From: edkcnw@comcast.net
Sent: Wednesday, March 24, 2021 12:51 PM
To: Tabitha Boschetti
Cc: Lindsey Hagerman; Steve Koper
Subject: RE: Public Comments- Notice ANN 20-0004- 23500 SW Boones Ferry Rd.

Follow Up Flag: Flag for follow up
Flag Status: Completed

Thanks Tabitha. My concern about the traffic also pertains to Washington County plans to extend the new 124th roadway to connect from Grahams Ferry Rd through to Boones Ferry Rd. In their public meeting a while ago, they showed alternative routes primarily ending on BFR near the new development. This too would create a massive traffic problem on Boones Ferry Rd. When I asked the WashCo planner, he said "they don't do traffic studies until the plans are written and in their hands. Seems somewhat backward to me. I believe the planning department should look at traffic at the start so if large scale development is planned, there will be adequate traffic flow to begin with, not after a large scale problem occurs. The same with the planned development on Nyberg Lane where it intersects with Nyberg and 65th. Have they resolved this issue as of yet?
Thanks,
Ed Casey

On 03/24/2021 11:39 AM Tabitha Boschetti <tboschetti@tualatin.gov> wrote:

Thank you for your questions about the recent email notice for Annexation case ANN 20-0004 at 23500 SW Boones Ferry Road. I apologize that the formatting clearly presented some legibility issues when it hit your inbox. The hearing notice was meant to appear in the body of the email. I am attaching a PDF version of the notice to hopefully address that legibility issue. We will also work on the formatting of future notices to be more universally compatible with different email clients, so thank you for bringing that to our attention.

This land use case under consideration is the annexation of this property into the City of Tualatin, described in the notice as:

Proposal to annex a 4.66-acre parcel located at 23500 SW Boones Ferry Road (Tax ID 2S135D000303) (Highlighted in Figure 1) into the City of Tualatin from unincorporated Washington County. Any future development or construction is not considered as part of this application.

The application materials are online here: https://www.tualatinoregon.gov/planning/ann-20-0004-annexation-23500-sw-boones-ferry-road.

To elaborate, this proposal is only considering a change to the City boundary and associated service districts at this time. The more specific transportation impacts of future development would be evaluated at the time of proposed development through the Architectural Review (AR) process. The applicant would need to prepare and submit a study of the transportation impacts as part of that future anticipated process. For Annexation, the applicant does still need to demonstrate a more general availability of nearby infrastructure consistent with local area plans.

I will keep a copy of your statements as part of the case record; if you have further comments about the proposal, please contact me at tboschetti@tualatin.gov.

Sincerely,

Tabitha Boschetti, AICP

Assistant Planner

City of Tualatin | Community Development

503.691.3029

www.tualatinoregon.gov

tboschetti@tualatin.gov

My pronouns are she/her

From: edkcnw <edkcnw@comcast.net>
Sent: Wednesday, March 24, 2021 10:36 AM
To: Lindsey Hagerman <lhagerman@tualatin.gov>
Subject: RE: Notice ANN 20-0004- 23500 SW Boones Ferry Rd.

Lindsey,

You're e-mail makes no sense. 1st attachment is blank COT letterhead, 2nd is map with small lot outlined and no explanation. 3rd won't open...

Please re-send so we can understand what's going on next to proposed large development.

Also, has a traffic study been completed for that development to show the impact on BFR by the cars that will enter an already overburdened N. Wilsonville I-5 access as well as adding to the northbound traffic heading toward Tualatin-Sherwood Rd?

Sent from Samsung Galaxy smartphone.

-------- Original message --------

From: Lindsey Hagerman <lhagerman@tualatin.gov>

Date: 3/24/21 9:40 AM (GMT-08:00)

To: Sheri_Esser@outlook.com, stan.jernberg@outlook.com, dan@danhardyproperties.com, hgeorge@gmail.com, doug_ulmer@comcast.net, jeanine@julianafamily.com, jeanine@julianafamily.com, MartinazziWoodsCIO@gmail.com, delmoore@frontier.com, jeremiah.baldwin@lamresearch.com, ardyth@comcast.net, janet7531@gmail.com, edkcnw@comcast.net, Patricia.Parsons@ctt.com, jmakarowsky@comcast.net, pdxalex@icloud.com, robikelly@earthlink.net, mwestenhaver@hotmail.com, deb.fant@gmail.com, tualatincommercialcio@gmail.com, scottm@capacitycommercial.com, scottm@capacitycommercial.com

Cc: neamtzu@ci.wilsonville.or.us, Naomi Vogel <Naomi_Vogel@co.washington.or.us>, theresa_cherniak@co.washington.or.us,

landusenotifications@oregonmetro.gov,
Region1_DEVREV_Applications@odot.state.or.us,
humphreysj@cleanwaterservices.org, thomas.mooney@tvfr.com,
trose1@ttsd.k12.or.us, pjohanson@sherwood.k12.or.us,
Roy@tualatinchamber.com, grluci@gmail.com, JWLuci@gmail.com

Subject: Notice ANN 20-0004- 23500 SW Boones Ferry Rd.


CITY OF
TUALATIN
Planning Division

NOTICE OF HEARING

CITY OF TUALATIN, OREGON

NOTICE IS HEREBY GIVEN that a public hearing will be held before the City of Tualatin City Council at 7:00 p.m., Monday, April 26, 2021, held online over Zoom and additionally accessible at the Juanita Pohl Center (8513 SW Tualatin Road, Tualatin, OR 97062).

You are invited to attend and participate in the public hearing. Under consideration is **File No. ANN 20-0004:**

Proposal to annex a 4.66-acre parcel located at 23500 SW Boones Ferry Road (Tax ID 2S135D000303) (Highlighted in Figure 1) into the City of Tualatin from unincorporated Washington County. Any future development or construction is not considered as part of this application.

Figure 1

The public is invited to comment by e-mail, writing or by testifying at the hearing. Written comments can be made by email to Tabitha Boschetti at tboschetti@tualatin.gov or submitted at the hearing. Failure to raise an issue at the hearing or in writing or to provide sufficient specificity to afford the City Council an opportunity to respond to the issue precludes appeal to the Land Use Board of Appeals (LUBA). Legislative hearings begin with the Mayor opening the hearing, presentation of the staff report, public testimony, questions of staff or anyone who testified by Council, after which the Mayor closes the public hearing, and Council may then deliberate to a decision and a motion would be made to either *approve*, *deny*, or *continue* the public hearing. The time of individual testimony may be limited.

For those who would prefer to make verbal comment at the hearing, there are two options:

- **Zoom teleconference**. Instructions on how to provide comment will be provided during the meeting itself.
    - Full instructions and a current link are available at: https://www.tualatinoregon.gov/citycouncil/council-meetings
- **Attend in person at the Juanita Pohl Center**. Physical distancing measures will be implemented for those attending in person, and City staff will be available to answer any questions.

To view the application materials visit: https://www.tualatinoregon.gov/planning/ann-20-0004-annexation-23500-sw-boones-ferry-road

A staff report will available seven day prior to the public hearing. This meeting and any materials being considered can be made accessible upon request.

To grant the amendment, Council must find the proposal meets the applicable criteria of Tualatin Development Code (TDC) 33.010, and Metro Code 3.09.045.

CITY OF
TUALATIN,
OREGON

Lindsey Hagerman

Office Coordiantor

City of Tualatin | Community Development Department

503.691.3053 | lhagerman@tualatin.gov

4-26-2021

To the Members of the Tualatin City Council – Individually and Collectively

RE: City of Tualatin City Council Hearing 4-26-2021

> **Consideration of Ordinance No. 1456-21**, requesting the annexation of approximately 4.66 acres of property located at 23500 SW Boones Ferry Road (Tax ID 2S135D000303); annexing the territory into the boundary of Clean Water Services, and withdrawing the territory from the Washington County Enhanced Sheriff Patrol District (File No. ANN 20-0004).

FOR THE PUBLIC RECORD

We appreciate the opportunity to provide Citizen Comments regarding the proposed ANN 20-0004 - Annexation of 23500 SW Boones Ferry Road by CPAH into the City of Tualatin.

We are property owners within unincorporated Washington County. The property upon which our home is located, is within 1000 feet, and is west and slightly south from the lands proposed for annexation into the City of Tualatin.

Due to the existing topography and the existing stormwater catchment area on the east side of SW Boones Ferry Road our home and property is also downstream from the southern portion of the CPAH property. We present our written testimony to the City of Tualatin City Council for consideration during the Council Hearing scheduled for April 26, 2021 on ANN 20-0004 - Annexation of 23500 SW Boones Ferry Road by CPAH.

(Please see **APPENDIX A- MAPS OF PROPOSED LAND FOR ANNEXATION 23500 SW BOONES FERRY ROAD)**

- We understand the Hearing scheduled before the City Council on 4-26-2021 is an annexation request.
- We also understand this hearing is not a property development request.
- We are not opposed to this Annexation per se, but the City needs to comply with the land use laws and good urban planning principles.
- The process by which the proposed Land Use Action should also be conducted in an openly transparent manner, and in accordance with State and Local Governmental requirements for notification and inclusion of the public within the process.

Our comments are based upon State, Regional and Local requirements.

CITY OF TUALATIN -APPLICABLE EVALUATION CRITERIA FOR ANNEXATION

Compliance to City of Tualatin Development Code TDC 32.150

> The proposed application for ANN 20-0004 - Annexation of 23500 SW Boones Ferry Road by CPAH includes a CERTIFICATION OF SIGN POSTING – required in TDC 32.150

CERTIFICATION OF SIGN POSTING

NOTICE
ANNEXATION
ANN-[YY]-__
For more information call
503-691-3026 or visit
www.tualatinoregon.gov

The applicant must provide and post a sign pursuant to Tualatin Development Code (TDC 32.150). The block around the word "NOTICE" must remain purple composed of the RGB color values Red 112, Green 48, and Blue 160. A template is available at:
https://www.tualatinoregon.gov/planning/land-use-application-sign-templates

NOTE: For larger projects, the Community Development Department may require the posting of additional signs in conspicuous locations.

As the applicant for the Community Partners for Affordable Housing project,
I hereby certify that on this day, December 28th, 2020 sign(s) was/were posted on the subject property in accordance with the requirements of the Tualatin Development Code and the Community Development Division.

Applicant's Name: Jilian Saurage Felton, Housing Development Director (Please Print)

Applicant's Signature:

Date: 12/28/2020

However, no signs matching the description within the Certification OF Sign Posting were seen along 23500 SW Boones Ferry Road on multiple days prior to the scheduled 4-26-2021 City of Tualatin City Council Hearing Agenda Item.

Please see photos in **APPENDIX B -PHOTOS TAKEN FROM SW BOONES FERRY ROAD – OF 23500 SW BOONES FERRY ROAD** taken from SW Boones Ferry Road looking east towards 23500 SW Boones Ferry Road. These photos were taken on 4-15-2021; 4-17-2021 and 4-23-2021.)

The absence of City of Tualatin specified posted signs on the property and along the public street of SW Boones Ferry Road is not compliant with

TDC 32.150. - Sign Posting.

(1)When Signs Posted. Signs in conformance with these standards must be posted as follows:

(b)Signs providing notice of a pending land use application must be posted after land use application has been submitted for Type II, III and IV-A applications.

(3)On-site Placement. The applicant must place one sign on their property along each public street frontage of the subject property. (Example: If a property adjoins four public streets, the applicant must place a sign at each of those public street frontages for a total of four signs.) The applicant cannot place the sign within public right-of-way.(

4)Removal. If a sign providing notice of a pending land use application disappears prior to the final decision date of the subject land use application, the applicant must replace the sign within 40-eight (48) hours of discovery of the disappearance or of receipt of notice from the City of its disappearance, whichever occurs first.

(Ord. 1414-18;12-10-18)

CITIZEN INVOLVEMENT – STATE OF OREGON GOAL #1 OAR 660-015-0000(1)

As the proposed lands for annexation are currently outside of the City Limits, and within unincorporated Washington County, lacking the posted signs at the site, Citizens may not even be aware of the proposed Land Use Action by the City of Tualatin, may not know where to locate information on the proposed annexation, or know when the only scheduled Land Use Hearing on ANN 20-0004 - Annexation of 23500 SW Boones Ferry Road by CPAH would be held.

Limited Citizen Involvement outreach on proposed Land Use Actions potentially impacting Basalt Creek Citizens and property owners has been previously identified as problematic. During the 3-8-2021 City of Tualatin City Council Hearing on City of Tualatin (File No. PMA 20-0002 and PTA 20-0005) the Chair of the Tualatin Planning Commission provided comments within his verbal testimony of the need to

address the provision of Citizen Involvement due to among other issues -the City's Citizen Involvement Organization membership limitations excluding non-City residents.

This statement by the Chair of the Tualatin Planning Commission is significant, as the City has stated the City of Tualatin Planning Commission is the official Committee to fulfill Goal 1 Citizen Involvement of Oregon's statewide land use planning program; and also serves as an Advisory Committee to the City Council on land use matters by reviewing and making recommendations on comprehensive plan amendments. (Tualatin Planning Commission March 19, 2021).

Lacking a City of Tualatin CIO for the Basalt Creek Area for non-City residents, Basalt Creek Citizens were not provided the opportunity to have the proposed ANN 20-0004 - Annexation of 23500 SW Boones Ferry Road by CPAH brought before the Tualatin Planning Commission prior to the 4-26-2021 City Council Hearing. As the City states the Tualatin Planning Commission fulfills Goal #1 Citizen Involvement requirements, it would have seemed appropriate for the role of the Planning Commission to conduct and promote effective outreach to the Basalt Creek Area- which will be impacted by this proposed Land Use Action.

It is also important to note, the majority of residents in the Basalt Creek Area are not residents of the City of Tualatin, and therefore have no elected representation within the proposed annexation and change in Land Use Zoning designation for approximately 5 acres within the Basalt Creek Area.

STATE OF OREGON -APPLICABLE EVALUATION CRITERIA FOR ANNEXATION

ORS 197.175 requires cities and counties to exercise their planning and zoning responsibilities in compliance with the Statewide Planning Goals.
This includes, but is not limited to, new or amended plans as a result of a city or special district boundary change including the incorporation **or annexation of unincorporated territory** (emphasis added).

The purpose of this rule is to clarify the requirements of Goal 14 and to provide guidance to cities, counties and local government boundary commissions regarding urban development on rural lands, planning and zoning of newly incorporated cities, **and the application of statewide goals during annexation proceedings** emphasis added).

STATE OF OREGON STATEWIDE LAND USE GOAL #2: LAND USE PLANNING OAR 660-015-0000(2)

To establish a land use planning process and policy framework as a basis for all decisions and actions related to use of land and to assure an adequate factual base for such decisions and actions

The City of Tualatin lacks adoption of two required documents which are needed in the evaluation of Land Use Planning Actions within the Basalt Creek Area. The absence of these required documents is relevant to the proposed ANN 20-0004 - Annexation of 23500 SW Boones Ferry Road by CPAH.

Lacking the ability to reference and utilize the two required documents, the factual basis for the evaluation of the proposed annexation cannot be adequately determined.

1. **The City of Tualatin lacks an adopted Stormwater Management Plan as identified in OAR Chapter 660 Div. 11 Public Facilities Planning for the Basalt Creek Area.**

Various State mandates require a formal plan for providing Key Public Services- including Stormwater Management- to be based upon current and future assessments, analysis and forecasting for services and facilities based upon designated Land Uses for the entire area- to be included within the Comprehensive Plan. The City has not adopted such a Plan for the Basalt Creek Area.

Lacking a Stormwater Management Plan for the Basalt Creek Area during an annexation Land Use Action, places the City in the position of accepting responsibility for providing safe and effective Stormwater Management without the required due diligence including: assessment of any existing Stormwater system within the lands proposed for annexation, limitations and constraints of the stormwater system and treatment facilities in the surrounding areas, forecasting costs, or establishment of clear formalized coordination with overlapping governments who also have jurisdiction over a majority of the existing Stormwater System and also have Land Use Planning jurisdiction within the Basalt Creek Area.

Lacking a Stormwater Management Plan for the Basalt Creek Area, the City lacks a regional integrated comprehensive plan which ensures the provision of safe and effective Stormwater Management throughout the area. The absence of an adopted mandated Stormwater Management Plan for the Basalt Creek Area is not resolved by the reliance on use of Clean Water Services Standards which are applied as part of an individual land development process.

In an email received from CPAH on 4-8-2021, in response our questions and concerns regarding their annexation proposal, CPAH replied, "While we cannot meet the requirement to infiltrate all stormwater onsite, due to soil conditions, any runoff will be equal to or less than if the site were an undeveloped grassy field, regardless of how much impermeable surface there is currently". We appreciated Jilian Saurage Felton's willingness to provide a response to our inquiries. Unfortunately, because past assurances of a similar nature by local governments have turned out not to be reliable, we remain concerned. (Please see **APPENDIX C COPY OF EMAIL CHAIN 2021 4-2 to 4-22 BETWEEN LUCINI AND CPAH ANN 20-0004)**

At the time the email was written, it was apparent from the comments, the company had not conducted a full assessment of the existing conditions including effects of topography; local land hydrology; limitations for local off site management; the limitations of the existing stormwater intake, conveyance and treatment facilities as to capacity and condition and configuration system within the area; constraints on land available and suitable for off-site treatment facilities; or the impacts of other potential Land Use Plans by Washington County which may add additional stormwater management needs within the area.

Due to the topography about half of the stormwater on the CPAH property flows to the north, and stormwater from the southern portion of the CPAH lands flow in a southwesterly direction. It should be noted, the CPAH lands do not have a Stormwater Intake integrated into the existing Washington County system on the property. The CPAH property is essentially "landlocked" from access to existing off-site intakes and Stormwater Management and treatment facilities.

(Please see **APPENDIX A- MAPS OF PROPOSED LAND FOR ANNEXATION 23500 SW BOONES FERRY ROAD)**

Stormwater from the southern portion of the CPAH property flows onto surrounding several properties, then flows down steep slopes into known wetlands and high valued habitats within the Basalt Creek Canyon. CPAH will have to rely upon coordination of stormwater planning with the surrounding property owners for off-site management.

Depending upon the phasing of the Autumn Sunrise/Lennar Developments, upgrades to the existing Stormwater system needed to accommodate the higher stormwater management needs which comes with higher density development, might provide some off-site treatment facilities. However, if CPAH desires to start development prior to the Autumn Sunrise initiation of development of their stormwater system along SW Boones Ferry Road, it will be problematic.

As the City lacks a Stormwater Management Plan for the Basalt Creek Area, and the existing Stormwater system may be at capacity, the sequencing of when CPAH can access connections into existing or new off-site conveyance and treatment facilities is not established, nor is funding identified should the City have to participate in the development of a regional stormwater facility, conveyance system and/or treatment facility.

To compound problems, Washington County is proposing the Basalt Creek Parkway Extension to intersect SW Boones Ferry Road. It is not publicly known at this time where Washington County plans to construct their stormwater management system along SW Boones Ferry Road to address the additional stormwater runoff generated by the major intersection planned at Greenhill Lane.

As the hydrology of the land is only able to absorb a finite amount of stormwater, CPAH is left in a position to compete for stormwater treatment facilities with not only other developments, but also another local government.

2. **The City of Tualatin lacks inclusion of data developed with clear and objective standards, conditions and procedures from a Goal #5 Natural Resources Inventory of the Basalt Creek Area into the City's adopted Natural Resources Maps.**

   It is questionable if the City is in compliance with its standards and responsibilities in the collection, evaluation and documentation of Goal 5 Natural Resources in the Basalt Creek Area into the City's Governing Documents.

   The City lacks factual information of various Natural Resources known to exist within the Basalt Creek Area within the City Maps:

   - City of Tualatin Map 72-1 Natural Resources Protection Overlay District (NRPO) and Greenway
   - City of Tualatin Map 72-3 Natural Resources

   adopted in adopted 2019 as part of ORD 1427-19 which included the City of Tualatin Basalt Creek Comprehensive Plan.

   It is unclear what clear and standard facts regarding the Natural Resources in the Basalt Creek Area the City utilizes to evaluate proposed Land Use Actions within the Basalt Creek Area as to their compliance to Goal #5 to fulfill requirements of the City's role and responsibility to protect and conserve various Natural Resources in the Basalt Creek Area.

   It is extremely unclear how the City of Tualatin is able to assess and minimize the potential impact of Stormwater flow and possible erosion from the upstream lands of the of the proposed CPAH annexation which are at a higher elevation than the wetlands, and high valued habitats known to exist downstream at the bottom of steep slopes– when the City has not conducted either the regional Stormwater

Management Plan for the Basalt Creek Area, nor documented within the City Maps the identification, location and condition of these and other Natural Resources in the Basalt Creek Area.

We therefore request the members of the Tualatin City Council to continue the hearing to a date certain in the future when the City has complied with the development and adoption of a Stormwater Management Plan pursuant to OAR Chapter 660 Div 11-for the Basalt Creek Area which should address a multitude of stormwater management issues which present themselves.

We would like to make it clear, this is a City issue, not a CPAH issue-but the City of Tualatin and/or CPAH should address the need for identification of how CPAH will provide safe and effective offsite Stormwater Management for the property at 23500 SW Boones Ferry Road as part of the annexation process in compliance with Federal, State and Regional mandates.

STORMWATER MANAGEMENT PLAN REQUIRED FOR BASALT CREEK AREA
APPLICABLE EVALUATION CRITERIA FOR ANNEXATION

METRO

TITLE 10: FUNCTIONAL PLAN DEFINITIONS

"Public facilities and services" means sewers, water service, **stormwater services** (EMPHASIS ADDED) and transportation.
"Utility facilities" means buildings, structures or any constructed portion of a system which provides for the production, transmission, conveyance, delivery or furnishing of services including, but not limited to, heat, light, water, power, natural gas, sanitary sewer, **stormwater**, (EMPHASIS ADDED) telephone and cable television.

3.07.1110 Planning for Areas Designated Urban Reserve

A local government, in creating a concept plan to comply with this section, shall consider actions necessary to achieve the following outcomes:
(H) Avoidance or minimization of adverse effects on farm and forest practices and important natural landscape features on nearby rural lands.

A concept plan shall:
(1) Show the general locations of any residential, commercial, industrial, institutional and public uses proposed for the area with sufficient detail to allow estimates of the cost of the public systems and facilities described in paragraph (2);
(2) For proposed sewer, park and trail, water and **stormwater systems** (EMPHASIS ADDED) and transportation facilities, provide the following:

(A) The general locations of proposed sewer, park and trail, water and stormwater systems;
(B) The mode, function and general location of any proposed state transportation facilities, arterial facilities, regional transit and trail facilities and freight intermodal facilities;
(C) The proposed connections of these systems and facilities, if any, to existing systems;
(D) Preliminary estimates of the costs of the systems and facilities in sufficient detail to determine feasibility and allow cost comparisons with other areas;
(E) Proposed methods to finance the systems and facilities; and
(F) Consideration for protection of the capacity, function and safe operation of state highway interchanges, including existing and planned interchanges and planned improvements to interchanges.

(d) Concept plans shall guide, but not bind:

(1) The designation of 2040 Growth Concept design types by the Metro Council;
(2) Conditions in the Metro ordinance that adds the area to the UGB; or
(3) Amendments to city or county comprehensive plans or land use regulations following addition of the area to the UGB.

Title 12: Protection of Residential Neighborhoods

3.07.1210 Purpose and Intent

Existing neighborhoods are essential to the success of the 2040 Growth Concept.
The intent of Title 12 of the Urban Growth Management Functional Plan is to protect the region's residential neighborhoods.

The purpose of Title 12 is to help implement the policy of the Regional Framework Plan to protect existing residential neighborhoods from air and water pollution, noise and crime and to provide adequate levels of public services. [Ord. 02-969B, Sec. 3.]

STATE OF OREGON STATEWIDE LAND USE GOALS:

#6 AIR, WATER AND LAND RESOURCES QUALITY OAR 660-015-0000(6)

Goal To maintain and improve the quality of the air, water and land resources of the state.

#7: AREAS SUBJECT TO NATURAL HAZARDS OAR 660-015-0000(7)

Goal To protect people and property from natural hazards.

9: ECONOMIC DEVELOPMENT OAR 660-015-0000(9)

Goal To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens.
Comprehensive plans and policies shall contribute to a stable and healthy economy in all regions of the state.
Such plans shall be based on inventories of areas suitable for increased economic growth and activity after taking into consideration the health of the current economic base; materials and energy availability and cost; labor market factors; educational and technical training programs; **availability of key public Facilities** (EMPHASIS ADDED); **necessary support facilities** (EMPHASIS ADDED)**;** current market forces; location relative to markets; availability of renewable and non-renewable resources; availability of land; and **pollution control requirements**. (EMPHASIS ADDED).

#10: HOUSING OAR 660-015-0000(10) OAR chapter 660, division 7

Goal To provide for the housing needs of citizens of the state.
Buildable lands for residential use shall be inventoried and plans shall encourage the availability of adequate numbers of needed housing units price ranges and rent levels which are commensurate with the financial capabilities of Oregon households and allow for flexibility of housing location, type and density.

11: PUBLIC FACILITIES AND SERVICES OAR 660-015-0000(11) OAR chapter 660, division 11

Goal To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.
Urban and rural development shall be guided and supported by types and levels of urban and rural public facilities and services appropriate for, but limited to, the needs and requirements of the urban, urbanizable, and rural areas to be served. A provision for key facilities shall be included in each plan.

14: URBANIZATION OAR 660-015-0000(14) OAR chapter 660, division 11; ORS 197.175; 660-014-0000

Goal To provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities.
Urbanizable Land-Land within urban growth boundaries shall be considered available for urban development consistent with plans for the provision of urban facilities and services.
Comprehensive plans and implementing measures shall manage the use and division of urbanizable land to maintain its potential for planned urban development until appropriate public facilities and services are available or planned.

DISCUSSION:

This proposed annexation application is a Land Use Action which will not only bring lands from within the Basalt Creek Area directly into the City Limits but will also change the Land Use Zoning designation for the property. Upon annexation (High Density Residential (RH) zoning would be applied, consistent with the Comprehensive Plan Map, 10-1).

STORMWATER MANAGEMENT REQUIREMENTS PER STATE OF OREGON

This proposed change in Land Use Designation will change anticipated stormwater management needs from those which currently exist on the Future Development 20 (FD 20) zoning- to the higher stormwater management needs identified with increased impervious surfaces which is caused by buildings, streets, parking lots and sidewalks which occur with RH zoning designations.

The City has not complied with the State requirements for a Stormwater Management Plan within the Basalt Creek Area which has significant ramifications as to the City's proposed Land Use Action.

State of Oregon Department of Environmental Quality,
Preparing Stormwater Planning Documents-A Guide for Clean Water State Revolving Fund Loan Applicants
5.1 Public facilities planning in Oregon
Last Updated: 06/03/2019

Stormwater master planning is public facilities planning under Oregon Administrative Rules 660-011-0010. By definition, a public facilities plan is a support document to a local comprehensive land use plan, required in Oregon. Certain elements of this plan must be adopted as part of the comprehensive plan (see Oregon Administrative Rule 660-011-0045).

Oregon Revised Statutes 197.712(2) (e) requires cities and counties develop and adopt a public facility plan for areas within an urban growth boundary with a population greater than 2,500.

A stormwater master plan/public facilities plan must contain the following:

(a) An inventory and general assessment of the condition of all the significant public facility systems which support the land uses designated in the acknowledged comprehensive plan;

(b) A list of the significant public facility projects which are to support the land uses designated in the acknowledged comprehensive plan. Public facility project descriptions or specifications of these projects as necessary;

(c) Rough cost estimates of each public facility project;

(d) A map or written description of each public facility project's general location or service area;

(e) Policy statement(s) or urban growth management agreement identifying the provider of each public facility system. If there is more than one provider with the authority to provide the system within the area covered by the public facility plan, then the provider of each project shall be designated;

(f) An estimate of when each facility project will be needed; and,

(g) A discussion of the provider's existing funding mechanisms and the ability of these and possible new mechanisms to fund the development of each public facility project or system.

According to Oregon Administrative Rule 660-011-0020, the public facility inventory noted in subsection (a) above of the public facilities planning requirements must adhere to the following:

(1) The public facility plan shall include an inventory of significant public facility systems. Where the acknowledged comprehensive plan, background document or one or more of the plans or programs listed in OAR 660-011-0010(3) contains such an inventory, that inventory may be incorporated by reference. The inventory shall include:

(a) Mapped location of the facility or service area;

(b) Facility capacity or size; and

(c) General assessment of condition of the facility (e.g., very good, good, fair, poor, very poor).

The City has responsibility and accountability for stormwater management planning within the Basalt Creek Area. The process for the development of a Stormwater Management Plan (meeting or exceeding State requirements) should have begun in 2004 when the "Tualatin Area" (now known as the Basalt Creek Area) was brought into the Urban Growth Boundary (UGB) with Metro 04-10400B, and should have resulted in the City adopting a Stormwater Management Plan for the Basalt Creek Area to be implemented and utilized as part of the City's annexation evaluation process and other land use planning actions impacting Lands within the Basalt Creek Area.

The City's statements of compliance to Clean Water Services standards -<u>when a development application is proposed for adoption</u>--to fulfill the lack of an adopted Stormwater Management Plan for the Basalt Creek Area <u>does **not** meet all of the requirements of the ensurance for the provision of Public Facility Services as mandated by the State</u>. The City has known for many years of the limitations of the existing stormwater management system within the Basalt Creek Area, that the design and construction of the existing system was based and implemented for rural undeveloped lands, and that the existing system has already proven to have failed.

The City of Tualatin Basalt Creek Concept Plan adopted by the City in 2018 acknowledged upgrades to the existing Stormwater Infrastructure would likely be need within the Basalt Creek Area with the onset of development. The Concept Plan did not include all of the requirements for a Stormwater Management Plan.

Stormwater

Existing stormwater infrastructure consists of roadside drainage ditches and culverts. Culverts in the Planning Area are under the jurisdiction of Washington County and may not have capacity for future urban conditions. Culverts to the south of the Planning Area are part of the City of Wilsonville stormwater system. The City of Tualatin has jurisdiction over the stormwater conveyance system to the north of the Planning Area. Culverts may need to be upsized to provide adequate capacity for runoff from new impervious areas, unless onsite retention or infiltration is required when the location of public drainage or the topography of the site make connection to the system not economically feasible

CITY OF TUALATIN RECEIVED MULTIPLE SUBMISSIONS ON THE FAILURE OF THE EXISTING SYSTEM AND NEED FOR THOUGHTFUL SAFE AND EFFECTIVE STORMWATER MANAGEMENT FOR THE BASALT CREEK AREA.

(Please see **APPENDIX E -CITIZEN COMMENTS -CITY OF TUALATIN STORMWATER MASTER PLANNING- BASALT CREEK AREA 2020)**

The City was provided written notification of the failure of the existing stormwater system within the Basalt Creek Area in 2016 and has on numerous times has received requests from us to address the need for safe and effective Stormwater Management Planning within the Basalt Creek Area.

2012-2015 Washington County designed and installed a stormwater system along SW Boones Ferry Road as part of the Washington County SW Boones Ferry Road Improvement Project.

The stormwater management calculation needs for the County's project were based upon undeveloped rural land within the area.

On 5-18-2015, the County's stormwater management system failed, flooding our property from upstream stormwater collected within the catchment basin east of SW Boones Ferry Road- which includes the southern portion of the land within this proposed annexation.

On 10-26-2016 the City acknowledged receiving written communication from us which included notification of the failure of the existing stormwater system within the Basalt Creek Area, information from an environmental engineer we hired to determine the cause of the flooding, and a request to include this information within the Basalt Creek Concept Planning process as to the need for thoughtful stormwater management planning within the Concept Land Use Planning process.

Washington County has made no significant changes or improvements to the existing stormwater system in the NE portion of the Basalt Creek Area to address the stormwater system failure we experienced in 2015.

We have continued to submit Citizen Comments and Concerns to the City for the need of a Stormwater Management Plan for the Basalt Creek Area throughout the years:

- the Basalt Creek Concept Planning process,
- the City of Tualatin Basalt Creek Comprehensive Planning process,
- the ANN 19-0002 Annexation of the Autumn Sunrise properties,
- the City of Tualatin proposed Stormwater Master Plan Update
- the adoption of PTA 20-0005 & PMA 20-0002 changing Land Use Designations and Code Changes in the Basalt Creek Area.

We have submitted to city staff in writing, verbally and during on-site inspections of the Stormwater Management system within the NE portion of the Basalt Creek Area our concerns regarding the existing stormwater system and treatment facilities:

- the limited capacities of the system designed for rural undeveloped land- and not the higher needs of more impervious surfaced which come with development,
- the known failure of the existing system,
- the erosion concerns due to existing topography with steep slopes and local geology/hydrology
    - the land's hydrology and finite amount of land able to absorb stormwater runoff
    - the anticipated removal of existing lands which currently function as stormwater catchment basin which will come with development
    - the **erosion concerns from peak flows** of stormwater and
    - the **erosion concerns of constant average flow** draining from retention facilities down steep slopes into downstream properties and multiple Natural Resources known to exist downstream.

MULTIPLE NATURAL RESOURCES KNOWN TO EXIST WITHIN BASALT CREEK AREA REQUIRE PROTECTION

DOCUMENTATION OF CLEAR STANDARDIZED FACTS AND ASSESSMENT OF MANDATED GOAL #5 INVENTORY OF NATURAL RESOURCES WITHIN THE BASALT CREEK AREA NOT BEEN ADOPTED OR IDENTIFIED ON CITY'S OFFICIAL NATURAL RESOURCES MAPS – YET NEEDED FOR EVALUATION OF COMPLIANCE TO GOAL #5 CRITERIA

(Please see **APPENDIX A- MAPS OF PROPOSED LAND FOR ANNEXATION 23500 SW BOONES FERRY ROAD)**

(Please see **APPENDIX D- STATE OF OREGON DOCUMENTS-MANDATES- ADDITIONAL INFORMATION)**

METRO 04-1040b –

Adopted in 2004 allowed for the inclusion of the "Tualatin Area" -now known as the Basalt Creek Area into the Urban Growth Boundary- with conditions and provisions for the protection and/or conservation of multiple Natural Resources. Some of these requirements were applicable to all lands being brought into the UGB, while other requirements for protection of Natural Resources were specific to the "Tualatin Area".

METRO TITLE 13: NATURE IN NEIGHBORHOODS

3.07.1310 INTENT

The purposes of this program are to

(1) conserve, protect, and restore a continuous ecologically viable streamside corridor system, from the streams' headwaters to their confluence with other streams and rivers, and with their floodplains in a manner that is integrated with upland wildlife habitat and with the surrounding urban landscape; and

(2) to control and prevent water pollution for the protection of the public health and safety, and to maintain and improve water quality throughout the region.

METRO 3.07.340 PERFORMANCE STANDARDS

MAP ADMINISTRATION.

Cities and counties shall amend their comprehensive plans and implementing ordinances to provide a process for each of the following:

(1) Amendments to city and county adopted Water Quality and Flood Management Area maps to correct the location of Protected Water Features, Water Quality Resource Areas and Flood Management Areas.
Amendments shall be initiated within 90 days of the date the city or county receives information establishing a possible map error.
(3)Amendments to city and county adopted Water Quality and Flood Management Area maps to add Title 3 Wetlands when the city or county receives significant evidence that a wetland meets any one of the following criteria: (A) The wetland is fed by surface flows, sheet flows or precipitation, and has evidence of flooding during the growing season, and has 60 percent or greater vegetated cover, and is over one-half acre in size; or The wetland qualifies as having "intact water quality function" under the 1996 Oregon Freshwater Wetland Assessment Methodology

METRO 3.07.1340 PERFORMANCE STANDARDS AND BEST MANAGEMENT PRACTICES FOR HABITAT CONSERVATION AREAS

Administering the Habitat Conservation Areas Map and Site-Level Verification of Habitat Location.

(1) Each city and county shall be responsible for administering the Habitat Conservation Areas Map, or the city's or county's map that has been deemed by Metro to be in substantial compliance with the Habitat

Conservation Areas Map, within its jurisdiction, as provided in this subsection (d) of this section.

(2) The comprehensive plan and implementing ordinances amended, adopted or relied upon to comply with this subsection (d) of this section shall comply with Metro Code Section 3.07.1330(g).

(3) Verification of the Location of Habitat Conservation Areas. Each city and county shall establish a verification process consistent with subsections (d)(4) through (d)(6) of this section.

STATE OF OREGON STATEWIDE LAND USE GOALS:

#5 NATURAL RESOURCES AND OPEN SPACES; OAR chapter 660, division 23,

Goal To protect natural resources and conserve scenic and historic areas and open spaces

#6 AIR, WATER AND LAND RESOURCES QUALITY OAR 660-015-0000(6)

Goal To maintain and improve the quality of the air, water and land resources of the state.

