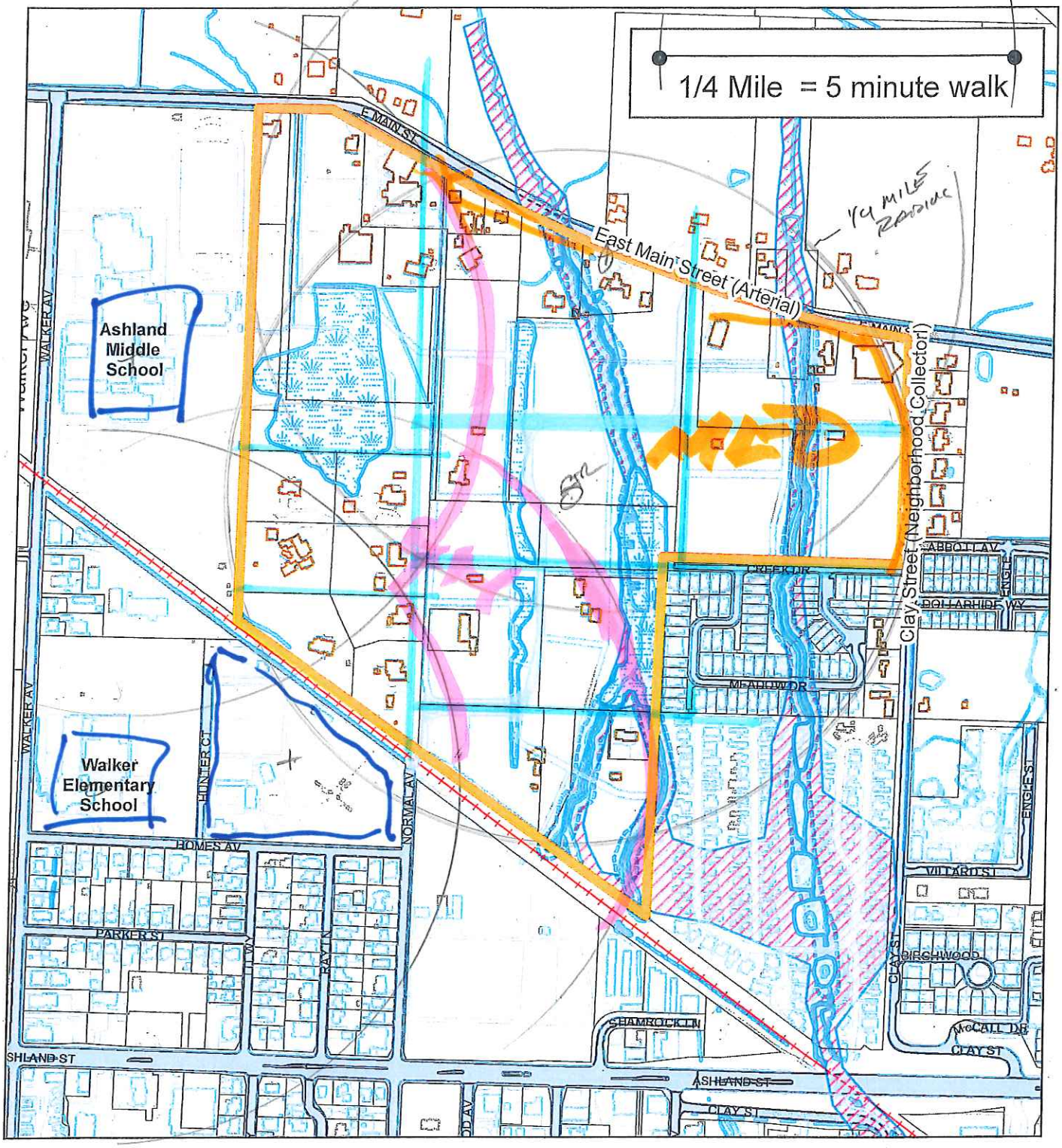
Working Group
Alternative Mapping Excercise
July 10, 2014

MIKE MORRIS

1 MILE = 20 MIN

CITY OF ASHLAND

Normal Neighborhood Plan



500 Feet

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Working Group
Alternative Mapping Excercise
July 10, 2014

John S

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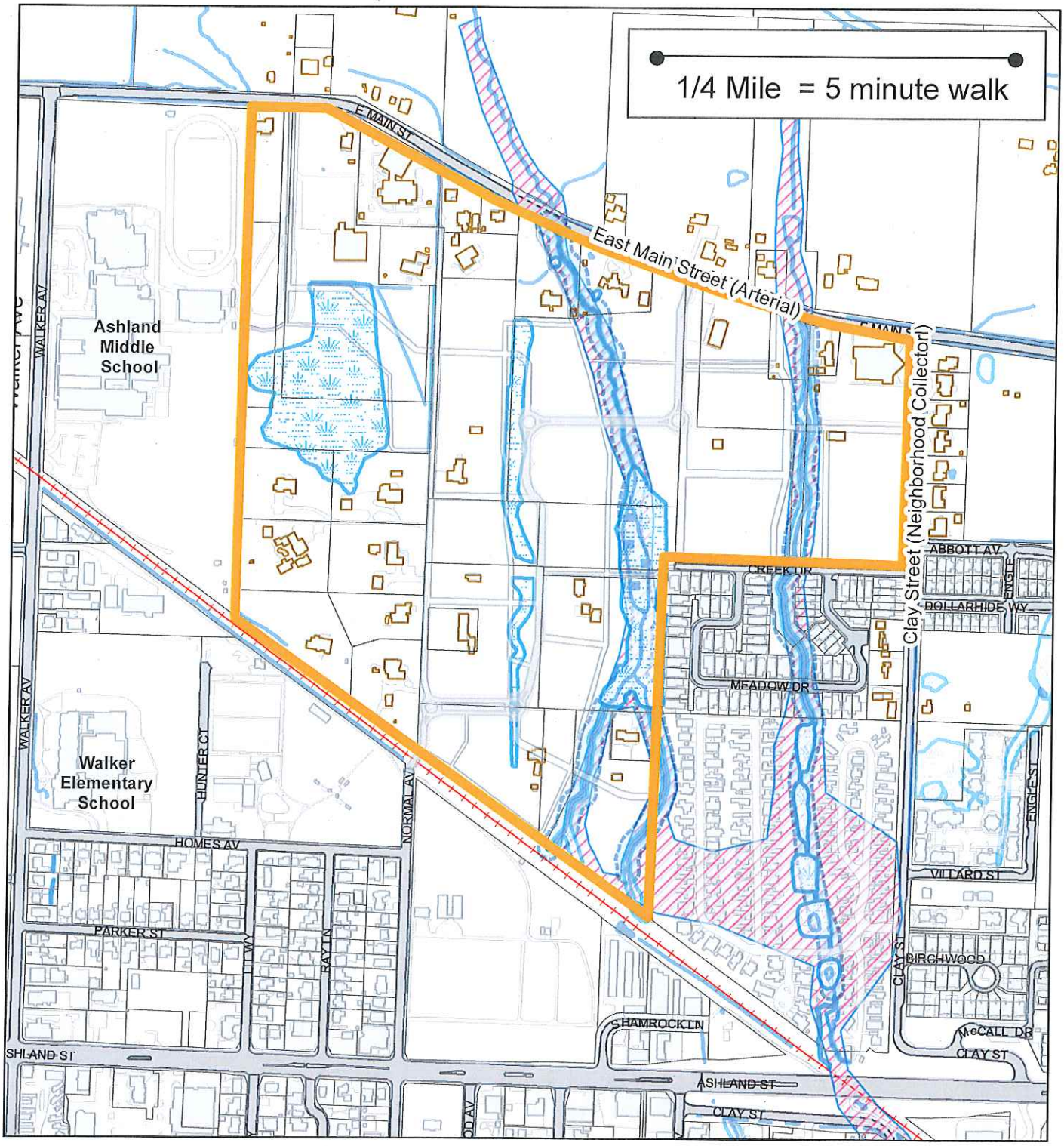
Normal Neighborhood Plan



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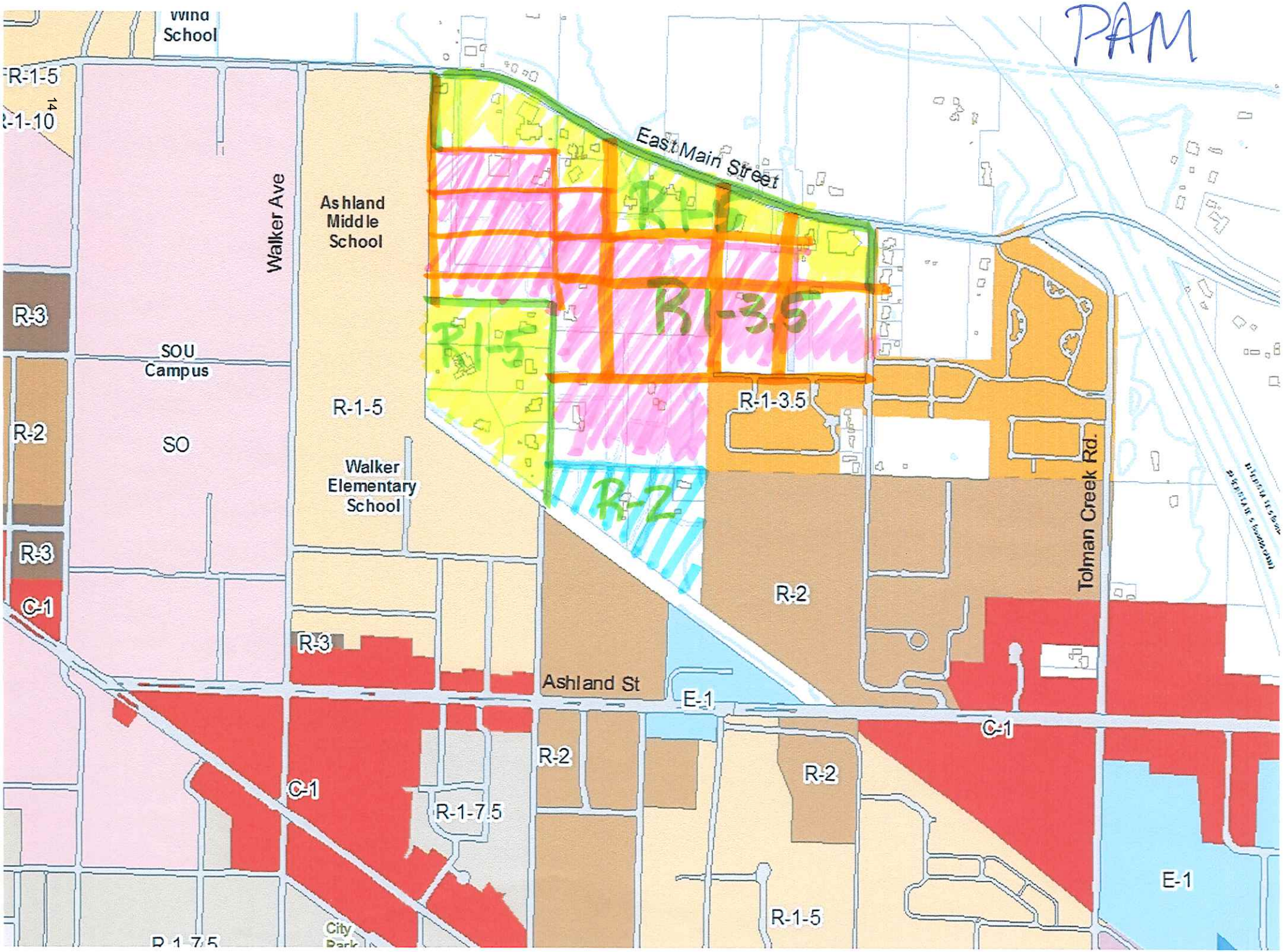
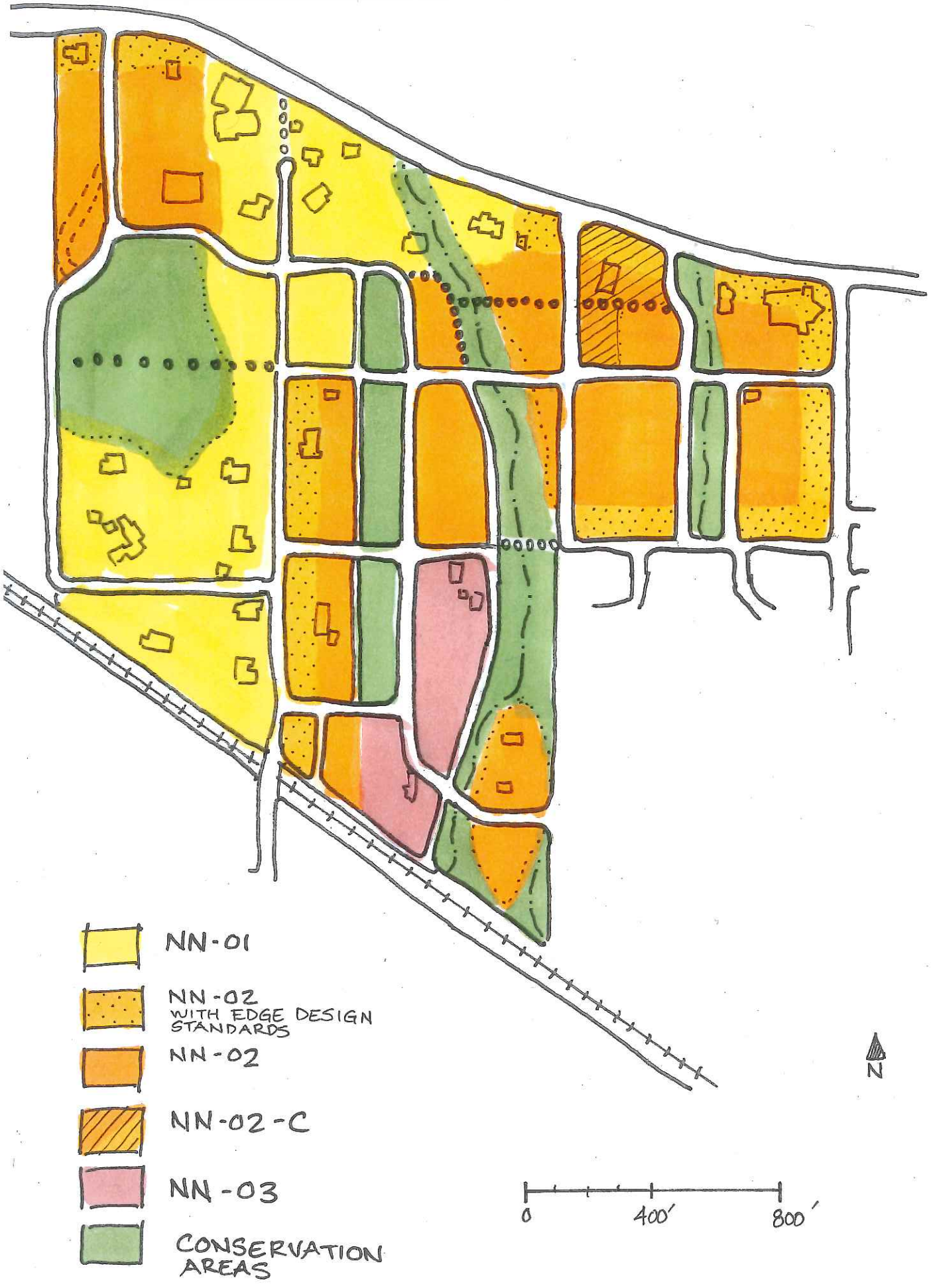
Working Group
Alternative Mapping Excercise
July 10, 2014


PAM
Wind School
R-1-5
R-1-10
East Main Street
Walker Ave
Ashland Middle School
R-1-5
R-1-3.5
R-2
R-3
SOU Campus
SO
R-1-5
Walker Elementary School
R-3
C-1
R-3
R-2
Tolman Creek Rd.
Ashland St
E-1
C-1
R-2
R-2
C-1
R-1-7.5
E-1
R-1-5
City Park
R-1-7.5


NN-01
NN-02 WITH EDGE DESIGN STANDARDS
NN-02
NN-02-C
NN-03
CONSERVATION AREAS
N
0
400'
800'

SCHOTT & ASSOCIATES
Ecologists & Wetlands Specialists

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

JURISDICTIONAL WETLAND DETERMINATION AND DELINEATION FOR

Normal Avenue

Township 39S, Range 1E, Sec. 10
South of E Main St and north of the Central Oregon & Pacific Railroad
Ashland, Jackson County, Oregon

Prepared for:
Mahar Homes

Prepared by:
Schott and Associates

Date: June 2014
Project #: 2273

WETLAND DELINEATION / DETERMINATION REPORT COVER FORM

This form must be included with any wetland delineation report submitted to the Department of State Lands for review and approval. A wetland delineation report submittal is not "complete" unless the fully completed and signed report cover form and the required fee are submitted. Attach this form to the front of an unbound report and submit to: **Oregon Department of State Lands, 775 Summer Street NE, Suite 100, Salem, OR 97301-1279.** Make the check payable to the Oregon Department of State Lands. To pay the fee by credit card, call 503-986-5200.

☒ Applicant ☐ Owner Name, Firm and Address: **Mahar Homes** **815 Alder Creek Drive** **Medford, OR 97504**	Business phone # 541-776-1200 Mobile phone # (optional) E-mail: randy@maharhomes.com
☒ Authorized Legal Agent, Name and Address: **Same as above**	Business phone # Mobile phone # E-mail:

I either own the property described below or I have legal authority to allow access to the property. I authorize the Department to access the property for the purpose of confirming the information in the report, after prior notification to the primary contact.

Typed/Printed Name: RANDALL D. JONES Signature: Randall D. Jones

Date: Special instructions regarding site access:

Project and Site Information (using decimal degree format for lat/long.,enter centroid of site or start & end points of linear project)

Project Name: **Normal Avenue**	Latitude: **42.1915N** Longitude: **-122.68W**
Proposed Use:	Tax Map # **39S R1E Sec 10**
Project Street Address (or other descriptive location): **South of E Main St and north of the Central OR & Pacific Railroad.** City: **Ashland** County: **Jackson**	Township **39S** Range **1E** Section **10** QQ Tax Lot(s) **2500,3200,3300,3400,3500,1100,1000,700,800,900** Waterway: Cemetery Creek River Mile: .70 NWI Quad(s):

Wetland Delineation Information

Wetland Consultant Name, Firm and Address: **Schott and Associates Attn: Martin Schott/Jodi Reed** **Aurora, OR 97002**	Phone # **503.678.6007** Mobile phone # E-mail: **martin@schottandassociates.com**

The information and conclusions on this form and in the attached report are true and correct to the best of my knowledge.

Consultant Signature: Date: 6/2/14

Primary Contact for report review and site access is ☒ Consultant ☐ Applicant/Owner ☐ Authorized Agent

Wetland/Waters Present? ☒ Yes ☐ No | Study Area size: **29.15** Total Wetland Acreage: **1.52AC**

Check Box Below if Applicable:	**Fees:**
☐ R-F permit application submitted	☒ Fee payment submitted **$ 396.**
☐ Mitigation bank site	☐ Fee ($100) for resubmittal of rejected report
☐ Wetland restoration/enhancement project (not mitigation)	☐ No fee for request for reissuance of an expired report
☐ Industrial Land Certification Program Site	
☐ Reissuance of a recently expired delineation Previous DSL # Expiration date ____	

Other Information:	Y	N	
Has previous delineation/application been made on parcel?	☐	☒	If known, previous DSL #
Does LWI, if any, show wetland or waters on parcel?	☐	☒	

For Office Use Only

DSL Reviewer:	Fee Paid Date: ____ / ____ / ____	DSL WD #
Date Delineation Received: ____ / ____ / ____	DSL Project #	DSL Site #
Scanned: ☐ Final Scan: ☐	DSL WN #	DSL App. #

TABLE OF CONTENTS

LIST OF FIGURES

(A) Landscape Setting and Land Use

The 29.15 acre site is located South of E Main Street and North of the Central Oregon and Pacific Railroad in Ashland, Jackson County, Oregon (T39S, R1E, Sec. 10 TL# 2500, 3200, 3300, 3400, 3500, 1100, 1000, 700, 800, 900) (Figure 1). The property is divided to north and south properties by Tax Lots 3100 and 3600, which are not included in the study area. The site is mostly gently north sloping.

The northern property (TL # 2500) is bordered by E Main Street and a residential home to the north. Both the east and west sides have fields adjacent to the property with a house occupying the western border and a church occupying the east. Cemetery Creek runs from the southeastern corner of the property north along the eastern portion of the lot. This property is dominated by grasses, except along Cemetery Creek, which contained cottonwoods, willow, and Himalayan blackberry. The southern end of Tax Lot 2500 is bordered by a fence that is the boundary between Tax Lots 3100 and 3600.