#10: Housing OAR 660-015-0000(10) OAR chapter 660, division 7

Goal To provide for the housing needs of citizens of the state.
Buildable lands for residential use shall be inventoried and plans shall encourage the availability of adequate numbers of needed housing units price ranges and rent levels which are commensurate with the financial capabilities of Oregon households and allow for flexibility of housing location, type and density.
(See also Appendix B- 2
2020 8-27 LCDC Enforcement Order Advisory: Local Government to Correct Regulations That Limit Housing Development in Natural Resource Areas- Washington County)

11: PUBLIC FACILITIES AND SERVICES OAR 660-015-0000(11)

Goal To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.

We appreciate your time and consideration in reviewing our concerns.

Respectfully submitted,
John and Grace Lucini
23677 SW Boones Ferry Road
Tualatin, Oregon 97062

APPENDICES

APPENDIX A- MAPS OF PROPOSED LAND FOR ANNEXATION 23500 SW BOONES FERRY ROAD

1. **Location of land proposed for annexation in relationship to the Lucini home and property**
2. **Topographical Map of location of land proposed for annexation with steep slopes downstream of southern portion of proposed annexation**
3. **Map of location of land proposed for annexation- stormwater from southern portion flows southwesterly direction to steep slopes (greater than 10% and greater than 25%) and downstream into federally identified wetlands**
4. **Aerial Map downstream of southern portion of proposed land for annexation**
5. **Map of downstream locations of Metro Identified High Valued Habitat- downstream from southern portion of proposed land for annexation**.
6. **Metro Title #13 Map of the Basalt Creek Area**
7. **City of Tualatin City Maps- adopted 2019 ORD 1427-19 with City of Tualatin Basalt Creek Comprehensive** Plan do NOT include information on multiple Natural Resources in the Basalt Creek Area which the City is mandated to protect and/or conserve
   a. City of Tualatin Map 72-1 Natural Resources Protection Overlay District (NRPO) and Greenway
   b. City of Tualatin Map 72-3 Natural Resources
8. **Relevant Bid Set Plans from Existing Stormwater System in Basalt Creek Area designed and constructed by Washington County**
   a. SW Boones Ferry Road Improvement Project 2012-2015
   b. Design based upon undeveloped land use needs
   c. Bid Plans for Stormwater Management System along SW Boones Ferry Road
   d. No stormwater Intakes provided or installed for Re Property- now CPAH Property
   e. Stormwater runoff from portion of CPAH Property flows Southwesterly direction
      i. 2 Intakes in Right of Way on East side of SW Boones Ferry Road and Curb adjacent to Autumn Sunrise- Horizon Community Church Properties
      ii. System conveys stormwater under SW Boones Ferry Road
      iii. Discharges into Right of Way on Lucini Property which Washington County has easement.
      iv. Lucini property is in unincorporated Washington County and has not requested annexation of any portion of their property into the City of Tualatin.

APPENDIX B -PHOTOS TAKEN FROM SW BOONES FERRY ROAD – OF 23500 SW BOONES FERRY ROAD

1. PHOTOS TAKEN 4-15-2021 – NO SIGNAGE OF NOTICE OF PROPOSED LAND USE ANNEXATION VISIBLE
2. PHOTOS TAKEN 4-17-2021 – NO SIGNAGE OF NOTICE OF PROPOSED LAND USE ANNEXATION VISIBLE

PHOTOS TAKEN 4-23-2021 – NO SIGNAGE OF NOTICE OF PROPOSED LAND USE ANNEXATION VISIBLE

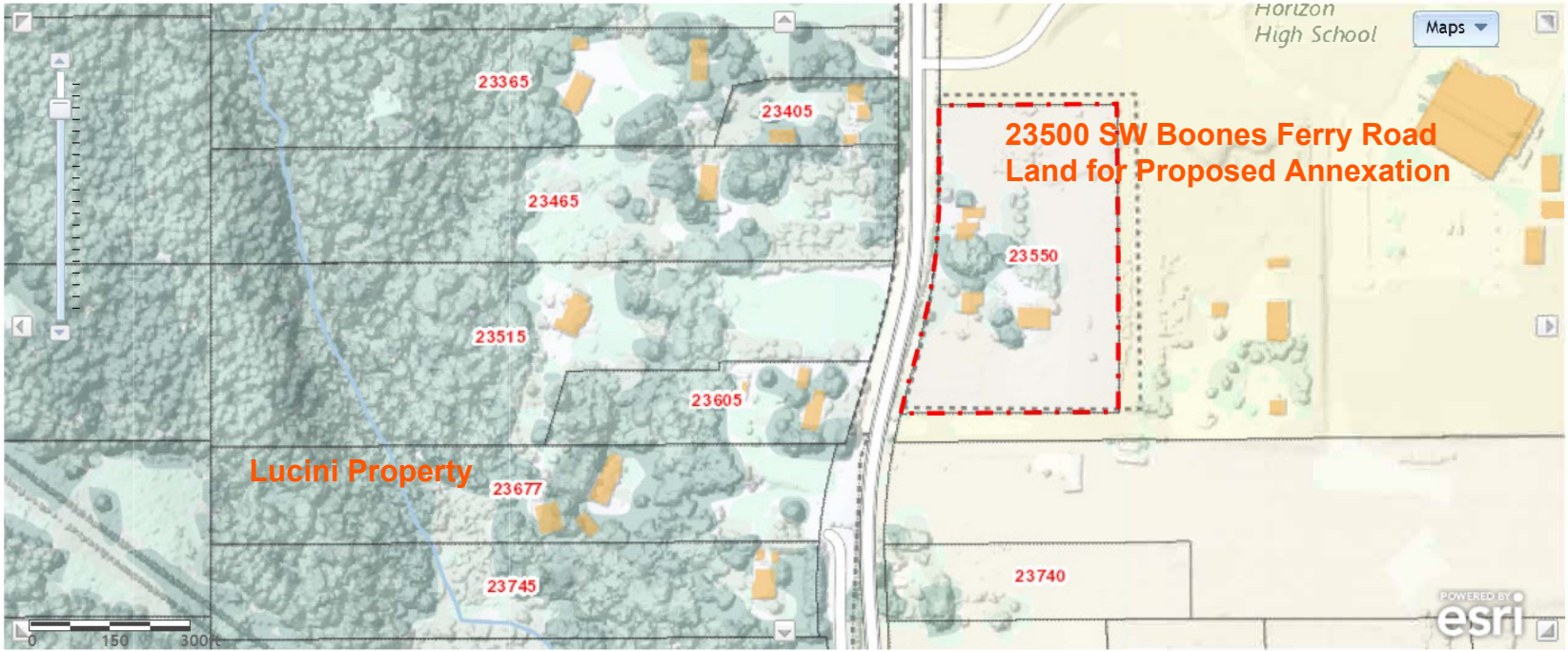
APPENDIX C COPY OF EMAIL CHAIN 2021 4-2 to 4-22 BETWEEN LUCINI AND CPAH ANN 20-0004

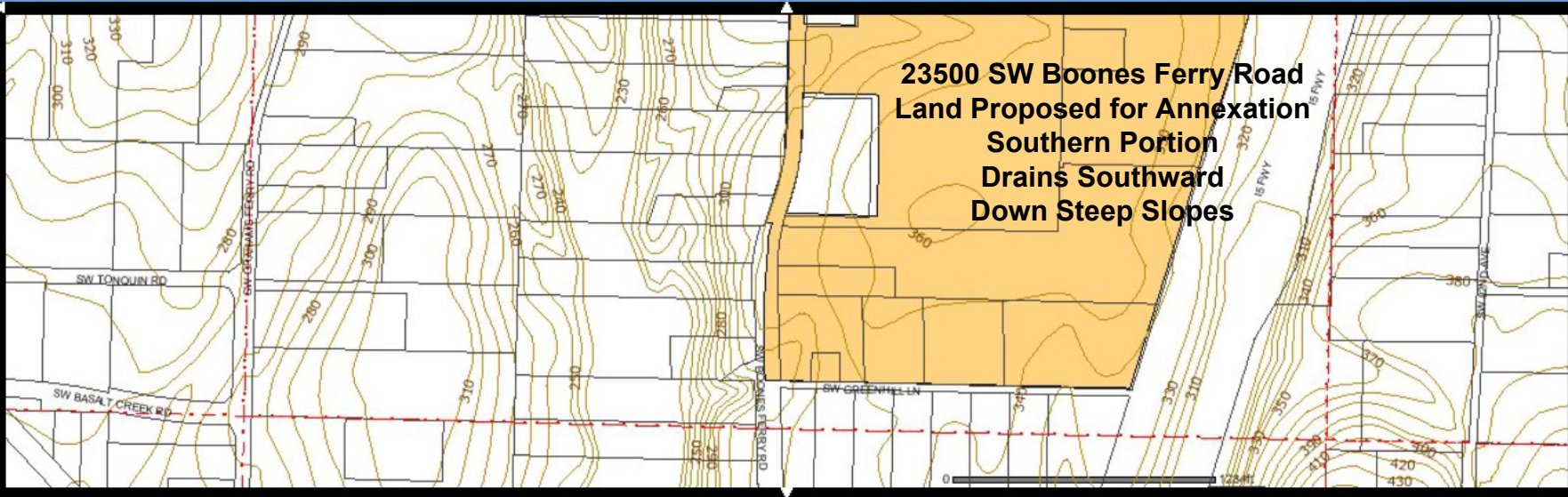
APPENDIX D- STATE OF OREGON DOCUMENTS-MANDATES- ADDITIONAL INFORMATION

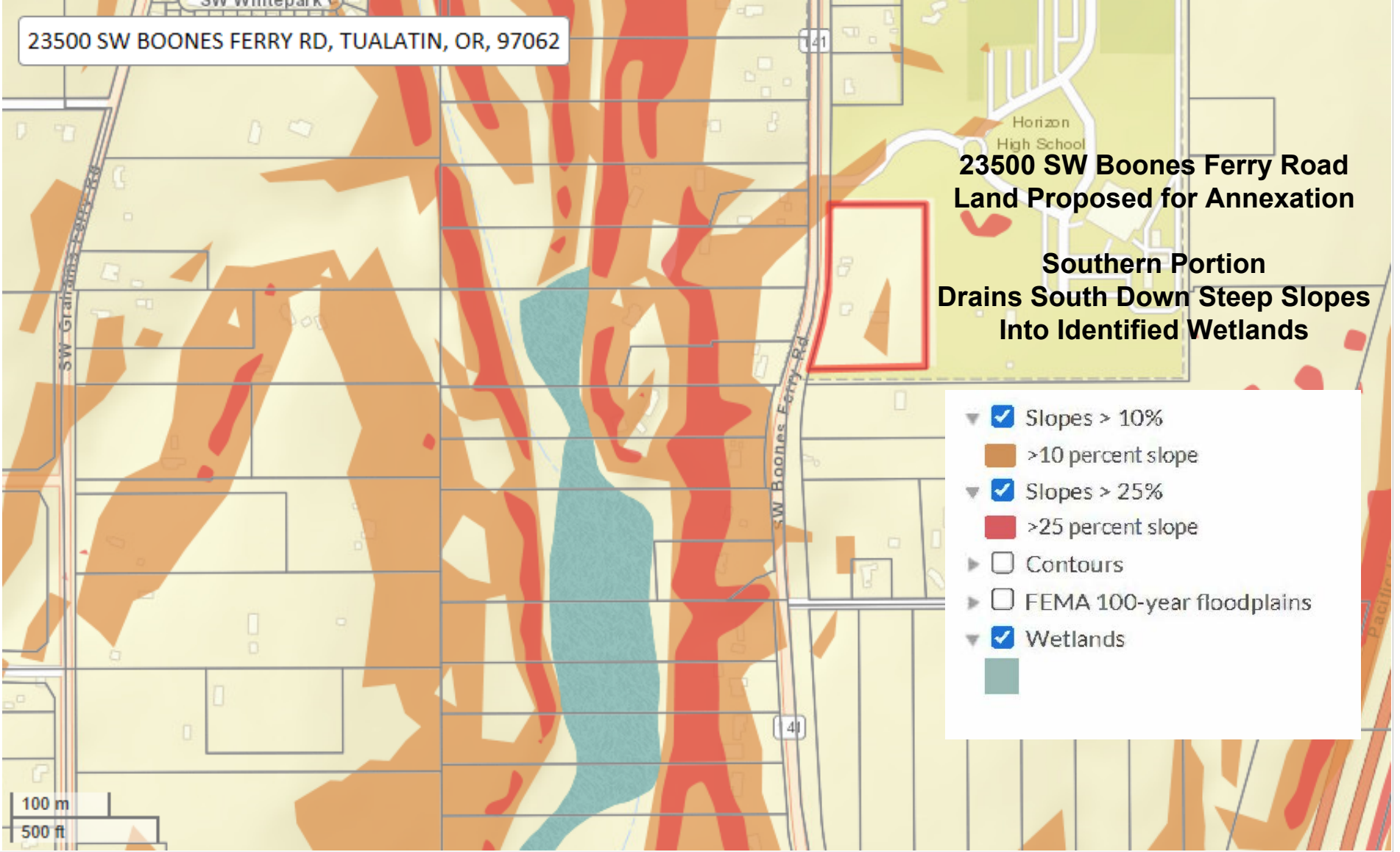
1. **Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces OAR 660-015-0000(5)**
    - Natural Resources Inventory requirements
    - Various Natural Resources known to exist within the Basalt Creek Area are included within the State's required Inventory.
2. **2020 8-27 LCDC Enforcement Order Advisory: Local Government to Correct Regulations That Limit Housing Development in Natural Resource Areas- Washington County**
    - Local government waiving application of code standards that are subjective, (not clear and objective) was no longer in compliance with its responsibilities to protect natural resources under Goal 5.
    - When subjective standards are the only option for a local program to implement a statewide land use goal, a local government must amend its code to include a path with clear and objective standards.

APPENDIX E -CITIZEN COMMENTS -CITY OF TUALATIN STORMWATER MASTER PLANNING- BASALT CREEK AREA 2020

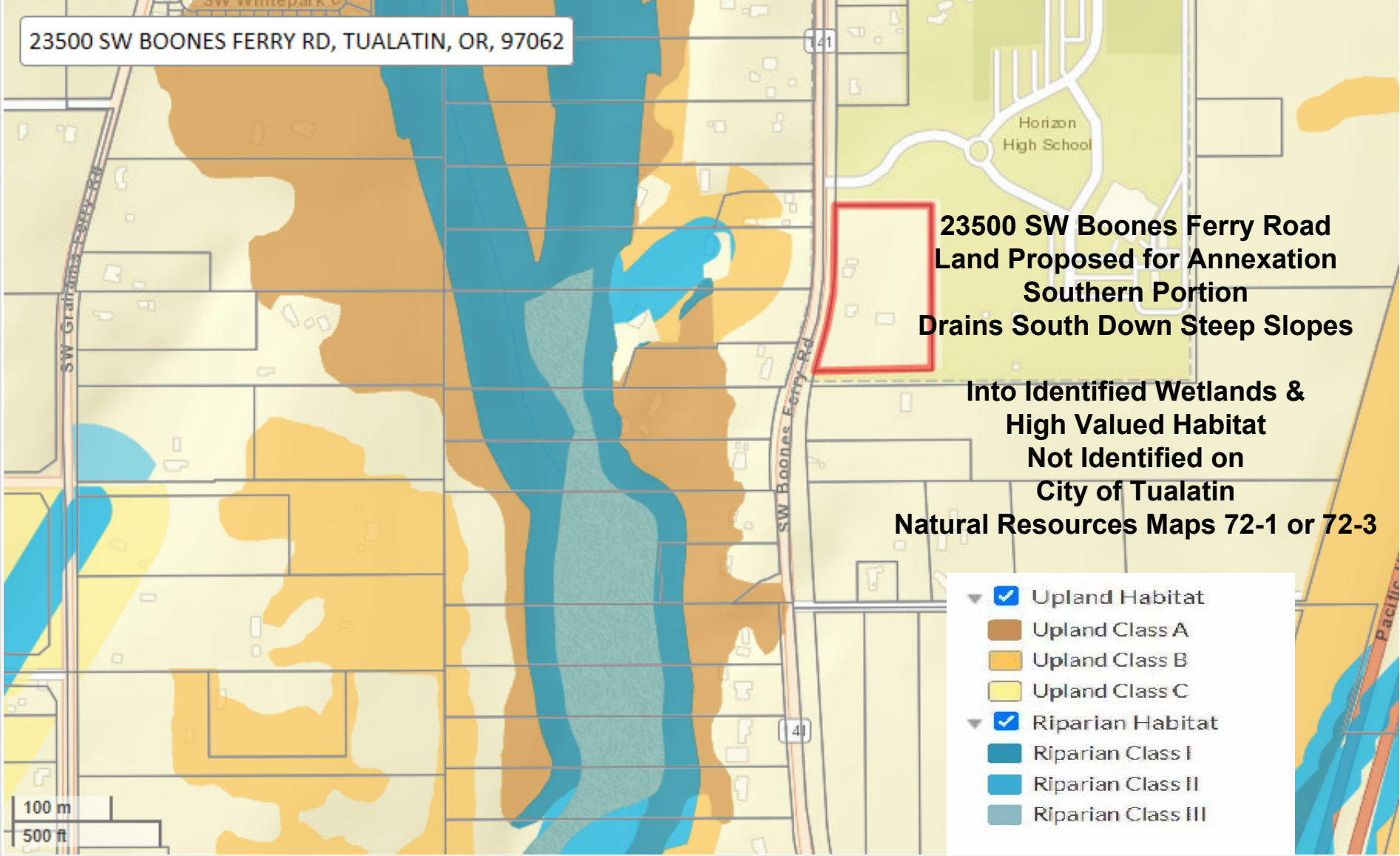
1. **2020 12-15 Citizen Comments – Draft City of Tualatin Master Plan Update During Public Comment Period**
    - PART 1
        a. 2020 12-15 Citizen Comments – Draft City of Tualatin Master Plan Update
        b. 2020 12-14 Review and Summary Draft Brown & Caldwell 2019 City of Tualatin Stormwater Master Plan Update with Supplements
        c. Maps City of Tualatin Draft Stormwater Master Plan Update
        d. 2016 11-1 Effects of Construction SW Boones Ferry Improvement Project - Washington County by Liberte Environmental Associates Inc.
    - PART 2
        a. 2016 11-1 Effects of Construction SW Boones Ferry Improvement Project – Appendices


Horizon
High School
Maps
23500 SW Boones Ferry Road
Land for Proposed Annexation
23550
23365
23405
23465
23515
23605
Lucini Property
23677
23745
23740
0
150
300ft
POWERED BY
esri


23500 SW Boones Ferry Road
Land Proposed for Annexation
Southern Portion
Drains Southward
Down Steep Slopes
SW TONQUIN RD
SW BASALT CREEK RD
SW GRAHAM FERRY RD
SW BOONES FERRY RD
SW GREENHILL LN
I5 FWY
SW 95TH AVE


23500 SW BOONES FERRY RD, TUALATIN, OR, 97062
Horizon High School
SW Boones Ferry Rd
SW Grahams Ferry Rd
23500 SW Boones Ferry Road
Land Proposed for Annexation
Southern Portion
Drains South Down Steep Slopes
Into Identified Wetlands
Slopes > 10%
>10 percent slope
Slopes > 25%
>25 percent slope
Contours
FEMA 100-year floodplains
Wetlands
100 m
500 ft


Maps
23365
23405
23465
23550
23515
23605
23677
23745
23500 SW Boones Ferry Road
Land Proposed for Annexation
Southern Portion
Drains South Down Steep
Slopes
Into Identified Wetlands &
High Valued Habitat
POWERED BY esri


23500 SW BOONES FERRY RD, TUALATIN, OR, 97062
Horizon High School
SW Boones Ferry Rd
SW Grahams Ferry Rd
23500 SW Boones Ferry Road
Land Proposed for Annexation
Southern Portion
Drains South Down Steep Slopes
Into Identified Wetlands &
High Valued Habitat
Not Identified on
City of Tualatin
Natural Resources Maps 72-1 or 72-3
Upland Habitat
Upland Class A
Upland Class B
Upland Class C
Riparian Habitat
Riparian Class I
Riparian Class II
Riparian Class III
100 m
500 ft

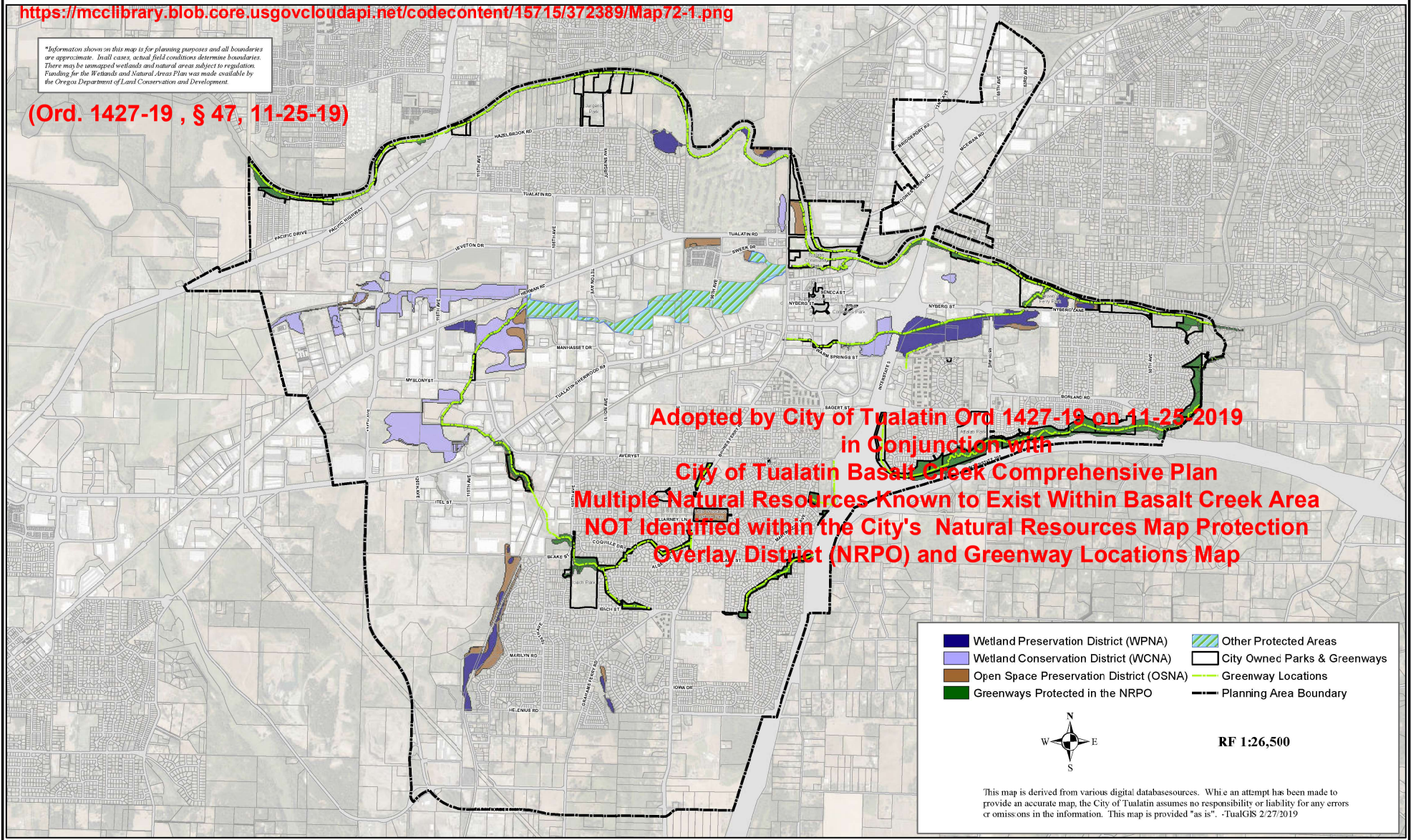
Map 72-1: Natural Resources Protection Overlay District (NRPO) and Greenway Locations

TUALGIS

https://mcclibrary.blob.core.usgovcloudapi.net/codecontent/15715/372389/Map72-1.png

*Information shown on this map is for planning purposes and all boundaries are approximate. In all cases, actual field conditions determine boundaries. There may be unmapped wetlands and natural areas subject to regulation. Funding for the Wetlands and Natural Areas Plan was made available by the Oregon Department of Land Conservation and Development.

(Ord. 1427-19 , § 47, 11-25-19)

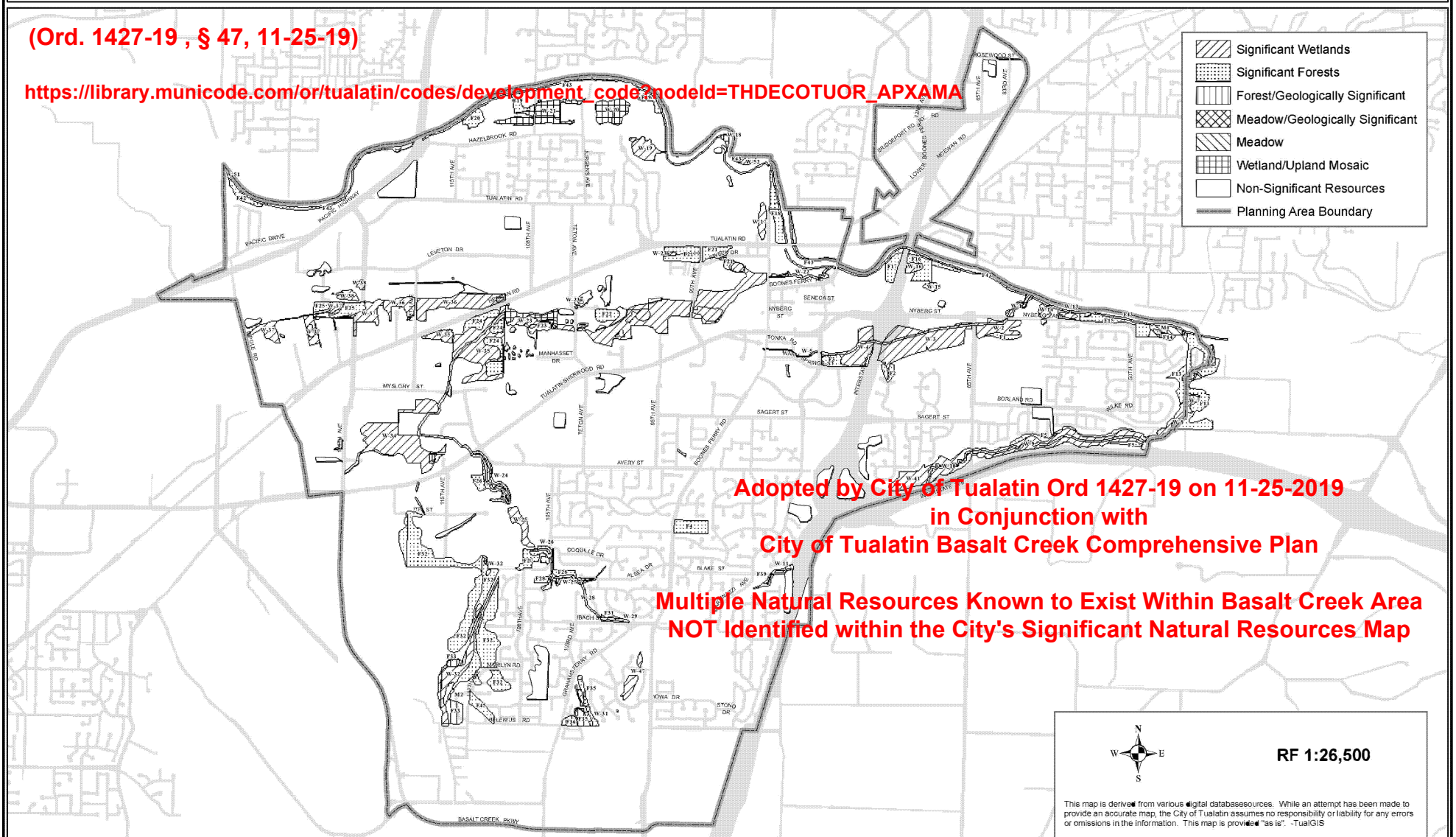


Map 72-3: Significant Natural Resources

TUALGIS

(Ord. 1427-19 , § 47, 11-25-19)

https://library.municode.com/or/tualatin/codes/development_code?nodeId=THDECOTUOR_APXAMA



Adopted by City of Tualatin Ord 1427-19 on 11-25-2019
in Conjunction with
City of Tualatin Basalt Creek Comprehensive Plan

Multiple Natural Resources Known to Exist Within Basalt Creek Area
NOT Identified within the City's Significant Natural Resources Map

WASHINGTON COUNTY
SW BOONES FERRY ROAD
IMPROVEMENT PROJECT

BID SET PLANS

STORMWATER DRAINAGE SYSTEM INSTALLED ALONG
SW BOONES FERRY ROAD
BASALT CREEK AREA

TOM RE PROPERTY
ON EAST SIDE SW BOONES FERRY ROAD NOW OWNED BY CPAH

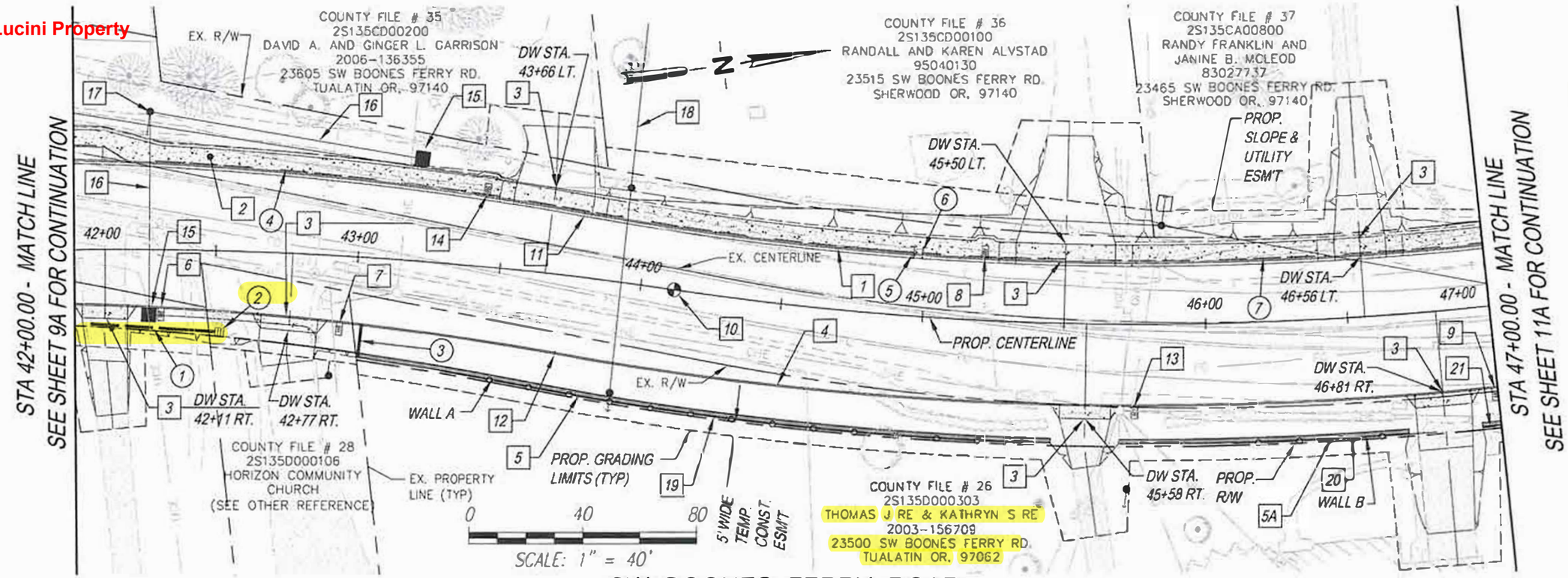
NO STORMWATER INTAKES CONSTRUCTED ON TOM RE PROPERTY

TOPOGRAPHY OF SOUTHERN PORTION OF TOM RE PROPERTY
CAUSES STORMWATER RUNOFF TO DRAIN IN SOUTH WESTERNLY DIRECTION
INTO EXISTING CATCHMENT AREA
THEN FLOWS INTO TWO INTAKES EAST BFR
IN RIGHT OF WAY NEXT TO AUTUMN SUNRISE LANDS /HORIZON CHURCH

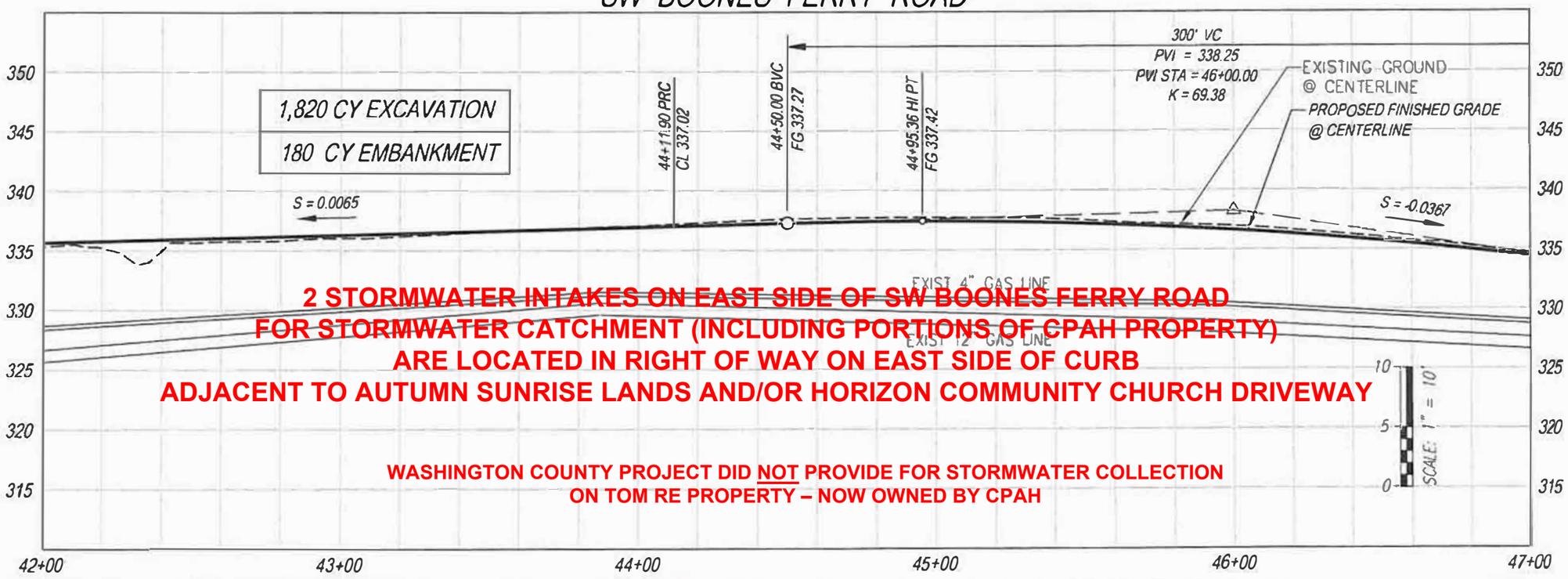
STORMWATER IS THEN CONVEYED WEST UNDER SW BOONES FERRY ROAD
AND DISCHARGES ONTO RIGHT OF WAY ON THE LUCINI PROPERTY
ON THE WEST SIDE OF SW BOONES FERRY ROAD

CONSTRUCTION PLAN AND PROFILE

Lucini Property



SW BOONES FERRY ROAD



2 STORMWATER INTAKES ON EAST SIDE OF SW BOONES FERRY ROAD FOR STORMWATER CATCHMENT (INCLUDING PORTIONS OF CPAH PROPERTY) ARE LOCATED IN RIGHT OF WAY ON EAST SIDE OF CURB ADJACENT TO AUTUMN SUNRISE LANDS AND/OR HORIZON COMMUNITY CHURCH DRIVEWAY

WASHINGTON COUNTY PROJECT DID NOT PROVIDE FOR STORMWATER COLLECTION ON TOM RE PROPERTY – NOW OWNED BY CPAH

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 25, 1991
RAMON C. WEBSTER
1/31/13
EXPIRES: 6/30/14

DEPARTMENT OF LAND USE & TRANSPORTATION ENGINEERING
WASHINGTON COUNTY OREGON

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NO	REVISIONS

SW BOONES FERRY RD.
SW DAY RD. TO SW NORWOOD RD.
WASHINGTON COUNTY

CONSTRUCTION PLAN AND PROFILE

MacKay Sposito
ENERGY PUBLIC WORKS LAND DEVELOPMENT
www.mackaysposito.com

PROJECT NUMBER
100096

SHEET NO.
147 OF 274

SHEET TITLE
10A

CONSTRUCTION NOTES

THIS SHEET TO FACE SHT. 10A

1. CONST. P.C. CONC. CURB & GUTTER
   SEE SHEET 2B-4 FOR DETAILS
2. CONST. POROUS P.C. CONC. WALK
   SEE SHEET 2B-6FOR DETAILS
3. CONST. P.C. RESIDENTIAL DRIVEWAY
   SEE SHEET 2B-1 & 2B-2 FOR DETAILS
4. CONST. P.C. CONC. MOUNTABLE VERTICAL CURB
   SEE SHEET 2B-4.1 FOR DETAILS
5. CONST. PREFAB. MODULAR RETAINING WALL A
   SEE SHEET 28A FOR DETAILS

5A. CONST. PREFAB. MODULAR RETAINING WALL B
   SEE SHEET 28A FOR DETAILS

6. CONST. SINGLE MAILBOX
   STATION 42+31
   MB ADDRESS " 23620 "
   SEE SHEETS 2B-7, 2B-8, AND 2B-9 FOR DETAILS
7. CONST. DOUBLE MAILBOX
   STATION 42+95
   MB ADDRESS " 23560 "
   SEE SHEETS 2B-7, 2B-8, AND 2B-9 FOR DETAILS
8. CONST. SINGLE MAILBOX
   STATION 45+21
   MB ADDRESS " 23515 "
   SEE SHEETS 2B-7, 2B-8, AND 2B-9 FOR DETAILS
9. CONST. SINGLE MAILBOX
   STATION 46+99
   MB ADDRESS " 23500 "
   SEE SHEETS 2B-7, 2B-8, AND 2B-9 FOR DETAILS
10. INSTALL CENTERLINE SURVEY MONUMENT
    WITH FRAME AND COVER
    @ STA 44+11.90 - CL PRC
    SEE SHEET NO 2B-7 FOR DETAIL
11. 43+77.26 PRC (22.52' LT)
    TC 336.58
12. 43+58.83 PRC (34.82' LT)
    TC 336.30
13. CONST. SINGLE MAILBOX
    STATION 45+75
    MB ADDRESS " 23550 "
    SEE SHEETS 2B-7, 2B-8, AND 2B-9 FOR DETAILS
14. CONST. SINGLE MAILBOX
    STATION 43+43
    MB ADDRESS " 23605 "
    SEE SHEETS 2B-7, 2B-8, AND 2B-9 FOR DETAILS
15. PROPOSED POWER VAULT BY PGE
16. PROPOSED POWER CONDUIT BY PGE
17. POWER POLE BY PGE (TYP)
18. OVERHEAD POWER BY PGE (TYP)
19. BLACK VINYL COATED CHAINLINK FENCE
    WALL A: STA. 0+30 TO STA. 2+37
    3" FROM BACK OF WALL
20. BLACK VINYL COATED CHAINLINK FENCE
    WALL B: STA. 0+40 TO STA. 1+12
    3" FROM BACK OF WALL
21. BLACK VINYL COATED CHAINLINK FENCE
    WALL C: STA. 0+00 TO STA. 0+36
    3" FROM BACK OF WALL

1. 12" STM SEWER L = 77' S = 0.0101
2. STM INLET # 33 (DITCH INLET)
   @ STA 42+52 (29' RT)
   TC 335.83
   IE 331.58 - 12" OUT (S)
3. 4" D.I.P. FOOTING DRAIN CONNECTION
   THRU CURB FACE - L = 12'
4. 4" PP STM SEWER L = 349'
5. STA 44+95 (23' LT)
   PLUG 4" PP
6. STA 44+98 (23' LT)
   PLUG 4" PP
7. 4" PP STM SEWER L = 335'

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 25, 1997
RAMON C. WEBSTER
EXPIRES: 6/30/14
1/31/13

DEPARTMENT OF LAND USE & TRANSPORTATION ENGINEERING
WASHINGTON COUNTY OREGON

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NO	REVISIONS

SW BOONES FERRY RD.
SW DAY RD. TO SW NORWOOD RD.
WASHINGTON COUNTY

CONSTRUCTION NOTES

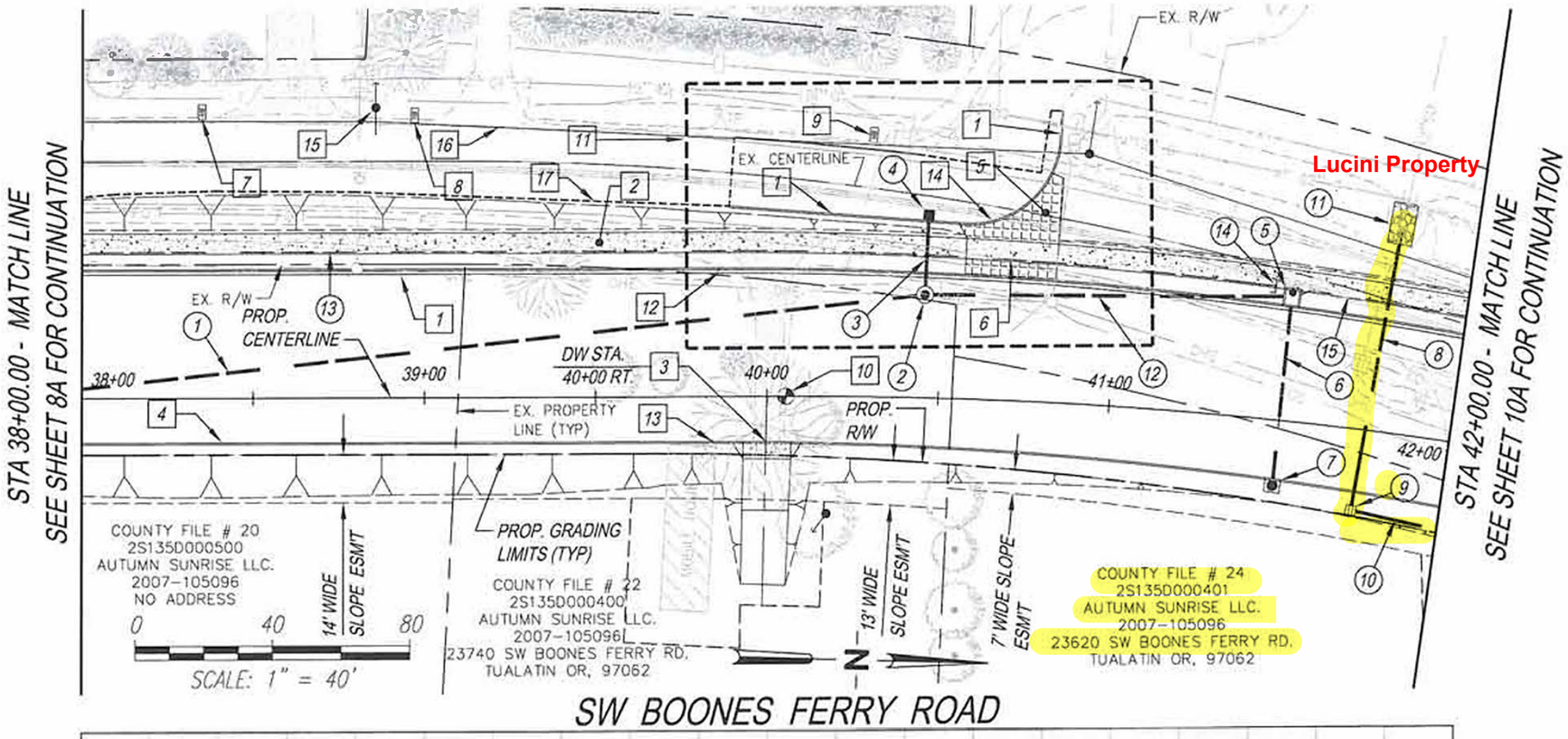
PROJECT NUMBER
100096

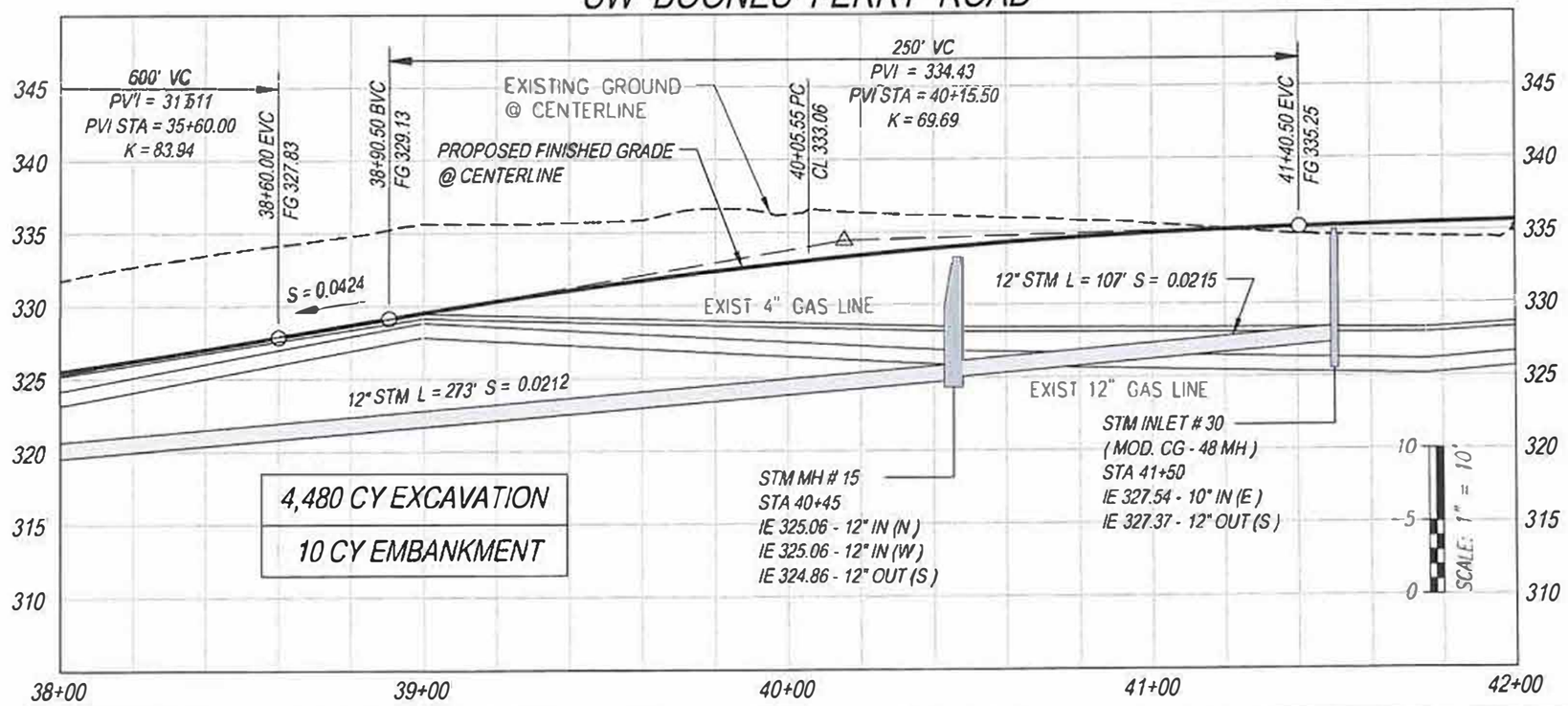
SHEET NO.
146 OF 274

SHEET TITLE
10

MacKay Sposito
ENERGY PUBLIC WORKS LAND DEVELOPMENT
www.mackaysposito.com

CONSTRUCTION PLAN AND PROFILE





REGISTERED PROFESSIONAL ENGINEER
15552PE
OREGON
JULY 25, 1997
SIMON C. WEBSTER
1/31/13
EXPIRES: 6/30/14

DEPARTMENT OF LAND USE & TRANSPORTATION ENGINEERING
WASHINGTON COUNTY OREGON

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SW BOONES FERRY RD.
SW DAY RD. TO SW NORWOOD RD.
WASHINGTON COUNTY

CONSTRUCTION PLAN AND PROFILE

PROJECT NUMBER
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SHEET NO.
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SHEET TITLE
9A

MacKay Sposito
ENERGY PUBLIC WORKS LAND DEVELOPMENT
www.mackaysposito.com

REGISTERED PROFESSIONAL ENGINEER
15552PE
OREGON
JULY 25, 1997
SHAMON C. WEBSTER
EXPIRES: 6/30/14
1/31/13

DEPARTMENT OF LAND USE & TRANSPORTATION ENGINEERING

WASHINGTON COUNTY OREGON

PLOT STAMP: 01/31/13 12:08A BFRANCO
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NO.	REVISIONS

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SW DAY RD. TO SW NORWOOD RD.
WASHINGTON COUNTY

CONSTRUCTION NOTES

PROJECT NUMBER
100096

SHEET NO
144 OF 274

SHEET TITLE
9

MacKay Sposito
ENERGY PUBLIC WORKS LAND DEVELOPMENT
www.mackaysposito.com

CONSTRUCTION NOTES

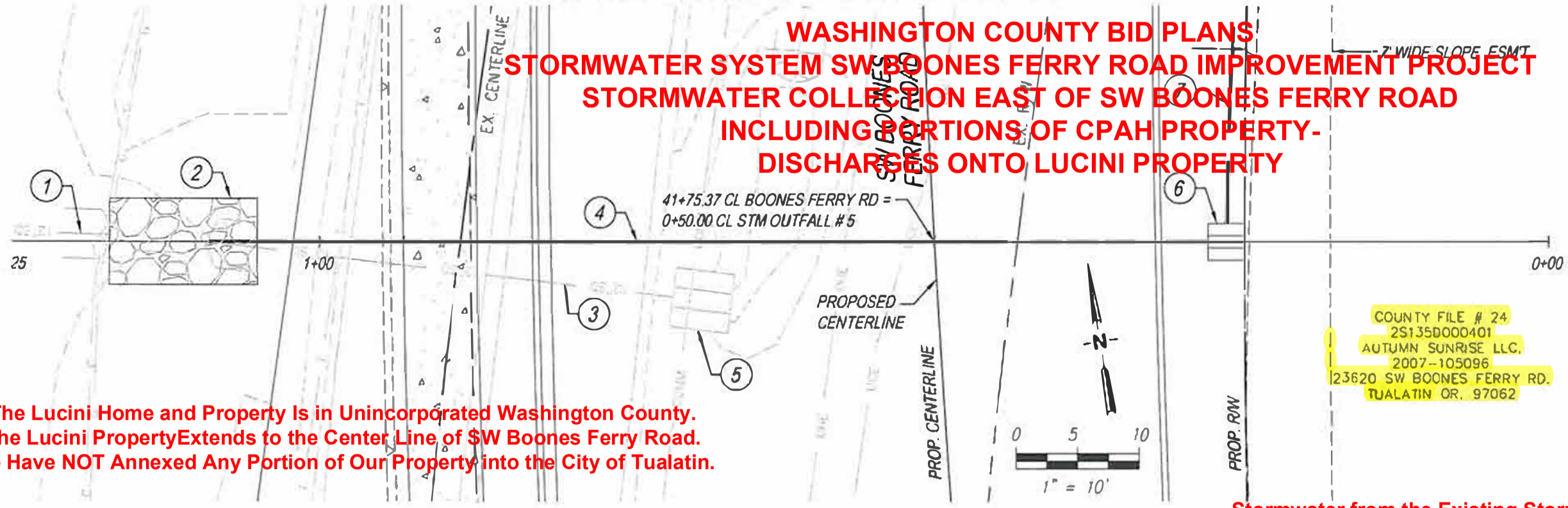
THIS SHEET TO FACE SHT. 9A

1. CONST. P.C. CONC. CURB & GUTTER
SEE SHEET 2B-4 FOR DETAILS
2. CONST. POROUS P.C. CONC. WALK
SEE SHEET 2B-6 FOR DETAILS
3. CONST. P.C. RESIDENTIAL DRIVEWAY
SEE SHEET 2B-1 & 2B-2 FOR DETAILS
4. CONST. P.C. CONC. MOUNTABLE VERTICAL CURB
SEE SHEET 2B-4.1 FOR DETAILS
5. INSTALL UNIT PAVERS AS SPECIFIED IN BOOK 2
6. CONST. CONC. COMMERCIAL DRIVEWAY
SEE SHEET 2B-6 FOR DETAILS
7. CONST. SINGLE MAILBOX
STATION 38+35
MB ADDRESS " 23845 "
SEE SHEETS 2B-7, 2B-8, AND 2B-9 FOR DETAILS
8. CONST. SINGLE MAILBOX
STATION 38+97
MB ADDRESS " 23745 "
SEE SHEETS 2B-7, 2B-8, AND 2B-9 FOR DETAILS
9. CONST. SINGLE MAILBOX
STATION 40+30
MB ADDRESS " 23677 "
SEE SHEETS 2B-7, 2B-8, AND 2B-9 FOR DETAILS
10. INSTALL CENTERLINE SURVEY MONUMENT
WITH FRAME AND COVER
@ STA 40+05.55 - CL PC
SEE SHEET NO 2B-7 FOR DETAIL
11. SEE SHEET 17A FOR DETAIL
OF THIS AREA.
12. 39+85.89 PC (37.00' LT)
TC 332.05
13. 39+65.87 PC (13.00' RT)
TC 332.62
14. CONST LOW PROFILE MOUNTABLE CURB
SEE SHEET 2B-6 FOR DETAILS
15. POWER POLE BY PGE (TYP)
16. OVERHEAD POWER BY PGE (TYP)
17. SAWCUT EXIST AC PAVEMENT
AND REMOVE (N)

1. 12" STM SEWER L = 273' S = 0.0212
2. STM MH # 15
@ STA 40+45 (30' LT)
RIM = 333.22
IE 325.06 - 12" IN (N)
IE 325.06 - 12" IN (W)
IE 324.86 - 12" OUT (S)
3. 10" STM SEWER L = 23' S = 0.1270
4. STM CB # 29 (AREA DRAIN TYPE II)
@ STA 40+50 (53' LT)
TC 334.27
IE 330.00 - 10" OUT (E)
5. STM CB # 30 (MOD. CG - 48 MH)
@ STA 41+50 (36' LT)
RIM = 334.98
IE 327.54 - 10" IN (E)
IE 327.37 - 12" OUT (S)
6. 10" STM SEWER L = 58' S = 0.0483
7. STM CB # 31 (CG-30)
@ STA 41+50 (22' RT)
TC 335.32
IE 330.32 - 10" OUT (W)
8. 12" STM CULVERT L = 83' S = 0.0162
STM OUTFALL #5
9. STM INLET # 32 (DITCH INLET)
@ STA 41+74 (24' RT)
TC 335.45
IE 330.81 - 12" IN (N)
IE 330.61 - 12" OUT (W)
10. 12" STMSEWER L = 77' S = 0.0101
11. RIP RAPPAD
CLASS 50 RIP RAP
8' LONG x 7' WIDE x 1.5' DEEP
PLACE 1' ABOVE PIPE CROWN
12. 12" STM SEWER L = 107' S = 0.0215
13. 4" PP STM SEWER L = 373'
14. STA 41+45 (39' LT)
PLUG 4" PP
15. 4" PP STM SEWER L = 349'

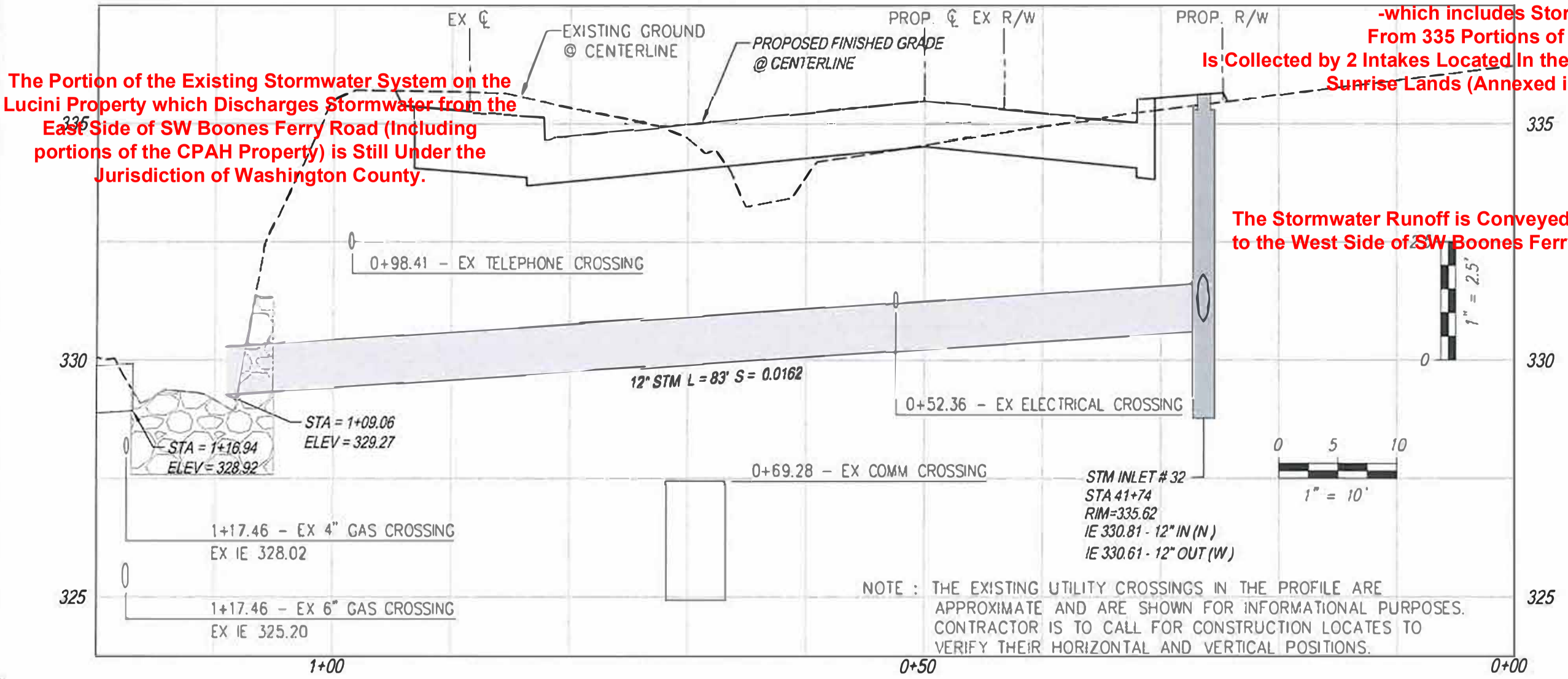
STORM OUTFALL #5 PLAN AND PROFILE

WASHINGTON COUNTY BID PLANS
STORMWATER SYSTEM SW BOONES FERRY ROAD IMPROVEMENT PROJECT
STORMWATER COLLECTION EAST OF SW BOONES FERRY ROAD
INCLUDING PORTIONS OF CPAH PROPERTY-
DISCHARGES ONTO LUCINI PROPERTY



The Lucini Home and Property Is in Unincorporated Washington County.
The Lucini PropertyExtends to the Center Line of SW Boones Ferry Road.
We Have NOT Annexed Any Portion of Our Property into the City of Tualatin.

STORM OUTFALL #5



The Portion of the Existing Stormwater System on the Lucini Property which Discharges Stormwater from the East Side of SW Boones Ferry Road (Including portions of the CPAH Property) is Still Under the Jurisdiction of Washington County.

Stormwater from the Existing Stormwater Catchment Basin East of SW Boones Ferry Road
-which includes Stormwater Runoff
From 335 Portions of CPAH Property-
Is Collected by 2 Intakes Located In the Right of Way adjacent to Autumn Sunrise Lands (Annexed into the City in 2020).

The Stormwater Runoff is Conveyed Under SW Boones Ferry Road to the West Side of SW Boones Ferry Road.

NOTE : THE EXISTING UTILITY CROSSINGS IN THE PROFILE ARE APPROXIMATE AND ARE SHOWN FOR INFORMATIONAL PURPOSES. CONTRACTOR IS TO CALL FOR CONSTRUCTION LOCATES TO VERIFY THEIR HORIZONTAL AND VERTICAL POSITIONS.

REGISTERED PROFESSIONAL ENGINEER
15552PE
OREGON
JULY 25, 1997
RAMON C. WEBSTER
EXPIRES: 6/30/14

DEPARTMENT OF LAND USE & TRANSPORTATION ENGINEERING
WASHINGTON COUNTY OREGON

PLOT STAMP: 01/31/13 2:18A BFRANCO
CAD: 15315_23A_26A_SDET.DWG, TAB: 24A
PATH: W:\15315\CIVIL\DWG\SHEETS\

NO.	REVISIONS

SW BOONES FERRY RD.
SW DAY RD. TO SW NORWOOD RD.
WASHINGTON COUNTY

STORM OUTFALL #5
PLAN AND PROFILE

MacKay Sposito
ENERGY PUBLIC WORKS LAND DEVELOPMENT
www.mackaysposito.com

PROJECT NUMBER
100096
SHEET NO.
179 of 274
SHEET TITLE
24A

REGISTERED PROFESSIONAL ENGINEER
15552PE
OREGON
JULY 25, 1997
RAMON C. WEBSTER
1/31/13
EXPIRES: 6/30/14

DEPARTMENT OF LAND USE & TRANSPORTATION ENGINEERING
WASHINGTON COUNTY OREGON

PLOT STAMP: 01/31/13 12:18A BFRANCO
CAD: 15315_23A_26A_ST_DET.DWG, TAB: 24
PATH: W:\15315\CIVIL\DWG\SHEETS\

NO.	REVISIONS

SW BOONES FERRY RD.
SW DAY RD. TO SW NORWOOD RD.
WASHINGTON COUNTY

CONSTRUCTION NOTES

PROJECT NUMBER
100096

SHEET NO.
178 OF 274

SHEET TITLE
24

MacKay Sposito
ENERGY PUBLIC WORKS LAND DEVELOPMENT
www.mackaysposito.com

CONSTRUCTION NOTES

THIS SHEET TO FACE SHT. 24A

(1) EX 12" CMP STM IE=328.92

(2) *ODOT CLASS 50 RIPRAP PAD*
8' LONG x 7' WIDE x 1.5' DEEP
PLUS 1' ABOVE PIPE CROWN

(3) EX 12" CONC PIPE L=40' S=0.0166

(4) *12" STM SEWER L = 83' S = 0.0162*

(5) EX CB
TOG 334.21
IE 329.94–12" OUT (W)

(5) *STM CB # 32 (DITCH INLET)*
@ STA 41+74 (24' RT)
TC 335.62
IE 330.81 - 12" IN (N)
IE 330.61 - 12" OUT (W)

(7) *12" STM L = 77' S = 0.0101*

PHOTOS TAKEN FROM SW BOONES FERRY ROAD

4-15-2021

NO SIGNAGE NOTIFYING OF PROPOSED ANNEXATION OF 235000 SW BOONES FERRY ROAD

PHOTOS TAKEN FROM SW BOONES FERRY ROAD

4-17-2021

NO SIGNAGE NOTIFYING OF PROPOSED ANNEXATION OF 235000 SW BOONES FERRY ROAD

PHOTOS TAKEN FROM SW BOONES FERRY ROAD

4-23-2021

NO SIGNAGE NOTIFYING OF PROPOSED ANNEXATION OF 235000 SW BOONES FERRY ROAD

Re: Proposed City of Tualatin ANN 20-0004 /CPAH Annexation Request

1 message

G Lucini <grluci@gmail.com> Thu, Apr 22, 2021 at 12:28 PM
To: Jilian Saurage Felton <jsaurage@cpahoregon.org>
Cc: John Lucini <JWLuci@gmail.com>
Bcc: Grace Lucini <GrLuci@gmail.com>

Jilian,

Thank you for your email.

My husband and I appreciated your comments made to assure us of your company's and your intentions. Unfortunately, because past assurances of a similar nature by local govt's have turned out not to be reliable, we remain concerned.

As you may know, the City of Tualatin has not adopted a Stormwater Management Plan for the Basalt Creek Area and has failed to meet many other requirements...

- The City lacks a stormwater management plan and has not produced an existing local regional plan to assure the safe and effective provision for off site management.
- The City is not compliant with Goal #11 for Provision of Public Services https://www.oregon.gov/lcd/OP/Documents/goal11.pdf
- The City is not compliant OAR Chapter 660 Public Facilities Planning

https://secure.sos.state.or.us/oard/viewSingleRule.action?ruleVrsnRsn=175246

- The City is not compliant with DEQ for Stormwater Management Planning https://www.oregon.gov/deq/wq/Documents/CWSRFStormwaterManual.pdf

3.2 Code development for stormwater management
3.2.1 Authority to develop stormwater requirements in code
The local comprehensive land-use plan should provide the policy framework and authority for municipalities to protect water quality as well as control local flooding. The plan guides a municipality's activities in areas such as land use, conservation, economic development and public facilities such as the development and management of stormwater, wastewater and transportation systems. It also provides the legal authority to regulate these systems while municipal code or ordinance provide the details on how a municipality will implement this authority.

Oregon Revised Statute 197.175 requires municipalities to adopt a local comprehensive plan, zoning and ordinance.
This comprehensive plan must be consistent with the Statewide Planning Goals in the Oregon Administrative Rules. Several of these goals are applicable to water quality and public facilities such as stormwater systems. In particular, Statewide Planning Goal 11 specifically addresses the planning and development of orderly and efficient public facilities such as stormwater systems to serve as a framework for urban and rural development. Planning Goal Number 5 addresses natural resources and Planning Goal Number 6 addresses water quality.35 36 37 Planning Goal Number 1 requires public involvement in the implementation of all the planning goals.38

5. Master planning

5.1 Public facilities planning in Oregon Stormwater master planning is public facilities planning under Oregon Administrative Rules 660-011- 0010. By definition, a public facilities plan is a support document to a local comprehensive land use plan, required in Oregon. Certain elements of this plan must be adopted as part of the comprehensive plan (see Oregon Administrative Rule 660-011-0045). Oregon Revised Statutes 197.712(2) (e) requires cities and counties develop and adopt a public facility plan for areas within an urban growth boundary with a population greater than 2,500. A stormwater master plan/public facilities plan must contain the following: (a) An inventory and general assessment of the condition of all the significant public facility systems which support the land uses designated in the acknowledged comprehensive plan; (b) A list of the significant public facility projects which are to support the land uses designated in the acknowledged comprehensive plan. Public facility project descriptions or specifications of these projects as necessary; (c) Rough cost estimates of each public facility project; (d) A map or written description of each public facility project's general location or service area; (e) Policy statement(s) or urban growth management agreement identifying the provider of each public facility system. If there is more than one provider with the authority to provide the system within the area covered by the public facility plan, then the provider of each project shall be designated; (f) An estimate of when each facility project will be needed; and, (g) A discussion of the provider's existing funding mechanisms and the ability of these and possible new mechanisms to fund the development of each public facility project or system.54 According to Oregon Administrative Rule 660-011-0020, the public facility inventory noted in subsection (a) above of the public facilities planning requirements must adhere to the following: (1) The public facility plan shall include an inventory of significant public facility systems. Where the acknowledged comprehensive plan, background document or one or more of the plans or programs listed in OAR 660-011- 0010(3) contains such an inventory, that inventory may be incorporated by reference.

The inventory shall include:
(a) Mapped location of the facility or service area;
(b) Facility capacity or size; and
(c) General assessment of condition of the facility (e.g., very good, good, fair, poor, very poor).

- **The City is not compliant with Goal #14 Urbanizable Land** OAR 660-015-0000(14)
https://www.oregon.gov/lcd/OP/Documents/goal14.pdf

Goal To provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities.

Land within urban growth boundaries shall be considered available for urban development consistent with plans for the provision of urban facilities and services. Comprehensive plans and implementing measures shall manage the use and division of urbanizable land to maintain its potential for planned urban development until appropriate public facilities and services are available or planned.

Neither John or I are opposed to the annexation per se, but the City needs to comply with the land use laws and good urban planning principles.

As the southern portion of the CPAH property is "landlocked" for off-site stormwater management and does not have direct access to the County's existing intake system and conveyance system...

Would CPAH agree to a Condition on their annexation approval that expressly requires that any and all subsequent development must decrease rather than increase downstream stormwater flow?

If an on-site visit would assist your company's or your understanding of our concerns, we are very open and willing to schedule this. Please let us know if you are interested.

Best Regards,

Grace
503 692 9890

On Thu, Apr 8, 2021 at 4:06 PM Jilian Saurage Felton <jsaurage@cpahoregon.org> wrote:

> Grace,

That title is confusing! The study is for the CPAH site, but it is the City of Tualatin that hired AKS. We are working with Vega for our civil engineering. The project teams are meeting regularly to coordinate efforts.

As a value, CPAH is committed to limiting our environmental impact and shrinking our carbon footprint. We share your commitment to the preservation of natural environments and local wetlands and take seriously the impact development has on our ecology. Our two most recent developments are certified Earth Advantage Platinum, and our team has been nominated for the Earth Advantage Project Team of the year.

Due to having federal funding associated with the project, we are held to a stormwater quality standard that exceeds the CWS standard. We have not yet completed all of the stormwater engineering or studies yet, but I did want to share some information about the planned stormwater treatment, even though I cannot share specific plans at this time.

While we cannot meet the requirement to infiltrate all stormwater onsite, due to soil conditions, any runoff will be equal to or less than if the site were an undeveloped grassy field, regardless of how much impermeable surface there is currently.

As far as the current stormwater management approach, we are planning to provide stormwater storage on site in vegetated basins to hold the stormwater runoff and then release the stormwater at a rate that is equal to the discharge rate from an undeveloped site. Therefore, stormwater runoff rate will be **reduced** from the current conditions, where there is no stormwater management for the existing site.

The HUD/ESA storm water quality criteria requires treatment of a larger storm event than CWS requires in order to protect the downstream habitat.

The stormwater management for the CPAH site will be very different from the Boones Ferry road improvement. as the road improvements provided no flow control for the stormwater runoff from Boones Ferry. When Vega reviewed the information you sent they observed that the Boones Ferry stormwater is intercepted by catch basins and then discharged to existing open channels without any flow control. Our system will detain stormwater and control the flow to less than or equal to an undeveloped site.

I can be reached via email or cell phone (503-781-0911) if you have any additional questions for us.

Jilian Saurage Felton

Director of Housing Development
Community Partners for Affordable Housing, Inc. (CPAH)
503-293-4038 ext. 302 phone

jsaurage@cpahoregon.org PLEASE NOTE NEW EMAIL ADDRESS
Pronouns: she/her

people will forget what you said, people will forget what you did, but people will never forget how you made them feel.

–Maya Angelou

Community Partners for Affordable Housing cares about our residents, our staff, and the community. We continue to take proactive and precautionary measures to guard against contraction spread of COVID-19. Although there are times that staff will be at the office or at our properties, and following social distancing guidelines, we will generally be working from home and meeting remotely.

Please be safe.

From: G Lucini [mailto:grluci@gmail.com]
Sent: Monday, April 5, 2021 1:15 PM
To: Jilian Saurage Felton <jsaurage@cpahoregon.org>
Cc: Rachael Duke <rduke@cpahoregon.org>; John Lucini <JWLuci@gmail.com>
Subject: Re: Proposed City of Tualatin ANN 20-0004 /CPAH Annexation Request

Hi Julian,

I appreciated hearing from you, and knowing you received the email. (I do note your email was sent on Saturday evening- for which I am even more appreciative!)

Thank you for the clarification regarding your current relationship with AKS.

The information you have provided is helpful. I guess I was confused by the title of the document (attached)

> CPAH SITE W/GRAVITY TO DEEPER AUTUMN PH2
>
> CPAH SEWER ANALYSIS
> CITY OF TUALATIN
> TUALATIN, OREGON

> If I am reading this draft for the provision of Sewer Service for CPAH correctly, it appears to indicate a possible sequencing of implementation for CPAH sewer service in the 2nd phase of the Lennar Autumn Sunrise development. If this is correct, we would be interested in hearing from you- if CPAH agrees with and supports this timing and phasing into Lennar's construction of phase 2 of the Autumn Sunrise Development.

Yes, there was a lot of information included within the email, which I understand may take time to review.

It is John and my desire to initiate open effective communication with you and CPAH in enough time that we may be able to identify and resolve any issues prior to the City Council Hearing on April 26th.

Looking forward to seeing you during our meeting on Thursday.

Grace

On Sat, Apr 3, 2021 at 7:32 PM Jilian Saurage Felton <jsaurage@cpahoregon.org> wrote:

> Dear Grace,

Thank you for your very detailed message, as well as the report and video.

I wanted to respond to you right away so you would know we received your message and the attachments. We appreciate it.

To fully digest this information however may take a while so I hope it's okay if we take this week to really consider your concerns and respond with the same level of thoughtfulness?

I did want to share that AKS is contracted by the City of Tualatin and Lennar, but not CPAH at this time. We are currently working with Tualatin, Horizon, and Lennar to come up with a sanitary sewer and water route for the proposed development.

It is good to see that you on the Task Force for the URA as well. I look forward to working with you. Also, It is so important to have local community voices represented when these decisions are being made.