Below the separating Tax Lots is the south end of the property (TL # 3200, 3300, 3400, 3500, 1100, 1000, 700, 800, 900). The northwestern section (TL# 3300, and 3400) are bordered where Normal Avenue would extend. Currently, Normal Avenue ends at the railroad tracks. A private driveway extended along the western property line of Tax Lots 3300 and 3400. There is a house along the private drive on Tax Lot 3400; Tax Lot 3300 was an unused pasture surrounding Tax Lot 3400 at the time of survey. The northeastern corner (TL# 3500) has a house and outbuildings in the northwest corner. This property is being grazed by horses. Most of Tax Lot 1100 is a pasture, which is used for livestock, with a residential house along the eastern portion of the lot. There in a house on Tax Lot 800. A tributary of Cemetery Creek merges on Tax Lot 3500. The vegetation along Cemetery Creek is predominantly Himalayan Blackberry, cottonwood, and willows.

(B) Site Alterations

Historically the land was flood irrigated. Irrigation on Tax Lot 2500 was shut off in about 2006 (Appendix D: Ariel Photographs), with the exception of Tax Lots 3300 and 3500 which were irrigated through last summer. A pipe for irrigation was placed along the northern edge of Tax Lot 3300. This pipe forms a dam that backs up water to south of the pipe and runs north through a culvert under the access road that was placed in 2002. The invert of the culvert is slightly higher than the adjacent land causing water to pond behind the culvert.

Driveways that run east from Normal Avenue between Tax Lots 3300, 3500, and 1100, 1000, 700, and 800 have altered the hydrology across the landscape. A culvert runs under the driveway been Tax Lots 1100 and 3300. Additionally, an access easement placed in 2002 between Tax Lots 3300 and 3100 on the north end of the southern properties has a culvert running underneath it.

The eastern edge of the southern property is bordered by residential houses that appear to have been built between 2000 and 2002. A storm drain was placed in the development, dumping storm water out onto the properties which most likely affected the hydrology patterns. At some point in time the storm drain was blocked changing the hydrology to a much drier terrain than it previously was.

In 2003 a wetland determination (WD03-0203) was performed by the Department of State Lands on Tax Lot 3600, which is not within Schott and Associates Study area. This portion of land separates the northern property from the southern property. The determination was performed due to reported filling on the site.

The city irrigation siphon that runs parallel to the railroad in Tax Lot 700 was currently under repair at the time of the site visit. Repair equipment had been running across the drainage, vegetation had been removed but no digging appears to have occurred.

Vegetation along the western border of the northern property (TL# 2500) had been disturbed by removal of Himalayan blackberry and cottonwoods within the last year. A railroad tie bridge that crossed Cemetery Creek in this lot was removed last summer. The bridge previously allowed access to the west side of the tax lot for farming equipment.

A depression in the southeast corner near the railroad appears to have been carved out sometime between 1994 and 2000.

(C) Precipitation Data and Analysis

The calendar year rainfall started out dry. In February rainfall was at 184% and in March rainfall was at 169 percent, both within normal range. The rainfall in April fell below normal range with a drier month at 79 percent average.

Table 1. Precipitation Summary

Month	2014 Precipitation	WETS Average	WETS Range	Percent of Average
January	0.6"	2.49"	1.37"-3.04"	24%
February	3.54"	1.92"	1.12"-2.33"	184%
March	3.54"	2.09"	1.55"-2.46"	169%
April	1.32"	1.68"	1.21"-1.98"	79%

(D) Site Specific Methods

Prior to visiting the site recent and historical aerial photographs were reviewed to determine if there had been any site alterations. In addition, the soil survey and Ashland's Local Wetland Inventory were reviewed. Department of State Lands was contacted to obtain any previous history on the site. Schott and Associates initially walked the subject properties the summer of 2013 to assess the presence or absence of onsite wetlands and

waters. Because there was flood irrigation on some of the site the decision was made to hold off on the delineation until winter or early spring. Fall and the early part of the winter proved to be drier than normal (well below the WETS Table). The site was visited again in early February; even though rainfall was still well below the WETS Table.

The 1987 Manual and Regional Supplement for Mountains and Valleys West Region were used to determine presence or absence of State of Oregon wetland boundaries and the Federal jurisdictional wetlands.

Sample plots were placed where geomorphic location or vegetation indicated the possibility of wetlands or where a wetland had been previously delineated. For each sample plot, data on vegetation, hydrology and soils was collected, recorded in the field and later transferred to data forms (Appendix B). Where a wetland was present paired plots were located in the adjacent upland to document the transition. Where wetland criteria were not met in plots previously indicated as wetlands rationale best professional judgment and available information was used to make a determination.

(E) Description of All Wetlands and Other Non-Wetland Waters

Based on soil, vegetation and hydrology data taken in the field four wetlands were associated with Cemetery Creek and its tributary. A fifth and sixth wetland were located along the western property line of Tax Lot 2500. Finally, a seventh wetland was located at the upper end of Tax Lot 3300, in a shallow depression caused by an irrigation culvert and road culvert.

Wetland A and C were located within a shallow swale that ran from south to north along the western edge of Tax Lot 2500. The northern PEM wetland was 0.15 acres, and the southern PEM wetland was 0.03 acres. The wetland appears to receive runoff from Tax Lot 3100 and Tax Lot 3300. The north end becomes a ditch that runs into a culvert. The soils were hydric meeting the redox dark surface indicator (F6). Soils were saturated at 12"-14", even though we were 7 weeks past the start of the growing season. Vegetation included Kentucky bluegrass (*Poa pratensis*) and meadow foxtail (*Alopecurus pratensis*), that were disturbed within the last year by Himalayan blackberry and cottonwood removal (Sample Plots 7, 12). Paired upland plots were dominated by soft brome (*Bromus hordeaceus*), an upland plant. The upland plots did not meet wetland hydric soil or hydrology indicators (Sample Plots 8, 9, 11, 13).

Wetland B was 0.27acres of fringe PEM wetlands associated with Cemetery Creek. Cemetery Creek runs through Tax Lot 2500 from the southeast corner to the northwest flowing off property in the middle northern boundary of the lot. Abandoned ditch irrigation around the creek has caused water to spread creating fringe wetlands around the stream channel. Soils were saturated between 12"-17". Best professional judgment was used on the soils, due to recent soil/alluvial materials being deposited so indicators were not visible (Sample Plots 1, 5). However, it had secondary indicators of a wetland

drainage pattern and the FAC neutral test. Vegetation was hydrophytic including reed canary grass (*Phalarus arundinacea*), meadow foxtail, and soft rush (*Juncus effuses*).

Wetland D a 0.05 acre wetland was located at the northern end of Tax Lot 3300. A partially buried irrigation pipe dammed up runoff. Below the irrigation pipe there was a culvert going under the private drive whose invert was above the ground level. Both the irrigation pipe and the culvert cause water to pond after rain events. These ponded areas have developed wetland characteristics. Soils were hydric displaying depleted matrix (F3) (Sample Plot 15) and redox dark surface (F6) (Sample Plot 17) indicators, with saturation at 6 inches. Hydric vegetation included meadow fox tail and common spike rush (*Eleocharus palustris*).

Cemetery Creek and a tributary merge in the southeastern portion of Tax Lot 3500. Wetland G, a PEM wetland, is located north of the confluence and is the result of high water areas during seasonal changes of the creek. The wetland was located in low elevation adjacent to the creek, and contained hydric soil indicators of depleted matrix (F3) (Sample Plot 23) and redox dark surface (F6) (Sample Plot 26). Hydrophytic vegetation was dominated by reed canary grass and white clover (*Trifolium repens*). Hydrology was saturated between 6 and 10 inches.

Wetland E a 0.65 acre PEM/PFO wetland (Sample Plot 33, 34) runs south to north along the eastern border of TL# 700. Wetland F a 0.15 acre PEM/PFO wetland (Sample Plot 31) runs south to north along the western border of the lot. Both are broad flat swales formed around their individual branches of Cemetery Creek. Wetland indicators were high in these locations with saturation to the surface. Wetland F (Sample Plot 31) was dominated by reed canary grass with strong hydrogen sulfide indicator for the soils. Wetland E (Sample Plot 34) had a soil indicator of gleyed soils (F2) and hydric vegetation dominated by small-fruited bull rush (*Scirpus microcarpus*).

(F) Deviation from LWI or NWI

The Local Wetland Inventory (LWI) for Ashland, Oregon indicated that a wetland borders the western boundary south to north in Tax Lot 2500. This was consistent with Schott and Associates findings in the field. The LWI indicated fringe wetlands around Cemetery Creek in the southeast corner of Tax Lot 2500 and along the eastern border of Tax Lot 3500. These wetlands are field verified according to the City of Ashland LWI. Schott and Associates found a slight deviation to the LWI with the fringe wetlands in Tax Lot 3500 being substantially smaller than the LWI indicates. It appeared the channel of Cemetery Creek had been dug out and the associated fringe wetlands were much smaller. The National Wetland Inventory does not indicate any associated wetlands on the properties.

(G) Mapping Method

The wetland boundaries were flagged by Schott & Associates, Inc., as were the sample plots. Wetlands boundaries and sample plots were surveyed by Polaris Land Surveying, LLC.

(H) Additional Information

None.

(I) Results and Conclusions

Based on soil, vegetation and hydrology data taken in the field seven wetlands were delineated on the project area. Wetland A and C were located in a small swale in Tax Lot 2500 bordering the western edge. They are both within the same swale, but are separated by a small upland which does not have hydric soils. Runoff appears to be saturating the area. Soils were hydric with redox dark surface indicators and saturation between 12-14 inches. Himalayan blackberry and cottonwoods had been removed within the last year causing site disturbance. Remaining vegetation was predominantly Kentucky bluegrass and meadow foxtail.

Wetland B was a fringe wetland surrounding Cemetery Creek in the eastern portion of Tax Lot 2500. Abandoned irrigation ditching leading from the creek has caused associated fringe wetlands around the stream channel. The creek channel has become partially blocked, and water is seeping into the ditches. Vegetation was hydrophytic including reed canary grass, meadow foxtail, and soft rush. Best professional judgment was used on the soils due to recent soil/alluvial materials being deposited by the hydrology. Soils were saturated between 12-17 inches.

Tax Lot 3300 contained Wetland D, a small depression located at the northern end of the lot. A buried and leaking irrigation pipe was causing water to dam up both below and above the buried pipe. Depleted matrix (F3) and redox dark surface (F6) soil indicators with saturation to 16 inches proved hydric features were present. Hydric vegetation included meadow fox tail and common spike rush.

Wetland G in Tax Lot 3500 was located in the eastern portion of the lot. Cemetery Creek and a tributary merge together in this lot. The wetlands are a result of seasonal high waters in a low elevation point on the property. Soil indicators were depleted matrix (F3) and redox dark surface (F6), with saturation between 6-10 inches. Hydric vegetation was dominated by reed canary grass and white clover.

Wetland E and Wetland F are both located in Tax Lot 700. Wetland E is along the eastern border and wetland F is along the western border. Both wetlands are broad flat swales dominated by reed canary grass and bull rush. Saturation was wet to the surface and soils had strong indicators with hydrogen sulfide.