See you on the 8th.

-jsf

Jilian Saurage Felton

Director of Housing Development
Community Partners for Affordable Housing, Inc. (CPAH)
503-293-4038 ext. 302 phone

jsaurage@cpahoregon.org PLEASE NOTE NEW EMAIL ADDRESS
Pronouns: she/her

people will forget what you said, people will forget what you did, but people will never forget how you made them feel.

–Maya Angelou

Community Partners for Affordable Housing cares about our residents, our staff, and the community. We continue to take proactive and precautionary measures to guard against contraction spread of COVID-19. Although there are times that staff will be at the office or at our properties, and following social distancing guidelines, we will generally be working from home and meeting remotely.

Please be safe.

From: G Lucini [mailto:grluci@gmail.com]
Sent: Friday, April 2, 2021 8:05 PM
To: Jilian Saurage Felton <jsaurage@cpahoregon.org>
Cc: John Lucini <JWLuci@gmail.com>; alex@aks-eng.com; Kim McMillan <kmcmillan@tualatin.gov>
Subject: Proposed City of Tualatin ANN 20-0004 /CPAH Annexation Request

Hello Jilian,

It was good to meet you during the virtual meeting of the City of Tualatin Urban Renewal Task Force on 3-18-21. I appreciated hearing your comments and learned a great deal about the goals of the proposed CPAH project in Tualatin. I agree with you about the need for Stormwater Management planning and stormwater infrastructure within the NE portion of the Basalt Creek Area.

My husband and I understand that CPAH has submitted an application for annexation into the City of Tualatin for the property at 23500 SW Boones Ferry Road. We received Notice on 3-24-21 -that the City of Tualatin ANN-20-0004 annexation request is scheduled on April 26, 2021, for a hearing before the City of Tualatin City Council.

Recently, Kim McMillan from the City of Tualatin Engineering Department, and the Community Development Department, provided me a copy of what was apparently the most current rendition (9th version) of the Sewer Analysis by AKS Engineering. This Sewer Analysis plan was apparently submitted by your company as part of the City's vetting process, to try to ensure the provision of this Public Service prior to annexation.

It appears your corporation, AKS and the City are still in the active phase of preliminary assessment of provision of key Public Services to this project. My husband and I would like to gain understanding of how stormwater management will be provided onsite- and if not feasible on site --how and where will stormwater from the project be treated and discharged from the proposed annexation area.

The preliminary Sewer Analysis Map Version #9 for the CPAH project does not indicate stormwater detention facilities on the southern portion of the project. Nor does it appear to show other mechanisms for addressing the stormwater which would normally flow in a southerly direction from the property.

We are downstream property owners from the project. We have in the past been flooded from waters coming from the existing stormwater catchment basin into which the southern portion of the CPAH property drains.

We have attached a short video of the 3-18-2015 flooding of our property to provide an understanding as to the basis for our concern.

1. 2015 3-18 outflow.MOV

We are also attaching a report from our Environmental Engineering Consultant which we retained to learn the cause of the 3-18-2015 flooding of our property.

a_LEA_review_BoonesFy-Lucini_8-3-15_all.pdf

2016 11-2 Effects Of Construction BFR Lucini Pr...

As the City of Tualatin currently lacks a regional Stormwater Master Plan for the Basalt Creek Area and considering the location and topography of the CPAH property- it is unclear to us how the City and CPAH intend to ensure for the provision of safe and effective stormwater management at that property. As you know, Stormwater Management planning is a key Public Service which should be addressed per Land Conservation and Development Department Chapter 660 Division 11 PUBLIC FACILITIES PLANNING 660-011-0000.

We are reaching out to you and your company to open discussions and to hopefully provide us understanding of how on-site stormwater management will be provided on the proposed site. As you no doubt know, on site Stormwater Management is required by the City of Tualatin Basalt Creek Comprehensive Plan that was adopted by the City of Tualatin in 2019. As you likely also know, if on site treatment is not feasible the applicant needs to address how and where Stormwater Management will be conducted off site. This includes any stormwater which may flow due to topography in a southerly direction from the CPAH property.

The current topography of the CPAH property as we understand it, causes approximately 1/2 of the stormwater to flow to the south. Any potential development on the southern portion of the CPAH property which has stormwater that is not handled on site, may cause downstream impacts to the south. That includes impacts to the Shared Road identified in Tualatin PMA 20-0002, the Lennar Autumn Sunrise Development, the Lennar Autumn Sunrise Commercial Neighborhood Zone, our property and eventually the Basalt Creek Canyon wetlands which discharge ultimately to the Willamette River.

The current stormwater system along SW Boones Ferry Road was designed by Washington County, to accommodate a specific amount of stormwater generated from undeveloped lands. It was not designed for the higher stormwater management needs of developed lands, which have higher amounts of impervious surfaces. A portion of the current stormwater system along SW Boones Ferry Road- downstream from the CPAH property has already proven to have failed.

The City of Tualatin and Washington County have overlapping jurisdictions over the existing stormwater intake, conveyance, treatment and discharge system along SW Boones Ferry Road and in the ROW along SW Boones Ferry Road. The City of Tualatin has a need for the clear identification for the provision of safe effective stormwater management within the NE portion of the Basalt Creek Area, as a component to be addressed during the City's Land Use Annexation vetting process for the proposed annexation of the CPAH property into the City of Tualatin.

We have had an opportunity to meet Mr. Alex Hurley, Principal at AKS Engineering and Forestry within the last few weeks due to his company's involvement with the Lennar Autumn Sunrise Development and Neighborhood Commercial Zone. Mr. Hurley has knowledge of our concerns as to stormwater management for the Lennar project.

It appears that Mr. Hurley's company is also providing engineering and planning services to CPAH . We have included him in this email, in hopes that he may be able to help provide timely additional information about the planned provision of stormwater management within the NE portion of the Basalt Creek Area from a more comprehensive regional perspective. Mr. Hurley may also be able to provide insight as to the timeframes as to when and how stormwater management is anticipated to be installed along western portion of the Autumn Sunrise lands along SW Boones Ferry Road.

It is not yet clear to us, how the timing, sequencing, and/or phasing of the development of the CPAH property, the Shared Road, the Lennar/ Autumn Sunrise Residential Development, and/or the Lennar/ Autumn Sunrise Neighborhood Commercial Development will be planned in a way that will also protect our existing downstream home, property and ourselves – to say nothing of the multiple downstream wetlands and Natural Resources. Hopefully you and/or Mr. Hurley, can inform us how all of the proposed changes to the existing "undeveloped land" conditions, upon which the current stormwater management system was designed and constructed, will be completed in a way that protects us and the important downstream Goal 5 resources.

The City of Tualatin will want to ensure the provision of Stormwater Management within the Basalt Creek Area based upon State and DEQ requirements are met as part of the City's annexation process. Consequently, we have also included the City's Engineer and Director of Community Development, Kim McMillan, on this email.

IMPORTANT BACKGROUND FACTS

To provide some background, Washington County designed and constructed the SW Boones Ferry Road Improvement Project in 2012-2015. That project shifted a portion of SW Boones Ferry Road to the east from its previously existing location.

The County's project had multiple impacts ---among those are:

- The County redesigned the stormwater system along SW Boones Ferry Road.
  - The County's system was designed and constructed using calculations for undeveloped land-and not for the higher stormwater management demands resulting from increased impervious surfaces which occur with more and higher density buildings; streets; parking lots and sidewalks etc.
  - The County's design created 2 more highly efficient stormwater intakes to service a portion of the stormwater catchment area (east of SW Boones Ferry Road which includes the southern portion of the CPAH property) and located these intakes in a different location and configuration from where a single historic horizontal culvert was once located.
    - These 2 intakes currently collect stormwater from portions of the "undeveloped" CPAH property,
    - However, these 2 intakes are not located on CPAH property- but are located on lands to the south and outside the proposed annexation
    - Upstream changes may negatively impact either of these 2 intakes, the stormwater conveyance system, treatment facilities or downstream outflow
  - The County's design continued to utilize the single outflow location for these two new stormwater intakes utilizing longer, upgraded more efficient conveyance pipe under SW Boones Ferry Road to discharge stormwater onto our property (County Stormwater Outflow #5) on the WEST side of SW Boones Ferry Road. That discharge is into an easement the County has on our property.
  - The stormwater which discharges out of County Stormwater Outflow #5 flows through our property and down steep slopes into important wetlands identified in the Federal Wetlands Inventory.
  - As can be seen in the attached 3-18-2015 video, the color of the stormwater indicates a high amount of sediment. The aftereffects of this flooding also showed erosion of the drainage ditch along our steep sloped driveway, and displacement of soil and debris downstream.
  - We had contacted Washington County on multiple occasions during the design and construction of their project, and we were provided assurances the County's design would *decrease* stormwater output by 10% onto our property from prior levels.
  - As the video and the Engineering Report show, that turned out not to be the case.
  - The County has not made significant changes or corrections to the stormwater system in the northern portions of the Basalt Creek Area since completion of the SW Boones Ferry Road Improvement Project.
  - This leaves us concerned that history might repeat itself when further development is authorized and occurs.
- Over the subsequent years:
  - We have informed the City of Tualatin- multiple times since 2016 -of the need for thoughtful planning for Stormwater Management within the Basalt Creek Area. We did this during the Basalt Creek Concept Land Use Planning, during the City of Tualatin Basalt Creek Comprehensive Land Use Planning, during ANN 19-0002 Autumn Sunrise Annexation, subsequent Autumn Sunrise Land Use Actions, and during the City of Tualatin Stormwater Master Plan Update Land Use process.
  - We and our Environmental Engineering Consultant attempted to obtain from the City of Tualatin- their projected Stormwater Management needs for the northern portion of the Basalt Creek Area based upon full build out- as we worked to design on our property additional protection from upstream stormwaters being discharged from County Outflow #5. We were not able to obtain this information, and as a result we built the additional protection for our property based upon the current existing conditions--- of undeveloped upstream land.

- The City has recently indicated their intent to generate a Stormwater Master Plan for the Basalt Creek Area within their Land Use Planning jurisdiction, but funding for such a study or a Service Contract for conducting such a study has not yet been obtained.

We look forward to hearing from you, that we may gain a better understanding of your proposed annexation plans, and that we may be able to open-up 2-way communications in advance of the hearing scheduled for April 26th.

Regards

John and Grace Lucini

23677 SW Boones Ferry Road

Tualatin, OR 97062

503 692 9890

Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces

OAR 660-015-0000(5)

Goal

To protect natural resources and conserve scenic and historic areas and open spaces.

Local governments shall adopt programs that will protect natural resources and conserve scenic, historic and open space resources for present and future generations. These resources promote a healthy environment and natural landscape that contributes to Oregon's livability.

The following resources shall be inventoried:

a. Riparian corridors, including water and riparian areas and fish habitat;

b. Wetlands;

c. Wildlife Habitat;

d. Federal Wild and Scenic Rivers;

e. State Scenic Waterways;

f. Groundwater Resources;

g. Approved Oregon Recreation Trails;

h. Natural Areas;

i. Wilderness Areas;

j. Mineral and Aggregate Resources;

k. Energy sources;

l. Cultural areas.

Local governments and state agencies are encouraged to maintain current inventories of the following resources:

3. Historic Resources;

4. Open Space;

5. Scenic Views and Sites.

Following procedures, standards and definitions contained in commission rules, local governments shall determine significant sites for inventoried resources and develop programs to achieve the goal.

Guidelines

A. Planning

1. The need for open space in the planning area should be determined, and standards developed for the amount, distribution, and type of open space.

2. Criteria should be developed and utilized to determine what uses are consistent with open space values and to evaluate the effect of converting open space lands to inconsistent uses. The maintenance and development of open space in urban areas should be encouraged.

3. Natural resources and required sites for the generation of energy (i.e. natural gas, oil, coal, hydro, geothermal, uranium, solar and others) should be conserved and protected; reservoir sites should be identified and protected again irreversible loss.

4. Plans providing for open space, scenic and historic areas and natural resources should consider as a major determinant the carrying capacity of the air, land and water resources of the planning area. The land conservation and development actions provided for by such plans should not exceed the carrying capacity of such resources.

5. The National Register of Historic Places and the recommendations of the State Advisory Committee on Historic Preservation should be utilized in designating historic sites.

6. In conjunction with the inventory of mineral and aggregate resources, sites for removal and processing of such resources should be identified and protected.

7. As a general rule, plans should prohibit outdoor advertising signs except in commercial or industrial zones. Plans should not provide for the reclassification of land for the purpose of accommodating an outdoor advertising sign. The term “outdoor advertising sign” has the meaning set forth in ORS 377.710(24).

B. Implementation

1. Development should be planned and directed so as to conserve the needed amount of open space.

2. The conservation of both renewable and non-renewable natural resources and physical limitations of the land should be used as the basis for determining the quantity, quality, location, rate and type of growth in the planning area.

3. The efficient consumption of energy should be considered when utilizing natural resources.

4. Fish and wildlife areas and habitats should be protected and managed in accordance with the Oregon Wildlife Commission's fish and wildlife management plans.

5. Stream flow and water levels should be protected and managed at a level adequate for fish, wildlife, pollution abatement, recreation, aesthetics and agriculture.

6. Significant natural areas that are historically, ecologically or scientifically unique, outstanding or important, including those identified by the State Natural Area Preserves Advisory Committee, should be inventoried and evaluated. Plans should provide for the preservation of natural areas consistent with an inventory of scientific, educational, ecological, and recreational needs for significant natural areas.

7. Local, regional and state governments should be encouraged to investigate and utilize fee acquisition, easements, cluster developments, preferential assessment, development rights acquisition and similar techniques to implement this goal.

8. State and federal agencies should develop statewide natural resource, open space, scenic and historic area plans and provide technical assistance to local and regional agencies. State and federal plans should be reviewed and coordinated with local and regional plans.

9. Areas identified as having non-renewable mineral and aggregate resources should be planned for interim, transitional and "second use" utilization as well as for the primary use.

Original Adoption: 12/27/74; Effective: 1/25/75
Amended: 2/17/88; Effective: 3/31/88
Amended: 6/14/96; Effective: 9/1/96

Administrative Rules Applicable to Goal 5:
OAR chapter 660, division 16, Requirements and Application Procedures for Complying with Statewide Goal 5 (applicable to cultural resources)
OAR chapter 660, division 23, Procedures and Requirements for Complying with Goal 5 (applicable to resources except cultural resources)

OREGON
Department of Land Conservation & Development

RELEASED: August 27, 2020

LCDC ENFORCEMENT ORDER ADVISORY:

LOCAL GOVERNMENT TO CORRECT REGULATIONS THAT LIMIT HOUSING DEVELOPMENT IN NATURAL RESOURCE AREAS

Update

In 2017, the Oregon Legislature passed Senate Bill (SB) 1051. This legislation extended the requirement for clear and objective standards to all housing inside an urban growth boundary. This new law has created challenges for local governments with subjective code provisions. A local petition for enforcement against Washington County for failure to apply habitat protection measures adopted under Statewide Land Use Goal 5 (Natural Resources, Scenic and Historic Areas, and Open Spaces), resulted in a Land Conservation and Development Commission (LCDC) enforcement order in May of this year.

In their order, LCDC held that a local government waiving application of code standards that are subjective, (not clear and objective) was no longer in compliance with its responsibilities to protect natural resources under Goal 5. This means that when subjective standards are the only option for a local program to implement a statewide land use goal, a local government must amend its code to include a path with clear and objective standards.

LCDC set a May 1, 2021 deadline for Washington County to complete code amendments so that the code provides clear and objective standards. LCDC also imposed a temporary injunction on permitting new housing development in some Goal 5 protected areas until development code amendments are adopted.

Accordingly, Department of Land Conservation and Development (DLCD) staff encourage local governments to review their residential development codes to ensure that there is an option for clear and objective review standards for residential development.

Background

Section 5 of SB 1051 amended Oregon Revised Statute (ORS) 197.307(4) and expanded the requirement to apply only clear and objective standards, conditions, and procedures to regulate **all** housing development inside an urban growth boundary (UGB). Previously the statutory requirement was limited to “needed housing”. A consequence of the amendment was the loss of distinction between lands defined as “buildable land” in Oregon Administrative Rules (OAR) 660-008-0005 and 660-007-0005 and all other lands within a UGB. As a result, local code provisions that rely solely on discretion to resolve conflicts between new housing development and other land use priorities, such as reducing risks posed by natural hazards or protecting natural resources, are no longer compliant with state law.

Intersect with Oregon’s land use statute, rules, and local codes

LCDC rules implementing Statewide Land Use Goal 10 (Housing) [OAR chapter 660, divisions 7 and 8], describe a methodology for cities to maintain sufficient area zoned for residential development to accommodate projected housing demand for twenty years. The methodology includes calculating the amount of available "buildable" land". The rules exclude various categories of constrained lands from this calculation, including areas subject to codes that implement Goals 5, 6, 7, 15, 16 and 17. In the past, the requirement for clear and objective standards for housing applied to "buildable lands", as the majority of housing was to be developed in these areas. This structure aligned with the use of subjective standards in local codes, which are either prescribed by Goals 15-17 or serve well to implement Goal 5 and 7 objectives. SB 1051 has changed this structure by requiring a local government to provide at least an option for application of clear and objective standards in the context of housing development applications to protect resources or mitigate hazards on these lands.

Washington County and LCDC enforcement order

The specifics of the Washington County case focus on three particular code provisions, adopted in the 1980s as protection measures to implement Goal 5. The provisions required mitigation of impacts to significant natural resource (SNR) areas identified in the county's comprehensive plan. The Oregon Court of Appeals held that Washington County's practice of prescribing mitigation measures based on a biologist's report and review by Oregon Department of Fish and Wildlife was unenforceable under ORS 197.307(4) because it was not clear and objective. LCDC's enforcement order, held that Washington County is no longer compliant with existing Goal 5 comprehensive plan provisions if the county does not apply development code standards adopted as part of a Goal 5 protection program. The Order directs the county to amend its code and imposes an injunction on the processing of new applications for housing in some of Washington County's SNR areas. The enforcement order is based on the statutory requirements that local plans and codes be compliant with all applicable land use goals. Since the three code provisions invalidated by SB 1051 were adopted and acknowledged to implement Goal 5, LCDC found that the county is out of compliance with Goal 5.

Implications for other Oregon cities and counties

DLCD staff believe Washington County is one of many jurisdictions with existing housing development code provisions which could be subject to challenges for lack of clear and objective review criteria. Furthermore, the order highlights a potential problem with goal compliance if a jurisdiction does not apply development code standards adopted as part of a Goal's implementation (protection program).

LCDC and department staff recognize that SB 1051 has placed local governments in a difficult position and that code amendments are the remedy currently available for resolving the problem. However, creating clear and objective housing standards which implement Goals 5, 6, 7, 15, 16 or 17, may be challenging. If you have concerns or if you would like to discuss these issues, please reach out to your DLCD regional representative.

Gmail

G Lucini <grluci@gmail.com>

LUCINI COMMENTS -Proposed Update to Tualatin Stormwater Master Plan

1 message

G Lucini <grluci@gmail.com> Tue, Dec 15, 2020 at 4:37 PM
To: Kim McMillan <kmcmillan@tualatin.gov>, Hayden Ausland <hausland@tualatin.gov>
Cc: Tualatin City Council <council@ci.tualatin.or.us>, Frank Bubenik <fbubenik@tualatin.gov>, Robert Kellogg <rkellogg@tualatin.gov>, Paul Morrison <pmorrison@tualatin.gov>, Bridget Brooks <bbrooks@tualatin.gov>, Maria Reyes <mreyes@tualatin.gov>, Valerie Pratt <VPratt@tualatin.gov>, Nancy grimes <ngrimes@tualatin.gov>, John Lucini <JWLuci@gmail.com>
Bcc: Grace Lucini <GrLuci@gmail.com>

Please find 5 attachments to this email providing Citizen Comments on the proposed City of Tualatin Stormwater Master Plan Update.

- 2020 12-15 LUCINI COMMENTS Attachment and DRIVE LINK

2020 12-15 LUCINI Comments Stormwater Master Pl...

- Attachments #1, #2 and # 3 LIBERTE ENVIRONMENTAL ASSOCIATES DRIVE LINKS

ATT #1 Tual-SWMP_LEA_Comments_w-Supplements_a.pdf

ATT #2 Supplement- B_Part1_LEA_Lucini_DrainageA...

ATT # 3 Supplement-B_Part2_RptAppendix_LEA_Nov1...

- MAPS DRIVE LINK (AND INCLUDED WITHIN COMMENT DOCUMENT PAGES 13-20)

ATT #4 MAPS Tualatin Stormwater Master Plan U...

Please let me know if you have difficulty opening any of these files.

Please forward this email and all attachments to the City of Tualatin Planning Commission, as I do not have a direct email address for them.

My husband and I appreciate the opportunity to be able to participate in the review of the proposed Update to this Master Plan.
Regards,
Grace Lucini

2 attachments

2020 12-15 LUCINI Comments Stormwater Master Plan Update Tualatin.pdf
3217K

2020 12-15 LUCINI Comments Stormwater Master Plan Update Tualatin.pdf
3626K

12-15-2020

For Public Record- Proposed Update to City of Tualatin Stormwater Management Master Plan

To: The City of Tualatin Department of Engineering

Cc: Members of the Tualatin City Council and City of Tualatin City Council
City of Tualatin Planning Commission

RE: **Proposed Update to City of Tualatin Stormwater Management Master Plan**

My husband and I appreciate the opportunity to provide Citizen Comments on this first opportunity for Public access and Comment Period on the proposed update to the City of Tualatin's Stormwater Management Master Plan being undertaken by the City. We support the efforts of the City to acknowledge and attempt to respond to the various changes and philosophies regarding Stormwater Management which have occurred since the current Master Plan was adopted several years ago.

We also recognize the City of Tualatin has undergone various changes since the City's Stormwater Master Plan was adopted in 1972. It would be expected the scope of the Land Use Master Plan would include all lands within the City limits- as well as lands identified within the future jurisdiction of the City- and assessment, analysis and stormwater management planning would be applied to all the lands within the scope of the project for both current and future needs.

The need for coordination of Land Use Planning between overlapping governments is necessary and mandated. As the northern portion of the Basalt Creek Area is identified as under the future jurisdiction of the City of Tualatin, and the City has already started the urbanization process, it is important for the City of Tualatin to identify a method for ensuring the effective coordination of Land Use Planning with other local governments- especially those with overlapping jurisdictions or responsibilities. The majority of the Basalt Creek Drainage flows south eventually through the City of Wilsonville and into the Willamette River. Very little of Stormwater drainage from the Basalt Creek Area flows north into the City's existing catchment and conveyance system.

Since Washington County currently has ownership and jurisdiction over the existing stormwater system within the Basalt Creek Area, and the County's stormwater conveyance and treatment systems are within lands under various ownerships, it is important for the City provide a well-crafted Stormwater Management Plan for the Basalt Creek Area.

The City already acknowledged in the Basalt Creek Concept Plan of the potential need to upgrade the existing stormwater system within the Basalt Creek Area to accommodate future development within the Area.

Neither my husband nor I are against development.

As citizens and residents of the Basalt Creek Area the ability to participate in this first solicitation for input/feedback by potentially affected Citizens on this proposed update to a City's Land Use Plan is welcomed. We are particularly interested in the creation of a well written fact-based Update to the City's Stormwater Management Master Plan, as our home and property is within the Basalt Creek Area –in an area which the City has future jurisdiction, and downstream from lands recently annexed into the City and are coming under consideration for development.

As potentially affected Citizens and property owners within unincorporated Washington County, my husband and I have for many years attempted to work with both the City of Tualatin and with Washington County in recognizing and addressing our concerns regarding Stormwater Management within the Basalt Creek Area.

We have presented our concerns as to the need for a fact-based Stormwater Management Plan for the Basalt Creek Area for use as part of Land Use Planning Actions within the area. We have submitted these concerns numerous times, to the staff of the Cities of Tualatin and Wilsonville, to the City of Tualatin Planning Commission, and to the Tualatin City Council including:

- during the development of the Basalt Creek Concept Plan by the Cities of Tualatin and Wilsonville (2012-2018)
- written fact-based testimonies to the City of Tualatin during the City Council 2019 Hearings on the Basalt Creek Comprehensive Plan proposed adoption and integration into the City's governing documents as to the need for further- identification and documentation of Natural Resources, and the need for a Stormwater Plan --to specifically access and address the current and future needs within the scope of the lands to be included within the Comprehensive Plan
- on 3-21-2020 my husband and I submitted written testimony to the Tualatin City Council, again supported by documentation, as to the lack of pertinent facts and information on Land Use Planning for the Public Service of Stormwater Management relating to the application for annexation of 40+acres of lands within the Basalt Creek Area into the City of Tualatin.

My husband and I now present our concerns regarding the proposed Stormwater Management planning within the Basalt Creek Area as presented within the proposed Master Plan Update to the City of Tualatin, the City of Tualatin Planning Commission, and to the City of Tualatin City Council.

This is first opportunity provided by the City for Citizen review and comment on the proposed Update to the City's Stormwater Master Plan.

We note there are inconsistent, conflicting or omitted information between the proposed Update and the City's existing Governing Documents. The lack of relevant, accurate, consistent and necessary information between the proposed Stormwater Master Plan and many of the City's current documents may result in difficulties in the safe effective implementation of Stormwater Management by the City and coordination of Land Use Planning with other governmental units.

Recognizing that my husband and I do not have a professional working knowledge of Stormwater Management or hydraulic dynamics, we have obtained the services of Dave La Liberte, Principal Engineer of Liberte Environmental Associates to review and comment upon the technical aspects of the proposed Update to the City's Master Plan. David M. LaLiberte, P.E., Civil and Environmental Engineer is licensed in the State of Oregon, has compiled these comments under contract with us. Mr. La Liberte' has over 30 years of experience in stormwater, water quality and design solution analysis. His Cumuli Vitae (CV) identifying his education and experience are attached as (Attachment #1 Supplement C). He has personally conducted various hydrodynamic modeling scenarios within the Basalt Creek Area. We believe Mr. La Liberte to be highly qualified to provide relevant comments upon the proposed Update to the City of Tualatin Stormwater Management Master Plan (SWMP).

Mr. La Liberte's comments regarding the City's proposed Update to the SWMP are to be considered a part of our Citizen Comments and are attached.

Also included as an embedded Google Link are additional documents including studies and analysis conducted by Mr. La Liberte' in 2016, ***"Effects of SW Boones Ferry Road Construction (2013-2015) Stormflow Analysis for the Lucini Property Washington County, Oregon".***

To offer identification of issues and assistance in a Land Use planning action – allowing the City of Tualatin to gain future jurisdiction over the northern portion of the Basalt Creek Area--this Stormflow Analysis was submitted to the Cities of Tualatin and Wilsonville during the Basalt Creek Concept Planning process. This study has also been provided to the City of Tualatin staff on other subsequent occasions.

SEE EMAIL ATTACHMENT --LA LIBERTE' ENVORONMENTAL ATTACHMENTS #1, #2 & #3 (INCLUDES SUPPLEMENTS)

TECHNICAL COMMENTS RELATING PROPOSED UPDATE TO THE CITY'S MASTER PLAN (Summarization)

A summarization of Review of Document Comments
by Mr. La Liberte, Principle Engineer La Liberte' Environmental Associates:

Significant problems in the Plan for the BFR south area are:

- lack of identified stormwater facilities
- omission of hydrologic and hydraulic modeling analysis
- potential for misapplication of design alternatives
- absence of stormwater problem acknowledgement and evaluation
- no assessment of stormflows on steep slopes
- topography and soils suggest that infiltration is not a likely future runoff design solution in the Boones Ferry Road area
    - This is an important issue as to the elevation of lands, steep slopes, and drainage into Basalt Creek
    - The elevation of lands above the drinking water wells is of concern with impact upon the well from which the Lucini's obtain their water
- effect of stormflows on the Basalt Creek Concept Plan are neglected
- no existing and future development stormwater flows are compared
- protection of natural resources is unclear
- no designation of Capital Improvement Projects (CIPs9) in the BFR south area
- There is no assessment of peak and average stormflows on the steep slopes, which constitute the west flank of the BFR south area
    - These Tualatin stormflows discharge to the Basalt Creek Concept Plan area and their existence is not established in the SWMP.
    - Stormflows on these steep slopes have excessive peak and average flow velocities, which cause erosion

        SEE: Supplement B Part 1 Analysis Report Section 4.
        Stormflow Hydraulics and Part 2 Appendices A2 and I
- The Tualatin SWMP makes no provisions for temporary stormwater storage and discharge facilities when phasing-in large developments such as the Autumn Sunrise property in BFR south.
    - The concern is that arbitrary storage and discharge locations could occur in the interim, before the final stormwater facility is operable.
    - It needs to be specified in the Tualatin SWMP that new construction developments must use stormwater facilities and outfalls consistent only with its final specifications and drawings.

ADDITIONAL COMMENTS -MAPS WITHIN PROPOSED UPDATE TO THE CITY'S MASTER PLAN

PROPOSED MAPS:

- CONTAIN DATED INFORMATION
- OMISSION OF RELAVENT AND NESSARY INFORMATION REQUIRED FOR LAND USE PLANNING

SEE EMAIL ATTACHMENT #4 MAPS or Pages 13-20

CITIZEN COMMENTS- NARRITIVE
PROPOSED UPDATE TO STORMWATER MASTER PLAN – CITY OF TUALATIN

My husband and I are submitting these Citizen Comments regarding the newly posted first draft (December 1, 2020) of the proposed City of Tualatin Stormwater Management Master Plan Update. Utilizing the State's Land Use Planning Goals as a basis for our concerns. We mention there are multiple other related local, State and Federal mandates which exist and provide additional measures to address stormwater management, property rights and protections, safety, conservation and protection of Natural Resources, and coordination and integration of Public Services with other governmental units or agencies.

STATE OF OREGON STATEWIDE LAND USE GOALS- Used as basis and support of concerns being presented
OAR 660-015-0000 Oregon Statewide Land Use Planning Goals

The state of Oregon has established goals and provided mandates for Land Use Plans – including specific requirements which should be included within the Land Use Plans of local city governments- including City Master Plans.

These Land Use Planning Goals not only provide a framework for creating a Land Use Plan, but they also provide a method for evaluation of various Land Use elements to be included within a potential Plan, as well as mandates for compliance.

Included within our comments are references to these Land Use Planning requirements to provide a common understanding of the basis for our comments and as support for request for resolution to concerns provided within this correspondence.

Land Use Planning Goal #2- LAND USE PLANNING OAR 660-015-0000 (2) provides the framework for the development and requirements for the development of a Land Use Plan- such as the City's proposed Stormwater Management Master Plan Update. Included with Goal #2 are the following goals and mandates apropos to these comments: (emphasis added)

- To establish a land use planning process and policy framework ***as a basis for all decision and actions related to use of land*** and ***to assure an adequate factual base*** for such decisions and actions.
- City, county, state and federal agency and special district plans, and actions related to land use **shall be consistent with the comprehensive plans of cities and counties and regional plans** adopted under ORS Chapter 268.
- All land use plans shall include:
    - ***identification of issues and problems, inventories and other factual information*** for each applicable statewide planning goal,
    - **evaluation of alternative courses of action and ultimate policy choices**, taking into consideration social, economic, energy ***and environmental needs*****.**

- The required information ***shall be contained in the plan document or in supporting documents***

- **The plans shall be the basis for specific implementation measures.**
  - **These measures shall be consistent with and adequate to carry out the plans.**
  - All land-use plans, and implementation ordinances shall... be reviewed and as needed, revised on a periodic cycle ***to take into account changing public policies and circumstances***

It is important that accurate fact-based information relating to potential Land Use actions are obtained and provided as part of any Land Use action. Both Citizens and those who may ultimately be making Land Use decisions require accurate representative unbiased information so that they may understand and comprehend issues pertaining to proposed Land Use issues. This process assists and promotes the transparency of the governmental process, and informed decision making.

Unfortunately, after review of the City of Tualatin's proposed Update to the Stormwater Management Master Plan, my husband and I have found multiple issues which reduce compliance with the Oregon Land Use Planning Goals, as well as other local, State and Federal mandates-particularly with respect to the Land Use Planning for the Basalt Creek Area under the current or future jurisdiction of the City of Tualatin, and/or under other overlapping governmental units or agencies.

HISORICAL LAND USE PLANNING ACTIONS-BASALT CREEK AREA & STORMWATER MANAGEMENT

My husband and I strongly support the City's efforts to review and revise the City's dated Stormwater Management Master Plan which according to the City's website was adopted in 1972

https://www.tualatinoregon.gov/sites/default/files/fileattachments/engineering/page/13099/tualatin_drainage_plan_sept_1972.pdf

A request had to be submitted to the City for access to the Appendices for the proposed Plan.

In the decades since the City's Stormwater Management Plan was adopted in 1972, the type and level of assessment, knowledge and implementation of stormwater management has greatly expanded, and the potential impacts more fully understood. The relevance of impact of Land Use Actions upon the environment has also become more greatly understood, expanding the need for a more comprehensive assessment and analysis of potential outcomes as part of the Land Use Planning process.

In 2004 Metro 04-1040B authorized the addition of the "Tualatin Area" (part of which is now known as the Basalt Creek Area) into the UGB. Metro imposed multiple conditions and requirements for the conservation and protection of multiple natural resources as part of Metro 04-1040B as part of the responsibilities of the local governments.

In 2018 the Basalt Creek Concept Plan jointly authored and adopted by the Cities of Wilsonville and Tualatin -taking the initial steps in the Land Use Planning of over 800 acres within the Basalt Creek Area and included various assessments of Natural Resources within the Basalt Creek Area.

Included within the Basalt Creek Concept Plan are various statements relating to Land Use Planning within the Basalt Creek Area including:

"New stormwater infrastructure will be primarily integrated with the local road network"

..."It is assumed that the existing culverts may not have capacity for future urban conditions and will need to be upsized to provide adequate capacity for runoff from new impervious areas, unless onsite detention or

infiltration is required when the location of public drainage or the topography of the site make connection to the system not economically feasible." *(emphasis added)*

"The Cities and CWS will adopt an Intergovernmental Agreement that will address areas where cooperative stormwater management is needed."

It is unclear if and when such Stormwater Management Planning for the Basalt Creek Area between these three entities was conducted.

Both Cities also stated within the Concept Plan- they would have "Joint Management" of the "Natural Area" within the Basalt Creek Canyon.

It is unknown what further action has been taken to implement the "Joint Management" of the lands in the center portion of the Basalt Creek Area- where a high percentage of the Natural Resources are located within the Basalt Creek Canyon.

It is not known what Land Use elements of "management" were intended to be the focus of this joint statement, but the potential involvement of the City of Wilsonville within the Land Use Planning of the Basalt Creek Area may result in additional complexities in the determination and implementation of Land Use planning within the Basalt Creek Area.

As the Basalt Creek Canyon receives a majority of the stormwater drainage from the area, the potential involvement and coordination of the City of Wilsonville should be included within any Stormwater Management plan within the Basalt Creek area. The identification of this information was not included within the City's proposed Update to the Stormwater Master Plan.

Included within the Basalt Creek Concept Plan are numerous maps identifying the location of multiple Natural Resources existing within the Basalt Creek Area mainly generated from Metro 2001 data. This type of information regarding Natural Resources within the Basalt Creek Area was not included within the maps the City elected to adopt within the City of Tualatin Basalt Creek Comprehensive Plan and the subsequent adoption and integration into the City's Governing Documents.

A few examples of the maps from the Basalt Creek Concept Plan are included as attachments to this correspondence to help substantiate:

- the existence of these Resources,
- the need for the City of Tualatin to conduct a more current assessment and analysis of multiple Natural Resources known to exist within the Basalt Creek Area for fact-based decision making,
- the need for the City to memorialize the information into the City's Governing Documents to:
    - establish fact-based documents which have evaluated significant factors which exist within lands the City sought to gain future jurisdiction -which are equal to or exceeding the level provided to the majority of the lands within the City.
    - Provide consistency of fact-based documents within the City which various departments can utilize as part of a decision-making process
    - Provide an accurate fact-based reference for use by the Public to gain understanding of the basis for future decisions

These actions will provide greater consistency within all proposed Land Use Plans -including the Stormwater Management Master Plan and may provide greater compliance and positive outcomes in subsequent implementation actions.

Attachment #4 Maps

In 2019, the City of Tualatin Basalt Creek Comprehensive Plan, did not provide stormwater management plans specific for the Basalt Creek Area or a stormwater system map specific to the Basalt Creek Area.

The City has left developers to be responsible for on-site Stormwater Management.

But the City did not identify what actions will be taken if financial costs become too high, if stormwater management requirements exceed onsite management and/or treatment capabilities or should other factors which might preclude full onsite stormwater management and/or treatment develop.

The City did not provide specific guidance as to:

- feasibility of integration into the County's existing stormwater management system (which is already known to be at capacity)
- mechanisms for cooperative planning and integration into the County's existing stormwater management system
- the process and funding to collect, convey, treat and dispose of excess stormwater runoff off site, or
- the role for Citizen Involvement by downstream property owners or other stakeholders.

The proposed Update to the City of Tualatin's Stormwater Management Master Plan does not acknowledge these issues nor provide information as to this issue.

There are questions as to the consistency of the City's Land Use Plans for Stormwater Management planning and implementation for development.

Contrary to the efforts taken to meet compliance requirements within the Basalt Creek Concept Plan, the City of Tualatin elected as part of the Basalt Creek Comprehensive Planning process, to omit maps within the Basalt Creek Area which denoted the existence of multiple Natural Resources within the Basalt Creek Area- which had been included in the Concept Plan.

The lack of information as to the assessment and location of multiple Natural Resources which have requirements for their conservation and protection, causes significant issues as to the ability to comply and implement various Metro, State and Federal requirements to conserve and protect Natural Resources based upon facts.

Consequently, lacking the inclusion of the assessment of the Natural Resources within the City's Governing Documents, inhibits the ability to effectively identify and mitigate negative impacts from Stormwater Drainage as part of the Master Plan for Stormwater Management and in the planning and implementation of any Land Use Action.

Within the City's Basalt Creek Comprehensive Plan -included as a supporting document- is a letter dated 12-5-2006, titled **"City of Tualatin Title 13 and Tualatin Basin Plan Compliance Review."** (Exhibit 6 to Ordinance No. 1418-19

There are several concerns presented by the inclusion of this letter with issues relating to the Basalt Creek Area:

- Although the City has posted this letter on the City's Planning Department's Basalt Creek website, it is unclear as to the relevance of this letter to issues related to the Basalt Creek Area
- The letter is date specific and does not provide information as to changes which may have occurred within the 14 year since it was authored.
- The letter is dated 12-5-2006, prior to the City of Tualatin's right to conduct Land Use Planning for lands within the Basalt Creek area-outside its jurisdiction at the time. It is not known if the scope of subject matter within the review included lands within the Basalt Creek Area.
- It appears the intent of the letter was to evaluate a program, and not an evaluation of Title 13 resources- the letter clearly makes that statement.
- The letter included several statements as to additional actions required for compliance- including issues relating to the need for documentation of identification of various Natural Resources.
- The City did not attach documentation of successful implementation of actions required within the letter, nor application of results of the Tualatin Basin Program and application to the Basalt Creek Area.
- Of most importance the letter states: *"The compliance review by Metro is a review only of whether the amendments Tualatin is proposing are consistent with the UGMFP and is not a review of whether Tualatin has complied, or will comply with the other requirements of Option 5 and the Tualatin Basin Program*. (emphasis added)

  In relevance to the proposed Stormwater Management Master Plan Update, the 2006 Metro letter included the following information:

  Stream crossings and detention ponds: We also note that for a number of HFDPs - such as minimizing stream crossings, encouraging perpendicular crossings, using habitat sensitive bridge and culvert designs, use of detention ponds, and allowance of narrow road widths through stream corridors - the City does not propose any code changes. Instead, the City states that its code is silent on such practices, but does not prohibit them, and mostly relies on its adoption of Metro's Title 3 and CWS requirements to meet Title 13's "encourage and facilitate" requirement.

  Recommendation: We recommend that the City amend its code to affirmatively support these HFDPs. Doing so would leave no doubt that the City is encouraging and facilitating these HFDPs.

  It is not known if the City implemented this recommendation- or if the recommendation is still relevant.

  If the use of this letter is intended to indicate compliance to mandates for the conservation and protection of Natural Resources within the Basalt Creek Area, it would seem prudent for the City to establish documentation of an assessment of the Natural Resources within the Basalt Creek Area, and documentation of actions taken by the City to comply with such mandates- based upon current facts and standards to meet compliance needs.

In 2020, the City of Tualatin started actions to annex large acres of land within the NE portion of the Basalt Creek Area. A large portion of these lands currently act as the stormwater catchment, retention, and reabsorption basin for the greater area. The City is currently taking Land Use Planning actions which will allow the development of over 60 acers of this current stormwater catchment area.

Along with the removal of several acres which contain many characteristic factors of a natural stormwater catchment area (which have decreased the flow and velocity of stormwater and increase its reabsorption), future development may remove these factors while significantly increasing impervious surfaces with the creation of buildings, streets, and parking lots.

CURRENT CONCERNS REGARDING THE PROPOSED STORMWATER MASTER PLAN UPDATE

TECHNICAL ISSUES

A summary of the Technical Issues presented within the Stormwater Master Plan Update are summarized at the beginning of this correspondence, with the full review included as a Google Link attachment #1, #2 #3.

It is readily apparent when reading the proposed Master Plan Update, that much of the information contained with the draft is dated, and not reflective of current issues, or needs.

Page 5-2 includes the following information:
"Basalt Creek runs north-south in the southern portion of the City. Much of the contributing land use is low-density and rural residential, ***but with pending adoption of the Basalt Creek Concept*** *Plan concept plan [sic], future development is anticipated to impact the contributing land use and stream condition. Ownership is currently private and public (City)." (emphasis added)*

The Basalt Creek Concept Plan was adopted by the Cities of Wilsonville and Tualatin in 2018, indicating the proposed plan may not have been revised as to changes within the Basalt Creek Area for over two years. Since that time, the City of Tualatin generated and adopted the Basalt Creek Comprehensive Plan.

Although the proposed Stormwater Management Plan readily identified and anticipated the negative impact future development within the Basalt Creek Area would have upon the stream condition- the proposed Plan did not identify actions to be taken to provide further assessment and/or alternative solutions to attempt to address and mitigate stormwater impact upon the "stream condition".

IMPACT NATURAL RESOURCES

A review of the City's newly proposed draft to Update the City of Tualatin Stormwater Management Master Plan, does not currently identify the evaluation of Natural Resources within the Basalt Creek Area, nor the methods to be utilized to ensure compliance with the various mandates for the conservation and protection of numerous Resources. The State Land Use Goal requires documentation of compliance with State Goal #5 NATURAL RESOURCES AND OPEN SPACES, and State Goal #6 AIR, WATER AND LAND RESOURCES QUALITY which are the basis upon many of our concerns regarding the proposed Update to the City's Stormwater Master Plan.

NEED FOR COORDINATION OF LAND USE PLANNING WITH OVERLAPPING GOVEMENTS- STATE GOAL #2

While both Cities had knowledge of, and participated within the decision making Land Use Planning process in planning the location of Washington County's proposed Basalt Creek Parkway Extension regional transportation 5+ lane expressway through the middle of the Basalt Creek Area--- neither the Basalt Creek Concept Plan nor the City of Tualatin

Basalt Creek Comprehensive Land Use Plans acknowledged, addressed or provided guidance as to coordination of stormwater management planning within the Basalt Creek Area for Washington County's proposed major transportation project within overlapping jurisdictions.

It is unclear as to the amount of land Washington County will require for their proposed project which will needed not only for road construction, but also a proportionally large amount of land for stormwater management and treatment within wetlands and other lands within the future jurisdiction of the City of Tualatin. Nor did either plan address or provide guidance (and intended compliance) as to how all local governments would ensure conservation and protection of various Natural Resources within the Basalt Creek Area from direct or indirect effects of stormwater or stormwater management which might be caused by the proposed project and potential impact upon Natural Resources within the future jurisdiction of the City of Tualatin.

Compounding the lack a clear plan for a coordinated Stormwater Management plan to address the permanent installation of this major transportation project through multiple Natural Resources, the Basalt Creek Concept Plan states, "joint management" management of the "Natural Area" within the Basalt Creek Area by the Cities of Wilsonville and Tualatin and introduces a possible intergovernmental agreement between the two Cities for stormwater management within the Basalt Creek Area.

Due to the proximity of the eastern terminus of the proposed Washington County Basalt Creek Parkway Extension on SW Boones Ferry Road, and the and anticipated City of Tualatin major residential development of 400+ units and Commercial Neighborhood development within approximately 1/4 mile, of each other on SW Boones Ferry Road, there will be significantly increased need and demand for Stormwater Management and treatment with a limited geographic area and in lands with over lapping governmental jurisdictions.

As my husband and I are potentially affected property owners, we have on multiple occasions reached out to the staff of both the City of Tualatin and of Washington County to gain a better understanding how the Land Use planning actions by both governments are coordinating Land Use planning within the area. We have expressed our desire to be able to have potentially affected property owners participate in the coordinated planning of major Land Use Projects on lands near overlapping jurisdictions due to various direct and indirect impacts upon our property. We have not gained much success in these actions.

Unfortunately, there appears to be a continued lack of coordination and communication between these two entities as to the conception, planning and design of major Land Use Projects within the Basalt Creek Area.

Recognizing the lack of effective coordination in Land Use Planning by these two local governments, and to promote better compliance with mandates for the coordination of planning for Public Services by local governments, a well authored Stormwater Management plan would include clear requisites to:

- identify major Land Use Projects under consideration by another government (as a potential constraint or added factor in Land Use Planning)
- provide guidance as to how to coordinate the provision of Public Services within overlapping jurisdictions.

The proposed Stormwater Management Plan does not address this issue or provide clear guidance for implementation.

CURRENT STORMWATER MANAGEMENT SYSTEM WITHIN BASALT CREEK AREA
- HAS PREVIOUSLY FAILED AND IS A LIMITATION AND CONSTRAINT FOR FUTURE DEVELOPMENT
- IS UNDER THE JURISDICTION OF --OR IMPACTED BY–
LAND USE PLANNING ACTIONS OF OTHER LOCAL GOVERMENT

The current Stormwater Management System along SW Boones Ferry Road within the Basalt Creek Area was designed and constructed as part of Washington County's SW Boones Ferry Road Improvement Project (2012-2015). During the design phase of this Land Use transportation project, my husband and I contacted the County on multiple occasions regarding our concerns of potential negative downstream stormwater impacts we identified within the proposed design. We were assured the outflow from the County's design would be equal or 10 % less than stormwater outflow which we previously experienced from a more primitive/less sophisticated stormwater system.

The 2016 Stormwater Analysis within the Basalt Creek Area by Mr. La Liberte' which was the basis of the report, *"Effects of SW Boones Ferry Road Construction (2013-2015) Stormflow Analysis for the Lucini Property Washington County, Oregon"*, was generated due to my husband's and my desire to understand the cause of flooding into our property from stormwater emitting from a Washington County Stormwater Outflow an apparent failure of the stormwater management system in 2015. There have been no significant changes made to the County's Stormwater system since 2015 upstream from our property.

Currently a large percentage of the stormwater drainage from the NE portion of the Basalt Creek Area flows south-eventually through the City of Wilsonville and into the Willamette River. Much of the stormwater within the NE portion of the Basalt Creek Area is captured within a stormwater catchment basin on undeveloped lands east of SW Boones Ferry Road, and collected within Washington County's stormwater collection, conveyance and treatment system. A majority of the stormwater catchment basin on the east side of SW Boones Ferry Road and north of Greenhill Lane is on lands recently annexed into the City of Tualatin.

The stormwater drainage from this area flows away from the majority of lands within the City of Tualatin and outside of the City of Tualatin's existing stormwater collection, conveyance and/or treatment facilities.

Mr. La Liberte's study identified multiple factors which lead to the flooding of our property from the stormwater system which currently exists within Basalt Creek Area in the area around SW Boones Ferry Road.

From this investigation we gained knowledge that the **County's design and planning for the stormwater management system installed along SW Boones Ferry Road as part of the SW Boones Ferry Road Improvement Project, was:**

- **based upon drainage needs of undeveloped land, and**
- **not designed to meet anticipated drainage needs of developed lands with higher nonporous surfaces (buildings, streets, and sidewalks etc.) which cause higher stormwater runoff and less reabsorption into the land which has previously acted as a major stormwater catchment area.**

Both the City of Tualatin, and Washington County are undertaking Land Use planning actions within the Basalt Creek Area affecting properties under overlapping jurisdictions. My husband and have on multiple occasions attempted to gain insight as to the coordination of Stormwater Management Planning within the Basalt Creek Area from these two local governments.

As downstream property owners within Washington County, we have specifically expressed concerns and requested Land Use Planning information from the City of Tualatin as to the City's Stormwater Management Plan within the Basalt Creek Area and of potential impacts upon the current existing system under the jurisdiction of Washington County - during the Basalt Creek Concept Planning, during the City of Tualatin Basalt Creek Comprehensive Planning and as part of the City's annexation process for ANN 19-2002- without fact based information which would provide us understanding of the City's proposed Land Use actions and potential impacts caused by increased needs or changes to this Public Service. The Basalt Creek Concept Plan adopted by the City in 2018 acknowledged limitations within the existing Stormwater Management system within the Basalt Creek Area and identified the need for system upgrades with development of the Basalt Creek Area.

We have specifically asked the City of Tualatin and Washington County on multiple occasions how both of these two local governments have coordinated the Land Use Planning Goals for Washington County's proposed Basalt Creek Parkway Extension Project. Our questions have included how Stormwater Management will be integrated into the County's existing Stormwater System, how or where additional conveyance and/or treatment facilities will be located within lands with overlapping jurisdictions and of potential impacts to the City of Tualatin's Land Use Planning for the urbanization of the Basalt Creek Area and associated increased stormwater management needs on private or public lands. Again, my husband and I have received little fact-based information as to how these two local governments with over lapping jurisdictions have conducted Land Use Planning for a key Public Service of Stormwater Management within an area containing multiple known constraints and limitations.

My husband and I have reasonable concerns as to potential negative impacts from stormwater due to poorly planned and executed Land Use actions. The need for a well-developed integrated Stormwater Management plan for the Basalt Creek Area is necessary for the safety and protection of Citizens, property and surrounding Natural Resources.

Thank you for the opportunity for participating in this first Citizen Involvement Public event for the City's Proposed Update for the Stormwater Master Plan.

My husband and I look forward to hearing what steps the City will be taking the City's adoption process for this proposed Land Use Plan Action

As Citizens and potentially affected property owners, we request Actual Notice of any future Public Meetings-where this proposed Land Use Action may be an agenda topic--- including but not limited to the City of Tualatin Planning Commission, and/or the Tualatin City Council.

Respectfully submitted,
Grace Lucini
John Lucini
23677 SW Boones Ferry Road
Tualatin, OR 97062

ATTACHMENTS #1, #2, & # 3 Documents La Liberte' Environmental Associates (Google Link)
#4 MAPS (Google Link) & (Hard Copy Pages 13-20)

ATTACHMENT #4

MAPS WITHIN PROPOSED UPDATE TO THE CITY'S MASTER PLAN

PROPOSED MAPS:
-CONTAIN DATED INFORMATION
-OMISSION OF RELAVENT AND NESSARY INFORMATION REQUIRED FOR LAND USE PLANNING

An example of questionable information provided within many maps within the proposed Stormwater Management Plan for the City, is **Figure 2-2 Project Area Overview**.

T**he Legend within Figure 2-2 provides keys as to the location of**

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However, there is no indication of the wetlands, and multiple Natural Resources known to exist within the Basalt Creek Area and within the Basalt Creek Canyon.

Many of these types of Natural Resources may be negatively affected by stormwater drainage, and an accurate assessment as to the quantity, quality and location of Natural Resources which are to be conserved and protected should be assessed evaluated and memorialized within a Stormwater Management Plan and integrated into the City's Governing Documents for to provide and assure consistency within the City's various Land Use Plans.

Another factor not denoted within the maps within proposed Stormwater Management Plan, is the identification of the "Natural Area" within the Basalt Creek Canyon.

This area which contains wetlands and various Natural Resources requiring conservation and protection was identified within the Basalt Creek Concept Plan in which both Cities agreed to have "joint management" of the "Natural Area". It would seem reasonable this information which might impact Land Use Planning within the Basalt Creek Area and is downstream from the Basalt Creek lands already annexed into the City, would be identified on the Figure 2-2 map, and include additional information within the narrative of the proposed Stormwater Management Plan as a potential constraint or limitation in the planning of Stormwater Management in the area or upstream from the "Natural Area".

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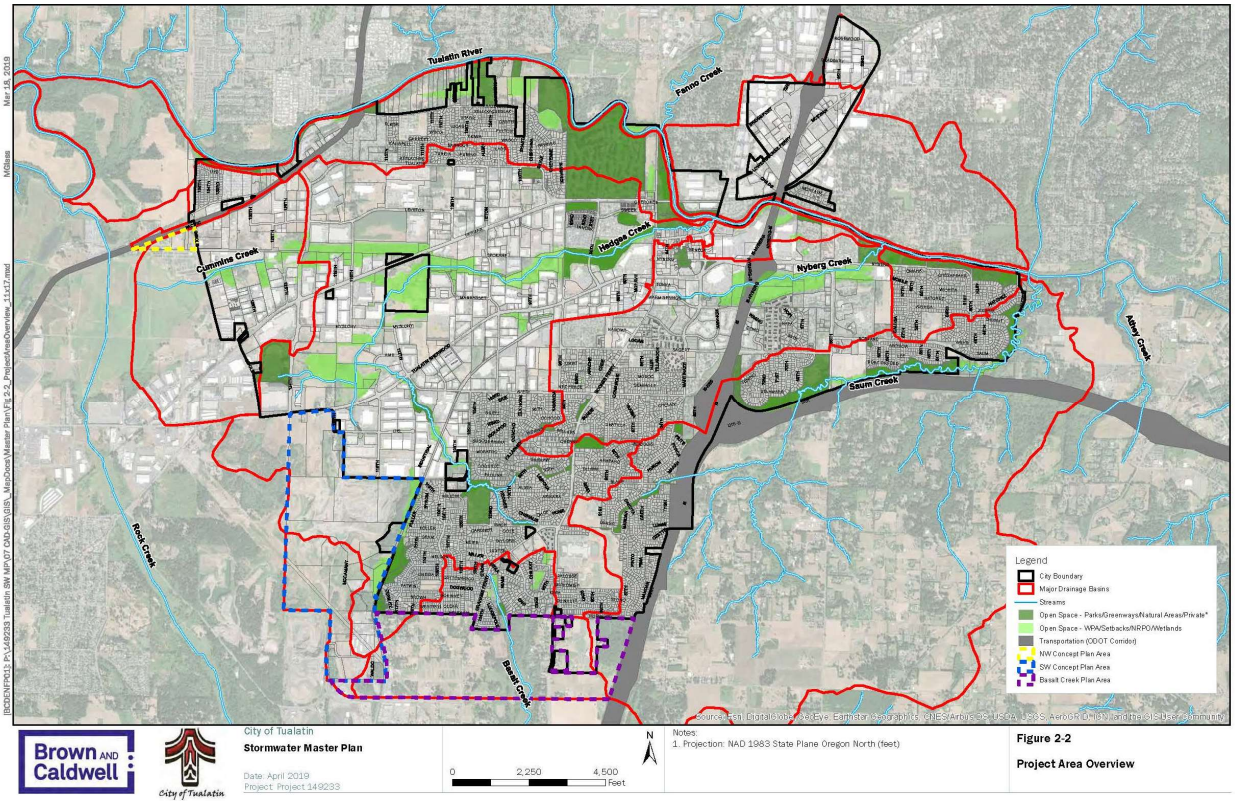
Tualatin River
Fanno Creek
Cummins Creek
Hedges Creek
Nyberg Creek
Saum Creek
Ibach Creek
Rock Creek
Basalt Creek
Legend
City Boundary
Major Drainage Basins
Streams
Open Space - Parks/Greenways/Natural Areas/Private*
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Transportation (ODOT Corridor)
NW Concept Plan Area
SW Concept Plan Area
Basalt Creek Plan Area
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Brown AND Caldwell
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Stormwater Master Plan
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1. Projection: NAD 1983 State Plane Oregon North (feet)
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Project Area Overview

Figure 2-4 "Land Use" Map Not Consistent with City's Current Land Use Zoning
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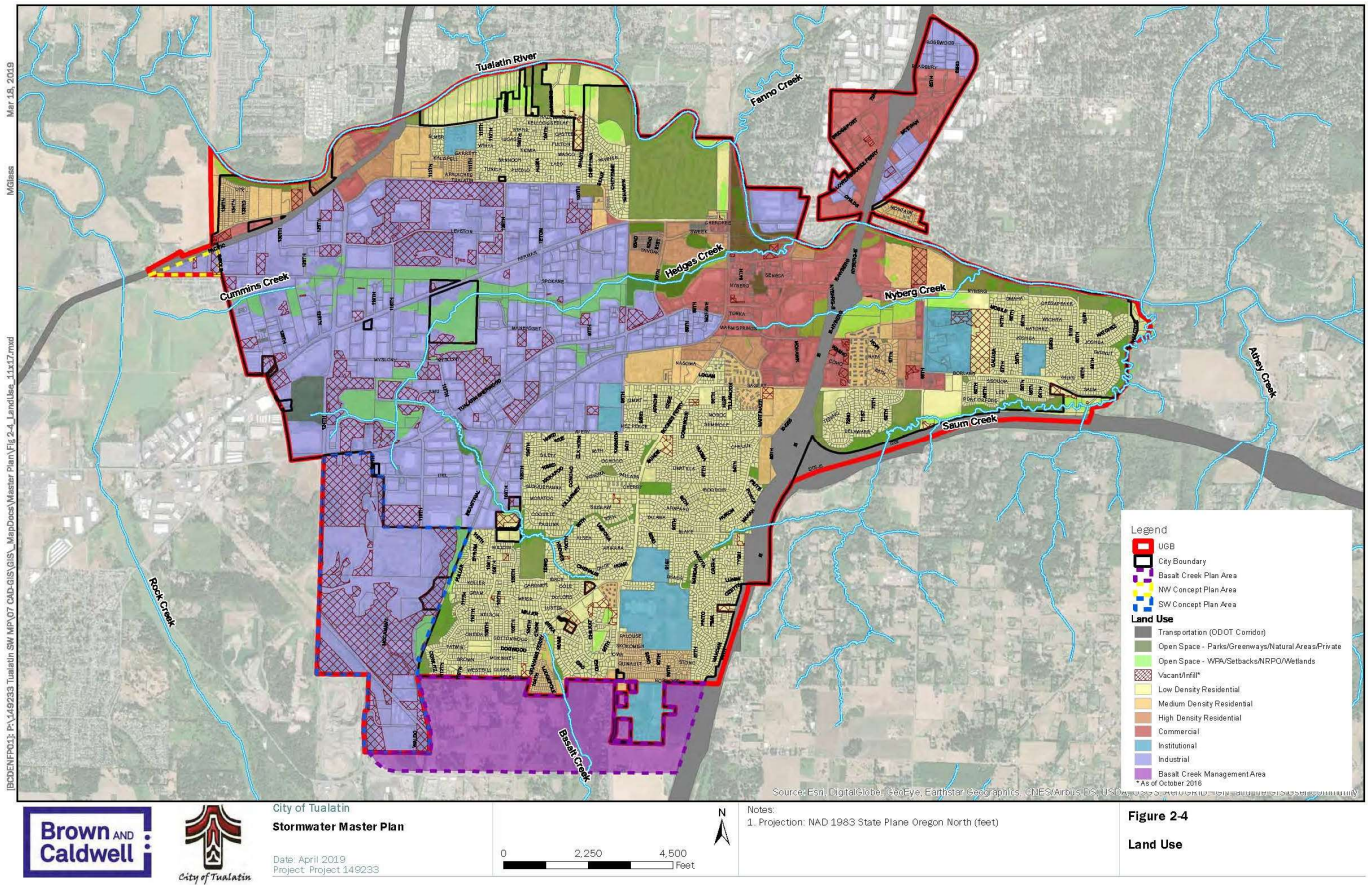
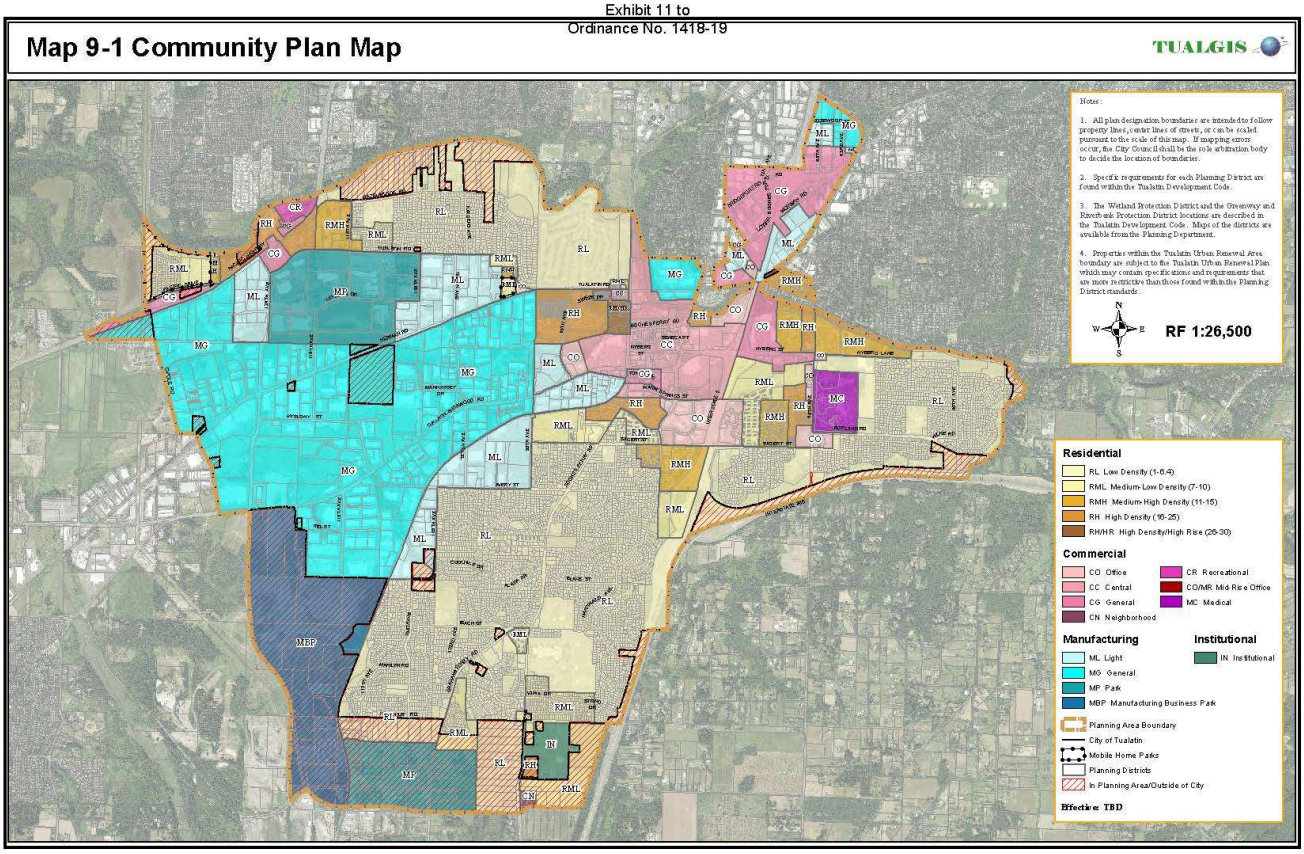
Yet, an asterisk notation within the Legend box states, "* As of October 2016".
Major changes have occurred as to Land Use within the City of Tualatin in the four years since this map was apparently generated.

The information provided as to the Land Use zoning or designations do not accurately reflect the Land Use Planning Actions of the Basalt Creek Concept Plan adopted in 2018, nor the City of Tualatin Basalt Creek Comprehensive Plan. Land Use Zoning within the Basalt Creek Area does not provide accurate information of current Land Use Zoning and Planning within the Basalt Creek Area and may hinder the planning for Stormwater Management in the assessment of current and future needs based upon type of land use. Approximately 60 acres within the Basalt Creek Area have already been annexed into the City of Tualatin, and into the responsibilities and regulations of the City for Land Use planning- including Stormwater Management.



The proposed Stormwater Master Plan Update is not consistent with the Land Use Plan adopted by the City in 2019 in Ordinance 1418-19, and consequently would not be compliant with Statewide Planning Goal #2

Exhibit 11 to
Ordinance No. 1418-19



72-1 Natural Resources Protection Overlay district (NRPO) and Greenway Locations
72-3 Significant Natural Resources
There is an absence of necessary information provided for the Basalt Creek Area for Natural Resources

Lacking necessary evaluations as to the level, location and quality of Natural Resources within the Basalt Creek Area within the proposed Stormwater Management Master Plan Update, it would be difficult for the City of Tualatin to utilize the maps adopted into the City's Governing Documents (as part of the adoption of the Basalt Creek Comprehensive (Ord. 1427-19 , § 47, 11-25-19)), as supportive or back up documents to the proposed Update, as these maps obtained from the City's website do not identify or provide substantive information as to the multiple Natural Resources which are known to exist within the Basalt Creek Area.

City of Tualatin Maps downloaded from the City's municipal Code website
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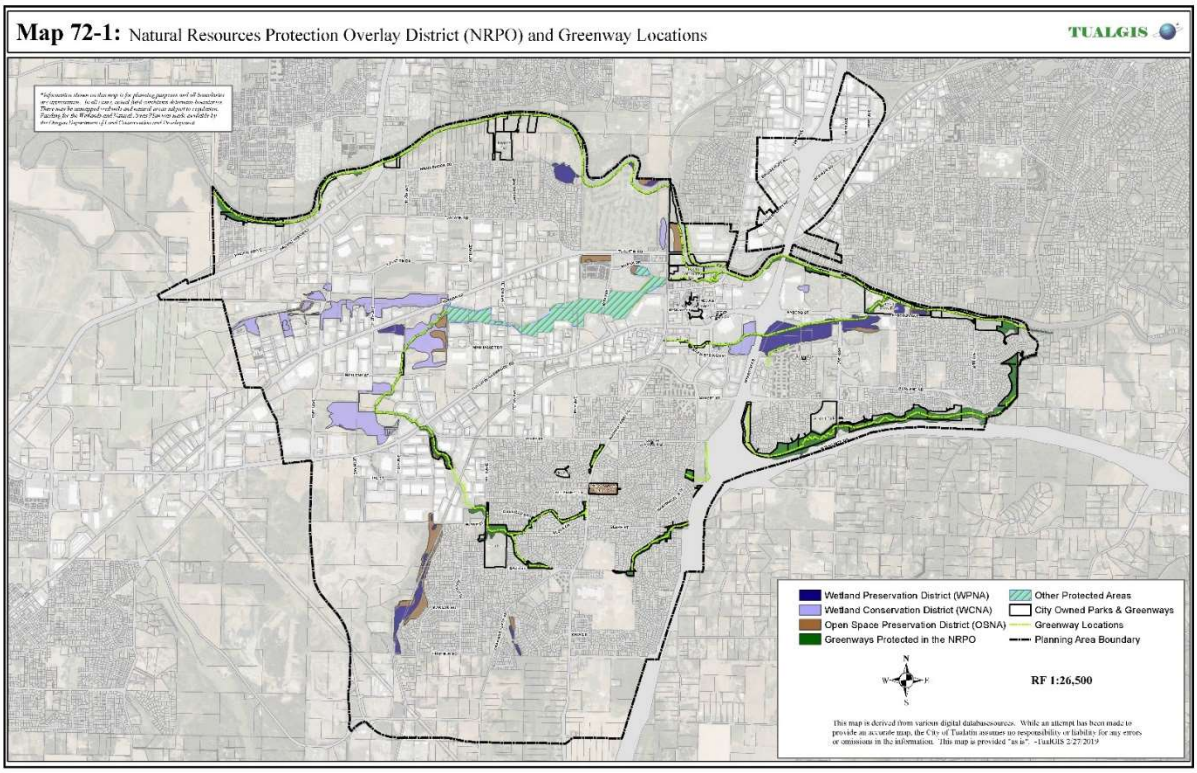
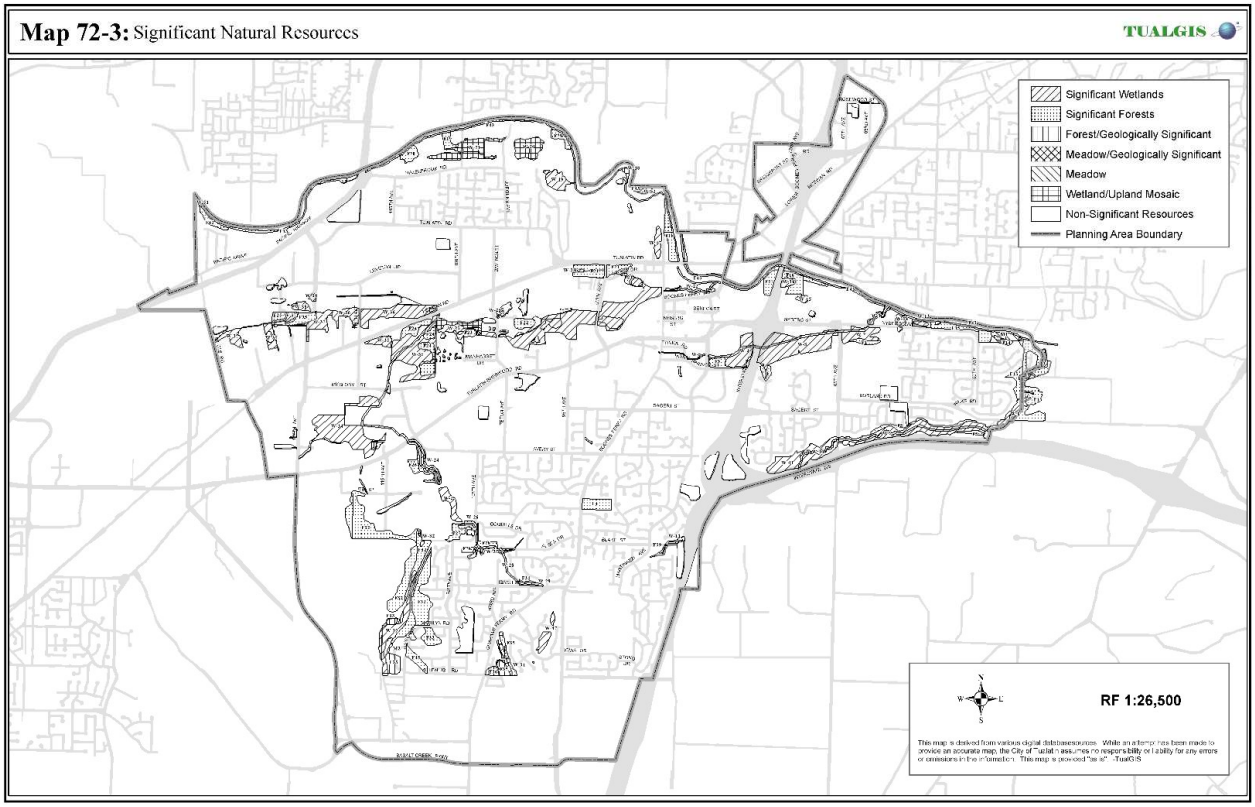
also lack essential information necessary for the development of a Land Use Plan, or effective implementation of a Land Use Action within the Basalt Creek Area and are not suitable support documents for the proposed Update to the City's proposed Stormwater Management Master Plan Update.





There are signficant inconsistancies in the level of acknolwedgement and identification of various Natural Resourcse which are required to be evaluated for potential impact within all Land Use Plans, and Planning Actions. The omission of pertenant information regarding the existance of multipe Natural Resources within the northern portion of the Basalt Creek Area as presented within the City's Governing Documents, and within the City's proposed Stormwater Master Plan update are notable.

However, the City included the Basalt Creek Concept Plan document adopted by the City in 2018, and utilized as a supporting document to the Basalt Creek Comprehensive Plan in 2019 did provide needed information as to Land Use evaluative factors such as the Natural Resources and contraints which exist within the Basalt Creek Area.

Examples of pertenent documentation from the Basalt Creek Concept Plan as to the quanity and quality of these Natural Resources is provided including a summary of a rational for inclusion of this information into the Basalt Creek Land Use Concept Plan.

Metro Title 13: Nature in Neighborhoods

Title 13 requires local jurisdictions to protect and encourage restoration of a continuous ecologically viable streamside corridor system integrated with upland wildlife habitat and the urban landscape. Metro's regional habitat inventory in 2001 identified the location and health of fish and wildlife habitat based on waterside, riparian and upland habitat criteria. These areas were named Habitat Conservation Areas.