(J) Disclaimer

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

Appendix A: Maps

FIGURE 1. SITE VICINITY

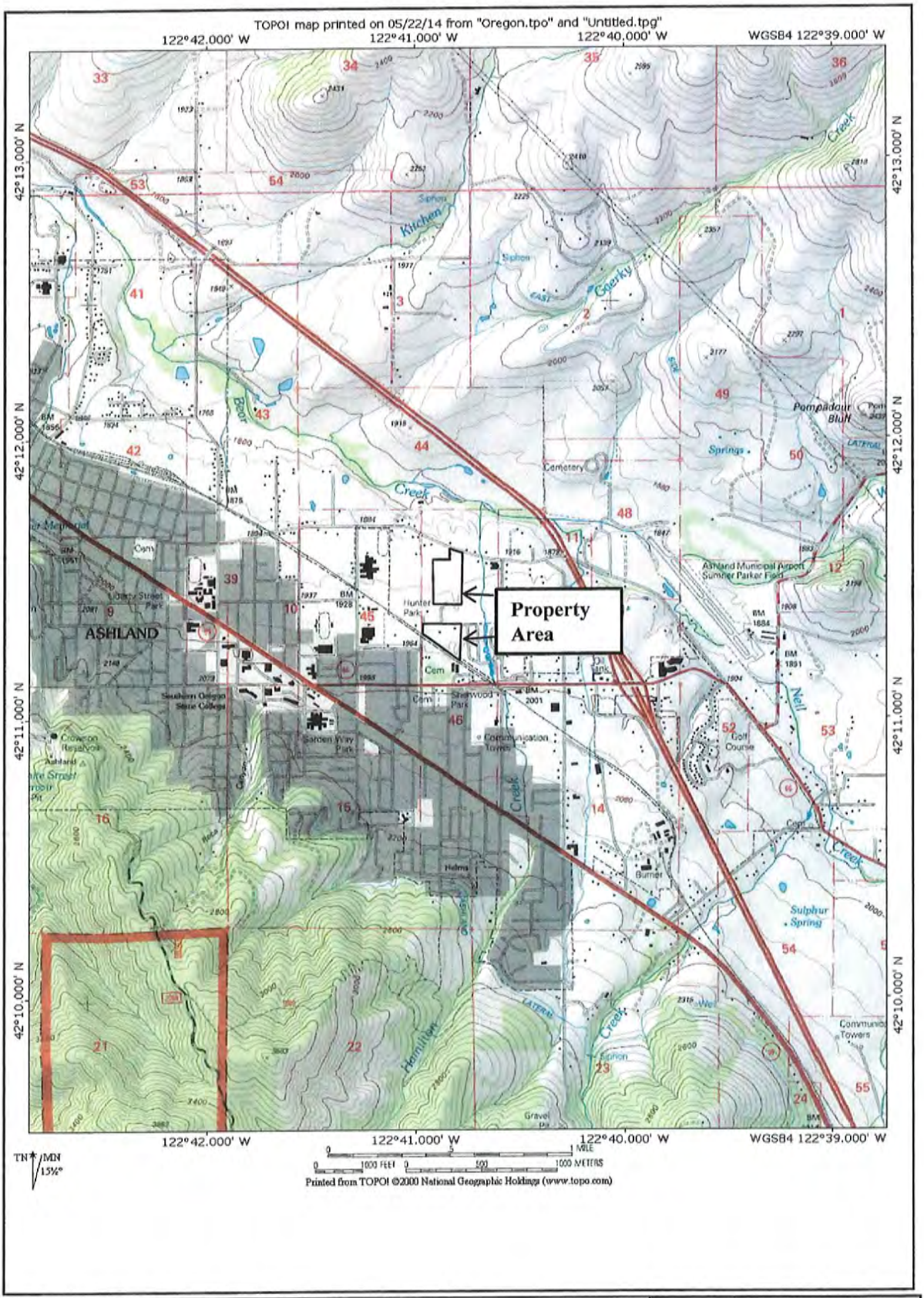


Figure 1: Site Vicinity Map
Normal Avenue
S&A # 2273

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

FIGURE 2. TAX MAP

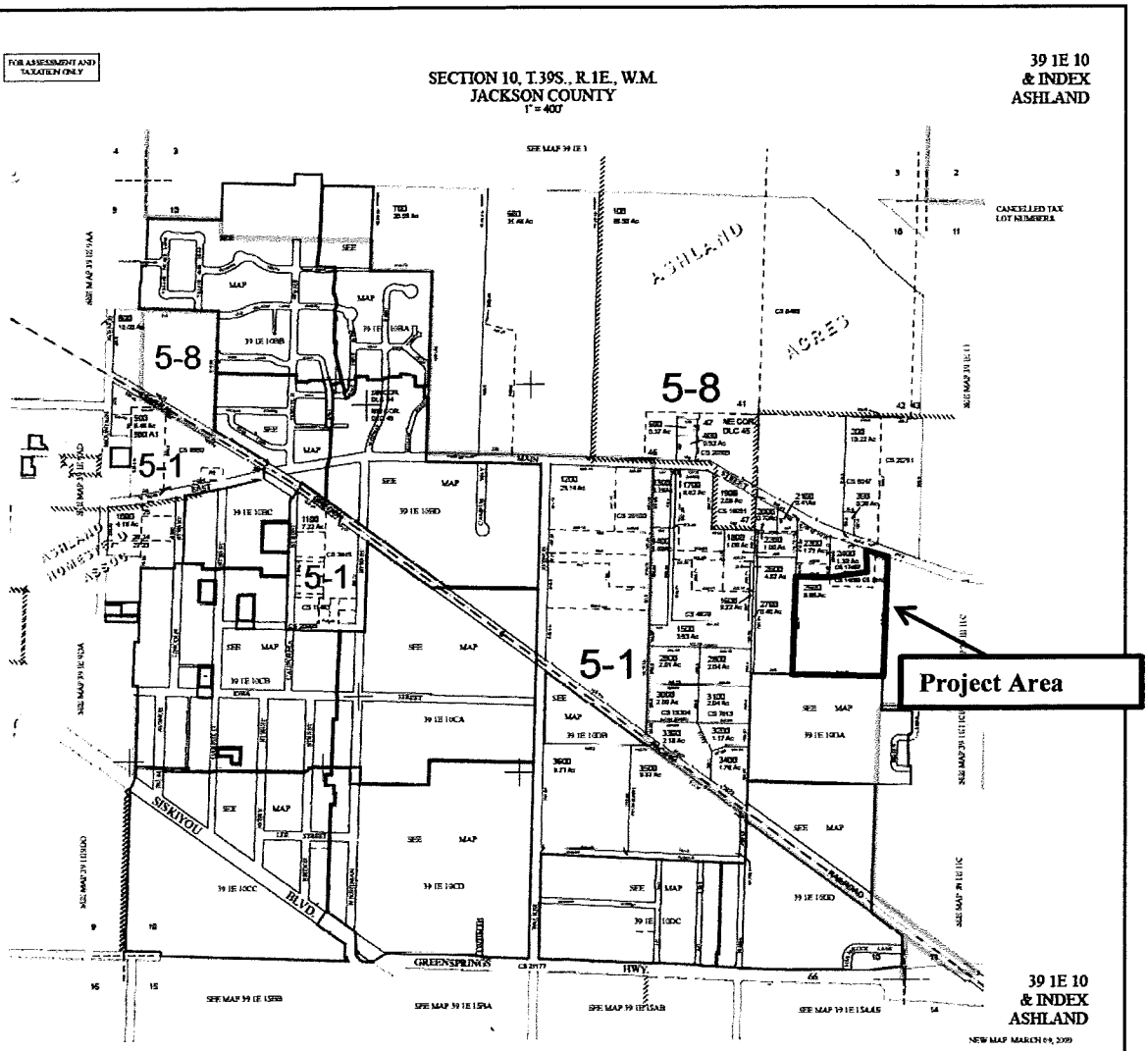


Figure 2: Tax Lot Map TL#2500
Normal Avenue
S&A# 2273

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

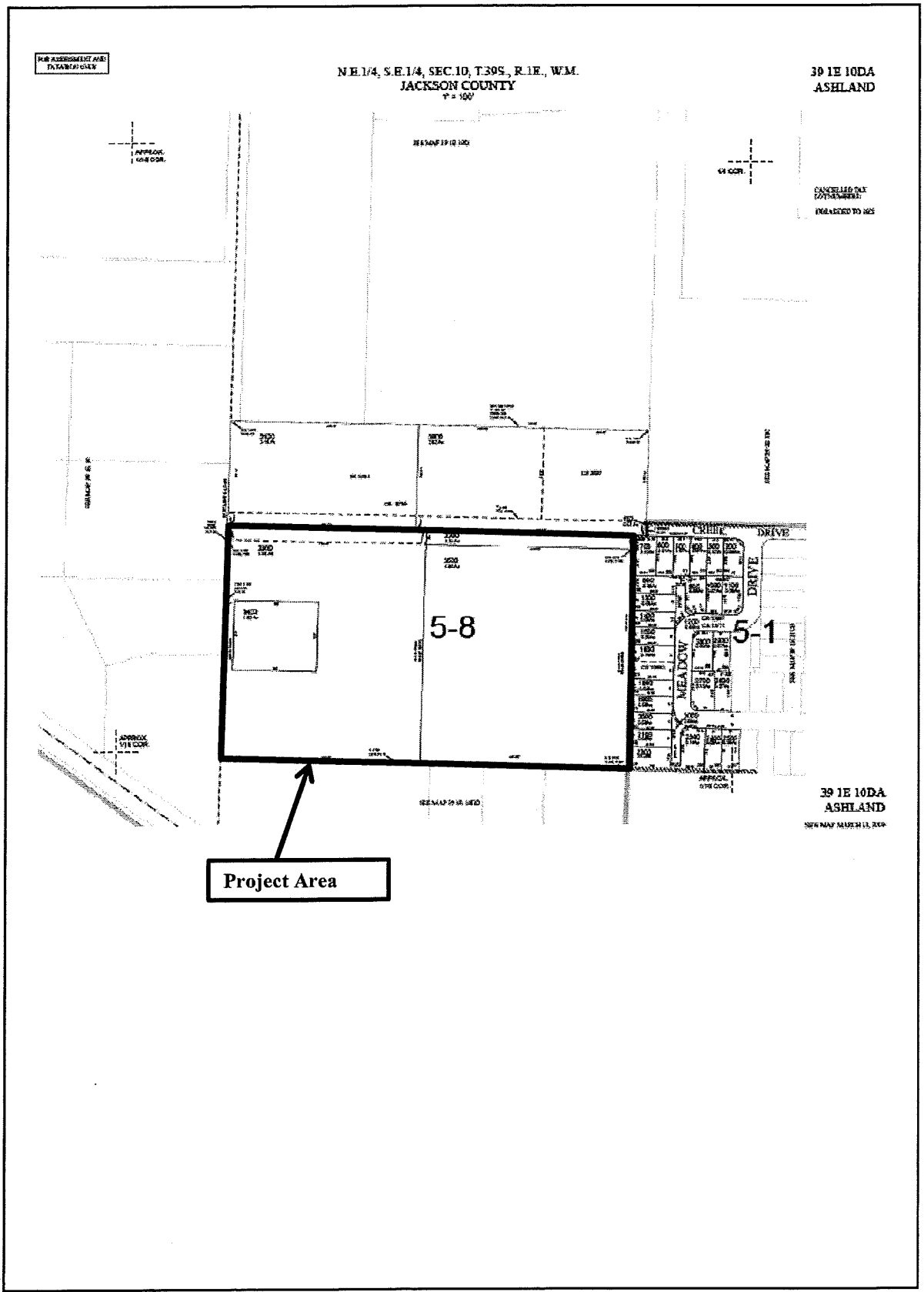


Figure 2: Tax Lot Map TL# 3200, 3300, 3400, 3500
Normal Avenue
S&A# 2273

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

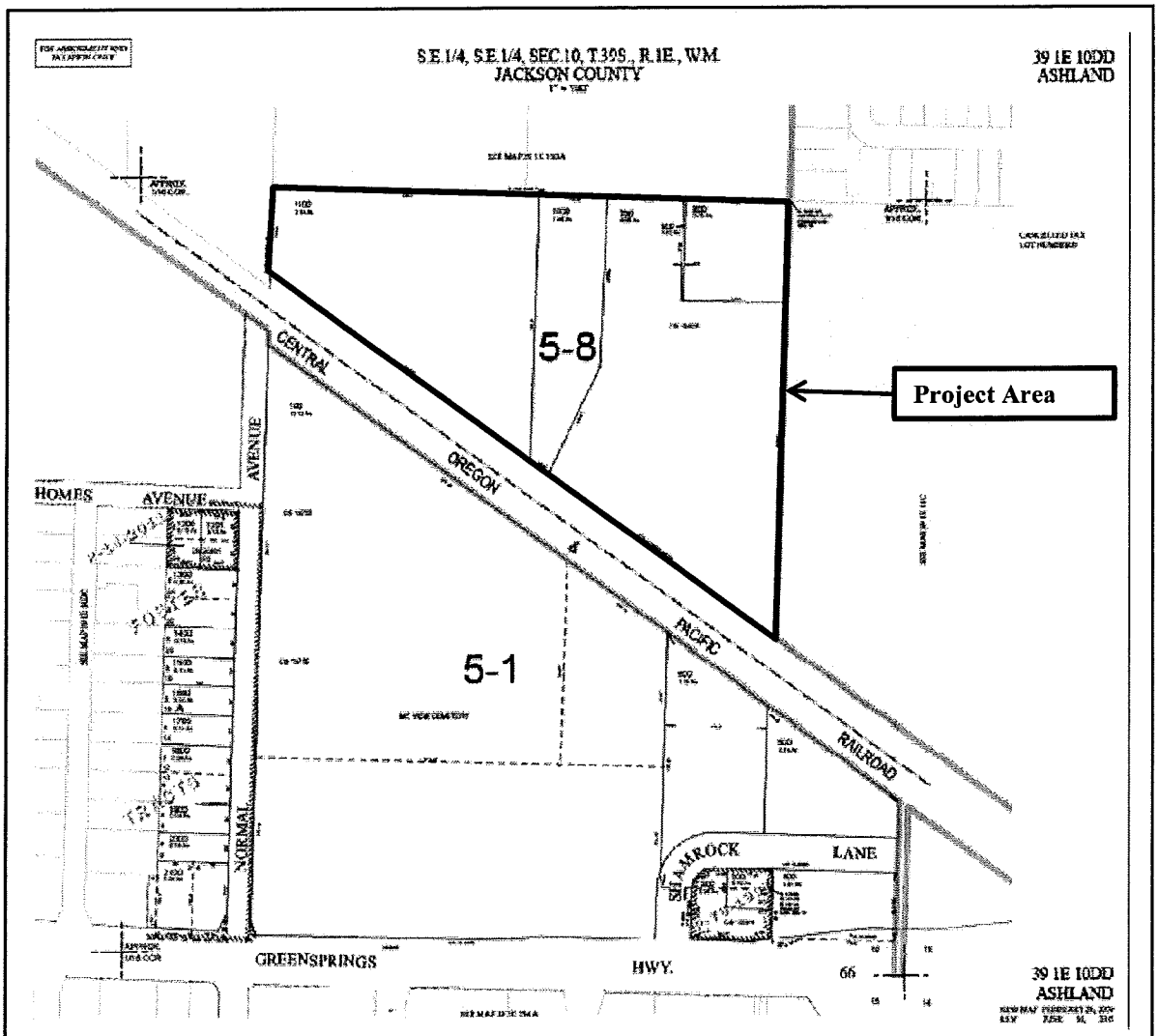
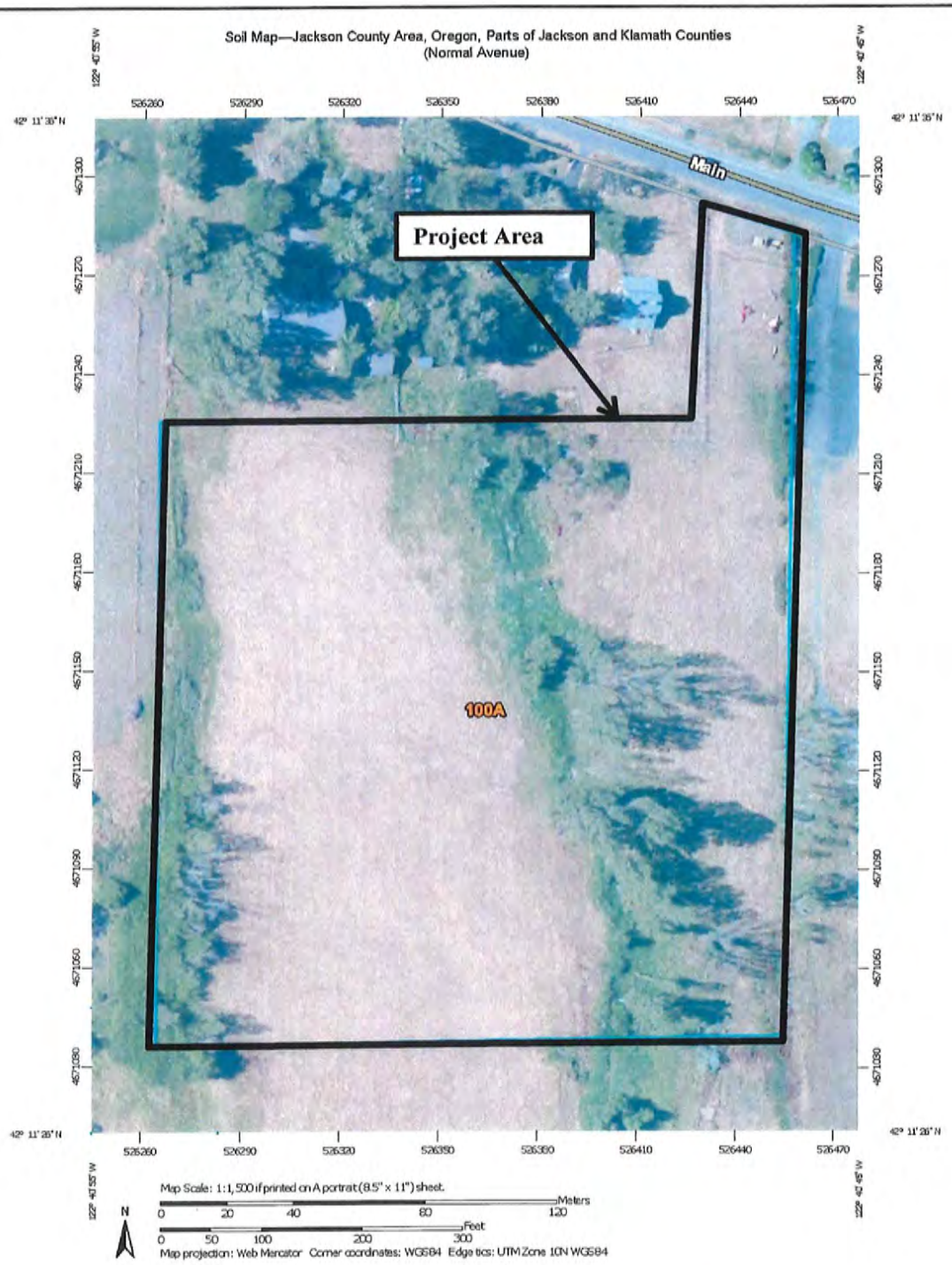


Figure 2: Tax Lot Map TL#1100, 1000, 900, 800, 700
Normal Avenue
S&A # 2273

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

FIGURE 3. LWI MAP

FIGURE 4. SOIL SURVEY MAP

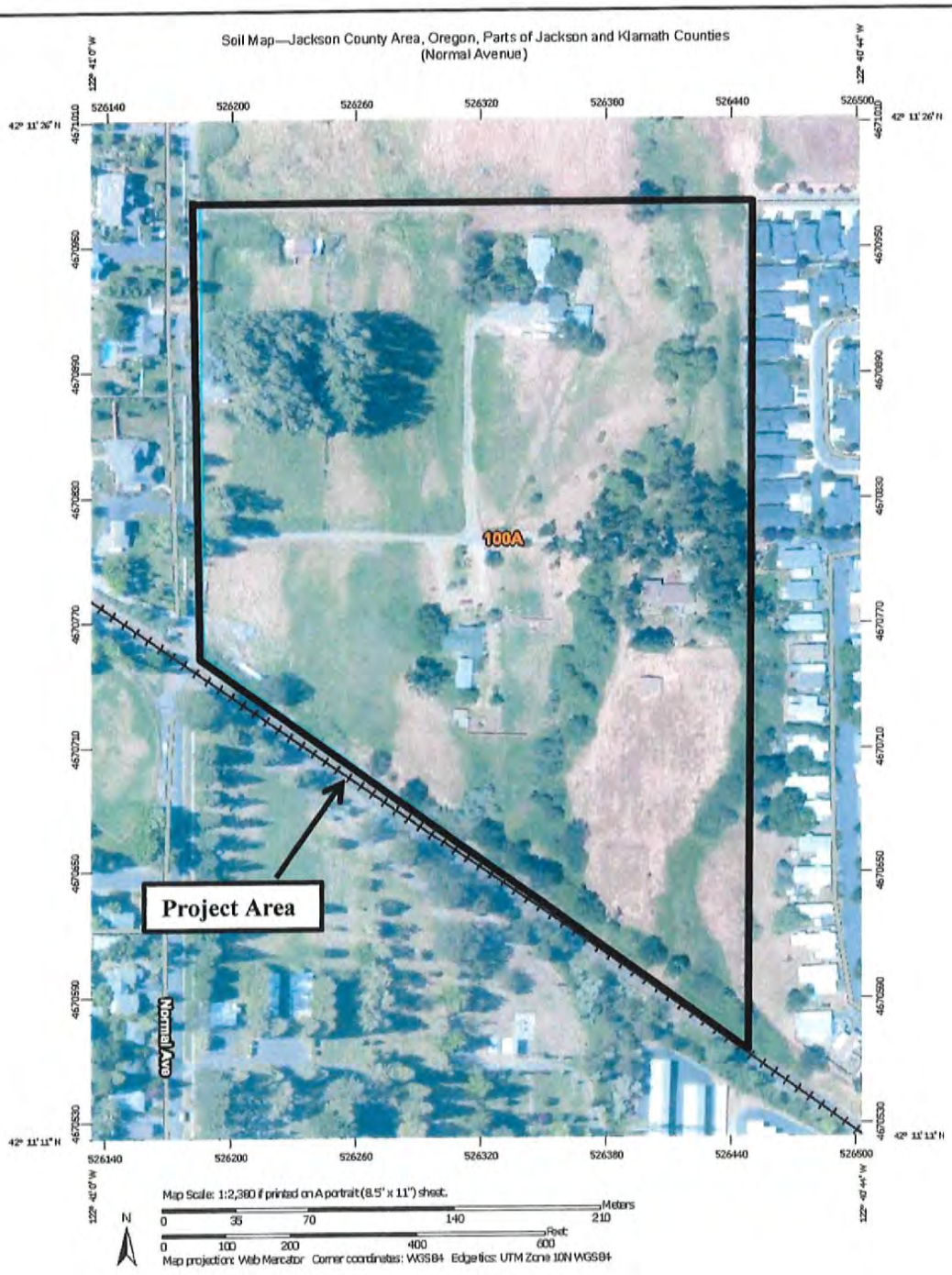


Map Unit Legend

Jackson County Area, Oregon, Parts of Jackson and Klamath Counties (OR632)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
100A	Kubli loam, 0 to 3 percent slopes	9.4	100.0%
Totals for Area of Interest		9.4	100.0%

Figure 4: Soil Survey Map TL# 2500
Normal Avenue
S&A# 2273

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



Map Unit Legend

Jackson County Area, Oregon, Parts of Jackson and Klamath Counties (OR632)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
100A	Kubli loam, 0 to 3 percent slopes	20.3	100.0%
Totals for Area of Interest		**20.3**	**100.0%**

Figure 4: Soil Survey Map TL# 3300, 3500, 3400, 700, 800, 900, 1000, 1100, 3200
Normal Avenue
S&A# 2273

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

FIGURE 5. WETLAND MAP

Normal Avenue Un-incorporated Area

WETLAND DELINEATION MAP

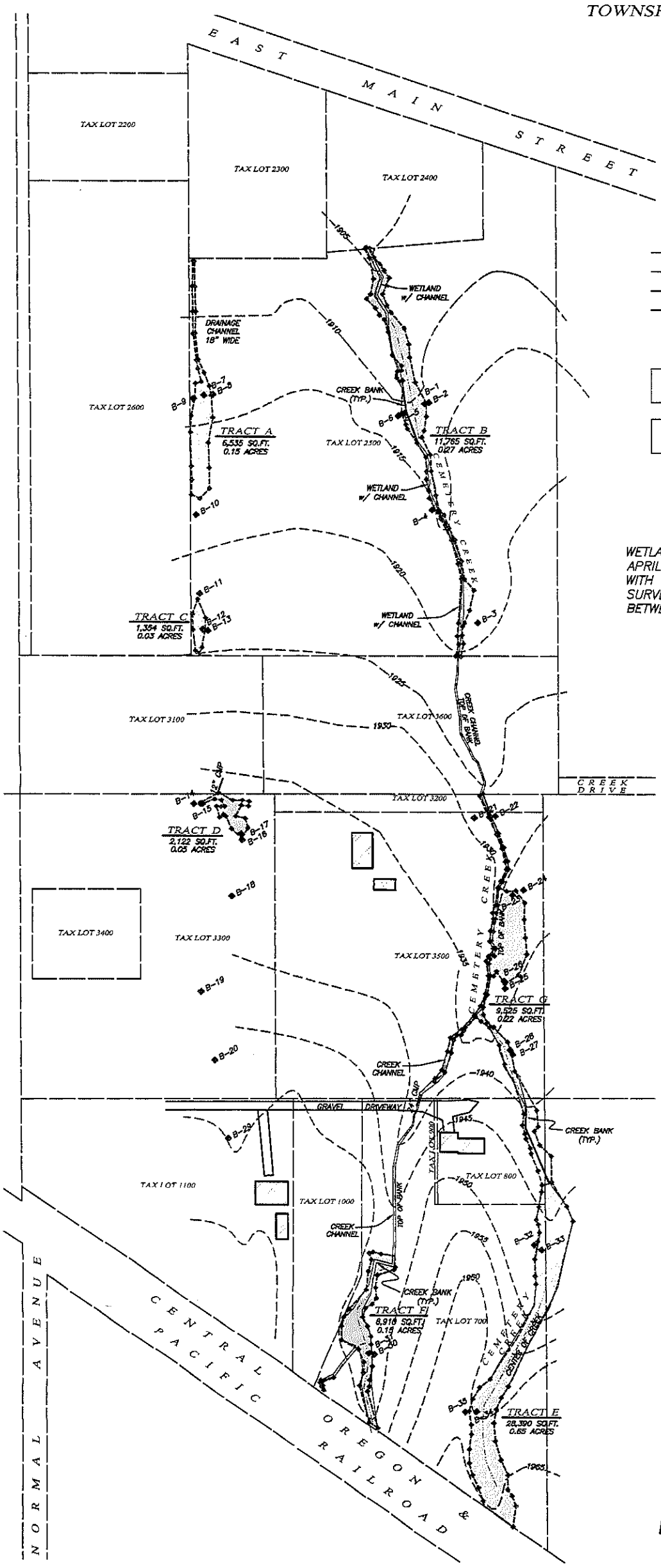
LYING SITUATE WITHIN

SOUTHEAST QUARTER OF SECTION 10
TOWNSHIP 39 SOUTH, RANGE 1 EAST, WILLAMETTE MERIDIAN
JACKSON COUNTY, OREGON

FOR

Mahar Homes, Inc.

815 Alder Creek Drive
Medford, Oregon 97504



LEGEND

- *RIGHT OF WAY CENTERLINE*
- *PROPERTY BOUNDARY LINE*
- *WETLAND DELINEATION BOUNDARY*
- *CENTERLINE OF DRAINAGE CHANNEL*
- *BLUE FLAGGED SOIL TEST PLOT, AS DESCRIBED*
- *ORANGE FLAGGED - WETLAND DELINEATION*
- *WETLAND AREA AS FLAGGED*
- *BUILDING*

SURVEY NOTE

WETLAND DELINEATION WAS FIELD MARKED WITH COLORED FLAGGED PINS ON APRIL 25, 2014 BY DR. MARTIN SCHOTT, A PROFESSIONAL WETLAND SCIENTIST WITH SCHOTT AND ASSOCIATES, INC. LOCATED IN AURORA, OREGON. FIELD SURVEY TO LOCATE AND MAP FLAGGED WETLAND PINS WAS CONDUCTED BETWEEN APRIL 27–30, 2014 AND UPDATED ON MAY 22, 2014.

TRACT	*AREA*
A	*6,535 SQ.FT.*
B	*11,765 SQ.FT.*
C	*1,354 SQ.FT.*
D	*2,122 SQ.FT.*
E	*28,390 SQ.FT.*
F	*6,910 SQ.FT.*
G	*9,525 SQ.FT.*
TOTAL	*66,168 SQ.FT.*

SCALE: 1" = 200'
CONTOUR INTERVAL = 5 FEET

REGISTERED
PROFESSIONAL
LAND SURVEYOR

OREGON
JULY 14, 1998
SHAWN KAMPMANN
2883 LS

ELECTRONIC COPY

RENEWAL DATE: 6/30/2015

SURVEYED BY:

POLARIS LAND SURVEYING LLC
P.O. BOX 459
ASHLAND, OREGON 97520
(541) 482–5009

DATE: MAY 28, 2014
PROJECT NO. 865–14

POLARIS LAND SURVEYING

WETLAND DELINEATION / DETERMINATION REPORT COVER FORM

This form must be included with any wetland delineation report submitted to the Department of State Lands for review and approval. A wetland delineation report submittal is not "complete" unless the fully completed and signed report cover form and the required fee are submitted. Attach this form to the front of an unbound report and submit to: **Oregon Department of State Lands, 775 Summer Street NE, Suite 100, Salem, OR 97301-1279.** Make the check payable to the Oregon Department of State Lands. To pay the fee by credit card, call 503-986-5200

X Applicant X Owner Name, Firm and Address: **Kathleen Livni,** **2535 Old Mill Way** **Ashland, Oregon, 97520**	Business phone # **510-913-5110** Mobile phone # (optional) FAX # E-mail: Helmansprings@gmail.com
☐ Authorized Legal Agent, Name and Address: **Same as above**	Business phone # FAX # Mobile phone # E-mail:

I either own the property described below or I have legal authority to allow access to the property. I authorize the Department to access the property for the purpose of confirming the information in the report, after prior notification to the primary contact.