Table 7 Title 13 HCA Categories with Acreage

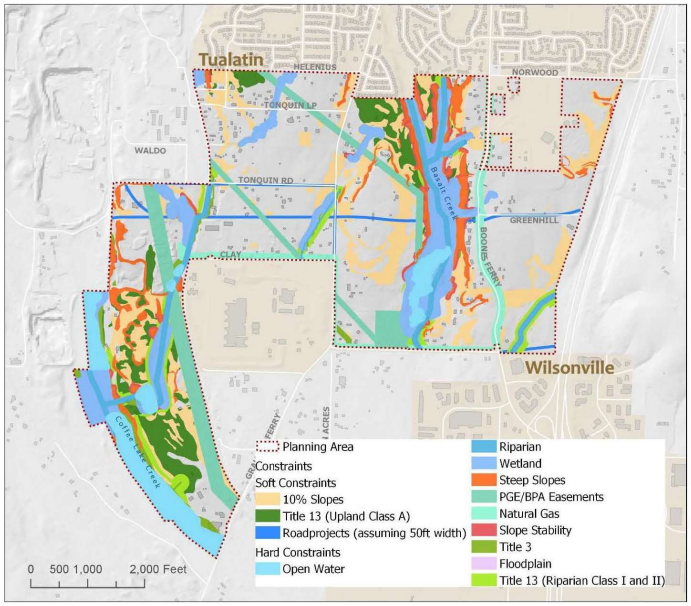
HCA Categories	Acres	Description
Riparian Wildlife Habitat Class I	130	Area supports 3 or more riparian functions
Riparian Wildlife Habitat Class II	31	Area supports 1 or 2 primary riparian functions
Riparian Wildlife Habitat Class III	7	Area supports only secondary riparian functions outside of wildlife areas
Upland Wildlife Habitat Class A	103	Areas with secondary riparian value that have high value for wildlife habitat
Upland Wildlife Habitat Class B	72	Area with secondary riparian value that have medium value for wildlife habitat
Upland Wildlife Habitat Class C	37	Areas with secondary riparian value that have low value for wildlife habitat
Designated Aquatic Impact	52	Area within 150 ft. of streams, river, lakes, or wetlands

Exhibit 2 to
Ordinance No. 1418-19

Environmental constraints are summarized below and unless otherwise noted were fully excluded from the developable land input in the scenario testing for the Basalt Creek Concept Plan:

- Open Water
- Streams
- Wetlands
- Floodplains (50% reduction of developable area)
- Title 3 Water Quality and Flood Management protections
- Title 13 Nature in Neighborhoods (20% reduction of developable area in areas designated Riparian Habitat Classes I and II)
- Steep Slopes (25% slopes and greater)

Figure 13 Natural Resources Map



It is unclear as to the rational for the omission of pertenent information required to be an evaluated compent in the development of all Land Use Plans and implmentation of Planning Actions have not been included within the proposed Stormwater Master Plan Update, nor in the City's Governing Documents as provided via the City's

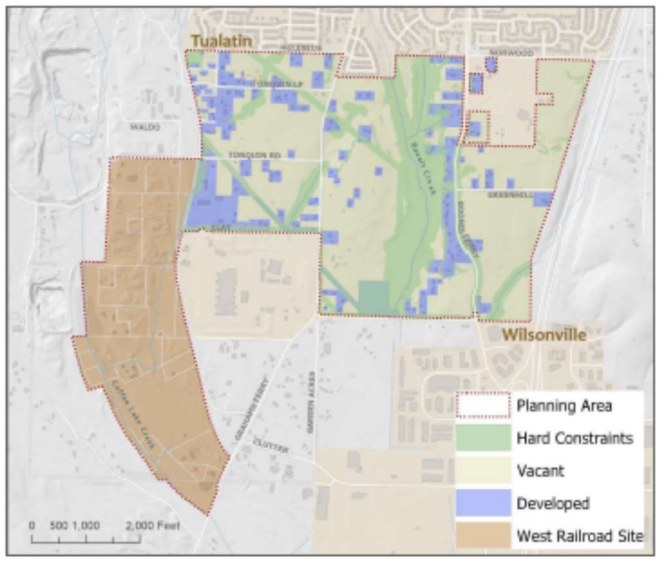
Exhibit 2 to
Ordinance No. 1418-19

The goal is to classify every parcel within the Planning Area into one of the categories described below:

Table 2 Land Supply within the Basalt Creek Planning Area by Type and with Acreage.

Land Supply by Type and Acreage		
Land Type	**Acres**	**Description**
Vacant Land	331	Unconstrained land that is ready to build with no major structures located on the site
Developed Land	125	Land already built upon which includes acreage covered by roadways
Constrained Land	153	Land that cannot be built upon due to environmental or other hard constraints
West Railroad Area	238	Excluded from development plan due to large amount of constraints and limited access
Total Land Supply	**847**	

Figure 6 Land Supply by Type.



21

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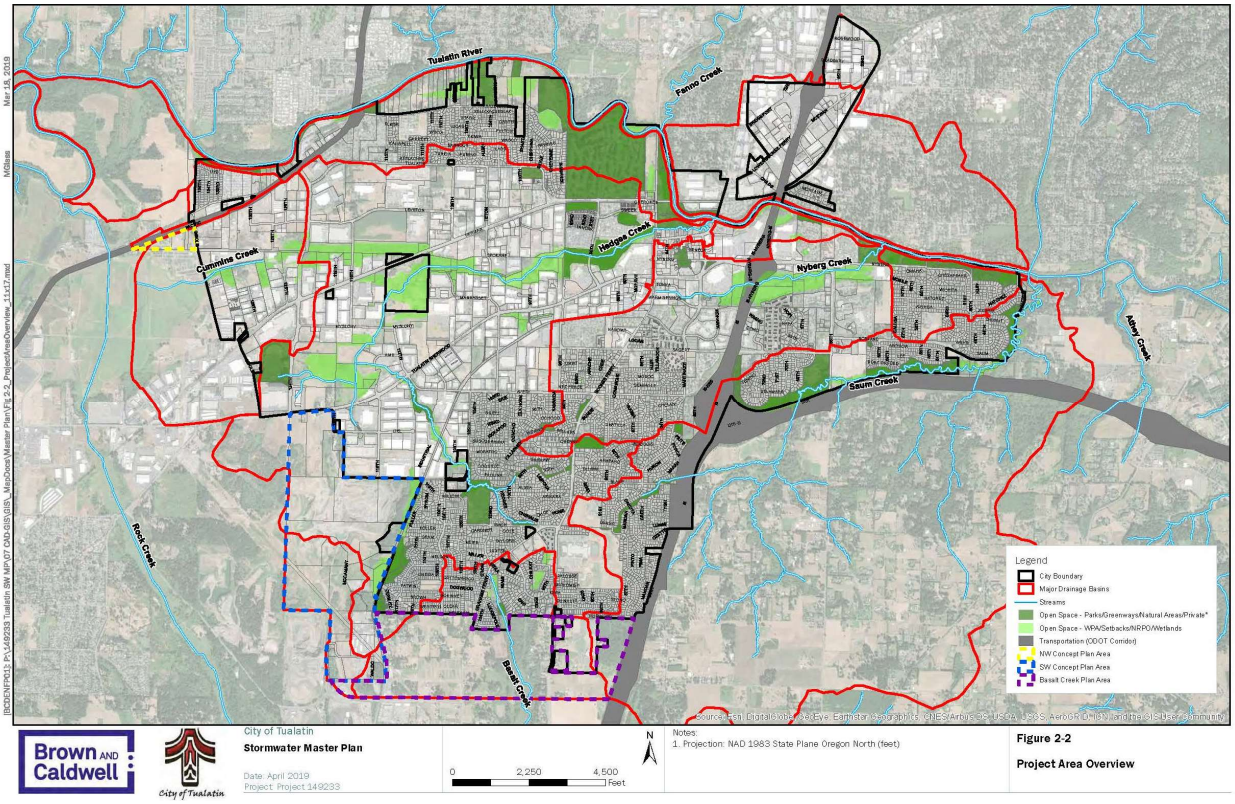
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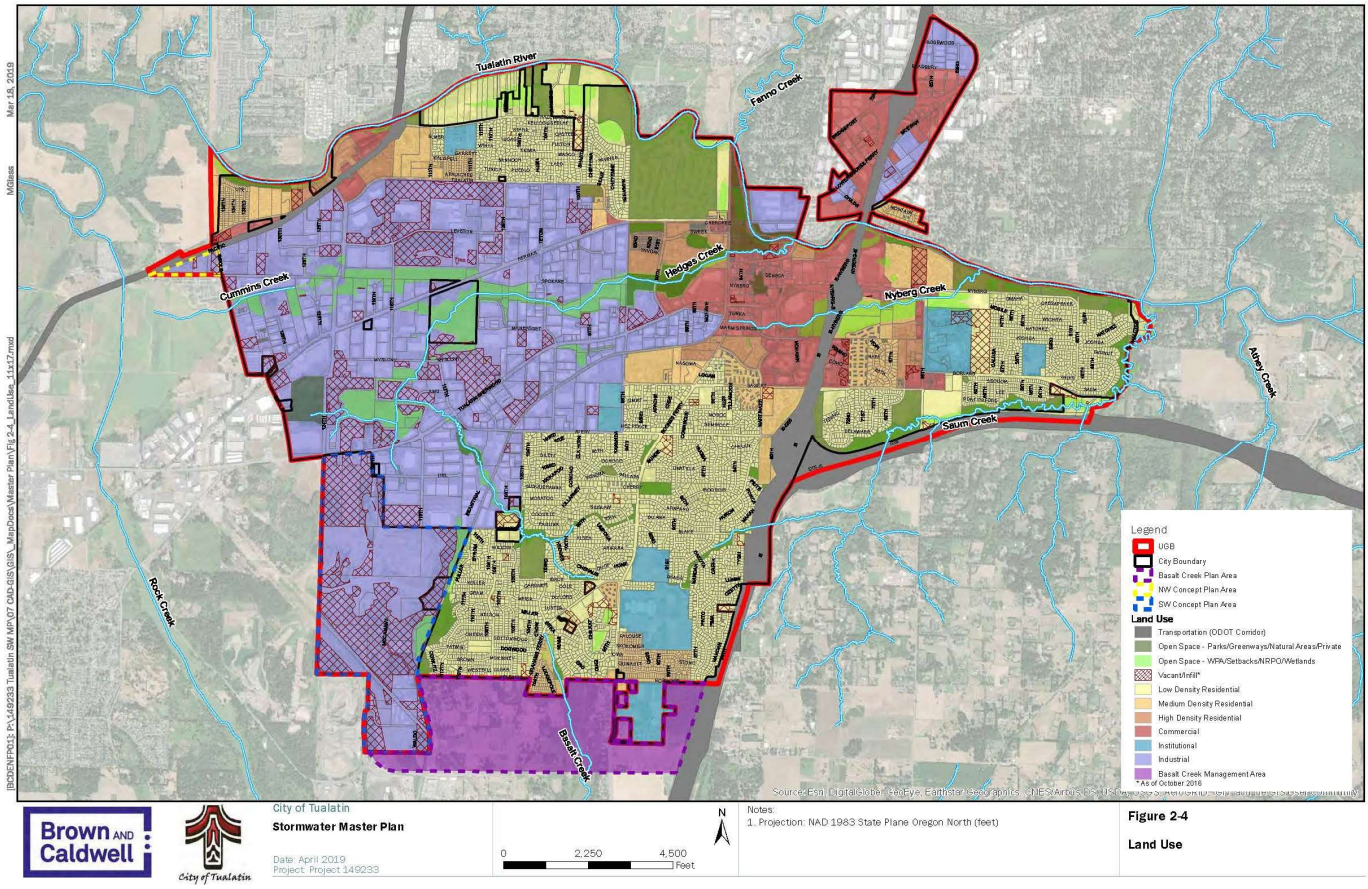

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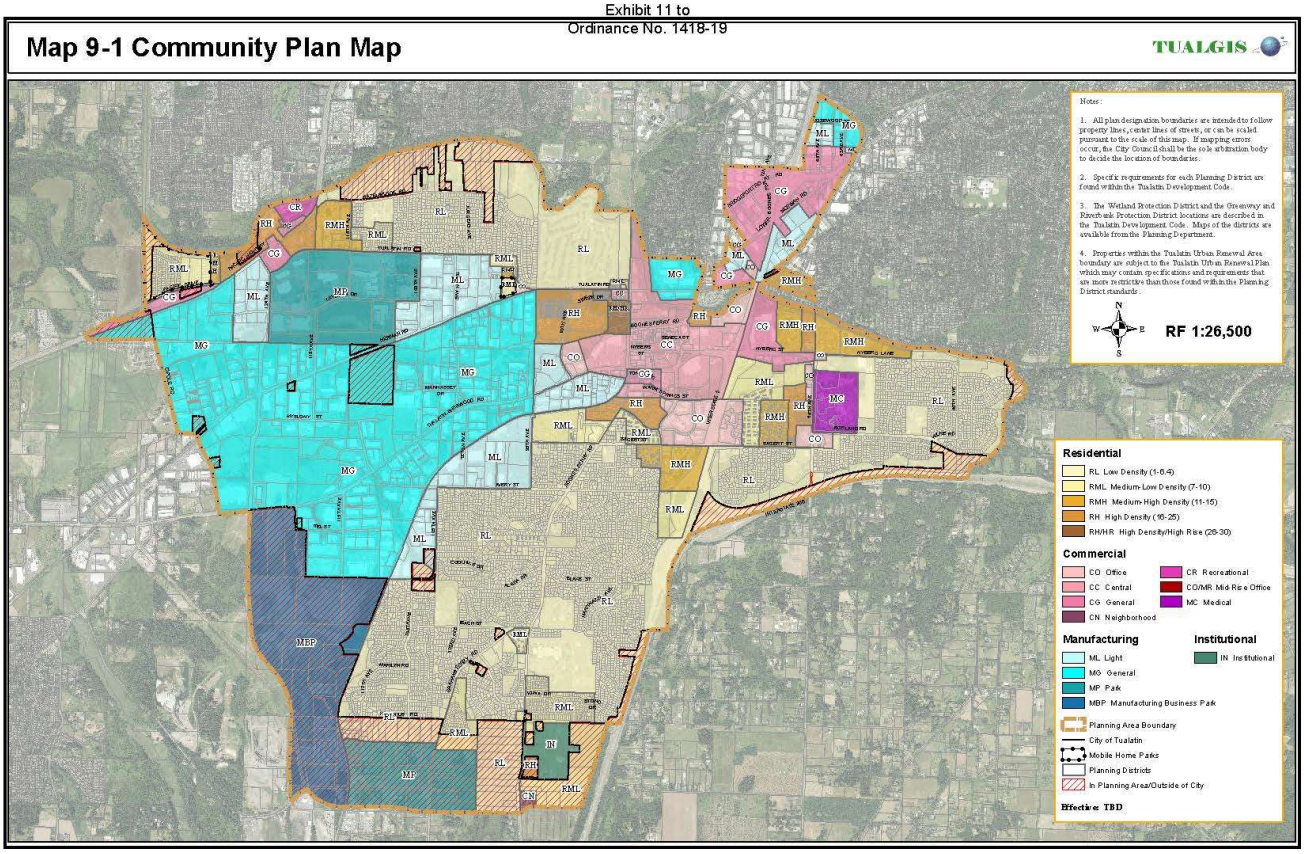

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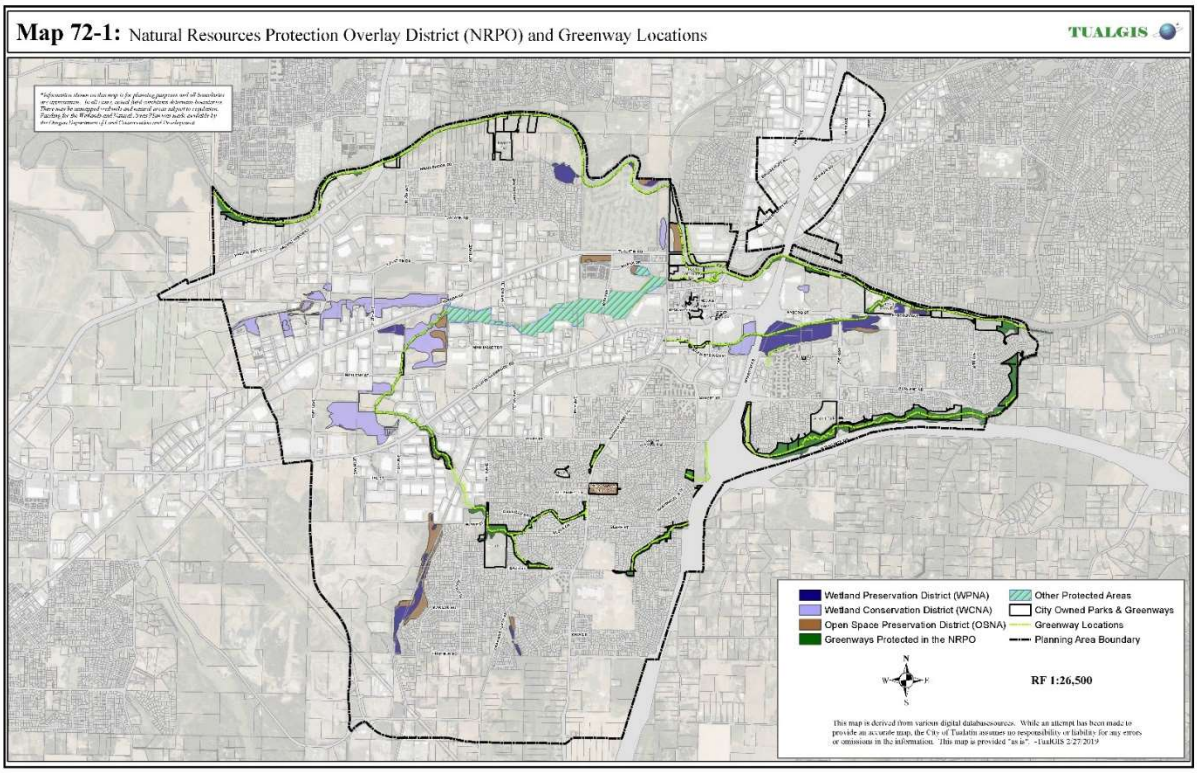
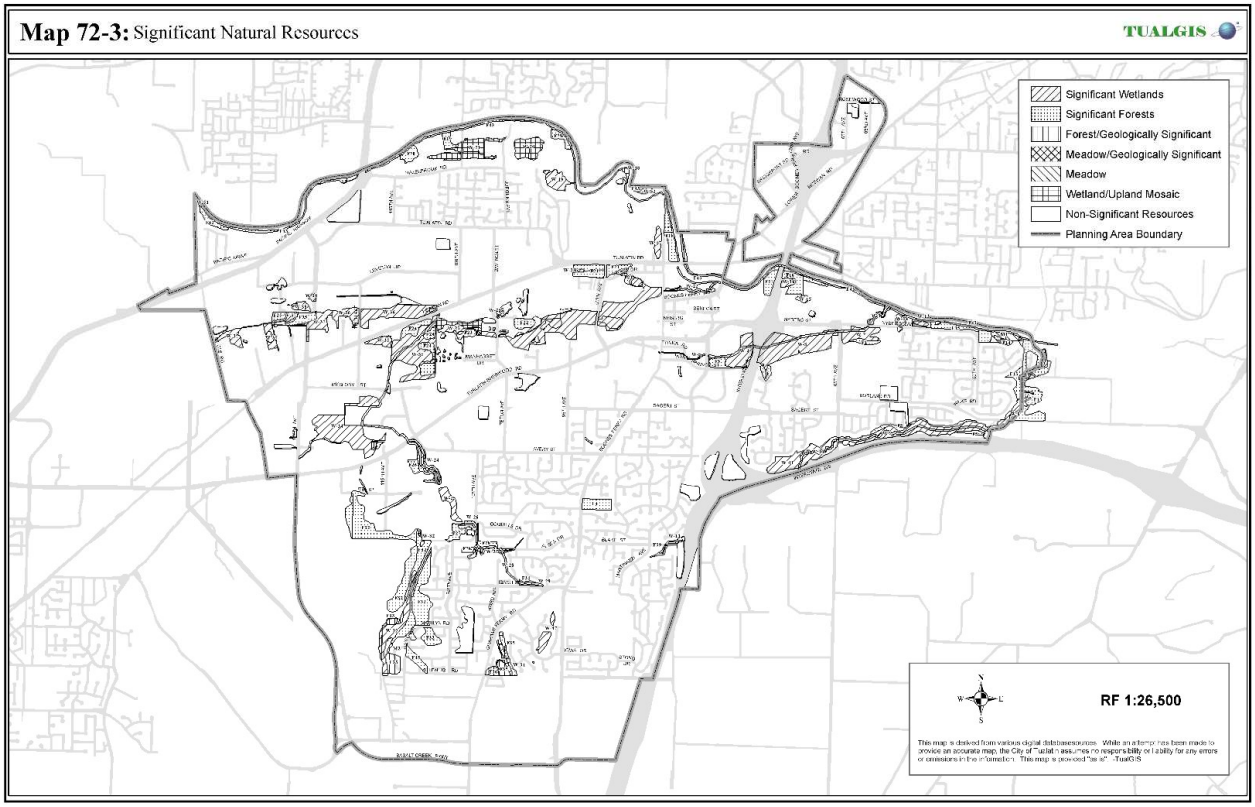




There are signficant inconsistancies in the level of acknolwedgement and identification of various Natural Resourcse which are required to be evaluated for potential impact within all Land Use Plans, and Planning Actions. The omission of pertenant information regarding the existance of multipe Natural Resources within the northern portion of the Basalt Creek Area as presented within the City's Governing Documents, and within the City's proposed Stormwater Master Plan update are notable.

However, the City included the Basalt Creek Concept Plan document adopted by the City in 2018, and utilized as a supporting document to the Basalt Creek Comprehensive Plan in 2019 did provide needed information as to Land Use evaluative factors such as the Natural Resources and contraints which exist within the Basalt Creek Area.

Examples of pertenent documentation from the Basalt Creek Concept Plan as to the quanity and quality of these Natural Resources is provided including a summary of a rational for inclusion of this information into the Basalt Creek Land Use Concept Plan.

Metro Title 13: Nature in Neighborhoods

Title 13 requires local jurisdictions to protect and encourage restoration of a continuous ecologically viable streamside corridor system integrated with upland wildlife habitat and the urban landscape. Metro's regional habitat inventory in 2001 identified the location and health of fish and wildlife habitat based on waterside, riparian and upland habitat criteria. These areas were named Habitat Conservation Areas.

Table 7 Title 13 HCA Categories with Acreage

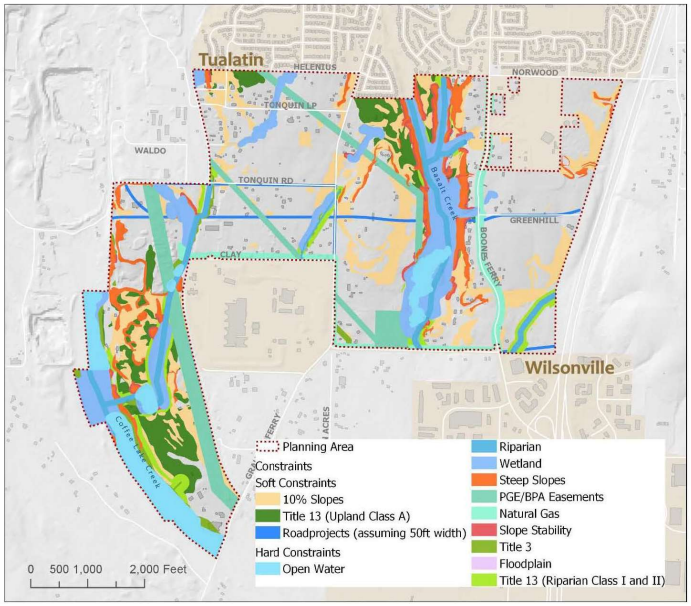
HCA Categories	Acres	Description
Riparian Wildlife Habitat Class I	130	Area supports 3 or more riparian functions
Riparian Wildlife Habitat Class II	31	Area supports 1 or 2 primary riparian functions
Riparian Wildlife Habitat Class III	7	Area supports only secondary riparian functions outside of wildlife areas
Upland Wildlife Habitat Class A	103	Areas with secondary riparian value that have high value for wildlife habitat
Upland Wildlife Habitat Class B	72	Area with secondary riparian value that have medium value for wildlife habitat
Upland Wildlife Habitat Class C	37	Areas with secondary riparian value that have low value for wildlife habitat
Designated Aquatic Impact	52	Area within 150 ft. of streams, river, lakes, or wetlands

Exhibit 2 to
Ordinance No. 1418-19

Environmental constraints are summarized below and unless otherwise noted were fully excluded from the developable land input in the scenario testing for the Basalt Creek Concept Plan:

- Open Water
- Streams
- Wetlands
- Floodplains (50% reduction of developable area)
- Title 3 Water Quality and Flood Management protections
- Title 13 Nature in Neighborhoods (20% reduction of developable area in areas designated Riparian Habitat Classes I and II)
- Steep Slopes (25% slopes and greater)

Figure 13 Natural Resources Map



It is unclear as to the rational for the omission of pertenent information required to be an evaluated compent in the development of all Land Use Plans and implmentation of Planning Actions have not been included within the proposed Stormwater Master Plan Update, nor in the City's Governing Documents as provided via the City's

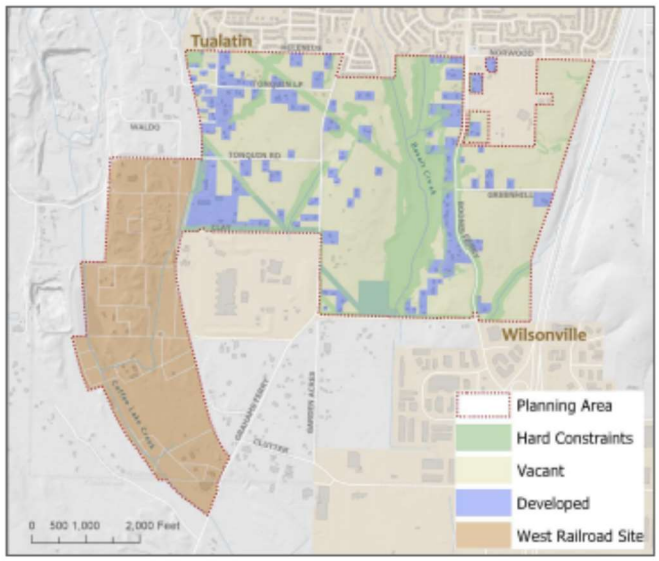
Exhibit 2 to
Ordinance No. 1418-19

The goal is to classify every parcel within the Planning Area into one of the categories described below:

Table 2 Land Supply within the Basalt Creek Planning Area by Type and with Acreage.

Land Supply by Type and Acreage		
Land Type	**Acres**	**Description**
Vacant Land	331	Unconstrained land that is ready to build with no major structures located on the site
Developed Land	125	Land already built upon which includes acreage covered by roadways
Constrained Land	153	Land that cannot be built upon due to environmental or other hard constraints
West Railroad Area	238	Excluded from development plan due to large amount of constraints and limited access
Total Land Supply	**847**	

Figure 6 Land Supply by Type.

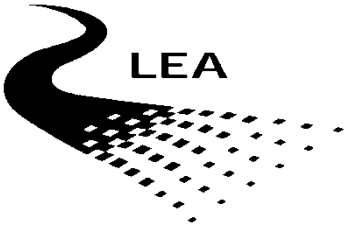


21

LEA Comments
On the Draft Tualatin Stormwater Master Plan
(Dated April 2019)

Prepared for
John and Grace Lucini
23677 SW Boones Ferry Road
Tualatin, Oregon
97140

Prepared by
Dave LaLiberte
Principal Engineer
Liberte Environmental Associates, Inc.
Wilsonville, Oregon



December 14, 2020

Draft Comments on the Tualatin Stormwater Master Plan (Draft, April 2019)

Due December 15, 2020, by Dave LaLiberte, P.E., Liberte Environmental Associates (LEA)

Summary Comments

These comments are based on the Draft Tualatin Stormwater Master Plan (SWMP) dated April 2019. Comments highlight issues in the Plan concerning Southwest Boones Ferry Road (BFR) south of Norwood Road, referred to as "BFR south".

Significant problems in the Plan for the BFR south area are: lack of identified stormwater facilities[1] omission of hydrologic and hydraulic modeling analysis[2], potential for mis-application of design alternatives[3], absence of stormwater problem acknowledgement and evaluation[4], no assessment of stormflows on steep slopes[5], effect of stormflows on the Basalt Creek Concept Plan are neglected[6], no existing and future development stormwater flows are compared[7], protection of natural resources is unclear[8], no designation of Capital Improvement Projects (CIPs[9]) in the BFR south area, and other Plan related problems.

Supplement documents collected by Liberte Environmental Associates (LEA) for these comments are identified as:

Supplement A - LEA Request for Tualatin SWMP Appendices

Supplement B - *Effects of SW Boones Ferry Road Construction (2013-2015): Stormflow Analysis for the Lucini Property* (LEA, November 2016).
This report is included in two parts: Supplement B Part 1 (Report) and Part 2 (Appendices) under separate cover because of their size.

Supplement C –David M. LaLiberte, P.E., Cumuli Vitae (CV)

David M. LaLiberte, P.E., Civil and Environmental Engineer licensed in the State of Oregon, has compiled these comments under contract with John and Grace Lucini (see Comment LEA2 below). Dave has over 30 years of experience in stormwater, water quality and design solution analysis. His education and experience are attached as Supplement C – Cumuli Vitae (CV).

[1] See Specific Comment LEA6.

[2] See Specific Comment LEA5.

[3] See Specific Comment LEA9.

[4] See Specific Comments LEA9, 11 and 14 as they pertain to the SWMP Table 3-1 and Figure 7-1.

[5] See Specific Comments LEA5, 7 and 8.

[6] See Specific Comments LEA6, 7, 8, 12 and 15.

[7] See Specific Comment LEA5.

[8] See Specific Comment LEA6.

[9] See Specific Comment LEA4, 9, 10 and 11.

Specific Comments

Comment LEA1. Many of the questions raised in these Tualatin SWMP comments focus on the area along BFR south. The BFR south area is shown within the city limits in all of the corresponding master plan figures. That is: Figures ES-1, 2-2 through 2-6 and 7-1.

Comment LEA2. Many of these comments refer to *Effects of SW Boones Ferry Road Construction (2013-2015): Stormflow Analysis for the Lucini Property* (LEA, November 2016), contracted by John and Grace Lucini, 23677 SW Boones Ferry Road, Washington County, Oregon, Tualatin, Oregon, 97140. This report is referred to as the "Stormflow Analysis" and is attached to these comments as Supplement B Part 1 (Report) and Part 2 (Appendices).

Comment LEA3. The Tualatin SWMP Appendices were obtained (Dec 10, 2020) from the City of Tualatin as part of this comment period ending December 15, 2020. A description of the SWMP Appendix request is contained in LEA Supplement A.

Comment LEA4. Some of the comments reference procedures in other areas of Tualatin. For example, Project Opportunity Area 6 – Alsea, aka Capital Improvement Project #17 (CIP17), calls for infiltration/retention that could be erroneously applied to the BFR south area. These procedures will potentially be applied to the hydrologic and hydraulic modeling in BFR south, and possibly any resulting CIP and stormwater design considerations.

Comment LEA5. The Tualatin SWMP does not include any hydrologic or hydraulic (H/H) modeling for stormwater flows in BFR south. The SWMP must include H/H modeling of the BFR south and affected areas such as the Basalt Creek corridor. Stormwater piping, channels, inlets, outfalls and other stormwater related facilities exist in BFR south (see LEA Supplement B Part 2: Appendices B through E) but are undocumented and un-analyzed in the SWMP. A perusal of the Tualatin SWMP Appendices A through C demonstrates that engineering data and analyses have all been omitted for the BFR south area. The SWMP must include stormwater facilities in Figure 2-6 – Stormwater System Overview for the BFR south and affected areas such as the Basalt Creek corridor. Comparison existing and developed future stormwater flow conditions are not performed. Evaluation of stormflows on hazardous steep slopes is omitted. Assessment of downstream conveyances below Tualatin outfalls is not conducted for the BFR south impacted areas.

Comment LEA6. The Tualatin SWMP does not include any wetlands in BFR south although they do exist. The SWMP Figure 2-5 - Stream Ownership omits the majority of stormwater impacted wetlands in Tualatin. Metro's Title 13 – Nature in Neighborhoods is intended to protect natural resources in urban areas but none of these opportunities are identified in the Plan for BFR south. The SWMP calls for protecting natural resources in subsections 1.1 Stormwater Master Plan Objectives and 2.2 Future Planning Areas. None of these opportunities are evaluated in the Plan for BFR south especially for the Basalt Creek Concept Plan area.

Comment LEA7. SWMP Figure 2-3 - Topography and Soils map contains too many TEXT overlays in the vicinity of Boones Ferry Road South of Norwood Road and the Lucini Property.

The sensitive steep slope topography in this vicinity can't be read. The "Boones Ferry" and "Basalt Creek" labels need to be moved from this visually important area of this map.

Comment LEA8. SWMP Table 2-1 (Page 2-3) in combination with Figure 2-3 - Topography and Soils suggests that infiltration is not a likely future runoff design solution in the BFR south. This is particularly important since this area is perched above steep slopes draining to Basalt Creek. This area is also above drinking water wells in the area including the Lucini property.

Comment LEA9. When the SWMP Appendix A - CIP Fact Sheets documentation is accessed for the Siuslaw Water Quality Retrofit, which includes the Alsea Road area (CIP17), there is no mention of infiltration in the design. But Table 3-1, Opportunity Area 6, aka CIP17, plainly refers to infiltration. The potential application of infiltration at the CIP17 site is of concern because it is inappropriate based on poorly draining soils (see next comment). As it relates to the BFR south area, applying the same inappropriate infiltration design approach will potentially cause significant problems (see next comment).

Comment LEA10. The BFR south area needs to exclude infiltration facilities as an alternative to reducing surface flow. Figure 7-1 (Page 3-2) does not show any CIP in the vicinity of BFR south although potential problems exist (see LEA Supplement B Part 2: Appendix A.2).

Comment LEA11. SWMP Figure 7-1 does show the location of CIP17, which is additionally described in Table 3-1 - City of Tualatin Stormwater Project Opportunities Number 6 as Alsea/BF Rd and 99th/Siuslaw Greenway. This CIP17 would drain to Hedges Creek and is comprised of "C" type soils as identified by Hydrologic Soil Group (see Section 2.4 -Soils, Table 3-1 and Figure 2-3). "C" type soils poorly drain and do not support functional infiltration facilities. The concern is that the "C" type soils above the Lucini property may be subjected to the same contradictory conclusion as the CIP17 site. This problem of misapplying design solutions may also exist for other conditions because BFR south has not been evaluated by Tualatin for hydrology and hydraulics as well as CIP.

Comment LEA12. SWMP Figure 2-6 - Stormwater System Overview omits the stormwater inlets, piping and other stormwater facilities in and around BFR south. The Stormwater Outfalls to the Basalt Creek Management Area and Greenhill Lane are not indicated (see LEA Supplement B Part 2: Appendix A.2). Downstream channels below the outfalls are not shown.

Comment LEA13. The SWMP Section 9 has incomplete References to Clean Water Services (CWS). The CWS document date and title are not current. For consistence in citing standards, the CWS reference must read "Design and Construction Standards" dated December 2019.

Comment LEA14. Nowhere in the Tualatin SWMP is a Stormwater Field Monitoring or Sampling program identified or proposed. This is despite the fact that Table 3-1 indicates numerous flooding and water quality problems resulting from stormwater flows. Table ES-1 – Capital Project Summary is being proposed without monitoring and sampling program basis.

Comment LEA15. There is no assessment of peak and average stormflows on the steep slopes, which constitute the west flank of the BFR south area. These Tualatin stormflows discharge to the Basalt Creek Concept Plan area and their existence is not established in the SWMP. Stormflows on these steep slopes have excessive peak and average flow velocities, which cause erosion (see Supplement B Part 1 Analysis Report Section 4. Stormflow Hydraulics and Part 2 Appendices A2 and I).

Comment LEA16. The Tualatin SWMP makes no provisions for temporary stormwater storage and discharge facilities when phasing-in large developments such as the Root property in BFR south. The concern is that arbitrary storage and discharge locations could occur in the interim, before the final stormwater facility is operable. It needs to be specified in the Tualatin SWMP that new construction developments must use stormwater facilities and outfalls consistent only with its final specifications and drawings.

Supplements

Supplements Contents

Supplement A

LEA Request for Tualatin SWMP Appendices

Subject:
Re: Review of Draft Tualatin SWMP by LEA
From:
Dave LaLiberte <dave@ee83.com>
Date:
12/10/2020 10:33 AM
To:
Hayden Ausland <hausland@tualatin.gov>
CC:
"grluci@gmail.com" <grluci@gmail.com>

Thanks Hayden.

The files downloaded just fine.