Typed/Printed Name: KATHLEEN DALEY LIVNI Signature: Kathleen Daley Livni

Date: 6.4.14 Special instructions regarding site access: N/

Project and Site Information (for latitude & longitude, use centroid of site or start & end points of linear project)

Project Name: **NONE**	Latitude: **42.1907** Longitude: **-122.6801**
Proposed Use: **Home Development**	Tax Map # **39S 01E 10DA**
Project Street Address (or other descriptive location): **Located west of the west terminus of Creek Drive**	Township **39S** Range **1E** Section **10** QQ **nwse** Tax Lot (s) **3600**
City: **Ashland** County: **Jackson**	Waterway: **Cemetery Creek** River Mile: **N/A** NWI Quad(s): **online wetlands mapper**

Wetland Delineation Information

Wetland Consultant Name, Firm and Address: **Keystone Natural Resource Consulting, Mike Hoischer** **12920 SW Moreno Dr.** **Gaston, OR 97119**	Phone # **503-201-9077** Mobile phone # FAX # E-mail: **mike@keystonenrc.com**
The information and conclusions on this form and in the attached report are true and correct to the best of my knowledge. Consultant Signature:	Date: **June 6, 2014**
Primary Contact for report review and site access is X Consultant ☐ Applicant/Owner ☐ Authorized Agent	
Wetland/Waters Present? x Yes ☐ No	Study Area size: 2.6 Total Wetland Acreage: 655sf.wetland 478sf stream

Check Box Below if Applicable:	**Fees:**
☐ R-F permit application submitted	X Fee payment submitted $396
☐ Mitigation bank site	☐ Fee ($100) for resubmittal of rejected report
☐ Wetland restoration/enhancement project (not mitigation)	Name of Payor:
☐ Industrial Land Certification Program Site	

Other Information:	Y	N	
Has previous delineation/application been made on parcel?	x	☐	If known, previous DSL # **WD 03-0203**
Does LWI, if any, show wetland or waters on parcel?	x	☐	**Wetland 4**

For Office Use Only

DSL Reviewer: _____	Fee Paid Date: ___/___/___	DSL WD # _____
Date Delineation Received: ___/___/___	DSL Project # _____	DSL Site # _____
Scanned: ☐ Final Scan: ☐	DSL WN # _____	DSL App. # _____

Form Updated 6/18/2012

Wetland Delineation for Tax Lot 3600, Tax Map 39 1E 10DA

Prepared For

Kathleen Livni
2535 Old Mill Way
Ashland, Oregon 97520

Prepared By

Mike Holscher, PWS
Keystone Natural Resource Consulting
12920 SW Moreno Drive
Gaston, Oregon 97119
503-201-9077
mike@keystonenrc.com

June 6th, 2014

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LANDSCAPE SETTING AND LAND USE

General Setting and Topography

The study area is located immediately northwest of the terminus of Creek Drive in Ashland Oregon (T39S, R1E, Section 10; Figures 1 & 2 in Appendix A). The landform is the toe slopes of the Klamath Mountains approximately 0.6 mile upslope (south) of Bear Creek. The general landscape in the area is gently sloping to the north with subtle undulations perpendicular to the slope where small drainages flow toward Bear Creek. The lands to the south are increasingly being developed with the newest developments adjacent to the study area. The development is a combination of older and newer residential subdivisions. The lands to the east, west and north are sparsely developed with much of the area as open graze lands and rural farmsteads. The land is mostly composed of grasses and forbs except for riparian zones which support some shrub and tree communities.

Lot 3600 is a gentle north sloping property. The grade is less than 5 percent at maximum. In the eastern portion of the property the lands drop into a floodplain associated with Cemetery Creek. The land west of the floodplain rises 5 feet to a terrace while the lands east of the creek rise 10 feet to a terrace. The property is mostly vegetated with grasses and forbs. There are a few newly planted trees throughout the eastern part of the site. In the southeast corner of the site near the terminus of Creek Drive, the eastern terrace escarpment is covered with Himalayan blackberry (*Rubus armeniacus*).

Cemetery Creek is a 2-foot wide drainage with a monoculture of reed canary grass dominating the floodplain on either side. A few mature weeping willows (*Salix babylonica*) are scattered throughout the floodplain onsite.

SITE ALTERATIONS

In 2003 wetland fill was noted onsite and Jennifer Goodridge and Bob Lobdell from Oregon Division of State Lands (ODSL) conducted a partial wetland determination of the area east of Cemetery Creek in order to identify areas of wetland that were impacted. It appears that the fill material has been removed and the area is restored. The ODSL delineation is attached to this report in Appendix E. That 2003 wetland boundary was added to Figure 7 based upon the field measurements on the ODSL determination map.

In fall of 2013, the current land owner plugged a stormwater outfall near the terminus of Creek Drive. The outfall was diverting untreated street runoff into the floodplain on his property. Currently, the street runoff is diverted into a ditch that runs along the east property line. The cap for the outfall still leaks a minor amount of water into the floodplain.

PRECIPITATION DATA AND ANALYSIS

The field data was collected on April 10, 2014. Monthly rainfall data was collected from WETS table for Ashland, Oregon. The daily rainfall totals for the 14 days prior to field work was obtained from NOAA National Climatic Data Center from their Medford Station. According to the WETS table the growing season starts on April 10 in 5 out of 10 years.

Month	Observed	Average	Deviation of Avg.	Percent of Avg.
January	0.73 in.	2.49 in.	-1.71in.	30%
February	4.02 in.	1.92 in.	2.1 in.	209%
March	3.66 in.	2.09 in.	1.23 in.	159%
April	1.48 in.	1.68 in.	-0.2 in	88%
TOTALS	**17.08 in.**			**121%**

According to daily NOAA climate data for Medford, Oregon, the precipitation data for the 14 days prior to field data collection was 1.22 inches. That rainfall accumulation is at or above normal precipitation totals for a 2 week period in March or April.

The water year starting in October 2013 was very dry until the end of January 2014. Since January there have been 2 months of excessive rainfall accumulation and the rainfall in the 14 days prior to field work was at a seasonal norm. Hydrology data collected was considered accurate and under normal circumstances.

METHODS

Offsite Methods

Soil mapping information was obtained from data available on the Web Soil Survey (WSS) for Jackson County. The USFWS wetlands mapper (NWI), tax maps and available air photos were also reviewed prior to site visit. This information provided basic knowledge and preliminary topographic indication of the location of waters, wetlands, and hydric soils to facilitate on-site reconnaissance for efficient and useful data collection. In this case, a previous ODSL 2003 wetland determination was reviewed and this year's data was collected in similar locations to ODSL.

The NWI shows no indication of a wetland within the study area (Figure 4). The City of Ashland local wetland inventory (LWI; Figure 3) does indicate a wetland along the east edge of lot 3600. It is labeled as W4 (wetland 4) and it also noted with the ODSL wetland determination number (WD 03-0203).

The Jackson County Soil Survey notes that the study area is mapped entirely as Kubli loam (Figure 5). The series is not listed as a hydric soil, but has hydric components of Aquolls

and Gregory silty clay loam. The Kubli and Gregory soils are found on stream terraces. All data collected was within the lowlands area associated with a drainage, so the soils documented are not similar to either series description.

The August 22, 2012 air photo indicates a lush green vegetation pattern in the lowlands adjacent to Cemetery Creek (Figure 6).

Field Methods

The focus of data collection within lot 3600 was within the lowlands adjacent to Cemetery Creek. Eleven sample points were selected which lie in two rough transects that cross the lowlands perpendicular to the Cemetery Creek alignment. Because the field work was conducted at the beginning of the growing season, documentation of hydrology indicators was expected in areas that ODSL had previously mapped as wetland (T1-P1, T2-P6 and T2-P5 in this report). Positive hydrology indicators were only documented at T2-P5 and marginally at T2-P4. The remaining wetland plots were selected to sufficiently represent all areas of the lowlands. Because this area was previously mapped as wetland, it was imported to see a lot of soil pits at various elevations in the lowlands.

Besides the area mapped as wetland in Figure 7, no other plots met the hydrology or soil criteria. The plots closest to Cemetery Creek had an observed water table but beyond the positive criteria depth. The lowlands are chiefly vegetated with reed canary grass (*Phalaris arundinacea*); a hydrophytic species which is commonly found in floodplains that are not wetlands.

The soil pits were dug and left open for three hours in order to allow the water tables to rise to their current seasonal levels. Based upon soils encountered this was deemed long enough to get accurate hydrology data.

DESCRIPTION OF WETLANDS AND OTHER NON-WETLAND WATERS

There are two features within the study area mapped on Figure 7 as wetlands and "waters."

Wetlands

One small wetland was flagged in the lowland area of lot 3600 east of Cemetery Creek. The wetland is located near the Creek Drive storm water outfall. The outfall was plugged last year but some water continues to escape. The soils were marginally hydrophytic with distinct mottle present in the upper horizon. The water table was at 11 inches and saturated soils at 10 inches. Reed canary grass is the dominant species but half of the area was barren ground from the machinery used to construct the storm water outfall blockage (Photos 1 & 4).

Waters

Cemetery Creek flows through the middle of the lowlands in the eastern portion of lot 3600. The creek on average is 2 feet wide. It was flowing during the site visit and was only a few inches deep. The stream channel runs in a fairly direct channel with little sinuosity. The banks are well defined and surrounded by reed canary grass (photo 5). The centerline of the creek was surveyed along with the wetland boundary and sample points flags.

DEVIATION FROM NATIONAL AND LOCAL WETLAND INVENTORIES

The (NWI) does not indicate any wetlands within lot 3600. The LWI indicates a wetland and Cemetery Creek within the east part of lot 3600. The wetland areas east of Cemetery Creek on LWI came from a previous wetland determination by ODSL. The wetland area west of Cemetery Creek were mapped by Fishman/SWCA. The feature is labeled as W4 or wetland 4. The informational page for wetland 4 in the LWI report states that no data was collected for this wetland because site access was not granted. Fishman/SWCA likely used the ODSL wetland determination and air photos showing a larger lush green pattern to map this LWI polygon. A logical approach based upon 2003 data.

It has been concluded that the wetland within lot 3600 is smaller than mapped on the LWI map (Figure 3 & Figure 7).

MAPPING METHODS

Sample plot and wetland boundary flags were placed in the field by biologist, Mike Holscher, PWS. These flags and the creek centerline were surveyed by Polaris Land Surveying and have a sub-foot accuracy. Keystone NRC modified the Polaris drawings to create the figures for this report.

ADDITIONAL INFORMATION

The data sheets from the ODSL wetland determination dated April 16, 2003 were reviewed (ODSL WD# 03-0203). While hydrology was observed within criteria depth in area mapped as wetland. None of the 2003 soils documented meet positive criteria depth according to current standards within the western supplement. There is a note that organic material was present at a couple wetland plots (plots 1 & 2). But there is no indication that this organic material is a histic or mucky type soil. Sample plots for this report were located near the 2003 ODSL plots (see T1-P1, T2-P4 & T2-P5). Both the ODSL and KNRC soil profiles are similar in these areas but KNRC did not note organics in the profiles.

At the time of the ODSL delineation the water year from October 2002 through April 2003 was 104 percent of normal. The positive hydrology data noted in 2003 could have been exaggerated by the storm water outfall that is currently blocked.

The vegetation data from 2003 notes only one plot with reed canary grass. That plot (#4) was an upland plot. The other vegetation noted though out the site is no longer present. The reed canary grass appears to have out competed the species noted in 2003. That 2003 upland data plot verifies that reed canary grass has no problem thriving in upland and it does all over the site today.

The City of Ashland's storm water management plan in located in Appendix B. The study area is highlighted in yellow. The plan shows that roughly 45 homes including streets diverted storm water directly onto lot 3600 until last fall. The subdivision was built in 2002 and would likely have been the water source noted in the 2003 ODSL data sheets. The LWI mentions that several storm water outflows feed this wetland area. Water is flashy in the lowlands, but does not linger long enough to create positive hydric soil indicators. The lowlands are sloped north and the water moves through the site; there is nothing holding it there.

The map produced for the 2003 report shows 4 measurements from the east property line. That line was transferred to Figure 7 using those field measurements. Based on those numbers the wetland boundary lies between halfway and just below the top of terrace. There is no indication of side hill seepage/wetland on any part of that terrace slope.

RESULTS AND CONCLUSION

It is the conclusion of KNRC that two potentially regulated features within Lot 3600; one is Cemetery Creek, a tributary or Bear Creek. The second feature is a small wetland associated with leakage from a storm water outfall.

Cemetery Creek – 478 square feet
Wetland – 655 square feet

Total Potentially Jurisdictional Lands – 1,133 square feet - 0.03 acre

DISCLAIMER

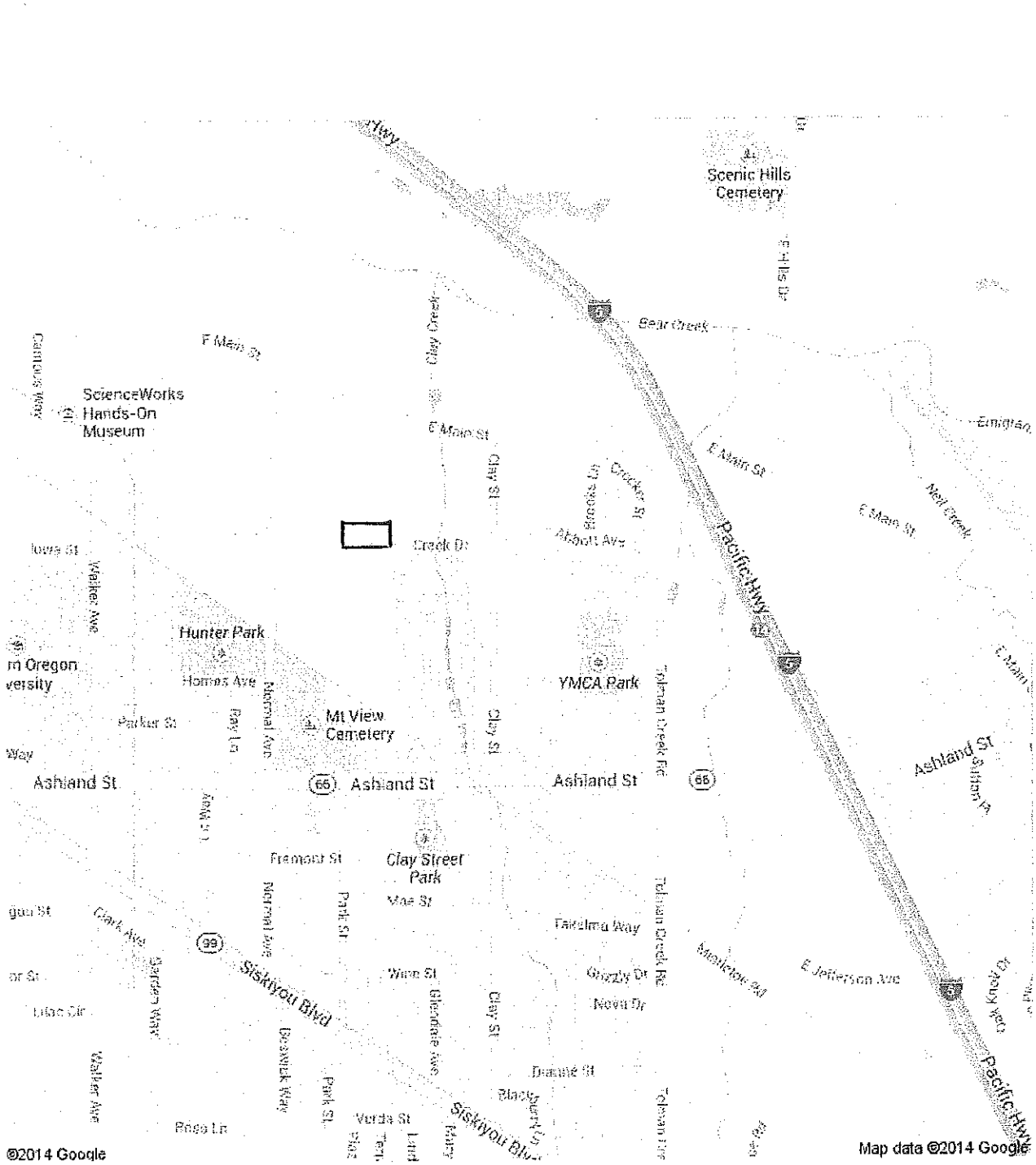
"This report documents the investigation, best professional judgment and conclusions of the investigator. It is correct and complete to the best of my knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been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

Report drafted by:

Mike Holscher, PWS
Keystone Natural Resource Consulting

APPENDIX A

- Maps



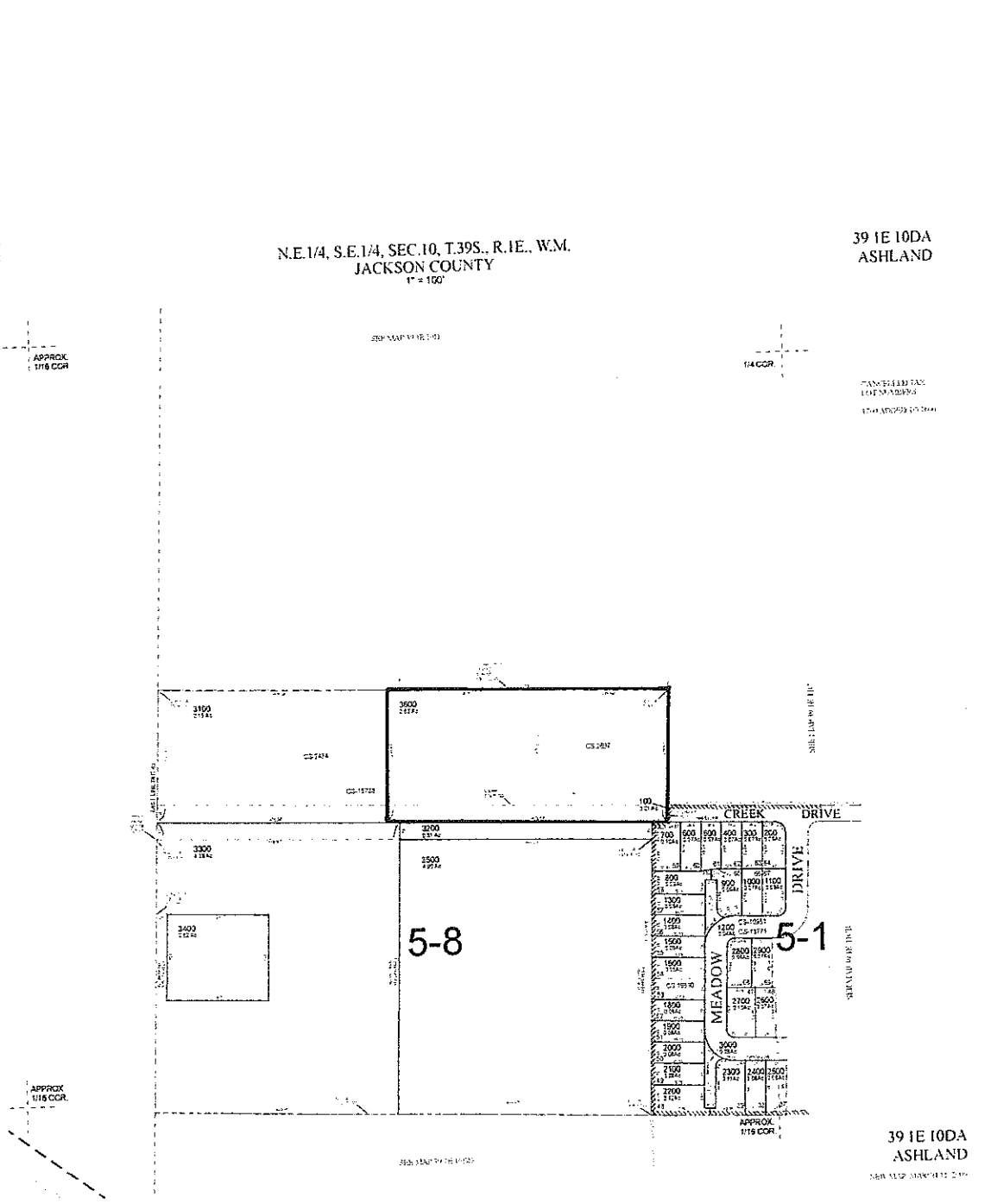
STUDY AREA

KEYSTONE NATURAL RESOURCE CONSULTING

48

VICINITY
WETLAND DELINEATION FOR
TAX LOT 3600, MAP 39 1E 10DA
Ashland, Jackson County, Oregon