Dave

On 12/10/2020 10:05 AM, Hayden Ausland wrote:
> Good morning Dave,
>
> Due to large files sizes, I've had to upload the appendices to an online file sharing system. The appendices come in two separate files and I'm hoping both hyperlinks below will work for you. Please let me know if you have any issues or problems with accessing these files.
>
> - Appendices A-D: https://cityoftualatin-my.sharepoint.com/:b:/g/personal/hausland_tualatin_gov/EYCg3fA-dVpMrk_014xs9KwB0o-idA1Eo1MdnnKw6fufZw?e=u0CnNH
>
> - Appendices E-I: https://cityoftualatin-my.sharepoint.com/:b:/g/personal/hausland_tualatin_gov/ESQumWDmfCdGrAIq_nTWEgQBNGIFcmZuGrb670B-KzxMow?e=jwjpn9
>
> Regards,
>
> Hayden Ausland, EIT, CPSWQ
> Engineering Associate - Water Quality
> City of Tualatin
> P 503.691.3037 | C 971.978.8217
>
> -----Original Message-----
> From: Dave LaLiberte <dave@ee83.com>
> Sent: Thursday, December 10, 2020 8:55 AM
> To: Hayden Ausland <hausland@tualatin.gov>
> Subject: Review of Draft Tualatin SWMP by LEA
>
> Hi Hayden,
>
> I am an Engineer working with John and Grace Lucini reviewing the Draft Tualatin Stormwater Master Plan (April 2019). I need to obtain the Appendices that are referenced in the report but not included by the City in the report. These are:
>

> Appendix A: CIP Fact Sheets
>
.....
.....
> A-1
> Appendix B: Data Compilation and Preliminary Stormwater Project Development (TM1) ... B-1 Appendix C: Hydrology and Hydraulic Modeling Methods and Results (TM2)
> C-1
> Appendix D: Nyberg Creek Flood Reduction Modeling (TM3)
..... D-1 Appendix E: Capital Project Modeling
Results.....
.....
> E-1
> Appendix F: Stream Assessment (TM4)
>
.....
.....
> F-1
> Appendix G: CIP Detailed Cost Estimates
.....
.....
> G-1
> Appendix H: Staffing Analysis
>
.....
.....
> H-1
> Appendix I: Clean Water Services Review Comments
..... I-1
>
> Please let me know at your earliest convenience when I may receive these documents for my review.
>
> Thanks,
> David (Dave) LaLiberte, P.E.
> LIberte Environmental Associates, Inc. (LEA) WIlsonville, Oregon
> 503.582.1558
>

Supplement B: Part 1 – Analysis Report

Included under separate cover because of size.

Effects of SW Boones Ferry Road Construction (2013-2015): Stormflow Analysis for the Lucini Property (LEA, November 2016)

Contracted by John and Grace Lucini, 23677 SW Boones Ferry Road,
Washington County, Oregon, Tualatin, Oregon, 97140.
This report is referred to as the "Stormflow Analysis" throughout these comments.

Supplement B: Part 2 – Rpt Appendices

Included under separate cover because of size.

Appendices - *Effects of SW Boones Ferry Road Construction (2013-2015): Stormflow Analysis for the Lucini Property* (LEA, November 2016)

Supplement C

CV for David M. LaLiberte, P.E.

David M. LaLiberte, P.E.
Principal Engineer

Summary:

Mr. LaLiberte's qualifications comprise over 30 years of experience in surface water quality analysis and evaluation, hydrology and hydraulics, stormwater system analysis, biological criteria for water and sediments, environmental quality control, sewage and industrial pollution abatement, effluent treatment alternatives and design, discharge requirements for NPDES wastewater and stormwater permits, mixing zone assessment, water intake and thermal discharges and environmental design. He has managed and performed on many environmental project teams assisting state and federal agencies, as well as municipal and industrial facilities, and non-governmental organizations in Oregon, California, Washington, Alaska and throughout the USA.

Education: M.S., Civil Engineering, Portland State University, 1990
B.S., Civil Engineering, Portland State University, 1988

Registration: Professional Engineer, Oregon (Civil and Environmental)

Liberte Environmental Associates, Inc. Experience:

Water Quality Evaluation of the Stormwater Management Plan (SWMP) Proposed for The Dalles, Oregon Wal-Mart Super Center for Karl Anuta, Attorney representing the plaintiff Citizens for Responsible Development in The Dalles. The effect on receiving water quality from stormwater discharges from a large retail facility was assessed in a report submitted to the Circuit Court of the State of Oregon. The detailed Expert Report was developed identifying the discharge conditions, storm flows based on local precipitation, storm flow mapping and routes, potential treatment levels using mechanical filtration and swales and other WQ issues. Water quality effects on receiving wetlands and tributaries of the Columbia River were investigated because of increased solids, toxics and bacterial loadings to be released from the proposed facility. Expert Testimony was provided in court supporting the evaluation report. This project was conducted in 2012 and 2013.

NPDES Mixing Zone and Water Quality Evaluations for Trident Seafoods Corporation, Alaska – Effluent characterization, discharge system configuration, receiving waterbody consideration, biological criteria and mixing zone evaluations were performed. Acting as subconsultant for Steigers Corporation. Facility operations generating wastewater discharges include: stormwater runoff inflow, seafood-processing wastewater, non-contact cooling water, treated sanitary effluent and other sources of industrial effluents. The MZ evaluations conformed to NPDES permit requirements and mixing zone guidelines for Trident facilities in Alaska at Akutan and Sandpoint. This project was performed from 2010 through 2012.

NPDES Water Quality Technical Assistance and Alternative Design Evaluations for North Slope Borough, Alaska – Evaluation of US Environmental Protection agency NPDES permit for discharges from oil and gas facilities including discharges from: stormwater system,

drilling operations, cooling water intake and discharge, storage facilities, pipelines, gravel pits, treated sewage discharges, maintenance requirements, and other types of discharges. These discharges include stormwater affected deck drainage, cooling water intake and thermal discharges, treated sewage discharges and drill cuttings disposal to marine sediments. Water quality evaluation of the Camden Bay Exploration Plan for the Beaufort Sea of the Arctic Ocean was conducted for discharge impacts on the marine aquatic environment and relative to BOEMRE/MMS EIS. Analysis of the Chukchi Sea Exploration Plan of the Arctic Ocean was conducted for discharge impacts on the marine aquatic environment and relative to BOEMRE/MMS EIS. These evaluations were based on water quality and treatment alternatives assessment, and comparison to biological criteria. This project was conducted in 2010 through 2011.

Aurora STP NPDES Assessment for CRAG Law Center - Review of documents related to the design, operation and monitoring of the Aurora, Oregon Sewage Treatment Plant. Documents include: NPDES permit; stormwater inflow and infiltration, design related plans and specifications including recent headworks unit design; discharge monitoring reports, irrigation using effluent reuse, biosolids monitoring reports; effluent reuse plan and additional information relating to the design and operation of the Aurora STP. The review provided a basis for assessing potential causes of facility underperformance and discharge violations. An STP site visit was performed during this project to investigate facility aeration treatment, reuse equipment and capacities. This project was conducted from 2008 through 2010.

Review of the Medford STP Nutrient Related Discharges, for CRAG Law Center in Portland, Oregon. Evaluation of treatment facility and nutrient discharges from the Medford Sewage Treatment Plant (STP) into the Rogue River in Jackson County, Oregon. Existing discharges were evaluated for nutrient concentrations based on the discharger's CORMIX mixing zone analysis. Facility costs to upgrade for nutrient removal, including nitrogen and phosphorus, were developed. This project was performed in 2015 through 2017.

Evaluation of Sewage Treatment Plant Discharges to the Illinois River, Oregon, for the City of Cave Junction. Mixing zone analysis using EPA CORMIX was performed to determine the effects of temperature and other discharge parameters on river quality. Hydraulic analysis of river flow conditions was conducted to support the MZ analysis particularly for critical summertime conditions. This project was performed in 2013 through 2014.

Draper Valley Farms, Inc. Chicken Processing Industrial Discharge to Municipal Sewage System, for Smith and Lowney, PLLC representing the plaintiff Waste Action Project Citizens Suit. The effects on sewage treatment processes were evaluated relative to high biochemical oxygen demand (BOD) from Draper Valley Farms (DVF). A key focus of this analysis was the operational consequences of excess BOD on treatment in the aeration basins of the Mt. Vernon, WA municipal facility. The pass-through impact on the Skagit River was assessed for increased BOD from the industrial discharge. This project was conducted in 2014 and 2015.

Coal Discharge Investigation for the Columbia River and Selected Tributaries, for the Sierra Club supported by the Columbia Riverkeepers. Prospective coal samples were collected from sediments along 18 miles of the Columbia River located at the confluences of selected tributaries from Rock Creek (RM 150.0) to the White Salmon River (RM 168.3). Sampling locations corresponded to Burlington Northern Santa Fe (BNSF) railroad crossings at or near

tributaries. The distribution of coal discharges into the Columbia River were mapped. Samples were analyzed by a third-party laboratory. Sample parameters were: moisture content, fixed carbon, volatile matter, ash and total sulfur. This was based on ASTM Proximate Analysis plus sulfur. Coal identification, to determine potential sources of coal, was completed for this investigation with the support of supplemental analysis advised by the laboratory. Supplemental analysis included ASTM D-388 requirements for heating value, sulfur in ash, free swelling index (carbonization physical characteristic) and classification of coal by rank. A deposition was provided in 2016 to defend the results of coal report. This project was performed in 2012 through 2013 and 2016.

Oregon Department of Environmental Quality - WQ Technical Assistance: Industrial discharge effluent evaluation of the Port of St. Helens, Oregon ethanol and power generating plants. Outfall mixing zone analysis with design assessment was developed. Provided water quality evaluation and environmental engineering assistance to the Oregon DEQ. Work included receiving WQ analysis, operations review, thermal discharge evaluation, biological criteria comparison and mixing zone analysis. NPDES requirements were based on EPA *Quality Criteria for Water*, EPA *Technical Support Document for Water-based Toxics Control* (TSD) and State Administrative Rules. The mixing zone models CORMIX and PLUMES were evaluated relative to the cases at hand. Potential discharge chlorine residual and temperature requirements were evaluated. The effect of potential temperature Total Maximum Daily Loads (TMDLs) in the Columbia River was also evaluated. This project was performed in 2003 through 2004.

Wauna Pulp and Paper Mill Outfall 003 and Columbia River Field Survey Locations and Sampling Results for Columbia Riverkeeper including sampling. In coordination with staff and volunteers, water samples were collected in the vicinity of the paper mill outfall for laboratory analysis. The physical outfall mixing zone was mapped using in-situ Hydrolab water quality measurements taken with depth for temperature, dissolved oxygen, pH, conductivity and turbidity. Laboratory samples were analyzed for potentially toxic concentrations of dioxins, total residual chlorine (TRC) and metals including aluminum, arsenic, copper, iron, lead, mercury and zinc. Additional information sources were investigated using the Oregon DEQ permit file and including the mill's NPDES permit and the mutual agreement and order (MAO) compliance schedule. This project was conducted in 2004.

Review of Draft and Final NPDES General Permit Cook Inlet, Alaska Oil and Gas Operators for Cook Inletkeeper - Evaluation of the draft National Pollutant Discharge Elimination System (NPDES) permit proposed by the U.S. Environmental Protection Agency (EPA) authorizing wastewater discharges from oil and gas exploration, development, and production facilities into Cook Inlet, Alaska. There are 18 existing facilities discharging into Cook Inlet with new facilities capable of being brought on line under the draft permit. Technical analysis of these discharges, which can contain toxic and bioaccumulating contaminants, was performed relative to the potential to adversely affect Cook Inlet water quality and sediments. This project was conducted from 2007 through 2009.

Water Quality Evaluations and NPDES Permit Requirements for the four (4) WES publicly owned treatment works (POTW) discharges (2000-2004, 1999) performed for Water Environment Services, Clackamas County, Oregon. These included evaluation of discharge

effects on the Willamette River (2 outfalls), Sandy River and a tributary of the Clackamas River. Field water quality sampling including detailed outfall mixing zone investigations. Water quality assessment was conducted relative to effluent temperature, disinfection and ammonia requirements to protect fish and aquatic organisms. Effluent mixing zone simulation and analysis was performed. Treatment alternatives analysis and costing were undertaken to ensure existing and future discharge conditions were protective of river WQ. River outfall piping alignment and diffuser design was provided including construction management of river installation.

Expert Analysis of Surimi and Seafood Industrial Wastewater Discharge into the Skipanon and Columbia Rivers, Oregon (2003-2006) was conducted for the National Environmental Law Center. Water quality analysis evaluating the effects of seafood and surimi wastewater discharges on the Skipanon and Columbia Rivers, Oregon. Field data collection was performed to support water quality technical analysis. Investigation included mixing zone analysis of historic seafood and surimi wastewater discharges into the Skipanon River, and new discharges to the Columbia River. Evaluations were performed for various discharge scenarios, monitoring and sampling requirements, potential treatment options, and alternative outfall pipeline alignments. Effluent and instream dissolved oxygen (DO), biochemical oxygen demand (BOD), ammonia, hydrogen sulfide, nutrients nitrogen and phosphorus, oil and grease, and total suspended solids (TSS) were evaluated in detail. Expert witness analysis and reporting was provided.

Westport Sewer Service District, Clatsop County, Oregon - MZ Evaluation with Alternative Disinfection (2003-2004). This project assessed water quality and mixing zone effects of disinfected treated wastewater discharged to Westport Slough, a segment of the Columbia River. Chlorine residual reduction or elimination was a key evaluation concern to satisfy Oregon DEQ requirements. Comparisons of alternative disinfection treatment scenarios and costs were performed that would allow the discharger to continue to meet WQ requirements. Ultraviolet disinfection, chlorination-dechlorination, and outfall diffuser feasibility were all investigated with comparison costs. In particular, the existing chlorination system was evaluated relative to how easily it could be retrofitted to function with dechlorination. The alternatives analysis aided the discharger in making a determination as to course of action.

Public Employees for Environmental Responsibility preparation of report Effect On Puget Sound Chinook Salmon of NPDES Authorized Toxic Discharges as Permitted by Washington Department of Ecology (2005-2006). Industrial, municipal, stormwater and general facility NPDES permits were reviewed and analyzed relative to the presence of toxic contaminants in Puget Sound. Toxic contaminants evaluated included metals, hydrocarbons, and chlorinated hydrocarbons.

Citizens for Responsibility v. Izaak Walton League, Circuit Court of the State of Oregon for Lane County, Expert Analysis for Plaintiff evaluating the effects of lead contamination from shooting range into South Fork Spencer Creek (2004-2005). Sediment sampling was conducted for metals including lead, arsenic, copper and polynuclear aromatic hydrocarbons (PAH). This information was evaluated for pollutant distribution and transport from the contaminated site and relative to upstream and downstream properties. Expert testimony was given at trial in 2004. Expert analysis and testimony was also provided in the subsequent equitable relief phase. Participation in the settlement conference was also provided.

Canby Utility Board - Industrial Discharge from Water Treatment Plant Study and Predesign (1999-2000) addressing Molalla River water quality issues with Oregon DEQ including treatment alternatives: filter backwash sedimentation basin, disinfected effluent de-chlorination, river infiltration gallery design, intake piping system, and sediment and riparian effects mitigation.

Water Environment Services of Clackamas County Hoodland WWTP Outfall Project Descriptions and Costs (2000); FEMA engineering, budgeting and negotiations is intended to reimburse Clackamas County for flood damage to their wastewater treatment plant outfall on the Sandy River. Numerous regulatory issues affected costs including an ACE 404 permit for instream construction work, NMFS ESA Section 7 Consultation, and NEPA documentation including environmental and biological assessments.

City of Bremerton, CSO Projects --A comprehensive review of the City of Bremerton, Washington collection system model was performed (2000). Hydraulic modeling was used to update information for the main sewer lines, combined sewer overflows and discharge conditions. Selected CSO reduction alternatives were evaluated and implemented. The purpose of the CSO reduction alternatives was accomplished and potential early action projects were identified. These projects yielded substantial CSO reductions while being quickly implemented at reasonable cost. Revised CSO baselines were produced conforming to Washington Department of Ecology requirments for Bremerton's 17 CSO outfalls. Expert witness testimony supporting the findings of the CSO baselines was provided in a hearing at the Federal Court in Seattle.

Previous Experience (Montgomery Watson Americas)
In addition, I have performed as project manager and/or project engineer on the following undertakings:

- Project Manager/Engineer evaluating stormwater hydrologic, hydraulic and quality conditions in Balch Creek Basin for the City of Portland, Bureau of Environmental Services, Oregon. The Army Corps of Engineers (COE) hydrographic model, (HEC-1) and hydraulic model (HEC-2) were applied to establish design criteria for flood magnitude, stormwater detention, water quality facility hydraulics and fish passage culvert hydraulics.

- Project Engineer evaluating stormwater hydrologic, hydraulic and quality conditions in Clackamas County for the CCSD#1. The graphically enhanced model, XP-SWMM, was used to develop the hydrology and hydraulics for the Kellogg and Mt. Scott Creeks basins in CCSD#1.

- *City of Portland, Bureau of Environmental Services* included Water Quality Evaluations and Diffuser Designs (2000-2001, 1997,1994) for wet and dry weather flows with chlorine residual discharges, and wet weather stormwater runoff for suspended solids and metals with potentially affected agencies including US Corps of Engineers, Oregon Division of State Lands, NOAA Fisheries, Oregon Dept. of Fish and Wildlife and US Fish and Wildlife.

- Project Manager/Engineer for the Kensington Mine in Alaska. PLUMES mixing zone modeling was used to evaluate the conditions affecting this industrial outfall. Sedimentation basin design for removal of mine tailings prior to discharge to Lynn Canal.

- City of Bremerton Corrosion and Fluoridation Facility detention facility design. An on-site detention facility was designed pursuant to Washington Department of Ecology's requirements as specified in the *Puget Sound Stormwater Management Manual*.

- Project Engineer for Water Environment Services of Clackamas County Kellogg Creek WWTP Odor Control Project. Participated as team engineer to design malodorous air collection system for headworks, primary clarifiers, secondary clarifiers, and dissolved air floatation thickening (DAFT) building. Malodorous air was passed through a biofilter for treatment.

- Project Engineer for Crescent City, California WWTP outfall mixing zone analysis. A major consideration of this project was developing alternative outfall pipeline alignments and an effective discharge location to optimize mixing.

- Project Manager/Engineer for the Hoodland WWTP Outfall project, which includes outfall diffuser design and construction (1998) in a sensitive Sandy River corridor.

- Project Task Manager—Jefferson County (Birmingham, Alabama) stream water quality analysis was performed relating to recommended NPDES permit limits for dry and wet weather conditions. Collection system analysis and treatment plant design constraints are also considerations in this potentially very large project.

- Project Engineer using Pizer's HYDRA, data compatible with the City of Portland, Oregon's XP-SWMM format, to evaluate gravity flow conditions in the proposed dual outfall system consisting of two connected parallel outfall systems over one mile each and including wet weather (CSO) hydraulic structures such as flow control structures, mix boxes and outfall diffusers.

- *City of Madison, Wisconsin* - stream water quality modeling analysis of POTW discharge relative to NPDES permitting requirements (1995-1996). A key objective of this study was restoration of base flows to the Sugar River Basin using high quality POTW effluent. An EPA QUAL2E model was developed for Badger Mill Creek and the Sugar River. Physical, chemical and biological simulation included temperature, algae, dissolved oxygen (DO), biochemical oxygen demand (BOD), total suspended solids (TSS) and ammonia. Particular attention was focused on the inter-relationships between temperature, climatological conditions, stream shading and channel conditions, DO, BOD and algal activity. Temperature and discharge point design alternatives were investigated using the model. It was demonstrated that, with minimal WWTP facility upgrading and cost, the City could beneficially discharge high quality effluent to surface streams. This assurance was primarily accomplished through detailed modeling analysis and model approach consensus building with regulators (WDNR). Some keys to the success of this project were in identifying important NPDES permitting issues, evaluating them with the model, recommending permit effluent limits and negotiating with regulators.

- *Washington Beef, Incorporated* in Toppenish, Washington – Development of an NPDES permit under the direction of the EPA (1993-94). The project objective was development of receiving water based permit effluent limits for this food-products industry discharger using dissolved air floatation (DAF) treatment. Important project elements were: interfacing with regulatory (EPA Region 10 and Washington Ecology) and public agencies; evaluation of the effect of effluent parameters on receiving water using modeling analysis (EPA QUAL2E and EPA CORMIX); and providing long-term treatment system design recommendations. Fishery issues were of key concern for this project. Receiving water modeling was used to analyze the discharge effects of on stream dissolved oxygen and temperature on the aquatic environment. The inter-relationship between temperature, climatological conditions, stream shading and channel conditions, DO and algal activity were thoroughly investigated. Temperature and discharge design alternatives were evaluated using the water quality model.

Previous Experience (Other Firm)

- *Oregon Department of Environmental Quality and Oregon Department of State Land Conservation and Development* - Non-point Source Pollution Control Guidebook for Local Government (1994) evaluation of non-point runoff pollution and control measures including detention facilities, sedimentation basins, water quality ponds and marshes; City of Portland, Bureau of Environmental Services (1989-90) - evaluated effects of combined sewer overflows and stormwater discharges on the Columbia Slough of the Columbia River. Hydrologic and water quality modeling support was provided including sampling.

- Project Engineer for NPDES waste discharge permit review and support related to permit effluent limits for the City of Vancouver, Washington. Two tracer dye studies were performed at their two municipal WTP outfalls. The key project objective was to determine actual outfall dilution and provide a physical, receiving water basis for setting permit effluent limits. The mixing zone evaluations showed that actual dilution was greater than estimated by the regulatory agency (Washington Department of Ecology) and higher permit effluent limits were recommended.

- Project Task Manager and Engineer for a comprehensive hydraulic and water quality compliance evaluation and recommendations. The City of Portland's Columbia Boulevard WTP, the largest municipal discharger in Oregon (300 MGD), required assistance in meeting their water quality compliance needs. A highly detailed Columbia River tidal flow evaluation was performed in the outfall vicinity to serve as the basis for the mixing zone simulation and diffuser design. EPA CORMIX, and the EPA supported PLUME model family (including UDKHDEN), were used in the modeling analysis. A thorough investigation of water quality compliance options led to regulatory (ODEQ) approval of the multi-port diffuser design, the lowest cost compliance option.

- Project Engineer for Kehei, Hawaii Water Reuse Facility (1992). Participated as team engineer to design upgrades to the facility's aeration basin including aeration blower design and aeration basin air piping with small bubble diffusion.

- Project Engineer for the Columbia Slough flow augmentation project for the City of Portland Bureau of Environmental Services, Oregon. Dynamic water quality modeling (COE CE-QUAL-W2), water quality sampling, and hydrodynamic sampling were

performed for this dynamic "freshwater" estuary. This project was driven by the City's need to evaluate the impact of water quality limited conditions on the Columbia Slough and was coupled to the City's EPA SWMM model. The objective was to propose best management practices (BMP) and evaluate design alternatives. The effect of temperature on the aquatic environment was examined in detail. The sophisticated two-dimensional (vertical and longitudinal) dynamic model evaluated temperature regimes and their effect on in-stream water quality. In-stream temperature design alternatives were investigated via simulation of climatological conditions, stream shading and channel conditions, algal processes and kinetics, and instream DO.

- Project Engineer conducting stormwater hydrologic and hydraulic simulation to evaluate flood effects for the City of Beaverton, Oregon. HEC-1 hydrographic modeling was conducted to generate peak flow values from surface runoff for existing and future conditions. HEC-1 model results for 2, 5, 10, 25, 50 and 100-year storm events were supplied to the HEC-2 model for detailed hydraulic analysis. The HEC-2 modeling was required as part of a cost assessment that included potential flood damage of key storms.

- Project Manager and Engineer for a mixing zone evaluation and diffuser design for the City of Albany, Oregon. An outfall pipeline and 40 MGD capacity multi-port diffuser was designed for this municipal discharger using EPA CORMIX. Simulation was performed to optimize the diffuser design. The DEQ approved design will meet water quality compliance needs for chlorine and ammonia.

- Project Engineer mixing zone modeling and design for the City of Gresham, Oregon. Alternative disinfection and multiport diffuser design were evaluated. Modeling (EPA CORMIX) was utilized to optimize multiport diffuser design for this WWTP outfall. Simulation offered the flexibility to test numerous design conditions.

- Project Manager and Engineer for a mixing zone evaluation and diffuser design for the Unified Sewerage Agency, Washington County, Oregon. Analysis of four municipal treatment facility outfalls was conducted according to DEQ NPDES requirements. Model simulation was performed to determine revised wet weather chlorine residual effluent limits. The models were calibrated to dye study results. Wet weather stream surveys were also performed at two sites, Hillsboro and Forest Grove. Alternative disinfection was evaluated and diffuser design recommendations were also made.

- Project Manager and Engineer for outfall mixing zone simulation and water quality compliance evaluation for the Oak Lodge Sanitary District, Oregon. As part of NPDES permit requirements, model simulation was performed to characterize the municipal discharge-mixing zone. Available dilution values and recommended permit effluent limits for chlorine, ammonia and metals were derived from the study.

- Project Manager for a mixing zone evaluation and diffuser recommendations for Electronic Controls Devices, Incorporated. A mixing zone field evaluation of this circuit board manufacturer's discharge was performed. Very low amounts of organics and metals from the facility discharge needed to be discharged to a small stream in a responsible manner. This study illustrated that the discharge was well within compliance requirements.

Previous Experience (Portland State University Research Assistant)
City of Portland, Bureau of Environmental Services (1989-90) - evaluated effects of combined sewer overflows and stormwater discharges on the Columbia Slough of the Columbia River. Hydrologic and water quality modeling support was provided including field sampling.

- Project Engineer for evaluation of fish screen approach velocities and hydraulic design analysis for the Eugene Water and Electric Board, Leaburg, Oregon. The effects of downstream baffles on velocities through fish screens at the Leaburg Power Canal Facility were evaluated for fish passage.

- Project Engineer evaluating combined sewer overflows (CSO) and stormwater discharges on the Columbia Slough. Hydrologic and water quality modeling, using the City's EPA SWMM model data, of urban runoff from sub-basins discharging to the Columbia Slough was supplied as input to the Army Corps of Engineers in-stream surface water model, CE-QUAL-W2. This study was performed for the City of Portland, Bureau of Environmental Services in Oregon.

- Project Engineer for the South Slough National Estuarine Reserve Hydrodynamic and Water Quality Study, State of Oregon, Division of State Lands, Charleston, Oregon. Dynamic water quality modeling, water quality sampling, and hydrodynamic sampling were performed for this southern section of the Coos Bay estuary. Tracer (rhodamine) dye study results were used to calibrate the Army Corps of Engineers CE-QUAL-W2 model.

- Project Engineer for design of stream flow measurement structures on two tributaries of the South Slough National Estuarine Reserve (State of Oregon, Division of State Lands) in Charleston, Oregon. Analysis and design of stream flow measurement structures was required as part of a study assessing the hydrology and hydraulics of this pristine estuary.

- Project Engineer for a hydrologic, hydraulic and water quality assessment of Smith and Bybee Lakes in Portland, Oregon. Lake sampling and modeling was performed. The objective of the study was to evaluate the potential for water quality impairment due to the close proximity of St. John's municipal landfill and Columbia (North) Slough inflow. A hydraulic model of possible flow control structures was incorporated into the Army Corps of Engineers CE-QUAL-W2 hydrodynamic and water quality model. Recommended actions were advanced for improving lake water quality based on simulation scenarios. This study was conducted as part of a larger study for the Port of Portland, Metropolitan Service District, and City of Portland, Bureau of Environmental Services, Portland, OR.

- Project Manager and Engineer assessing the water quality impact of urban runoff from the Leadbetter storm outfall discharge to Bybee Lake. This study was conducted for the Port of Portland, Portland, Oregon.

- Project Engineer assisting in initial field work and model development for assessing impact of landfill leachate on surrounding surface waters. Conducted for the Metropolitan Service District (METRO) as part of the St. Johns Landfill closure.

Publications and Presentations

Stream Temperature Trading, Presented at the Pacific Northwest Pollution Control Annual Conference, 2001, Bend, Oregon.

Winter Temperature Gradients in Circular Clarifiers (January 1999), *Water Environment Research*, **70**, 1274.

Wet Weather River Diffuser Port Velocities: The Energetic Debate, Presented at the Pacific Northwest Pollution Control Annual Conference 1998, Portland, Oregon.

Near Field Mixing and Regulatory Compliance Implications Presented at Portland State University, February, 1998.

Whither the Wet Weather Flow, Presented at the Pacific Northwest Pollution Control Annual Conference 1997, Seattle, Washington.

Supplement B: Part 1 – Analysis Report

Included under separate cover because of size.

Effects of SW Boones Ferry Road Construction (2013-2015): Stormflow Analysis for the Lucini Property (LEA, November 2016)

Contracted by John and Grace Lucini, 23677 SW Boones Ferry Road,
Washington County, Oregon, Tualatin, Oregon, 97140.
This report is referred to as the "Stormflow Analysis" throughout these comments.

Effects of SW Boones Ferry Road Construction (2013-2015)

Stormflow Analysis for the Lucini Property

Washington County, Oregon

Prepared for

John and Grace Lucini

23677 SW Boones Ferry Road

Tualatin, Oregon

97140

Prepared by

Dave LaLiberte

Principal Engineer

Liberte Environmental Associates, Inc.

Wilsonville, Oregon

LEA

November 1, 2016

1. Summary

Beginning in about 2015, Washington County, Oregon re-routed and increased the portion of stormwater flows passing through its road culvert (Outfall #5). These increased stormflows are associated with the County's SW Boones Ferry Road (BFR) Improvement Project. A location map is presented in Figure 1 showing the Lucini property relative to the County's road project. The re-routed portion and increased stormwater ultimately discharge onto the Lucini property[1]. Figures 2 and 3 show the stormwater conveyance through the steeply sloped Lucini property, which is composed of pipes and ditches. The photos in Appendix A document drainage condition problems on the Lucini property associated with the road project.

Increased portions of stormflows are now routed to the Lucini property but the County did not acknowledge this condition in its planning document, which is identified throughout this report as the *Drainage Report* (2013).[2] Figure 4 shows the erroneous subbasin boundaries used by the County in its Drainage Report. Figure 5 shows the necessary corrections to the faulty subbasin boundaries. These corrected subbasin boundaries demarcate a smaller actual subbasin acreage draining to the Lucini property, which results in lower stormflows than those projected by the County for ORIGINAL conditions prior to 2013. Appendix B provides the Drainage Report figures pertaining to overall subbasin boundaries for "Existing Conditions Hydrology", called throughout this report as the ORIGINAL conditions; and the "Proposed Conditions Hydrology", i.e., IMPLEMENTED conditions.

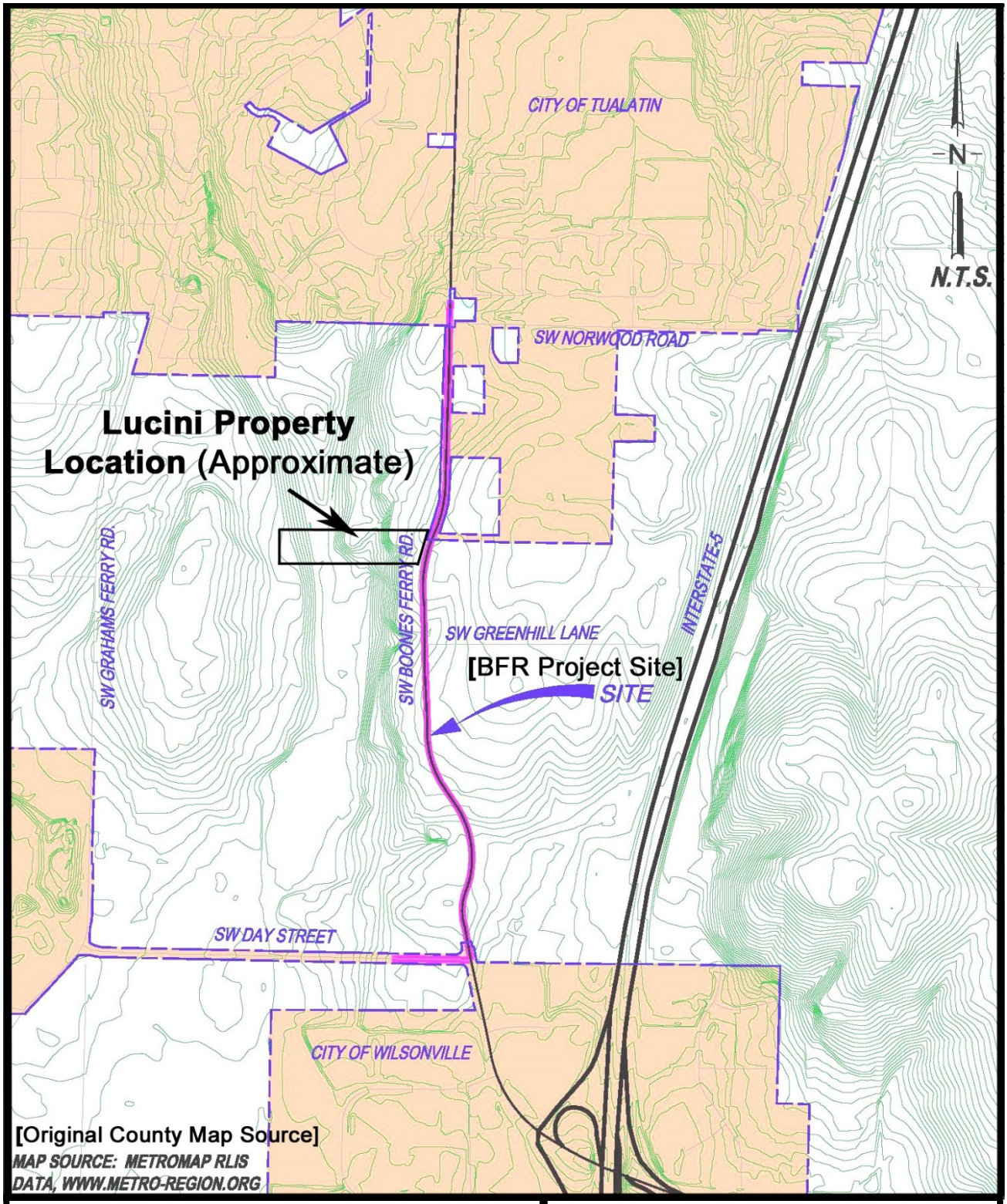
Photos and Drawings Documentation

The County claims in the Drainage Report that the ORIGINAL Boones Ferry Road above the Lucini property prior to 2013 was curbed and included storm sewers. However, the photos in Appendix A1 show that there are no curbs or storm sewer inlets. The County's mischaracterization of stormflow conditions, and depriving the public of accurate land contour information, allowed the County to shift a portion of flows from the adjacent and sensitive Greenhill Lane subbasin and into the subbasin above the Lucini property generating significant problems with erosion and flooding.

Appendix C contains the "Existing Conditions Plan" (June 2012) from the County's 70 percent drawings submittal related to the subbasin above the Lucini property. The drawings contain no elevation labeling nor do the unlabeled contour lines support the County's claim that the majority of stormflows in this area originally ended up passing onto the Lucini property.

[1] John and Grace Lucini property is located at: 23677 SW Boones Ferry Road, Tualatin, Oregon, 97140.

[2] Drainage Report (2013), Storm Drainage Report – SW Boones Ferry Road (SW Day Road to SW Norwood Road, by MacKay Sposito for Washington County, Capital Project Management (CPM), Final January 31, 2013.



Background Image from Washington County's *Storm Drainage Report for SW Boones Ferry Road* Appendix A2 - Site Map figure on PDF page 27 of 152 (January 31, 2013).

Figure 1. Location Map Showing Lucini Property Overlay and Proximity to the SW Boones Ferry Road Improvement Project

These problems were not corrected in the construction plans for the project related to the subbasin above the Lucini property as shown in the final as-built drawings (November 2014) available in Appendix D. The County's "Erosion and Sediment Control Plan" from the as-built drawings as it relates to the subbasin draining to the Lucini property are contained in Appendix E. These drawings show that the original contours allowed stormflow to enter the road right-of-way and then flow south into the adjacent Greenhill Lane subbasin, not the subbasin draining into the Lucini property.

The storm flow increases overwhelmed the existing downstream conveyance system causing substantial erosion and flood damage to the property in May 18, 2015. Photos of flood damage are presented in Appendix A2. Still more flood damage is threatened in future years as the County has not protected the Lucini property from increased flows in an area that is rapidly urbanizing. Appendix A3 contains photos of erosion damage on the Lucini property resulting from increased stormflows that erode soil, widen the conveyance ditch into the adjacent embankment and expose tree roots.

In its Drainage Report, the County has departed from its stated stormwater guidance identified in Clean Water Services (CWS).[3] In particular, the County did not carry-out a Downstream System[4] evaluation for the Lucini property as necessitated in its guidance. This evaluation process is used to determine the potential effects of increased storm flows on the property. The effects of ongoing and future development in the drainage above the Lucini property are neglected in the County's Drainage Report for the ORIGINAL (pre-2013) and IMPLEMENTED (2015) subbasin conditions.