FIGURE 1

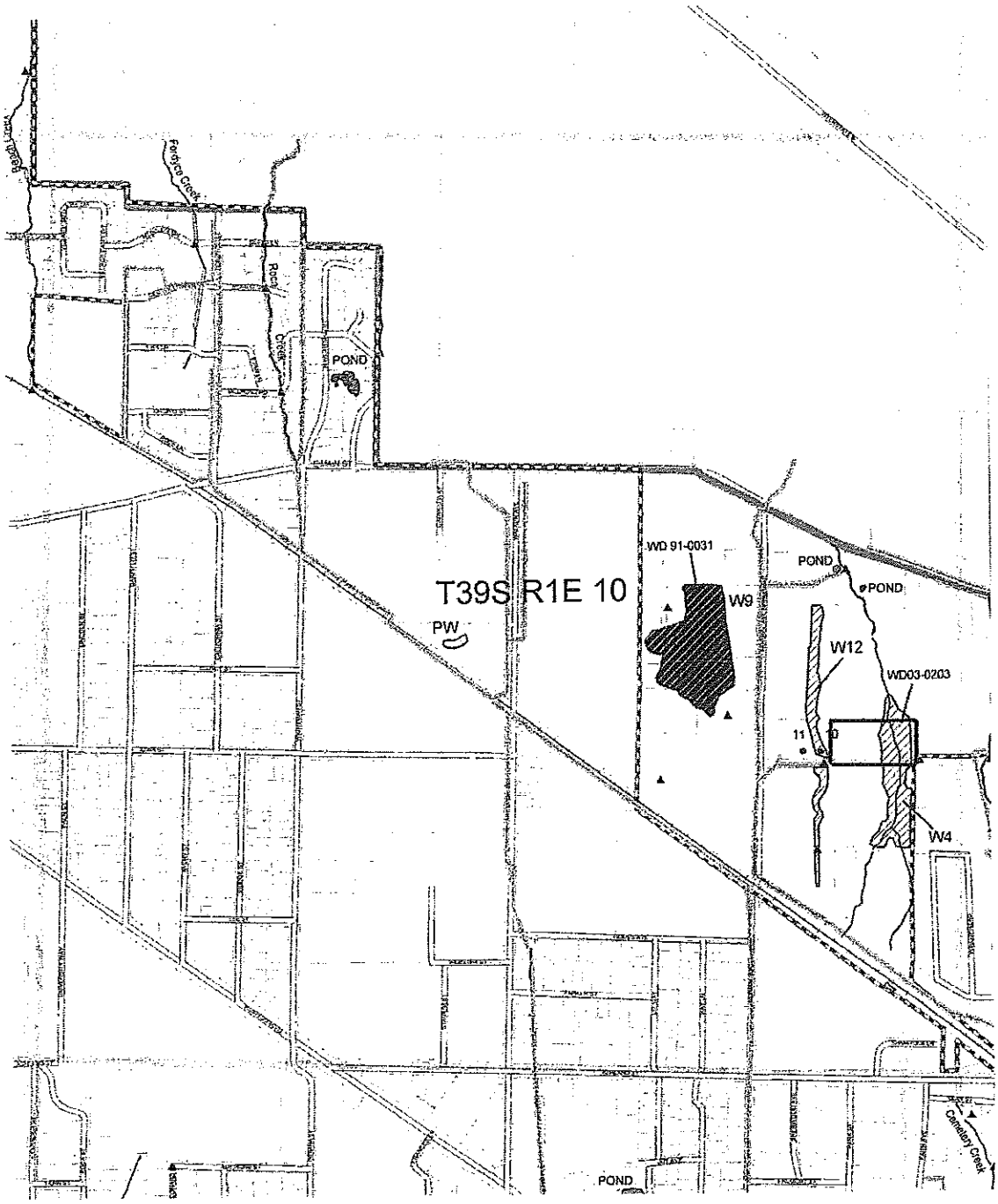


KEYSTONE NATURAL RESOURCE CONSULTING

TAX MAP
WETLAND DELINEATION FOR
TAX LOT 3600, MAP 39 1E 10DA
Ashland, Jackson County, Oregon

No Scale

FIGURE 2



KEYSTONE NATURAL RESOURCE CONSULTING

LOCAL WETLAND INVENTORY
WETLAND DELINEATION FOR
TAX LOT 3600, MAP 39 1E 10DA
Ashland, Jackson County, Oregon

FIGURE 3

Approximate Scale 1 inch = 1000 ft.

0 1000 2000

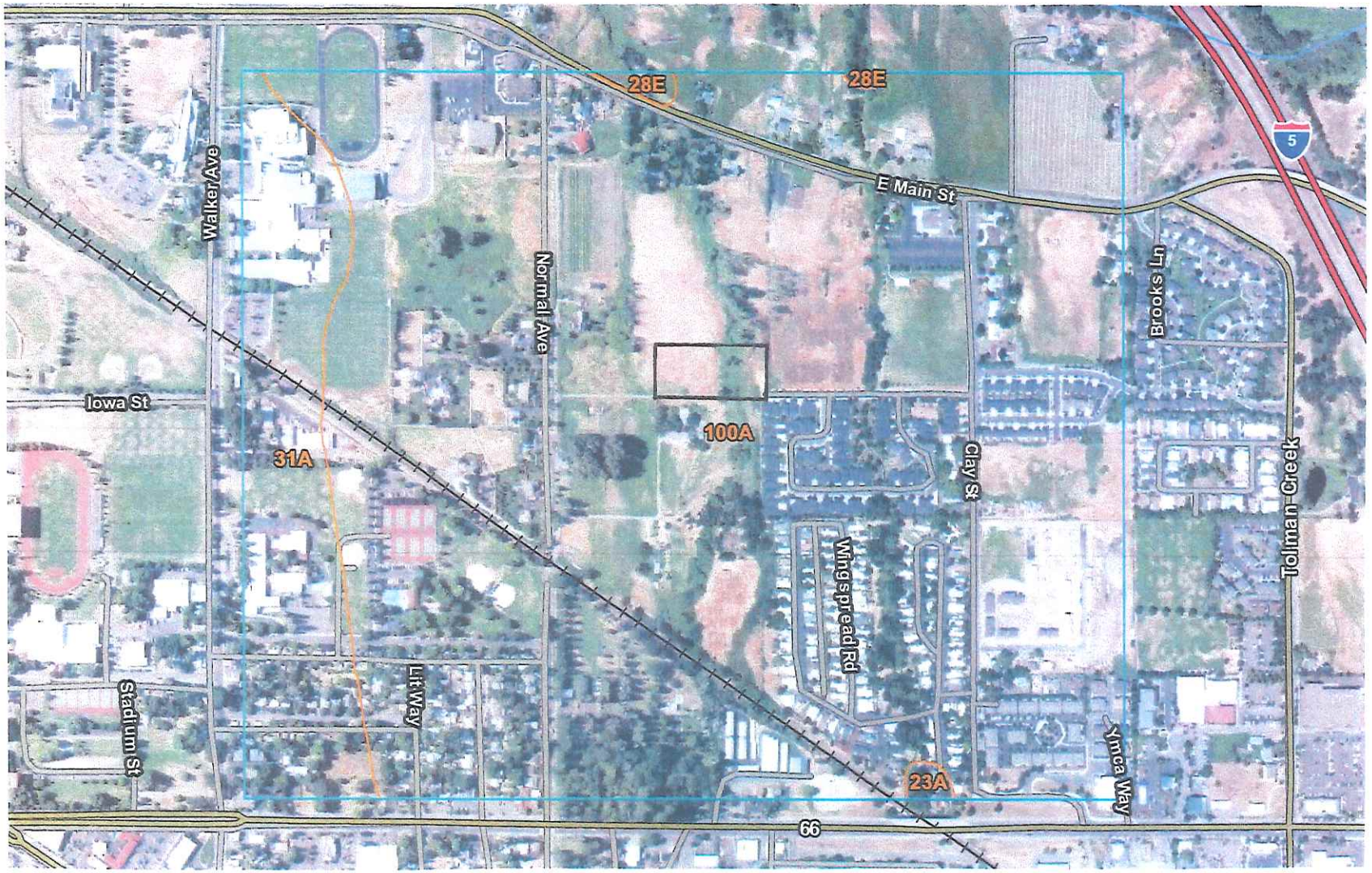
June 6, 2014

KEYSTONE NATURAL RESOURCE CONSULTING

AIR PHOTO - AUGUST 22, 2012
WETLAND DELINEATION FOR
TAX LOT 3600, MAP 39 1E 10DA
Ashland, Jackson County, Oregon

FIGURE 6

feet 400
meters 100



100A - Kubli loam

KEYSTONE NATURAL RESOURCE CONSULTING

June 6, 2014

SOILS
WETLAND DELINEATION FOR
TAX LOT 3600, MAP 39 1E 10DA
Ashland, Jackson County, Oregon

FIGURE 5

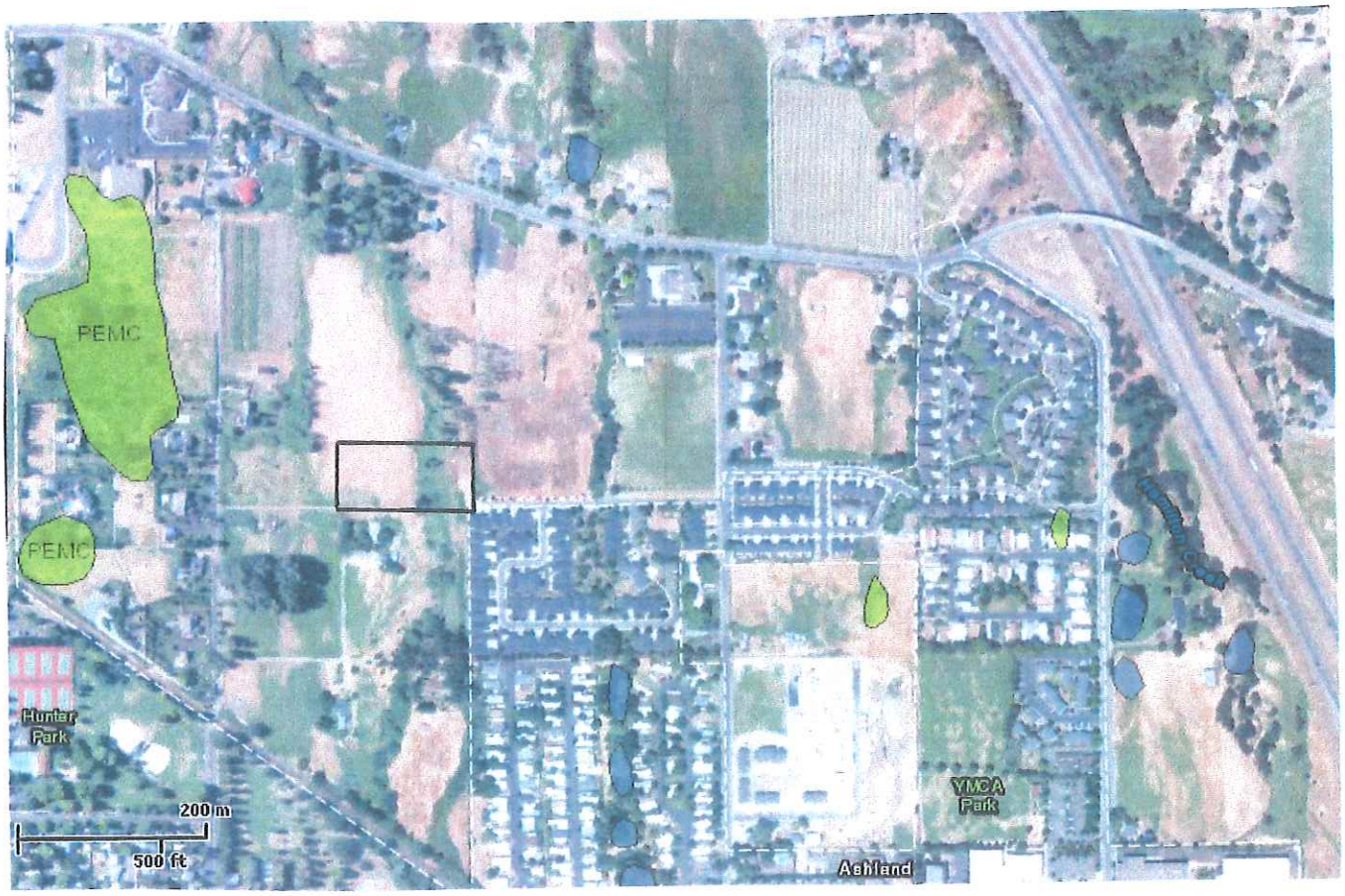
Map Scale: 1:7,990 if printed on A landscape (11" x 8.5") sheet.

Meters
0 100 200 400 600

Feet
0 350 700 1400 2100

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

SOURCE : NRCS Web Soil Survey, 6/2/14.



NORTH

STUDY AREA

Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

KEYSTONE NATURAL RESOURCE CONSULTING

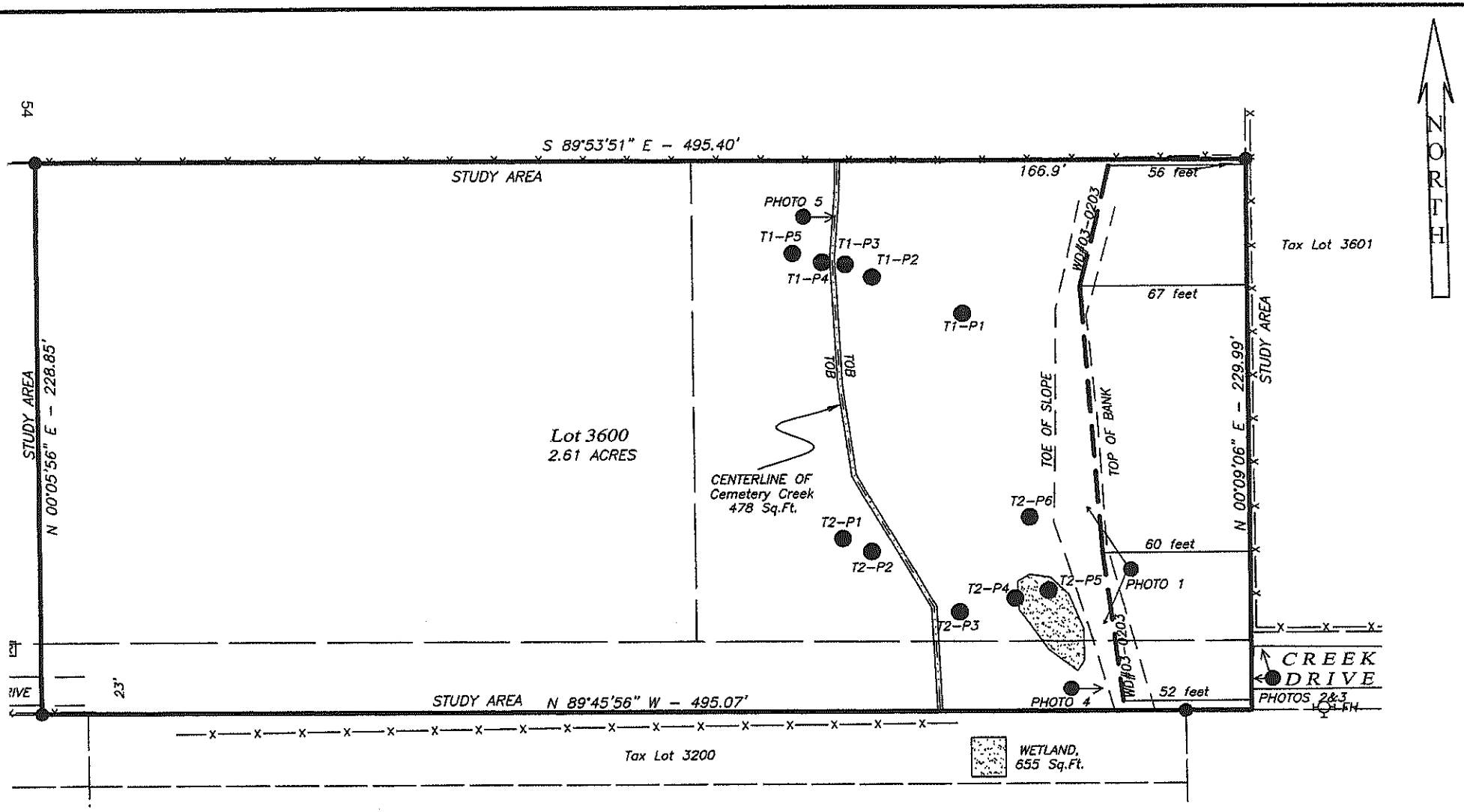
NATIONAL WETLAND INVENTORY
WETLAND DELINEATION FOR
TAX LOT 3600, MAP 39 1E 10DA
Ashland, Jackson County, Oregon

FIGURE 4

Approximate Scale 1 inch = 200m

0 200 400

June 6, 2014



KEYSTONE
NATURAL
RESOURCE
CONSULTING

June 6, 2014

WETLAND BOUNDARIES, SAMPLE & PHOTO POINTS
WETLAND DELINEATION FOR
TAX LOT 3600, MAP 39 1E 10DA
Ashland, Jackson County, Oregon

Scale 1 inch = 60 ft.

0 60 120

SOURCE : Polaris Land Surveying, April 2014, Sub-foot accurate.

FIGURE 7

SCJ ALLIANCE
CONSULTING SERVICES

TECHNICAL MEMORANDUM

TO:	Brandon Goldman, City of Ashland
FROM:	Anne Sylvester, PTE
DATE:	November 19, 2013
PROJECT #:	0722.01
SUBJECT:	Final Future Conditions Report for Normal Avenue Neighborhood Plan

1. INTRODUCTION

The purpose of this memo is to summarize the analysis of future 2038 traffic conditions in the Normal Avenue Neighborhood Plan study area. The location of this study area and its surrounding street system is illustrated in Figure 1. Analysis is based on the draft Neighborhood Plan (dated June 25, 2013) including both recommended land uses, densities and locations, as well as proposed multimodal transportation infrastructure within the study area. Analysis also reflects recommendations in the City's Transportation System Plan (TSP) Update including the extension of Normal Avenue from the existing at-grade rail crossing north and east to intersect East Main Street. The TSP also recommends improvements to active (bicycle and pedestrian) transportation facilities.

This memorandum is built on the analysis of existing transportation facilities and operating conditions that was prepared by myself and documented in a Technical Memorandum dated September 5, 2012. Please refer to that report for a discussion of existing traffic volumes, operating performance for existing streets, intersections, transit, bicycle and pedestrian facilities, and recent multimodal safety experience and considerations.

This memo includes six major sections, as described below:

- Section 1 is this introduction.
- Section 2 presents an Executive Summary of the key findings, conclusions and recommendations of the study
- Section 3 describes the existing Normal Avenue Neighborhood Plan study area.
- Section 4 highlights characteristics of the anticipated 2038 baseline transportation system. This baseline transportation system includes development within the Neighborhood Plan area as anticipated under existing Comprehensive Plan designations and includes an extension of Normal Avenue from its current northern terminus to a new intersection with E. Main Street. The section also includes a brief summary of existing conditions at intersections that were added to the study area after completion of the Existing Conditions Analysis documented in the September, 2012 memorandum.

- Section 5 focuses on the future traffic conditions associated with Neighborhood Plan development in the study area including proposed land uses and densities, along with the proposed transportation networks for vehicles, bicycles and pedestrians. The section includes key findings and conclusions, and presents recommendations for transportation improvement to maximize operations and enhance safety.
- Section 6 documents the analysis of Multimodal Levels of Service (MMLOS)

2. EXECUTIVE SUMMARY

2.1 Key Findings and Conclusions

Key findings and conclusions from the analysis of the multimodal transportation system within and affected by development of the Normal Avenue Neighborhood Plan are as follows:

- Drawing on the conclusions in the "*Existing Transportation Conditions Technical Memorandum"* (dated September 5, 2012) as augmented by additional current traffic data, all eight study area intersections are currently performing within their applicable mobility standards during the PM peak hour (the primary analysis time period).
- The assessment of 2038 PM peak hour traffic operations at study area intersections indicates that while community growth will increase the level of delay experienced at each location, all intersections will meet their applicable mobility standards. In certain locations, expected traffic queues will exceed available vehicle storage creating limited impacts on through traffic movement. The most significant impact is expected to occur in the westbound left turn lane at the intersection of Ashland Street with Tolman Creek Road.
- Development of the Normal Avenue Neighborhood Plan is expected to generate the following magnitude of trips (total inbound and outbound):

Phase	Daily	AM Peak	PM Peak
Phase 1	1,946	139	172
Phase 2	1,156	87	112
Total	3,102	226	284

- With development of either Phase 1 or 2 of the Neighborhood Plan, in the 2038 PM peak hour all study area intersections are expected to meet their applicable mobility standards. Traffic queuing impacts are expected to be similar to those described for 2038 base conditions, with a lesser impact associated with westbound left turns at the intersection of Ashland Street and Tolman Creek Road.
- With Phase 1 development, approximately 1,000 vehicles per day are expected to use Normal Avenue, and approximately 1,200 vehicles per day with Phase 2 development. This is significantly lower than the volume range recommended for an Avenue street classification.
- Access spacing for internal streets shown on the current Normal Avenue Neighborhood plan meets both current city standards and the spacing recommendations of the recently adopted Transportation System Plan.
- Traffic operations analysis for Phases 1 and 2 was based on the assumption that a public crossing would not be provided on Normal Avenue where it currently intersects the CORP rail

line. Thus, all traffic was assumed to use either E. Main or Clay Streets to enter or leave the neighborhood. This restriction did not result in significant adverse impacts to surrounding streets or intersections.

- Existing pedestrian facilities vary considerably throughout the study area ranging from excellent along Walker Avenue in the vicinity of the existing schools to very poor along E. Main Street where is there is limited shoulder space and relatively high speeds.
- Bicycle facilities also vary considerably throughout the study area ranging from poor on E. Main and Clay Streets where no facilities are present and shoulder widths are narrow, to excellent along the northern part of Walker Avenue where there are existing bicycle lanes.
- Transit service is currently provided only along Ashland Street and Tolman Creek Road (RVTD Route 10). Service is provided on a half-hourly basis and transit amenities are minimal.
- With development of the Normal Avenue Neighborhood Plan, it is anticipated that urban scale improvements would be made to E. Main Street. These changes would improve the multimodal LOS analysis results for E. Main Street for bicycle and pedestrian facilities to excellent.

2.2 Recommendations

- E. Main Street cross-section – at a minimum this street should be constructed to include: two 11-foot travel lanes, two 6-foot bike lanes (or a 6-foot shoulder along the north side of the street), a 5 to 8-foot planting strip on the south side of the street to buffer the sidewalk from vehicular traffic, and a 6 to 10-foot sidewalk, also along the south side of the street. The shoulder along the north side of E. Main Street is recommended until such time as the adjacent property is included within the UGB and developed. A 12-foot center turn lane should be considered as a safety enhancement and/or to meet longer-term travel needs as future conditions warrant.
- Access locations onto E. Main Street should be limited, where possible to local or collector street intersections. All access locations should meet the City's minimum spacing requirements. Additionally, all access locations onto E. Main Street should meet the intersection and stopping sight distance requirements associated with its existing speed.
- As the property along E. Main Street is urbanized, the City should request that ODOT perform a speed zoning study with the goal of reducing the existing 40 mph posted speed to a lower limit. Consideration should be given to speeds in the range of 25 to 30 mph.
- Normal Avenue should be reclassified from its current TSP designation as an Avenue to a Neighborhood Collector with the recommended cross-section and multimodal improvements that accompany this designation.
- Stop signs should be installed on side streets at all intersections along E. Main Street, except if and where roundabouts are chosen as the preferred means of intersection traffic control. A decision on appropriate traffic control should be made as street improvements are developed.
- Stop sign warrant analysis should be conducted along the New Normal Avenue through the heart of the project to identify any locations appropriate for side street stop sign control. Consideration should also be given to either stop or yield signs where sight distance is limited.

- While not necessary as a traffic mitigation measure for potential project impacts along E. Main Street or elsewhere, provision of a public crossing of the CORP rail line would benefit the neighborhood by providing an alternative multimodal route to a variety of destinations throughout the City and should be considered over the long-term. When such a crossing is installed, traffic volumes at the intersection of Normal and Ashland Streets should be monitored to determine when signalization of this location is warranted.
- It is recommended that the City consider extending north/south left turn channelization on Tolman Creek Road at Ashland Street in the future if and when the need for additional vehicle storage becomes apparent.

3. STUDY AREA

The study area for evaluating future transportation conditions for the Normal Avenue Neighborhood Plan includes two primary areas of focus. The first is the Normal Avenue Plan area itself, referred to in this report as the project area. This area includes both the alignment of Normal Avenue between the Central Oregon and Pacific Railroad right-of-way and E. Main Street, and all other local streets within the Plan area that provide access to individual properties. The proposed street system for the project area is illustrated in Figure 2. This report documents the analysis of this internal street system focusing on several key questions:

- Whether the proposed street classification and cross-section is consistent with anticipated travel demand as the project area builds out.
- When an enhanced public crossing of the existing limited crossing of the Central Oregon and Pacific Railroad at Normal Avenue will need to be improved. Until such time as this improvement is made traffic circulation to/from the plan area will largely focus on E. Main and Clay Streets.

The second focus area includes eight key intersections located on the streets surrounding the project area. Existing traffic control and lane channelization at these intersections is documented in Figure 3. Analysis of these intersections was conducted to identify any potential future 2038 impacts associated with the Plan. These intersections include:

- Ashland Street at Walker Avenue (included in TSP Update)
- Ashland Street at Normal Avenue
- Ashland Street at Clay Street
- Ashland Street (Oregon Highway 66) at Tolman Creek Road (included in TSP Update)
- East Main Street at Walker Avenue (included in TSP Update)
- East Main Street at Existing School Bus Access Road
- East Main Street at Clay Street
- East Main Street at Tolman Creek Road

4. TRANSPORTATION ANALYSIS FOR BASELINE CONDITIONS

This section identifies the relevant traffic operational performance standards that apply to study area intersections under the jurisdiction of either the Oregon Department of Transportation or the City of Ashland. These standards form the basis for determining the quality of traffic performance on the local

street system and for quantitatively measuring the impact of developing the study area in a manner consistent with the Normal Avenue Neighborhood Plan.

4.1 Intersection Operational Standards

4.1.1 *ODOT Facilities*

One intersection in the Normal Avenue study area is under the jurisdiction of ODOT – OR 66 (Ashland Street) at Tolman Creek Road. OR 66 is designated as a District Highway from its intersection with Tolman Creek Road eastward through the I-5 interchange.

ODOT uses volume-to-capacity (v/c) ratio standards to assess traffic operations at intersections on state highway facilities. Table 6 of the Oregon Highway Plan (OHP) and Table 10-1 of the Oregon Highway Design Manual (HDM) provide the maximum v/c ratios for all signalized and unsignalized intersections outside of the Portland Metro area. The OHP ratios are used to evaluate existing and future no build conditions, while the HDM ratios are used to evaluate transportation system improvements on state highways. Based on its classification as a District Highway, the signalized intersection of OR 66 at Tolman Creek Road has an OHP v/c standard of 0.95 (based on revisions to the OHP adopted by the Oregon Transportation Commission in December of 2011 which became effective on January 1, 2012)[1]. Its relevant HDM v/c ratio is 0.80.

4.1.2 *City of Ashland Facilities*

The remaining seven intersections in the study area are all under the jurisdiction of the City of Ashland. Based on discussion included in the TSP, the following operational standards were used:

- Level of service (LOS) D at signalized and all-way stop-controlled intersections if the v/c ratio is not higher than 1.00 for the sum of critical movements.
- LOS E for the poorest operating approach at two-way stop-controlled intersections. Approaches operating at a LOS F where a traffic signal is not warranted were also identified in the TSP.

A summary of the relevant operational standards for the seven City intersections in the Normal Avenue study area is presented in Table 1 below.

[1] It should be noted that the TSP used the OHP v/c standards that were in place prior to the OTC's action in December of 2011. Consequently the v/c threshold cited in the TSP is 0.90.

Table 1. Operational Threshold for City Intersections

Intersection	Traffic Control	Threshold	Intersection	Traffic Control	Threshold
E. Main Street @ Walker Avenue *	TWSC	LOS "E"	E .Main Street @ Clay Street	TWSC	LOS "E"
Ashland Street @ Walker Avenue *	Signal	LOS "D"	E. Main Street @ Tolman Creek Road	TWSC	LOS "E"
Ashland Street @ Normal Avenue	TWSC	LOS "E"			

* Intersection included in TSP

4.2 Synopsis of Existing Traffic Volumes and Operational Analysis

The September 25, 2012 Existing Conditions Technical Memorandum documents much of the existing multimodal transportation system in the study area. However, during development of the future conditions analysis two additional intersections were identified for inclusion to evaluate both the potential impacts of growth and the possible need for improvements. These intersections included:

- Ashland Street at Clay Street
- East Main Street at Existing School Bus Access Road (east of Walker Avenue)

Additionally, new turning movement traffic count data became available for the intersection of Ashland Street at Tolman Creek Road. Traffic count data at all three locations was seasonally adjusted prior to operations analysis based on the procedures outlined in the project's Methodology and Key Assumptions Technical Memorandum (dated June 27, 2013). These procedures are consistent with the requirements of ODOT's Analysis Procedures Manual (APM).

Operational analysis at these three locations focused on the PM peak hour. Additionally, the afternoon school peak hour (3 to 4 PM) was also evaluated at the intersection of E. Main Street with the Bus Access Road. Traffic count data and operations analysis worksheets are included in Appendix A. Key findings and conclusions from this analysis are summarized below which indicates that existing performance standards are currently being met at all locations.

Table 2. 2012 PM Peak Hour Operations Analysis Summary

Intersection	Operating Standard	Traffic Control	Worst Movement	PM Peak Hour V/C [1]	PM Peak Hour Delay [2]	PM Peak Hour LOS [3]
Ashland Street at Clay Street	LOS D	Stop	SBL	0.10	14.0	B
OR 66/Ashland Street at Tolman Creek Road	V/C= 0.95	Signal		0.56	19.4	B
E. Main Street at Bus Access	LOS E	Stop	NB	0.02	12.3	B
E. Main Street at Bus Access – School PM	LOS E	Stop	NB	0.08	14.7	B

[1] Volume-to-Capacity ratio of a signalized intersection or Worst Movement of an unsignalized intersection.
[2] LOS = Level-Of-Service using 2000 Highway Capacity Manual (HCM) methodology.
[3] Average Control Delay for an entire signalized intersection or the worst movement of an unsignalized intersection.

4.3 2038 Baseline Traffic Volumes

Traffic forecasts for the Normal Avenue study area were developed for 2038 at the eight study area intersections and along key streets within the study area. The purpose of these forecasts was to assess roadway improvement needs and functional classification designations for conditions with and without

the Neighborhood Plan. Future year traffic volume forecasts were prepared using the following steps and are presented in Figure 4.

- RVCOG and ODOT provided RVMPOv3.1 travel model output for 2038 including daily and PM peak hour trips. This model output represents the latest growth and network assumptions available for the Ashland area. Both 2006 and future 2038 model runs were obtained to assess the traffic volume growth potential on study area streets.
- The expected traffic growth was post-processed using the procedures identified in the APM to develop intersection level turning movement projections. This method uses the existing traffic volumes as a starting point since these have already been adjusted to reflect the 30th highest hour[2]. Consistent with the analysis conducted for existing conditions, intersection level turning movements and operations analysis at most locations have been conducted only for the 2038 PM peak hour (4:15 to 5:15 PM). For the intersection of E. Main Street with the Bus Access Road, analysis was also conducted for the afternoon school peak hour (3:00 to 4:00 PM).

An assessment of potential traffic volume growth along Normal Avenue was also conducted to form the basis of comparison with build-out of the Neighborhood Plan (discussed in the next section). In the 2038 RVMPO travel model, Normal Avenue is expected to be extended to E. Main Street. However, the model also assumes that Normal Avenue would be a lower order facility than Walker or Clay Streets. Projected traffic volumes along Normal Avenue are expected largely to consist of locally-generated traffic. No significant volume of through traffic was projected.

4.4 Findings and Conclusions

4.4.1 *Intersection Operations Analysis Results*

Synchro 8 software was used to evaluate the performance of both signalized and unsignalized intersections in the study area. Table 3 summarizes 2038 PM peak hour operational performance for study area intersections assuming Comprehensive Plan land use designations. These results incorporate the intersection geometry and traffic control features illustrated in Figure 3 and the projected 2038 PM peak hour traffic volumes in Figure 4.

As indicated in Table 3, all study area intersections are expected to meet their applicable mobility standard. Detailed traffic operational worksheets can be found in Appendix B.

[2] See *"Existing Transportation Conditions Technical Memorandum"*, Parametrix, September 5, 2012.

Table 3. 2038 Baseline PM Peak Hour Operations Analysis Summary

Intersection	Operating Standard	Traffic Control	Worst Movement	PM Peak Hour V/C [1]	PM Peak Hour Delay [2]	PM Peak Hour LOS [3]
Ashland Street at Walker Avenue	LOS D	Signal		0.59	15.1	B
Ashland Street at Normal Avenue	LOS E	Stop	SB	0.44	30.5	D
Ashland Street at Clay Street	LOS E	Stop	SBL	0.24	18.6	C
OR 66/Ashland Street at Tolman Creek Road	V/C= 0.95	Signal		0.84	37.9	D
E. Main Street at Walker Avenue	LOS E	Stop	NB	0.34	22.1	C
E. Main Street at Bus Access Road	LOS E	Stop	NB	0.03	15.0	C
E. Main Street at Bus Access Road – School PM	LOS E	Stop	NB	0.10	17.8	C
E. Main Street at Clay Street	LOS E	Stop	NB	0.31	20.6	C
E. Main Street at Tolman Creek Road	LOS E	Stop	NB	0.36	13.0	B

[1] Volume-to-Capacity ratio of a signalized intersection or Worst Movement of an unsignalized intersection.
[2] LOS = Level-Of-Service using 2000 Highway Capacity Manual (HCM) methodology.
[3] Average Control Delay for an entire signalized intersection or the worst movement of an unsignalized intersection.

4.4.2 *Traffic Queuing Analysis Results*

Table 4 summarizes 2038 baseline PM peak hour traffic queuing analysis results at the two signalized study area intersections. Worksheets are included in Appendix C.

Queuing results for the signalized intersection of Ashland Street at Walker Avenue show that for both left turn movements (eastbound and westbound) along Ashland Street there is sufficient space to meet expected vehicle queuing demand. At the intersection of OR 66/Ashland Street with Tolman Creek Road three of the existing left turn lanes do not have sufficient space to accommodate expected traffic queues during the 2038 PM peak hour without impacting other traffic. In the north and southbound directions, a two to three vehicle spillover into the through lane is expected for certain signal cycles during the PM peak hour. A more significant queuing problem would occur with the westbound left turn lane where queuing demand extends beyond available space in the designated left turn lane, spilling back into a two-way left turn lane and impacting access to/from existing driveways, particularly along the south side of the street east of Tolman Creek Road.

Table 4. 2038 Baseline PM Peak Hour Intersection Traffic Queuing

Intersection	Movement	Existing Vehicle Storage	PM Peak Hour Vehicle Queue
Ashland Street at Walker Avenue[1]	EB Left	100 ft	75 ft
	WB Left	100 ft	72 ft
OR 66/Ashland Street at Tolman Creek Road[1]	NB Left	100 ft	129 ft
	SB Left	100 ft	153 ft
	EB Left[2]	185 ft	161 ft
	WB Left[3]	225 ft	306 ft

[1] Traffic queuing calculated using Synchro 8 traffic operations software.
[2] Existing storage space includes two-way left turn lane. EB left has only 185 feet to first driveway.
[3] Existing storage space includes two-way left turn lane. WB left has only 225 feet to first driveway.

5. FUTURE TRANSPORTATION ANALYSIS WITH NORMAL AVENUE NEIGHBORHOOD PLAN

5.1 2038 Build Traffic Volumes

Traffic forecasts for the Normal Avenue study area were developed for 2038 "build" conditions at the same eight study area intersections and along key streets within the study area. Future year traffic volume forecasts were prepared using the following steps:

- Similar to the development of traffic forecasts for the 2038 baseline conditions, RVCOG and ODOT provided RVMPOv3.1 travel model output for daily and PM peak hour trips. This model run excluded growth in the Transportation Analysis Zones (TAZs) that represent the Normal Avenue Plan area. This allowed creation of a 2038 "Build" assignment to which project-generated traffic could be manually assigned for greater detail and sensitivity.
- The expected traffic growth from the Build conditions model was post-processed using the procedures identified in APM to develop non-project intersection level turning movement projections.
- Normal Avenue Plan trip generation estimates were prepared for AM and PM peak hours and daily conditions using the most recent rates published by the Institute of Transportation Engineers (ITE) in the "Trip Generation" manual, 9th Edition, as appropriate for the assumed land use types. Two phases of development were evaluated. An internal trip capture reduction of 5 percent was assumed and applied to all trips.
- Select zone loads were obtained from the regional model for the two TAZs (#745 and 750) that cover the Normal Avenue study area. These were used to develop trip distribution assumptions to manually assign project traffic to the surrounding street system.
- AM, PM peak hour and daily project traffic for the two phases were assigned to the internal and surrounding street system to illustrate the potential growth in volumes that could occur on any give street segment during these time periods. These assignments were used in two ways. First to assess the level of traffic expected on internal roads to check consistency with classifications and proposed street cross-sections. Second, to form the base for developing future turning movement projections at the eight study area intersections external to the site. For the latter, only PM peak hour volumes were used.

The following sections describe the development of trip generation analysis, document the distribution assumptions for project area trips, and present future traffic volumes and analysis results for Phases 1 and 2.

5.1.1 *Normal Avenue Neighborhood Plan Trip Generation*

This section summarizes the process used to estimate future auto trips that would use the internal road system in the project area and would impact the surrounding eight key study area intersections. Trip generation estimates were developed using rates for comparable land uses as published in the ITE manual, an authoritative reference to the travel-making characteristics of a wide variety of land use types throughout the United States. The trip generation rates shown below in Table 5 were chosen as they represented the best fit for the types of land uses that are envisioned in the project area.

Table 5. Normal Avenue Trip Generation Rates

Plan Description	ITE Code	Land Use	Units	Daily		AM Peak		PM Peak	
				In	Out	In	Out	In	Out
NA-01	210	Single Family Residential	dus	4.76	4.76	0.19	0.56	0.63	0.37
NA-02/03	221	Low Density Multi-Family	dus	3.3	3.3	0.12	0.35	0.34	0.24

Source: Trip Generation, 9th Edition, Institute of Transportation Engineers, 2012.
Note: du means dwelling unit.

The trip generation rates illustrated in this table are expressed per individual dwelling unit. These rates are then multiplied by the total number of dwelling units for each land use type and adjusted to reflect the potential that some of the generated trips will remain within the neighborhood and not use the surrounding street system. Table 6 illustrates the total estimated trips for the Normal Avenue Neighborhood study area. A total of 973 daily trips (one-way) could be expected with build-out of Phase 1, with a further 578 daily trips (one-way) with build-out of Phase 2. A total of 1,551 one-way trips per day is estimated with build-out of the entire neighborhood plan for a total of 3,100 daily trips.

Table 6. Normal Avenue Trip Generation Estimates

Plan Description	Land Use	Net Acres	Units per Acre	Dwelling Units	Daily		AM Peak		PM Peak	
					In	Out	In	Out	In	Out
Phase 1										
NA-01	Single Family Residential	1.47	5	7	35	35	1	4	5	3
NA-02	Low Density Multi-Family	14.65	10	147	482	482	17	52	48	35
NA-03	High Density Multi-Family	10.28	15	154	508	508	19	54	51	37
Sub-Totals		26.40		308	1,025	1,025	37	110	104	75
				Less Internal (5%)	*(52)*	*(52)*	*(2)*	*(6)*	*(4)*	*(3)*
				Net Trip Ends	**973**	**973**	**35**	**104**	**100**	**72**
Phase 2										
NA-01	Single Family Residential	11.73	5	59	280	280	10	33	37	21
NA-02	Low Density Multi-Family	5.89	10	59	193	193	7	20	20	15
NA-03	High Density Multi-Family	2.73	15	41	135	135	5	14	14	10
Sub-Totals		20.35		159	608	608	22	67	71	46
				Less Internal (5%)	*(30)*	*(30)*	*(0)*	*(2)*	*(3)*	*(2)*
				Net Trip Ends	**578**	**578**	**22**	**65**	**68**	**44**

The generated trips in Table 5 were further disaggregated into specific geographic sub-areas for use in developing a refined estimate of how traffic in the neighborhood would use the available street system. These sub-areas or Transportation Analysis Zones (TAZs) are illustrated in Figure 5. Trip generation estimates for each of the project area TAZs is presented in Appendix D. It should be noted that the project-related trips in Table 5 reflect only vehicle trips. Trip generation analysis conducted using ITE rates does not require development or application of mode split assumptions as is common with areawide travel demand modeling. Accordingly, no bicycle, pedestrian or transit trips are included in numbers presented in Table 6.

5.1.2 *Normal Avenue Neighborhood Plan Trip Distribution*

The next step in the analysis process was to distribute project-related traffic for the two development phases to the internal and surrounding street system. This process was based on the directional

distribution of traffic observed in the RVMPO travel demand model for the two analysis zones (#745 and #750) that constitute the Normal Avenue project area. Trip distribution calculations were conducted for each project area TAZ using the assumptions illustrated in Figure 6.

Using the trip estimates in Table 5 and the trip distribution assumptions in Figure 6, the potential growth in traffic volumes that could occur on any given street segment can be determined. This information will be used in two ways. First, to assess the level of traffic expected on internal roads to check consistency with street classifications and proposed street cross-sections. Second, to form the base for developing future turning movement projections at the eight study area intersections external to the site. This information will then be used to determine the project's long-term impact and the potential need for mitigation.

5.2 Phase 1 Findings and Conclusions

5.2.1 *Phase 1 Traffic Volumes*

The estimates of growth in traffic volume for various street segments in the project area were used to prepare future (2038) PM peak hour turning movement projections at the eight study area intersections. Figure 7 illustrates both the assumed land uses for Phase 1 of development and the internal street system expected to be in place (based on the June 25, 2013 plan). Generally, it is anticipated that the initial development in the Normal Avenue neighborhood will occur within the eastern portions of the property. As illustrated in Figure 7, the initial plan showed access to be available both from Clay Street (via two east/west Neighborhood Streets) and from E. Main Street (via two north/south Neighborhood Streets and the northerly extension of Normal Avenue, a designated city avenue). The most recent plan (as reflected in Figure 2) would only include two north/south connections to E. Main Street. This change would not affect turning movement projections at study area intersections.

Figure 8 presents 2038 intersection turning movement projections for the PM peak hour including both 2038 background traffic growth and Phase 1 of development in the Normal Avenue project area. Figure 11 illustrates projected PM peak hour Phase 1 traffic volumes on the streets accessing the Normal Avenue neighborhood.

5.2.2 *Intersection Operations Analysis Results*

Table 7 summarizes 2038 PM peak hour operational performance for study area intersections assuming build-out of Phase 1 of the Normal Avenue Plan. These results incorporate the intersection geometry and traffic control features illustrated in Figure 3 and the projected 2038 PM peak hour traffic volumes in Figure 8.

As indicated in Table 7, all study area intersections are expected to meet their applicable mobility standard. Detailed traffic operational worksheets can be found in Appendix E.

Table 7. 2038 Normal Avenue Plan Phase 1, PM Peak Hour Operations Analysis Summary

Intersection	Operating Standard	Traffic Control	Worst Movement	PM Peak Hour V/C [1]	PM Peak Hour Delay [2]	PM Peak Hour LOS [3]
Ashland Street at Walker Avenue	LOS D	Signal		0.61	16.0	B
Ashland Street at Normal Avenue	LOS E	Stop	SB	0.55	38.2	E
Ashland Street at Clay Street	LOS E	Stop	SBL	0.20	17.8	C
OR 66/Ashland Street at Tolman Creek Road	V/C= 0.95	Signal		0.87	42.6	D
E. Main Street at Walker Avenue	LOS E	Stop	NB	0.38	24.1	C
E. Main Street at Bus Access Road	LOS E	Stop	NB	0.03	16.4	C
E. Main Street at New Normal Avenue	LOS E	Stop	NB	0.14	20.0	C
E. Main Street at Clay Street	LOS E	Stop	NB	0.36	23.2	C
E. Main Street at Tolman Creek Road	LOS E	Stop	NB	0.42	13.5	B

[1] Volume-to-Capacity ratio of a signalized intersection or Worst Movement of an unsignalized intersection.
[2] LOS = Level-Of-Service using 2000 Highway Capacity Manual (HCM) methodology.
[3] Average Control Delay for an entire signalized intersection or the worst movement of an unsignalized intersection.

5.2.3 *Traffic Queuing Analysis Results*

Table 8 summarizes 2038 PM peak hour traffic queuing analysis results for Phase 1 of the Normal Avenue Plan at the two signalized study area intersections. Worksheets are included in Appendix F.

Similar to the results from analysis of the 2038 PM peak baseline condition, queuing results for the signalized intersection of Ashland Street at Walker Avenue show that for both left turn movements (eastbound and westbound) along Ashland Street there is sufficient space to meet expected vehicle queuing demand. At the intersection of OR 66/Ashland Street with Tolman Creek Road three of the existing left turn lanes do not have sufficient space to accommodate expected traffic queues with Phase 1 traffic during the 2038 PM peak hour without impacting other traffic. In the north and southbound directions, a two to three vehicle spillover into the through lane is expected for certain signal cycles during the PM peak hour. In the westbound left turn lane queuing demand is expected to extend beyond available space in the designated left turn lane, spilling back into a two-way left turn lane and potentially impacting access to/from existing driveways.

Table 8. 2038 Normal Avenue Plan Phase 1, PM Peak Hour Intersection Traffic Queuing

Intersection	Movement	Existing Vehicle Storage	PM Peak Hour Vehicle Queue
Ashland Street at Walker Avenue[1]	EB Left	100 ft	82 ft.
	WB Left	100 ft	78 ft.
OR 66/Ashland Street at Tolman Creek Road[1]	NB Left	100 ft	155 ft.
	SB Left	100 ft	187 ft.
	EB Left[2]	185 ft	168 ft.
	WB Left[3]	225 ft	247 ft.

[1] Traffic queuing calculated using Synchro 8 traffic operations software.
[2] Existing storage space includes two-way left turn lane. EB left has only 185 feet to first driveway.
[3] Existing storage space includes two-way left turn lane. WB left has only 225 feet to first driveway.

5.2.4 *Evaluation of Internal Streets*

Figures 2 and 12 illustrate the internal street, bicycle and pedestrian systems for the Normal Avenue Neighborhood Plan. As indicated in Figure 2, the internal street system follows an hierarchical structure which uses Normal Avenue as its primary backbone. Normal Avenue would ultimately run north/south, connecting E. Main Street on the north with Ashland Street on the south. This connection would require approval of a public railroad crossing of the existing CORP rail line.

Normal Avenue is supported by a system of Neighborhood Streets, running both north/south (generally parallel to Normal Avenue) and east/west (connecting Normal Avenue to various subareas in the development and to individual properties). In addition to neighborhood streets, there is also a system of alleyways or "rear lanes" providing back access to properties fronting on public open space, and shared space streets that provide for mixed mode travel with no separation between cars, pedestrians and bicyclists. The idea of shared space streets originated in The Netherlands where these are referred to as "woonerfs or living streets". On shared space streets pedestrians and cyclists would have legal priority over motorists with a goal of calming and reducing speeds.

As shown in Figure 12, the bicycle network in the Plan area includes streets with bike lanes (primarily E. Main Street adjacent to the project), streets without bike lanes (including Normal Avenue and the neighborhood street system), shared space streets, multi-use paths, and the Ashland Central Bike Path. The pedestrian system also shown in Figure 12 includes an extensive system of streets with adjacent sidewalks, shared use streets, multi-use paths and the Ashland Central Bike Path. It should be noted that these two figures show the bicycle and pedestrian systems at full build-out. With Phase 1 development, improvements would be largely confined to the eastern portion of the Plan area (see Figure 7).

The Ashland Transportation System Plan designates Normal Avenue as a City Avenue in its functionally classified hierarchy of streets. The City's *"Handbook for Planning and Designing Streets"* defines an Avenue as a street that provides *"concentrated pedestrian, bicycle, transit and motor vehicle access from neighborhoods to neighborhood activity centers and boulevards. Avenues are similar to boulevards, but are designed on a smaller scale… A 2-lane or 3-lane configuration can be used depending on the number of trips generated by surrounding existing and future land uses."* Avenues are expected to carry between 3,000 and 10,000 daily vehicle trips, speeds would be controlled to 20-25 mph, and bike lanes, on-street parking, planting strips and sidewalks would all be provided.

Traffic volumes for daily and PM peak hourly conditions with Phase 1 development were estimated for Normal Avenue a short way south of E. Main Street, where the maximum traffic volume on this facility is expected to occur. Traffic volume estimates were based on the trip generation and trip assignment process described above, resulting in an estimate of approximately 90 vehicles during the PM peak hour. Review of travel model output indicates that there would be little demand for cut-through traffic movement on Normal Avenue between Ashland and E. Main Streets, thus minimizing non-project traffic on the plan area street system if and when a continuous Normal Avenue connection might be made. Approximately 1,000 vehicles were estimated on a daily basis at this same location, representing a low end for the Avenue street classification. It is recommended that this street be reclassified as a Neighborhood Collector between Ashland and E. Main Streets. This classification has a recommended service volume of 1,500 to 5,000 vehicles per day.

It should be noted that the Plan does not propose that bike lanes be included on Normal Avenue which is inconsistent with its existing functional designation, but generally acceptable given the low traffic volumes that this street is expected to carry. A reclassification of the street from Avenue to Neighborhood Collector would eliminate this inconsistency. City standards state that "*bicycle Lanes*

should be provided on streets designated as neighborhood collectors when the average daily traffic is over 3000, and/or when actual travel speeds exceed 25 mph". Since Phase 1 (and full build-out volumes as described later in this report) would generate less than 3,000 vehicles per day along Normal Avenue, consistency with the Neighborhood Collector classification could be achieved. Street design should encourage travel speeds of 25 mph or less.

The proposed multi-use path connection along the east side of an existing street from Normal Avenue to the north edge of the project area will ultimately provide access to the Bear Creek Greenway. When complete, the Greenway will connect to many destinations in central Jackson County. The presence of sidewalks and trails throughout the development provide for convenient and safe pedestrian movement, linking to destinations within the Plan area, as well as outside.

5.2.5 *Access Management Considerations*

As noted in the TSP, spacing requirements for public roadways and private driveways can have a profound impact on transportation system operations, safety and land development. Access management strategies and implementation require careful consideration to balance the need for access to developed land with the need to ensure movement of traffic in a safe and efficient manner. Access management generally becomes more stringent as the functional classification level of roadways and the corresponding importance of mobility increase.

The Ashland TSP identifies a minimum driveway access spacing of 300 feet for boulevards like Ashland and E. Main Streets, 100 feet for avenues like Walker Avenue, Clay Street and Tolman Creek Road, and 75 feet for lower order streets such as those that could be developed internal to the Normal Avenue Neighborhood Plan area. However, these spacing standards have not yet been codified. Current standards, as adopted in the Municipal Code (18.92.080 Parking, Access and Circulation Design) are as follows:

- Distance between driveways:
    - On arterial streets – 100 feet
    - On collector streets – 75 feet
    - On residential streets – 50 feet
- Distance from intersections:
    - On arterial streets – 100 feet
    - On collector streets – 50 feet
    - On residential streets – 35 feet

OR 66 east of Tolman Creek Road is under ODOT jurisdiction and state highway access spacing standards apply. ODOT and the City of Ashland have an agreement that OR 66 within the city limits is subject to the minimum spacing standards typically applied to District Highways. OR 66 within the City is subject to a minimum access spacing standard of 300 feet. The public roadway spacing standards is 1 mile for boulevards and ¼ mile for avenues. The City currently does not have minimum public roadway spacing standards for neighborhood collectors or neighborhood streets.

The proposed alignment of Normal Avenue through the Plan area is largely consistent with the ¼ mile (1,320 feet) spacing standard for avenues in relation to the existing alignment of Clay Street which is also a designated avenue. The exception would be at the north end near E. Main Street where Normal Avenue makes a transition eastward as it approaches E. Main Street to avoid wetlands and minimize impact to an existing stream. At its proposed Main Street intersection, Normal Avenue would be

approximately 1,000 feet west of Clay Street. Neighborhood streets are located roughly 300 to 500 feet apart and are supported by shared space streets and rear lanes. Redesignation of Normal Avenue as a Neighborhood Collector would meet this spacing standard.

As development plans for the project area become more refined it will be important to ensure that there is adequate spacing between the proposed Normal Avenue intersection with E. Main Street and the neighborhood street intersection proposed immediately to the east. As shown currently in Figure 2, there is at least 300 feet between these two intersections which is consistent with TSP recommendations and exceeds current city code. Additionally it will be important that adequate intersection and stopping sight distance is provided at each intersection onto E. Main Street. Consideration should be given to reviewing existing sight distance at the intersection of E. Main Street with Clay Street to ensure that appropriate distance is available to maximize safety.

5.2.6 *Railroad Crossing*

The existing road crossing of the CORP tracks at Normal Avenue is a stop-controlled, private crossing intended to serve a limited number of single family homes on large lots. In order to connect Normal Avenue as a public street between the Plan area and Ashland Street, a formal rail crossing permit application must be submitted and approved. If approved, then it is likely that enhanced rail crossing protection devices will be required and must be installed as a part of the public street improvement project. This is an expensive undertaking as it is likely that crossing gates with flashers and warning devices would be required. As a part of the Normal Avenue Plan future traffic conditions analysis, the need for a Normal Avenue extension including upgraded rail crossing was evaluated.

The primary factors considered in this evaluation focused on whether there would be a significant degradation of traffic operations along E. Main or Clay Streets, or at any of the study area intersections that could be avoided by making the proposed road extension. The results of PM peak hour intersection traffic operations analysis indicates that, with one exception, all study area intersections would operate acceptably without the improved rail crossing and Normal Avenue street connection in place. Accordingly, developing a public rail crossing as a traffic impact mitigation measure is not necessary. However, it is desirable to ultimately improve this crossing and connect Normal Avenue to the south to provide for additional connectivity and circulation. In the interim, the viability of adding a bicycle and pedestrian connection across the railroad at this location should be explored.

5.3 Phase 2 Findings and Conclusions

Figure 9 illustrates both the assumed land uses for Phase 2 of development and the internal street system expected to be in place. Generally, it is anticipated that build-out of the Normal Avenue neighborhood will occur within the western and southern portions of the property. As illustrated in Figure 9, access will be available both from Clay Street (via two east/west Neighborhood Streets) and from E. Main Street (via two north/south Neighborhood Streets and the northerly extension of Normal

Avenue). If a public crossing of the existing CORP rail line is permitted and constructed, access would also be available to/from the south via an improved Normal Avenue connection.

Figure 10 presents 2038 intersection turning movement projections for the PM peak hour including 2038 background traffic growth and both phases of development in the Normal Avenue project area. Figure 11 illustrates projected PM peak hour Phase 2 traffic volumes on the streets accessing the Normal Avenue neighborhood.

5.3.1 *Intersection Operations Analysis Results*

Synchro 8 software was used to evaluate the performance of both signalized and unsignalized intersections in the study area. Table 9 summarizes 2038 PM peak hour operational performance for study area intersections assuming build-out of both Phases 1 and 2 of the Normal Avenue Plan. These results incorporate the intersection geometry and traffic control features illustrated in Figure 2 (with the addition Normal Avenue and other local street connections to E. Main Street) and the projected 2038 PM peak hour traffic volumes in Figure 10.

As indicated in Table 9, all study area intersections are expected to meet their applicable mobility standard. Detailed traffic operational worksheets can be found in Appendix G.

Table 9. 2038 Normal Avenue Plan Phase 2, PM Peak Hour Operations Analysis Summary

Intersection	Operating Standard	Traffic Control	Worst Movement	PM Peak Hour		
				V/C [1]	Delay [2]	LOS [3]
Ashland Street at Walker Avenue	LOS D	Signal		0.63	17.0	B
Ashland Street at Normal Avenue	LOS E	Stop	SB	0.55	38.3	E
Ashland Street at Clay Street	LOS E	Stop	SBL	0.20	17.8	C
OR 66/Ashland Street at Tolman Creek Road	V/C= 0.95	Signal		0.88	45.3	D
E. Main Street at Walker Avenue	LOS E	Stop	NB	0.41	25.3	D
E. Main Street at Bus Access Road	LOS E	Stop	NB	0.18	21.2	C
E. Main Street at Bus Access Road – School PM	LOS E	Stop	NB	0.27	23.9	C
E. Main Street at New Normal Avenue	LOS E	Stop	NB	0.17	20.0	C
E. Main Street at Clay Street	LOS E	Stop	NB	0.39	25.1	D
E. Main Street at Tolman Creek Road	LOS E	Stop	NB	0.46	14.2	B

[1] Volume-to-Capacity ratio of a signalized intersection or Worst Movement of an unsignalized intersection.
[2] LOS = Level-Of-Service using 2000 Highway Capacity Manual (HCM) methodology.
[3] Average Control Delay for an entire signalized intersection or the worst movement of an unsignalized intersection.

5.3.2 *Traffic Queuing Analysis Results*

Table 10 summarizes 2038 PM peak hour traffic queuing analysis results for Phase 2 of the Normal Avenue Plan at the two signalized study area intersections. Worksheets are included in Appendix H.

Similar to the results from analysis of the 2038 PM peak baseline condition, queuing results for the signalized intersection of Ashland Street at Walker Avenue show that for both left turn movements (eastbound and westbound) along Ashland Street there is sufficient space to meet expected vehicle queuing demand. At the intersection of OR 66/Ashland Street with Tolman Creek Road three of the existing left turn lanes do not have sufficient space to accommodate expected traffic queues during the 2038 PM peak hour without impacting other traffic. In the north and southbound directions, a two to

three vehicle spillover into the through lane is expected for certain signal cycles during the PM peak hour. In the westbound left turn lane queuing demand is expected to extend beyond available space in the designated left turn lane, spilling back into a two-way left turn lane and potentially impacting access to/from existing driveways.

Table 10. 2038 Normal Avenue Plan Phase 2, PM Peak Hour Intersection Traffic Queuing

Intersection	Movement	Existing Vehicle Storage	PM Peak Hour Vehicle Queue
Ashland Street at Walker Avenue[1]	EB Left	100 ft	90 ft.
	WB Left	100 ft	78 ft.
OR 66/Ashland Street at Tolman Creek Road[1]	NB Left	100 ft	155 ft.
	SB Left	100 ft	203 ft.
	EB Left[2]	185 ft	168 ft.
	WB Left[3]	225 ft	247 ft.

[1] Traffic queuing calculated using Synchro 8 traffic operations software.
[2] Existing storage space includes two-way left turn lane. EB left has only 185 feet to first driveway.
[3] Existing storage space includes two-way left turn lane. WB left has only 225 feet to first driveway.

5.3.3 *Evaluation of Internal Streets*

Full build-out of the Plan area would occur with Phase 2 development. This development is largely focused on the western portion of the study area (see Figure 9 for the additional streets that would serve Phase 2 land development).

Traffic volumes for daily and PM peak hourly conditions with both Phases 1 and 2 were estimated for New Normal Avenue south of E. Main Street. Based on the estimate of trip-making with this additional development, an estimate of approximately 110 vehicles during the PM peak hour would use Normal Avenue somewhat south of E. Main Street. This equates to approximately 1,200 daily vehicles at the same location, representing a low end for the Avenue street classification. It should also be noted that the Normal Avenue Neighborhood Plan does not propose that bike lanes be included on Normal Avenue which is inconsistent with its functional designation, but generally acceptable given the low traffic volumes that this street is expected to carry. However, as discussed under the evaluation of Phase 1 traffic, reclassification of Normal Avenue as a Neighborhood Collector is recommended. This reclassification would be consistent with the daily traffic volumes projected for the street and would not require bicycle lanes.

A proposed multi-use path provides necessary connections to/from the schools located west of the project area along Walker Avenue, offering a safer and more pleasant travel route for young people than using the proposed E. Main Street bike lanes. The presence of sidewalks and trails throughout the development provide for convenient and safe pedestrian movement, linking to destinations within the Plan area, as well as outside.

5.3.4 *Access Management*

With development of the Phase 2 street system another neighborhood street connection to E. Main Street is proposed at the western edge of the project area. Based on the street alignment illustrated in Figure 2, there does not appear to be any spacing conflicts with other nearby street connections including both Walker Avenue to the west and New Normal Avenue to the east. As development plans

for this area become more refined it will be important to ensure that adequate intersection and stopping sight distance is provided at E. Main Street.

5.3.5 *Railroad Crossing*

The findings, conclusions and recommendations presented under the Phase 1 discussion would not change with the addition of Phase 2 traffic.

5.3.6 *Evaluation of Improvement Alternatives*

To further explore the movement of neighborhood traffic to/from the project area, several alternatives to the proposed Neighborhood Plan transportation system were evaluated. Specifically, these alternatives were intended to respond to the following questions:

- If traffic to/from the project area were to adversely impact the Bus Access Road intersection on E. Main Street, what would be the impact of moving this traffic to another location? The location selected for a "sensitivity" analysis was a new intersection on E. Main Street with a northerly extension of existing Normal Avenue. In evaluating this improvement option, it was assumed that project-related traffic that would have used the Bus Access Road would be reassigned to the Existing Normal Avenue Extension. Traffic operations analysis conducted for this scenario indicates that both intersections would operate acceptably within the City's adopted mobility standards.
- What would be the traffic impacts of providing a multimodal street connection across the CORP rail line? To answer this question a redistribution of the traffic volumes assumed to use E. Main Street and Tolman Creek Road was made to place this traffic on Normal Avenue just north of Ashland Street. Traffic operations analysis was then conducted for the intersections of Ashland Street with Normal Avenue, Clay Street and Tolman Creek Road. Based on this analysis, all intersections are expected to operate within the relevant mobility standards. However, the southbound left turn onto Ashland Street from Normal Avenue is expected to operate at LOS E. If any significant volume of additional traffic were to divert to this location, LOS F for this movement may be experienced. Traffic signal warrant analysis was also conducted and it is expected that warrants for signalization would be met. Thus, if a public rail crossing is developed on Normal Avenue, consideration should be given to signalizing the intersection of Normal Avenue with Ashland Street.
- Are there other intersection improvement options to the traditional stop sign-controlled intersections either existing or proposed along E. Main Street? The traffic operations analysis conducted in this report assumes that existing lane channelization would be maintained along E. Main Street (e.g., one travel lane in each direction with no left turn lanes). Analysis was conducted of the potential for developing single lane roundabouts along this street including the intersections of E. Main with the Bus Access Road, New Normal Avenue and Clay Street. Analysis results indicates that all locations would operate at LOS A during the 2038 PM peak hour including full neighborhood built-out. This operational performance is better than the performance with stop signs, since roundabouts utilize the full capacity of an intersection more efficiently. Roundabouts require that traffic slow down, typically to 18 or 20 mph, to negotiate the intersection. This can have a traffic calming effect on overall traffic movement along the street. Roundabouts have a substantial benefit in terms of safety with lower crash rates and reduced crash severity. Additionally, roundabouts typically require less linear right-of-way than streets with other types of traffic control in locations where left-turn channelization is provided.

The table below summarizes a comparison between expected future PM peak hour traffic performance with a side street stop sign and with a single lane roundabout.

	2038 PM Peak with Side Street Stops			2038 PM Peak with Roundabouts		
Location	V/C	Delay	LOS	V/C	Delay	LOS
E. Main Street @ Bus Access Road	0.03	16.4	C	0.44	6.8	A
E. Main Street @ New Normal Avenue	0.14	20.0	C	0.41	6.7	A
E. Main Street @ Clay Street	0.36	23.2	C	0.55	8.0	A

Note: V/C means volume-to-capacity ratio, LOS means level of service.

Appendix I includes intersection analysis worksheets for each of these improvement alternatives.

5.4 Recommended Street Improvements and Traffic Control

5.4.1 *E. Main Street Recommended Cross-section*

E. Main Street is currently designated as a city Boulevard. Ashland's "*Handbook for Planning and Designing Streets*" identify a range of cross-sectional improvements for boulevards, largely depending on anticipated traffic volumes. The recommended cross-section for E. Main Street between Walker Avenue and Tolman Creek Road is as follows:

- 2038 PM peak hour traffic analysis indicates that each existing or proposed intersection along this street will operate acceptably with a single lane in each direction. Left turn channelization should be considered for its safety benefits, but is not necessary to ensure that mobility standards are met. At a minimum E. Main Street would be constructed to include: two 11-foot travel lanes, two 6-foot bike lanes (or a 6-foot shoulder along the north side of the street), a 5 to 8-foot planting strip on the south side of the street to buffer the sidewalk from vehicular traffic, and a 6 to 10-foot sidewalk, also along the south side of the street. The shoulder along the north side of E. Main Street is recommended until such time as the adjacent property is included within the UGB and developed. A 12-foot center turn lane should be considered as a safety enhancement and/or to meet longer-term travel needs as future conditions warrant.
- Access locations onto E. Main Street should be limited, where possible, to local or collector street intersections. All access locations should meet the City's minimum spacing requirements.
- All access locations onto E. Main Street should meet the intersection and stopping sight distance requirements associated with its speed.
- As the property along E. Main Street is urbanized, the City should request that ODOT perform a speed zoning study with the goal of reducing the existing 40 mph posted speed to a lower limit. Consideration should be given to speeds in the range of 25 to 30 mph.

5.4.2 *Normal Avenue Reclassification*

Due to the relatively low level of traffic expected to use Normal Avenue through the project area, it is recommended that the street be reclassified from its current TSP designation as an Avenue to a Neighborhood Collector with the recommended cross-section and multimodal improvements that accompany this designation.

5.4.3 *Traffic Control*

Traffic control recommendations are segregated into three groups: those affecting E. Main Street, those that are internal to the project area, and other locations.

E. Main Street Traffic Control

All side streets approaching E. Main Street are lower order facilities (e.g., Avenues, Neighborhood Collectors or local streets). Consequently each of these streets should be stop sign-controlled at its intersection with E. Main Street. The exception would be for any location where a roundabout is developed to serve intersecting traffic. A decision on appropriate traffic control should be made as street improvements are developed.

Internal Streets

Stop sign warrant analysis should be conducted along the New Normal Avenue through the heart of the project to identify any locations appropriate for side street stop sign control. Consideration should also be given to either stop or yield signs where sight distance is limited.

Other Locations

If and when a public crossing of the CORP rail line is provided along Normal Avenue, traffic volumes should be monitored to determine when signalization at Ashland Street is warranted.

5.4.4 *Public Railroad Crossing on Normal Avenue*

While not necessary as a traffic mitigation measure for potential project impacts along E. Main Street or elsewhere, provision of a public crossing of the CORP rail line would benefit the neighborhood by providing an alternative route to a variety of destinations throughout the City. Of particular importance would be the connection to active transportation facilities such as the Central Bike Path and the bicycle and pedestrian infrastructure along Ashland Street. A public crossing at this location would also have safety and convenience benefits by providing an alternative means of access to the neighborhood, particularly if an incident should reduce or limit accessibility along E. Main or Clay Streets.

5.4.5 *Other*

It is recommended that the City consider extending north/south left turn channelization on Tolman Creek Road at Ashland Street in the future if and when the need for additional vehicle storage becomes apparent.

6. MULTIMODAL LEVEL OF SERVICE ANALYSIS

This section summarizes a qualitative multimodal level of service analysis that was conducted for the streets in the study area based on procedures recently developed by ODOT[3]. This analysis differs from the quantitative assessment conducted for the City's Transportation System Plan and updated for the Normal Avenue Plan existing conditions analysis. For the qualitative analysis data was collected to gain an understanding of both the existing and proposed multimodal transportation system and its performance for pedestrians, bicyclists, transit users and motorists.

[3] Oregon Department of Transportation, *"Qualitative Multimodal Level of Service Supplement"*, January 2013.

The results of multimodal level of service analysis for roadway segments is shown in Table 11 and summarized below. Analysis results for intersections are shown in Table 12, and back-up documentation of data used in both assessments is included in Appendix J. In addition to this analysis, it should be noted that the City's Central Bike Path runs east/west through the project area along the south side of the existing CORP rail tracks between Tolman Creek Road and A Street. This path is a significant component of the City's non-motorized transportation system, connecting the Normal Avenue Neighborhood to the broader community and significantly enhancing opportunities for the use of active transportation modes in the study area.

Table 11. Summary of Qualitative Multimodal Level of Service Analysis for Street Segments

	Travel Mode			
Street Segments	**Pedestrian**	**Bicycle**	**Transit**	**Auto**
Existing and 2038 Baseline				
Ashland Street				
Walker Avenue to Tolman Ck Road	Fair	Good	Fair	Good [1]
E. Main Street				
Walker Avenue to Tolman Ck Road	Very Poor	Poor	N/A	Excellent
Walker Avenue				
E. Main Street to Iowa Street	Excellent	Excellent	N/A	Excellent
Iowa Street to Ashland Street	Good	Good	N/A	Excellent
Clay Street				
E. Main Street to Ashland Street	Fair	Poor	N/A	Good [2]
Tolman Creek Road				
E. Main Street to Ashland Street	Good	Good	N/A	Good [1]
2038 with Neighborhood Plan				
Ashland Street				
Walker Avenue to Tolman Ck Road	Fair	Good	Fair	Good [1]
E. Main Street				
Walker Avenue to Tolman Ck Road	**Excellent**	**Excellent**	N/A	Excellent
Walker Avenue				
E. Main Street to Iowa Street	Excellent	Excellent	N/A	Excellent
Iowa Street to Ashland Street	Good	Good	N/A	Excellent
Clay Street				
E. Main Street to Ashland Street	Fair	Poor	N/A	Good [2]
Tolman Creek Road				
E. Main Street to Ashland Street	Good	Good	N/A	Good [1]

[1] Significant congestion at intersection of Ashland Street and Tolman Creek Road. Intersection also exceeds signalized critical crash rate.
[2] No crash data but perception of hazard on Clay at E. Main due to speed.

As indicated in Table 11, existing pedestrian facilities vary considerably throughout the study area ranging from excellent along Walker Avenue in the vicinity of the existing schools to very poor along E. Main Street where is there is limited shoulder space and relatively high speeds. Bicycle facilities also vary considerably throughout the study area ranging from poor on E. Main and Clay Streets where no facilities are present and shoulder widths are narrow, to excellent along the northern part of Walker Avenue where there are existing bicycle lanes. Transit service is currently provided only along Ashland Street and Tolman Creek Road (RVTD Route 10). Service is provided on a half-hourly basis and transit amenities are minimal. Pedestrian access along Ashland Street is very good, but limited along Tolman

Creek Road. Overall the transit level of service was rated as fair. Auto levels of service are largely derived from the intersection traffic operations analysis that is documented earlier in this report. Generally, operations are good except for the intersection of Ashland Street with Tolman Creek Road where growing traffic volumes will cause LOS to significantly degrade over time.

With development of the Normal Avenue Neighborhood Plan, it is anticipated that urban scale improvements would be made to E. Main Street. Consistent with the Boulevard designation in the City's *"Handbook for Planning and Designing Streets"* it is anticipated that E. Main Street would ultimately be constructed to include: two 11-foot travel lanes, one 12-foot median, two 6-foot bike lanes, two 5 to 8-foot planting strips on either side of the street to buffer the sidewalk from vehicular traffic, and two 6 to 10-foot sidewalks. It is also anticipated that the City will seek a speed reduction from the existing 40 mph designation to a 25 to 30 mph range consistent with the City's street standards. These changes would improve the multimodal LOS analysis results for E. Main Street for bicycle and pedestrian facilities to excellent. A more detailed discussion of the rating process and results is presented below.

Table 12 presents a summary of the results of qualitative multimodal level of service analysis for intersections. As indicated in the table, existing pedestrian and bicycle crossings of side streets along Ashland Street are rated as Good due to existing traffic control and the presence of crosswalks. Existing crossings of side streets along E. Main Street are rated as Good at Walker Avenue and the future Normal Avenue due to the presence (or likely future presence) of stop-sign traffic control and crosswalks. The intersections with Clay Street and Tolman Creek Road were rated as Fair due to the lack of crosswalks.

Table 12. Summary of Qualitative Multimodal Level of Service Analysis for Intersections

	Along Ashland Street at Side Street Crossings of:			
Travel Mode	**Walker**	**Normal**	**Clay**	**Tolman Creek**
Existing and 2038 Baseline				
Pedestrian Facilities	Good	Good	Good	Good
Bicycle Facilities	Good	Good	Good	Good
2038 with Neighborhood Plan				
Pedestrian Facilities	Good	Good	Good	Good
Bicycle Facilities	Good	Good	Good	Good
	Along East Main Street at Side Street Crossings of:			
	Walker	**Normal**	**Clay**	**Tolman Creek**
Existing and 2038 Baseline				
Pedestrian Facilities	Good	N/A	Fair	Fair
Bicycle Facilities	Good	N/A	Fair	Fair
2038 with Neighborhood Plan				
Pedestrian Facilities	Good	Good	Fair	Fair
Bicycle Facilities	Good	Good	Fair	Fair
	Crossings of Ashland Street at:			
	Walker	**Normal**	**Clay**	**Tolman Creek**
Existing and 2038 Baseline				
Pedestrian Facilities	Fair	Poor	Poor	Fair
Bicycle Facilities	Fair	Poor	Poor	Fair
2038 with Neighborhood Plan				
Pedestrian Facilities	Fair	Poor	Poor	Fair
Bicycle Facilities	Fair	Poor	Poor	Fair

Crossings of Ashland Street were rated as Fair at Walker Avenue and Tolman Creek Road due to the presence of traffic signal control with pedestrian buttons and signal heads (which is positive) and the long crossing distance (which is negative). Crossings of Ashland Street at Normal Avenue and Clay Street were rated as Poor since there are no traffic control devices, crosswalks or median refuges.

6.1 Data Sources

For the Ashland Street, E. Main Street and Tolman Creek Road segments, the data was taken exclusively appendices and support memoranda prepared for the recently adopted Transportation System Plan (TSP). This data was spot checked on Google Earth to ensure that it was both current and accurate. Data was updated where necessary.

For the Clay Street and Walker Avenue segments, Google Earth and other resources were used to determine the values needed to populate the tables. The TSP indicated that there is no transit on these roads and this was confirmed b a check on the RVTD website. To determine pavement conditions, the pavement as viewed on Google Earth supplemented by photos of roadway segments earlier in the project, was compared to locations where a pavement rating was provided. Where pavement condition seemed similar based on visual inspection, a location was scored the same as the other roadways. It should be noted that all of the roadways with a pavement rating in the TSP had the same score.

For the intersection table, crossing width was assumed to be the number of lanes on the cross street. The analysis addresses both travel along Ashland and E. Main Streets, as well as crossings of Ashland Street.

6.2 Determining the Multimodal Assessment for Segments

6.2.1 *Pedestrian System*

Factors incorporated into the evaluation were abstracted from ODOT qualitative multimodal level of service guidance and include the following:

- *"Outside travel lane width: Wider travel lanes are rated better than narrower travel lanes because of the increased separation between pedestrians and motorized vehicles.*
- *Bicycle lane/shoulder width: The presence of bicycle lanes or shoulders creates a buffer between traffic and wider facilities are rated better than narrower or nonexistent facilities.*
- *Presence of buffers (landscape or other): The presence of buffers that separate pedestrians from traffic result in an improved rating. Wider buffers are rated better than narrower or nonexistent buffers.*
- *Sidewalk/path presence and effective width: The presence of sidewalks/paths versus shoulders or no facilities is a significant consideration with wider facilities rated better than narrow or nonexistent facilities.*
- *Volume and speed of motorized traffic in the adjacent travel lane: The speed and volume of motorized traffic in the adjacent travel lane affect the pedestrian experience with lower volumes and slower travel speeds rated better than higher volumes and faster travel speeds."*

Evaluation findings and conclusions:

- Ashland Street – was given a score of Fair because it has sidewalks with bike lane/shoulder to serve as a buffer but no planter buffer and fairly high vehicle volumes and speeds in the outside lane.

- E. Main Street – was given a score of Very Poor because it has no sidewalks and very little shoulder space with high speeds and volumes. With the Normal Avenue Neighborhood Plan, pedestrian amenities would be significantly improved along E. Main Street resulting in an excellent rating.
- Walker Avenue (E. Main to Iowa) – was given a valuation of Excellent because it has sidewalks, bike/shoulder space and some areas with planter buffers. It also has low speeds.
- Walker Avenue (Iowa to Ashland) – was given a score of Good because it has sidewalks with bike /shoulder space and low speeds. It did not receive an excellent because the southbound sidewalk/path is an unimproved area that has been turned into a trail by common usage.
- Clay Street – was given an assessment of Fair because it has partial sidewalks with planter buffer and low speeds, but it also has areas without sidewalks and has only partial (and narrow) bike/shoulder width.
- Tolman Creek Road – was given a valuation of Good because it has a southbound sidewalk and decent bicycle/shoulder space in both directions along with relatively low speeds. However, it does not provide a northbound sidewalk or path area along much of the length of this roadway. However, the portions of the road without sidewalks are currently undeveloped which mitigated the overall rating given to the road.

6.2.2 *Bicycle System*

Factors incorporated into the evaluation included:

- *"Bicycle lane presence and effective width: The presence of bike lanes is a significant consideration, with wider facilities rated better than narrow or nonexistent facilities.*
- *Shoulder presence and width: Shoulders serve bicyclists in the absence of bike lanes, and wider facilities are rated better than narrower or nonexistent facilities.*
- *Outside travel lane width: Wider outside travel lanes are rated better than narrower travel lanes because of the increased separation between bicyclists and motorized vehicles.*
- *Pavement Condition: Poor pavement conditions or obstacles such as sewer grates affect the bicycling experience with good quality pavement rated better than poor pavement conditions.*
- *On Street Parking: The presence and utilization of on-street parking affects the bicyclist experience, with no parking or low utilization rated better than high utilization and turnover rates.*
- *Volume, type, and speed of motorized traffic in the adjacent travel lane: The volume and type of motorized vehicles (i.e., more or less large trucks) in the adjacent travel lane affect the bicycling experience as do travel speeds. Conditions with lower volumes, fewer trucks, and slower travel speeds are rated better than higher volumes, more trucks, and faster travel speeds."*

Evaluation findings and conclusions:

- Ashland Street – received a score of Good because it had 6-foot bike lanes with wide outside travel lanes, a good pavement score and very low truck percentage. It does not score as excellent because it has fairly high vehicle volumes and speeds.
- E. Main Street – received a score of Poor because it has no official bike lanes (only a relatively narrow shoulder), moderate vehicle volumes and relatively high speeds. It also has a high truck percentage (7 percent). It did not warrant a Very Poor designation because there are 4-foot shoulders and fairly wide travel lanes, with a good pavement conditions. With the Normal

Avenue Neighborhood Plan, bicycle amenities would be significantly improved along E. Main Street resulting in an excellent rating.

- Walker Avenue (E. Main to Iowa) – was given an assessment of Excellent because it has bike lanes, low travel speeds, and good pavement conditions.
- Walker Avenue (Iowa to Ashland) – was given a score of Good because it has bike lanes, low travel speeds and good pavement condition, but has heavily utilized on-street parking along the west side of the street.
- Clay Street – this received an assessment of Poor because it has no bike lanes and does have areas of on street parking that conflict with bike movement, as well as areas with little or no paved shoulder space. However, it does have low travel speeds and some areas with shoulders.
- Tolman Creek Road – was given a score of Good because it has 6-foot bike lanes with low travel speeds and a low truck percentage with a good pavement condition. The volume is fairly high, which kept it from being assessed as excellent.

6.2.3 *Transit System*

Factors incorporated into the evaluation included:

- *"Service frequency and reliability: Shorter headways and arrival reliability are rated better than longer headways and unreliable arrival times.*
- *Bus speed/travel times: Faster average speeds and shorter travel times are rated better than slower speeds and longer travel times.*
- *Bus stop features: The presence of shelters, benches, and lighting is rated better than stops with no amenities.*
- *Pedestrian network: The quality of the pedestrian facilities serving transit stops affects the transit user's experiences. Bus stops connected to a network of streets with sidewalks are rated better than those with no pedestrian facilities."*

Within the study area only Ashland Street and Tolman Creek Road currently have transit service. Based on the data from the TSP (and verified on RVTD's website), the transit service on each street appears essentially the same and is provided on half-hourly headways. Most stops are designated by signs only, although there is a shelter with bench on the east (northbound) side of Tolman Creek Road at Abbott Street with a crosswalk to connect it with the residential development on the west side of the street. Service is provided on a half-hourly basis. Existing transit service was rated as Fair.

E. Main, Walker and Clay have no transit service and, accordingly, were not evaluated.

6.2.4 *Auto System*

Factors incorporated into the evaluation included:

- *"Volume-to-capacity (v/c) ratios: The prime consideration for the auto mode is based on the quantitative evaluation of demand (volume) versus roadway capacity with lower v/c ratios rated better than higher v/c ratios.*
- *Delay: Primarily considered at unsignalized locations with high side-street delays, shorter delays are rated better than longer delays.*
- *Safety: Roadway conditions that provide for a decreased likelihood of crashes were rated better than conditions with an increased likelihood of crashes."*

Generally, traffic operations within the study area range from good to excellent with minimal delays and no significant safety problems. One exception is the intersection of Ashland Street with Tolman Creek

Road which currently exceeds the citywide critical crash rate for signalized intersections. While existing traffic levels of service (expressed as volume-to-capacity ratios and average vehicle delay) are good, the Ashland/Tolman intersection will worsen substantially in the future and exceed the ODOT operational standard.

6.3 Determining the Multimodal Assessment for Intersections

Multimodal level of service evaluation at intersections focused largely on pedestrian and bicycle movement. Key factors that were incorporated into the evaluation include: the presence and type of traffic control, crossing width and whether a median island was present to serve as a refuge. Each of these criteria was assessed as follows:

6.3.1 *Pedestrian Facilities*

Factors incorporated into the evaluation included:

- *"Traffic control: The presence of a traffic signal or all-way STOP control stops pedestrians by stopping traffic. Intersections with a traffic signal or all-way STOP control with crosswalks are rated better than locations with only two-way STOP control, and/or locations without crosswalks.*
- *Crossing width: The number of approach lanes at an intersection determines the amount of pedestrian exposure and the intersection crossing time. Fewer travel lanes to be crossed is rated better than more travel lanes because it reduces pedestrian exposure and crossing time.*
- *Median islands: The presence of a median island is rated better than no islands because it reduces crossing time and allows two-stage crossings at unsignalized locations."*

Evaluation findings and conclusions:

- Crossings of Side Streets along Ashland Street – Generally rated as Good as all locations include either signals or side-street stop signs which require traffic to stop before proceeding. Both types of traffic control devices provide protection for pedestrian crossings. Additionally, all intersections along Ashland Street presently include crosswalks.
- Crossings of Side Streets along E. Main Street – Generally rated as Good at Walker Avenue which includes a side-street stop sign and a crosswalk. Generally Fair at Clay and Tolman Creek Road since there are stop signs but there are no existing crosswalks. In the future when Normal Avenue is extended to intersect with E. Main Street, it is assumed that this location will be stop controlled with a crosswalk. Accordingly, it is given a Good rating.
- Crossings of Ashland Street – The crossings of Ashland Street at both Walker Avenue and Tolman Creek Road are controlled by traffic signals which provide a relatively safe pedestrian environment. However the crossing distance is long (five vehicular travel lanes plus bicycle lanes which resulted in an overall rating of Fair. The crossings at Normal Avenue and Clay Streets have no protection or pedestrian refuge. Accordingly, they are rated as Poor.

6.3.2 *Bicycle Facilities*

Factors incorporated into the evaluation included:

- *"Traffic control: The presence of a traffic signal or all-way STOP control benefits bicyclists trying to cross the major roadway by stopping traffic. Signalized or all-way STOP traffic control is rated better than crossings with only two-way STOP control.*

- *Crossing width: Fewer travel lanes to be crossed is rated better than more travel lanes because it reduces bicyclist exposure and crossing time. "*

Since the evaluation factors for bicycle crossings are virtually the same as for pedestrians, the results are also the same.