The County disregarded increased stormflow effects, above the Lucini property, resulting from more intense ongoing and future urbanization in the subbasin. Near-term increases in land use intensity were also neglected as the Drainage Report did not acknowledge the County's own construction impact on the subbasin above the property. Increased stormflows, generated from the more intensely urban "Institutional" category associated with the City of Tualatin, are entirely overlooked by the County.

Purpose of this Stormflow Analysis

This Stormflow Analysis report is performed in lieu of Washington County carrying-out an accurate assessment of ORIGINAL (prior to 2013) and IMPLEMENTED (2015) drainage conditions upstream and through the Lucini property.

The U.S. Army Corps of Engineers (Corps) model, HEC-HMS[5], is used in this analysis to evaluate rainfall hydrology. Model inputs include precipitation time distributions and amounts, drainage area sizes, land use and soil conditions, runoff time-of concentration,

[3] CWS (2007), *Design and Construction Standards for Sanitary Sewer and Surface Water Management*, for Clean Water Services (CWS), Hillsboro, Oregon, June 2007.

[4] Ibid, see Chapter 2, Page 12 under the 2.04.2 subsection heading "3. Review of Downstream System", i.e., this is subsection 2.04.2.3.

[5] HEC refers to the U.S. Army Corps of Engineers Hydrologic Engineering Center; and the HMS refers to the Hydrologic Model System.

stormwater routing and other parameters are considered for evaluating storm flows onto and through the Lucini property.

The hydrologic analysis performed in this report was first adjusted to the Washington County hydrologic results presented in its Drainage Report for the corresponding Soil Conservation Service (SCS) Type IA 25-year design storm. Then the corrected subbasin areas and land use conditions were supplied to the HEC-HMS hydrologic model so that realistic storm flow conditions could be simulated.

The County's Drainage Report did not perform a hydraulic analysis to assess the effects of stormflows above and through the Lucini property. The Corps hydraulic model, HEC-RAS[6], is used in this analysis to overcome the lack of hydraulic information. Peak flows from 25-year rainfall runoff, generated by the hydrologic model HEC-HMS, are supplied as inputs to the HEC-RAS hydraulic model. HEC-RAS is run in steady state mode, i.e., peak stormflows are held constant for each run. This process allows for the consideration of the impact of stormflows on piping, ditches and other features of the drainage system. Specifically, the hydraulic effects resulting from stormflows passing through the drainage system subbasins, stormflow routing, ditches, culverts (piping), land use conditions, ditch and piping materials, and other parameters can be assessed.

Hydrologic Modeling Results

The hydrologic simulation inputs and stormflow results generated by HEC-HMS for the subbasin above the Lucini property are contained in Appendix H.

The hydrologic modeling considered a number of probable realistic cases unexamined in the Drainage Report for the 25-year design storm. The ORIGINAL subbasin configuration as depicted in Figure 4, which is corrected as shown in Figure 5. The hydrologic model was then run with the more accurate drainage area as the ORIGINAL subbasin configuration. This comparison demonstrates that the realistic (actual) peak flow value of 0.89 cubic-feet-second (cfs) discharging to the Lucini property is 31.5 percent less (see the Figure 6 column chart) than peak flow of 1.17 cfs claimed in the County's Drainage Report. This is critically important because the County is inflating the ORIGINAL stormflows and makes it seem like the ORIGINAL condition had higher flows. This is an adverse condition for the Lucini's because the Drainage Report analysis later claims to reduce the ORIGINAL stormflow amount that it previously inflated as part of the IMPLEMENTED project.

Stormflow values are graphically compared in the Figure 6 through Figure 8 column charts. Figures 9 and 10 show the subbasin boundaries for IMPLEMENTED conditions, which permanently re-rout stormflows from a portion of the Greenhill Lane subbasin ultimately onto the Lucini property

Still greater stormflow inaccuracies are introduced by the County because it did not consider fundamental increases in impervious land areas resulting from ongoing and future land use. This is a basic necessity identified in the CWS (2007) guidance, which

[6] HEC-RAS refers to the River Analysis System hydraulic model developed by the Corps.

the County is claiming it is relying upon. It can be seen that ongoing land use and future full build-out development conditions result in much larger stormflows being discharged to the Lucini property.

Ongoing land use considerations include road construction activities and large facility support conditions necessitated by the Horizon Community Church. These land use conditions can be seen in the aerial view presented in Figures 13 and 14. Appendix F also displays additional land use characteristics in the subbasin above the Lucini property. Road construction activities result in soil compaction from heavy equipment movement and parking as well as materials staging and other provisions necessitated by road construction. Figures 13 and 14 also show the sprawling Horizon Community Church complex that relies in part on the subbasin draining to the Lucini property. The church facilities include a driveway, service roads, vehicle parking, facility support buildings and other impervious features affecting runoff.

When realistic ongoing land use is considered, stormflows discharged to the Lucini property are projected to inflate to 92.1 percent of the ORIGINAL conditions (see middle column in Figure 7). When stormflows from ongoing land use are compared to IMPLEMENTED conditions, the Lucini property is projected to receive 204.7 percent of the realistic (actual) original stormflows based on implemented conditions (see middle column in Figure 8).

The majority of the subbasin above the Lucini property is slated for intense future development allowed within the 20-year future development (FD20) planning. The County disregarded this condition in its Drainage Report and is subjecting the Lucini property to significant burdens from future erosion and flooding. When realistic future full build-out development is considered, stormflows discharged to the Lucini property are projected to inflate to 220.2 percent of the ORIGINAL conditions (see right column in Figure 7). When stormflows from full build-out conditions are compared to IMPLEMENTED conditions, the Lucini property is projected to receive 414.1 percent of the realistic (actual) original stormflows based on implemented conditions (see right column in Figure 8).

Hydraulic Modeling Results

The hydraulic modeling presented in this analysis evaluates the ORIGINAL and IMPLEMENTED piping and ditches on the Lucini property (see Figures 2 and 3) as well as the County's system above the Lucini property (see Figures 11 and 12).

Figure 11 shows the hydraulic conditions for connecting piping and the original road culvert locations for the ORIGINAL configuration. Figure 12 illustrates the IMPLEMENTED hydraulic conditions consisting of connecting piping and the new culvert comprising the County's Outfall #5. Figure 12 also shows the juxtaposition of the old and new Boones Ferry Road that hydraulically affects flows to the Lucini property.

The hydraulic simulation inputs and results, including stormflow water surface profiles and velocities, generated by HEC-RAS are available in Appendix I. The hydraulic

modeling assessing pipe and ditch flow conditions shows that excessive stormflow velocities are created on the steep slopes of the Lucini property. The estimated land profiles of the storm water conveyance is illustrated in Figure 15 and Appendix I).

Stormflow velocities shown in Figure 16, for a range of land use conditions and the ORIGINAL subbasin configuration, demonstrate many instances where values exceed velocities that cause erosion on the Lucini property. These velocities exceed 4.0 feet-per-second (fps) and cannot be maintained. This deleterious situation requires measures to reduce peak flows coming through the County's culvert (Outfall #5) and onto the Lucini property. The physical conditions of excessive and increased streamflow on steep slopes existing on the Lucini property, and compared to the ORIGINAL conditions, were not evaluated by the County in its Drainage Report.

Stormflow velocities shown in Figure 17, for a range of land use conditions and the IMPLEMENTED subbasin configuration, demonstrate that values exceed velocities that cause erosion on the Lucini property for the ongoing land use and full build-out development conditions. These velocities exceed 4.0 feet-per-second (fps) and cannot be maintained. This harmful condition requires methods to reduce peak flows, including sediment and debris transport, passing through the County's culvert and onto the Lucini property. The physical conditions of excessive and increased streamflow on steep slopes existing on the Lucini property, and compared to IMPLEMENTED conditions, were not evaluated by the County in its Drainage Report.

Planning Level Costs

Three levels of estimated capital costs are related to remedying problems on the Lucini property resulting from the County's SW Boones Ferry Road widening project:

1) Immediate Shorter Term Remedy using Orifice Plate ($4,500 to $6,500 installed)
2) Ongoing Flow and Water Quality Control Facilities ($12,157 to $17,560 installed)
3) Longer Term Detention/Retention Facilities (to several hundred thousand dollars)

These capital costs include equipment, materials, labor, and construction contractor overhead and profit. Design, engineering and construction management costs are separately considered. An estimate of 20 percent of the final construction capital cost for this relatively small scale project is considered. For the high range estimates above, the design cost estimates are $1,300 for number 1 and $3,572 for number 2.

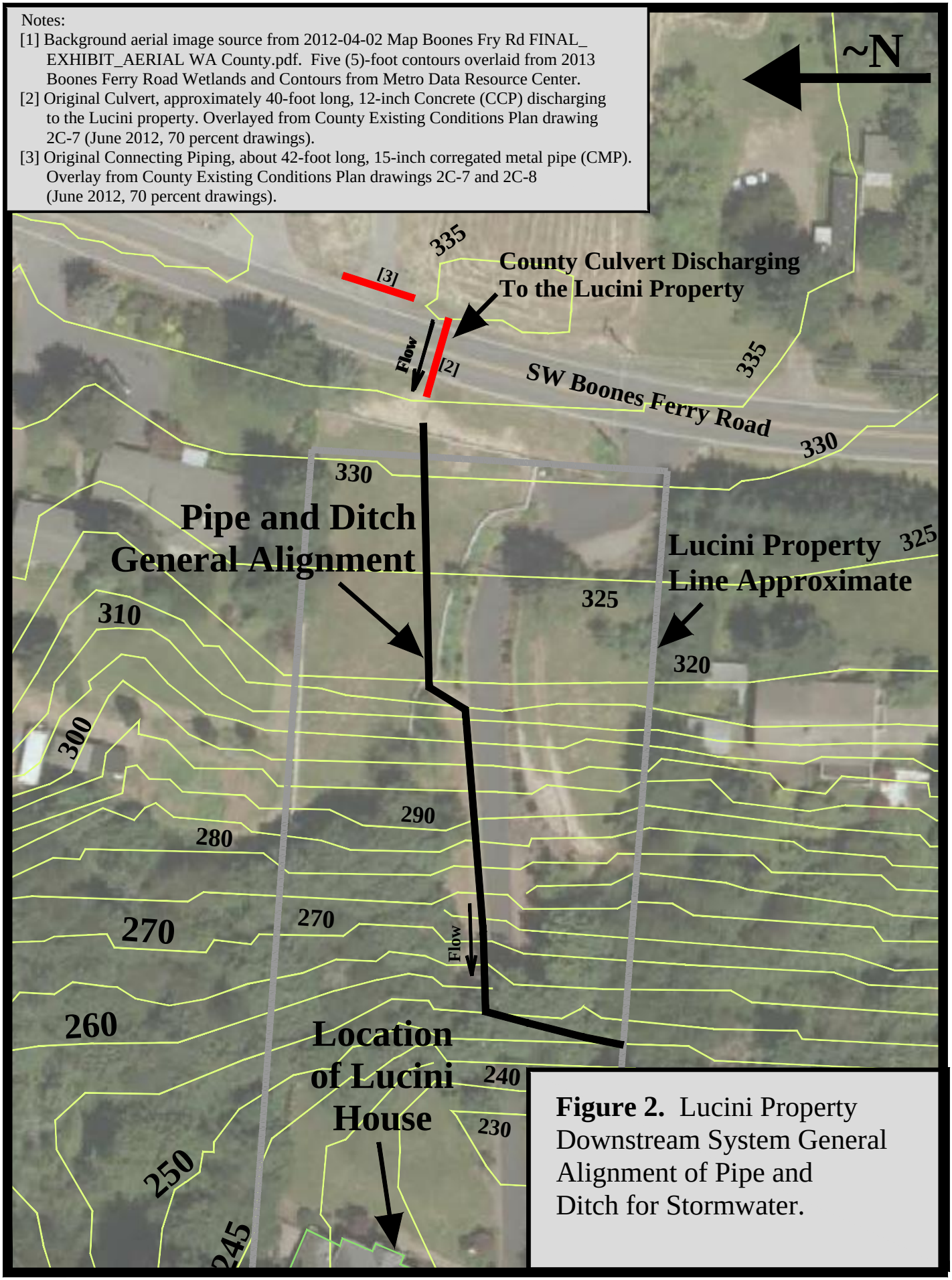


Figure 2. Lucini Property Downstream System General Alignment of Pipe and Ditch for Stormwater.

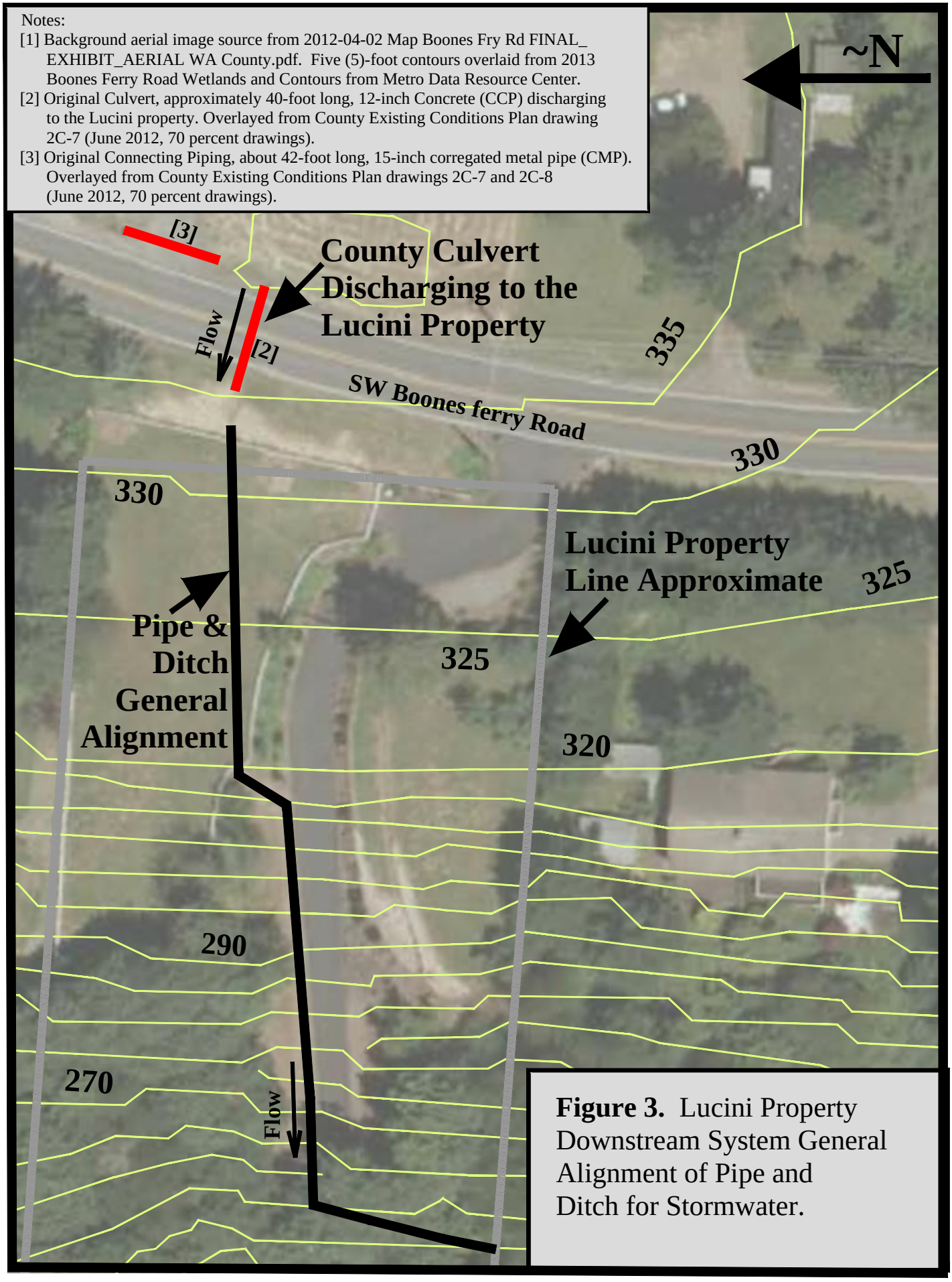


Figure 3. Lucini Property Downstream System General Alignment of Pipe and Ditch for Stormwater.

2. Background

This investigation begins with the ORIGINAL subbasin (Figures 4 and 5) stormflow conditions affecting the Lucini property and resulting from the SW Boones Ferry Road improvements project (approximately years 2013-2015). Unlike the County's Drainage Report (2013) that only considered very limited runoff hydrology, this study includes comprehensive stormflow hydrology and hydraulics comprised of the pipes and ditches upstream of, and on, the Lucini property.

Hydrology and Hydraulics

The hydrologic analysis performed in this report employs the U.S. Army Corps of Engineers (Corps) model called HEC-HMS.[7] The LEA model analysis was adjusted to the Washington County results for the initial corresponding design storm. The same Soil Conservation Service (SCS) design storm event[8] was used for both the Washington County and the LEA hydrologic analysis presented in this report.

The Washington County storm flow results affecting the Lucini property are compared in Tables 2 and 3, and are based on the SCS 25-year design storm event for ORIGINAL and IMPLEMENTED stormflow conditions, respectively.

For Original conditions, the County stated a peak storm flow of 1.17 cubic-feet-per-second (cfs) for the design storm event. The LEA hydrologic model analysis employing HEC-HMS produced the same storm flow results as the County. This LEA-County results calibration used the same model inputs as the County[9], for the supposed ORIGINAL drainage area, runoff curve numbers, and other corresponding parameters.

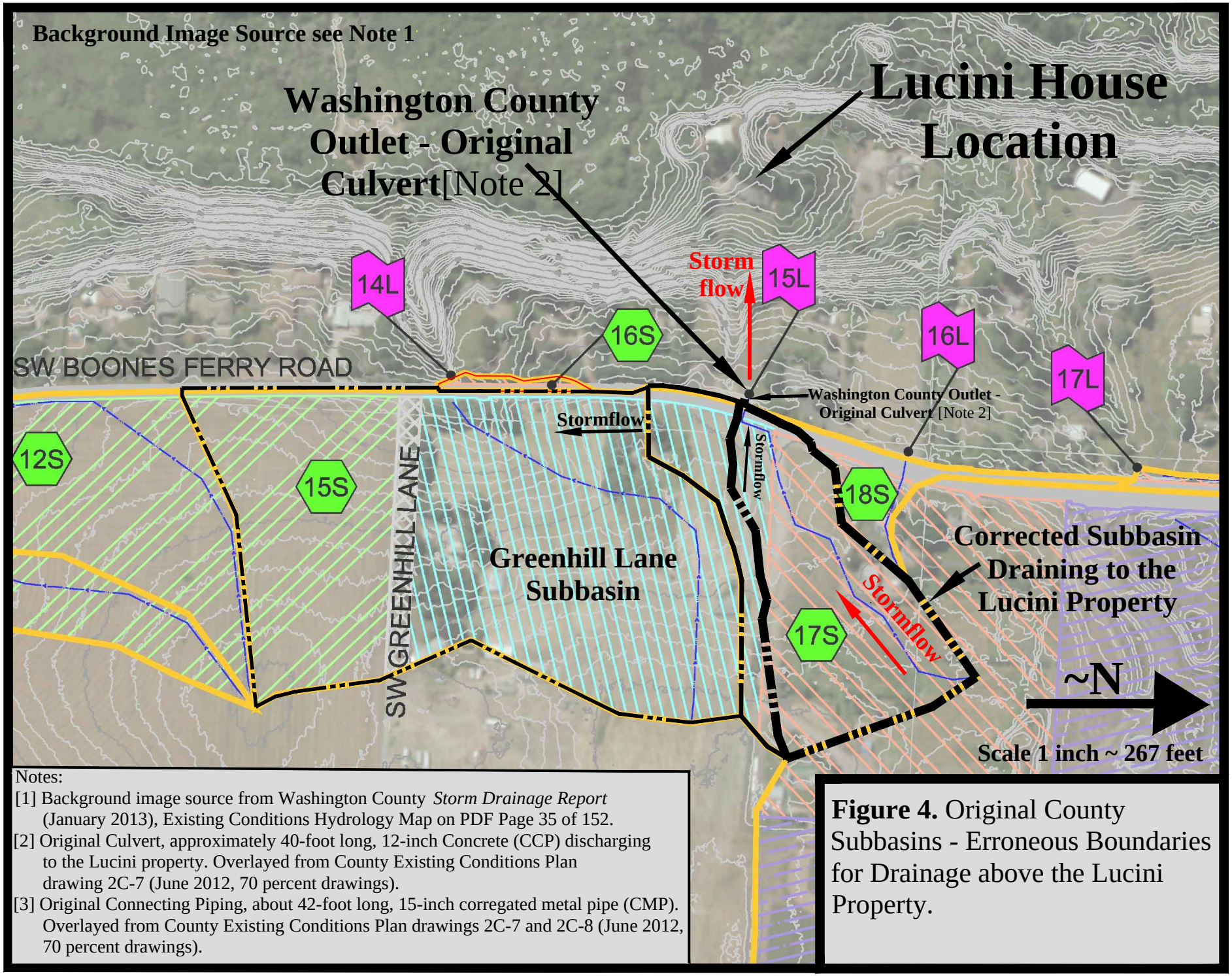
For IMPLEMENTED conditions, the County projected a peak storm flow of 0.85 cfs for the design storm event. The LEA hydrologic model analysis, employing HEC-HMS, produced the same storm flow results as the County. This LEA-County results calibration used the same inputs for the Implemented drainage area, runoff curve numbers, and other corresponding parameters.

Photos of the Lucini Property taken during the May 18, 2015 storm event are shown in Appendix A2. These photos demonstrate the excessive flow velocities generated at the site for storms even less than the 25-year event.

[7] HEC refers to the U.S. Army Corps of Engineers Hydrologic Engineering Center. HMS refers to the Hydrologic Model System.

[8] The design storm is defined herein as the 24-hour, 25-year Type IA developed by the Soil Conservation Service (SCS). This the same design storm event as used by Washington County in its Drainage Report.

[9] The County employed the commercially available HydroCAD software program to carry out the hydrologic calculations using the SCS design storm method.



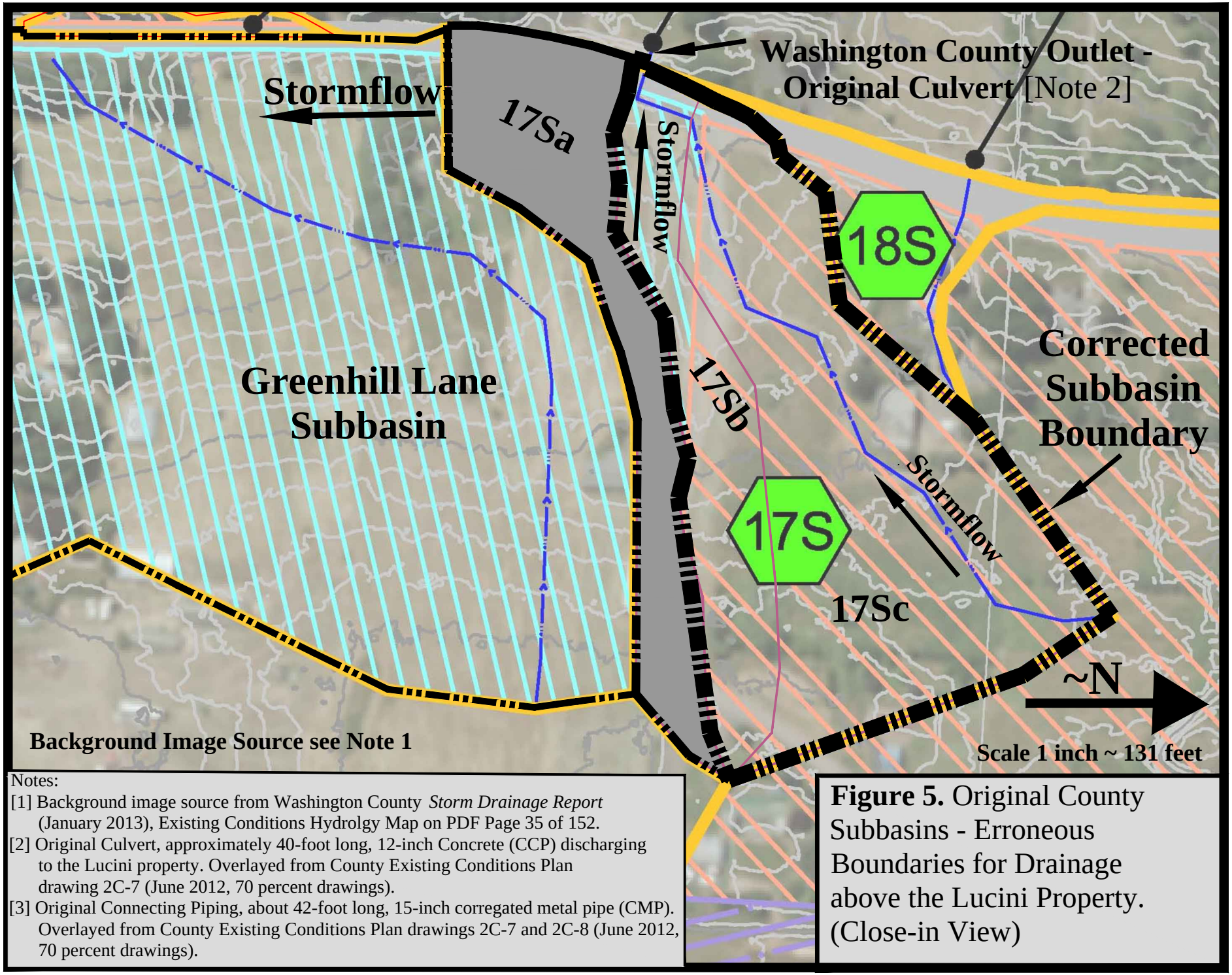
Notes:

[1] Background image source from Washington County *Storm Drainage Report* (January 2013), Existing Conditions Hydrology Map on PDF Page 35 of 152.

[2] Original Culvert, approximately 40-foot long, 12-inch Concrete (CCP) discharging to the Lucini property. Overlayed from County Existing Conditions Plan drawing 2C-7 (June 2012, 70 percent drawings).

[3] Original Connecting Piping, about 42-foot long, 15-inch corregated metal pipe (CMP). Overlayed from County Existing Conditions Plan drawings 2C-7 and 2C-8 (June 2012, 70 percent drawings).

Figure 4. Original County Subbasins - Erroneous Boundaries for Drainage above the Lucini Property.



Notes:
[1] Background image source from Washington County *Storm Drainage Report* (January 2013), Existing Conditions Hydrolgy Map on PDF Page 35 of 152.
[2] Original Culvert, approximately 40-foot long, 12-inch Concrete (CCP) discharging to the Lucini property. Overlayed from County Existing Conditions Plan drawing 2C-7 (June 2012, 70 percent drawings).
[3] Original Connecting Piping, about 42-foot long, 15-inch corregated metal pipe (CMP). Overlayed from County Existing Conditions Plan drawings 2C-7 and 2C-8 (June 2012, 70 percent drawings).

Figure 5. Original County Subbasins - Erroneous Boundaries for Drainage above the Lucini Property. (Close-in View)

The County's Drainage Report (2013) indicates it is relying upon CWS 2007 for storm flow evaluation methodology, which requires a "Review of Downstream System"[10], especially when flow increases are likely under present and future conditions. No Downstream System review exists in the Drainage Report for the storm water culvert flow draining to the Lucini property.

Despite supposed lower stormflows based on erroneous sub-basin delineation and land use conditions being reported in the Drainage Report[11], the storm inlet capacity for the culvert has been substantially increased. Stormflows are now conveyed to the storm inlets, and hence onto the property, much more rapidly than prior to the Boones Ferry Road widening project. This problem will worsen in the future because the Drainage Report and construction design did not take into account the future effects of full build-out conditions.

Flooding problems at the Lucini property are additionally aggravated because existing and future development conditions were disregarded in the Drainage Report. As CWS 2007 standards require:[12]

> 5.05 Storm Conveyance Design Considerations
>
> 5.05.1 Design for Full Build Out
>
> Storm drainage facilities shall be designed and constructed to accommodate all future full build-out flows generated from upstream property.

The Drainage Report did not evaluate the full build out stormflow conditions that will affect the property. Increased discharges from future development, routed through the County's road culvert, will result in worse flooding than presently exists.

[10] CWS 2007, see Chapter 2, Page 12 under the 2.04.2 subsection heading "3. Review of Downstream System", i.e., this is subsection 2.04.2.3.

[11] See Drainage Report on Page 11, Table under heading 5.5 - Hydrologic Analysis Results. Specifically, see the table results for Discharge Location 15L that indicates a reduction in stormflows.

[12] CWS 2007, Chapter 5, Page7, see 1st paragraph in section 5.05.

3. Drainage Boundaries and Hydrologic Modeling

An evaluation of the stormflow drainage above the Lucini property establishes that the County's delineation of subbasin boundaries is crucially inaccurate. As broken down numerically in Table 1 for ORIGINAL conditions, the south section area of the County's Subbasin 17S is erroneously depicted as draining to the Lucini property. The south section is labeled Subbasin 17Sa in Table 1 below.

The faulty subbasin delineations in the County's Drainage Report (2013) are illustrated in Figures 4 and 5. The ORIGINAL drawings in the County's report were digitized by LEA into the computer aided design software, AutoCAD. This allowed for the making of the scale model to evaluate the subbasins affecting the Lucini property. Conversion of subbasin area into HEC-HMS compatible units in square-miles (mi^2) was also performed. The County's errors in its stated original runoff areas, draining to the Lucini property, overestimate the original stormflows that the property can convey.

Table 1. Land Area Inputs for Subbasins above the Lucini Property
For ORIGINAL and IMPLEMENTED Subbasin Boundaries

		Original Drainage Areas			
	Washington County Subbasin ID	Scale Model AutoCAD in^2	HEC-HMS Input mi^2	Subbasin Size ft^2	Subbasin Size acres
Corrected South Section	17Sa	9117253	0.002267	63314	1.45
Corrected North Section	17Sb+c	27264059	0.006781	189334	4.35
Original County Total	17S	36381312	0.009048	252648	**5.8**
Corrected South Section	17Sa	9117253	0.002267	63314	1.45
Central-Section	17Sb	7464200	0.001856	51835	1.19
North-Section	17Sc	19799859	0.004924	137499	3.16
Original County Total (OK, check on total above)	17S	36381312	0.009048	252648	**5.8**
		Implemented Drainage Areas			
	Washington County Subbasin ID	Scale Model AutoCAD in^2	HEC-HMS Input mi^2	Subbasin Size ft^2	Subbasin Size acres
South-Section	59Sa	7999004	0.001989	55549	1.28
North-Section	59Sb	23991460	0.005967	166607	3.82
Implemented County Total	59S	31990464	0.007956	222156	**5.1**

This resulted in erroneously concluding that the Boones Ferry Road right-of-way to the south of the original culvert[13] flowed into the Lucini property. The actual Original subbasin excluded all of the rainfall runoff from the southern strip of the County's wrongly depicted subbasin. This condition is illustrated in Figure 5, which more accurately shows the ORIGINAL stormflow from the southern strip as being routed to the Greenhill Lane subbasin.[14]

Original and Implemented Stormflows

Table 2 compares realistic ORIGINAL stormflows, as determined in this analysis, to the County's erroneous stormflows based on faulty subbasin drainage boundaries. For Original peak storm flows, it is estimated that the increased drainage area depicted in the County's Drainage Report results in a storm flow increase of about 31.5 percent that is discharged to the Lucini property. The hydrologic model inputs and results for HEC-HMS realistic Original conditions are contained in Appendix H.

Table 2. ORIGINAL Peak Stormflows
County Values Compared to HEC-HMS

Percent Increases for Projected County versus Actual Drainage Area Conditions

	Washington County Flows Based on Boones Fy. Road Drainage Analysis (cfs)	**HEC-HMS Flows Based on Actua1 BFR Drainage Areas** (cfs)	**Increase of Storm Flows to Lucini Property** (Percent)
Original Washington County - Pre-construction (prior to 2013)	1.17	0.89	31.5% [15]
Original Wash. CO Land Area - Ongoing Land Use (LU)	*County did Not Consider*	1.71	92.1%
Original Wash. CO Land Area - Projected Full Build-out (BO)	*County did Not Consider*	2.85	220.2%

The County's Drainage Report did not consider on-going land use changes other than the existing farming and single dwelling 2-acre lots. When actual ongoing urbanization and more intense land use are considered, the increased stormflows to the Lucini property are projected to increase by about 92.1 percent.

[13] This is the original 12-inch diameter concrete cylinder pipe (CCP) culvert, which is about 40-foot long, and identified as the County's Outfall #5.

[14] This is identified in the County's Drainage Report (2013) as Subbasin "17s". See the background image of Figure 4, which uses HexBox labels to identify subbasins.

[15] The calculation is: [(0.1.17 – 0.89) / 0.89] equals 0.315 or 31.5 percent.

Figure 6. Actual Original versus County Stated Peak Stormflow Conditions

Comparison based on Actual ORIGINAL Hydrologic Conditions - Prior to 2013

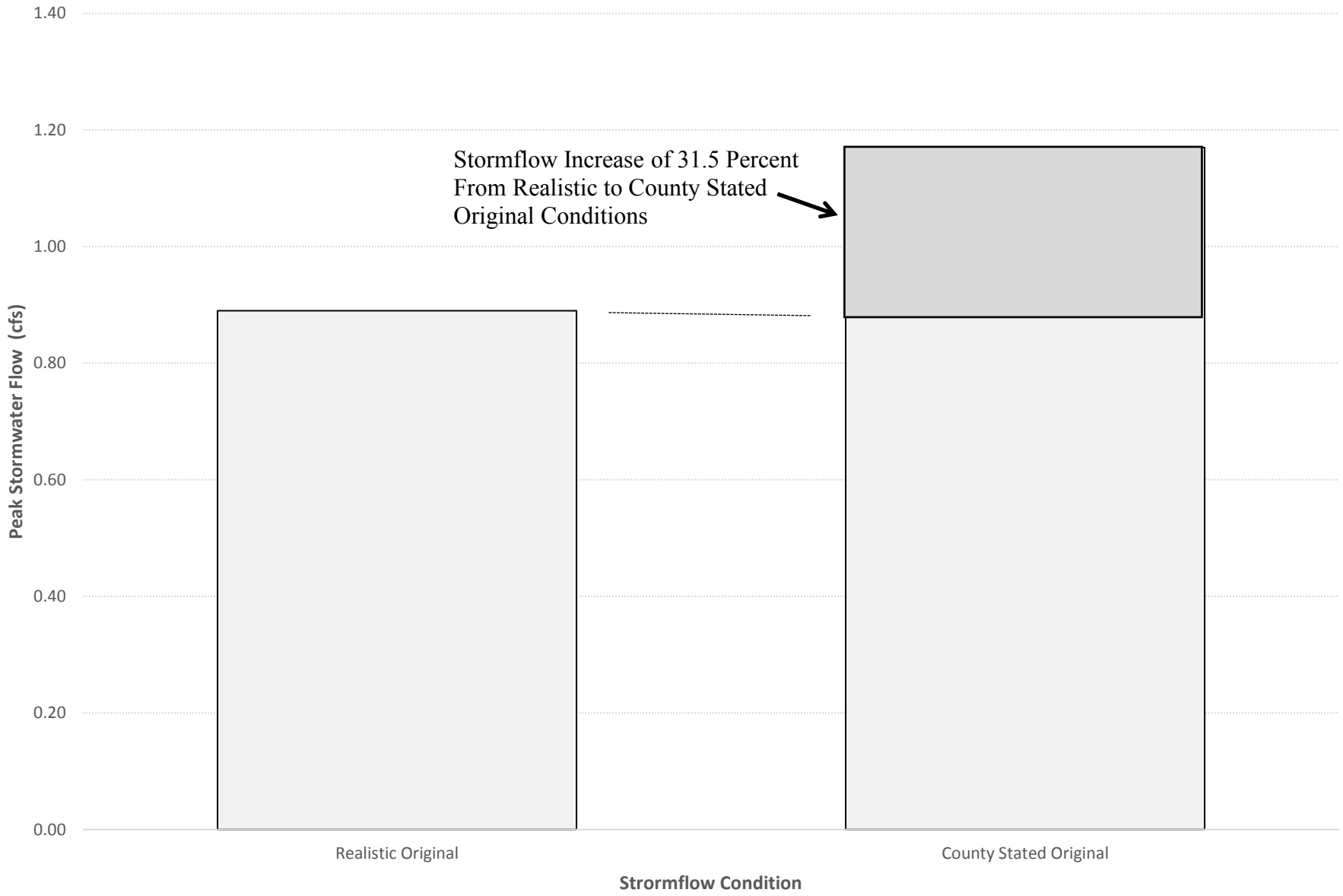
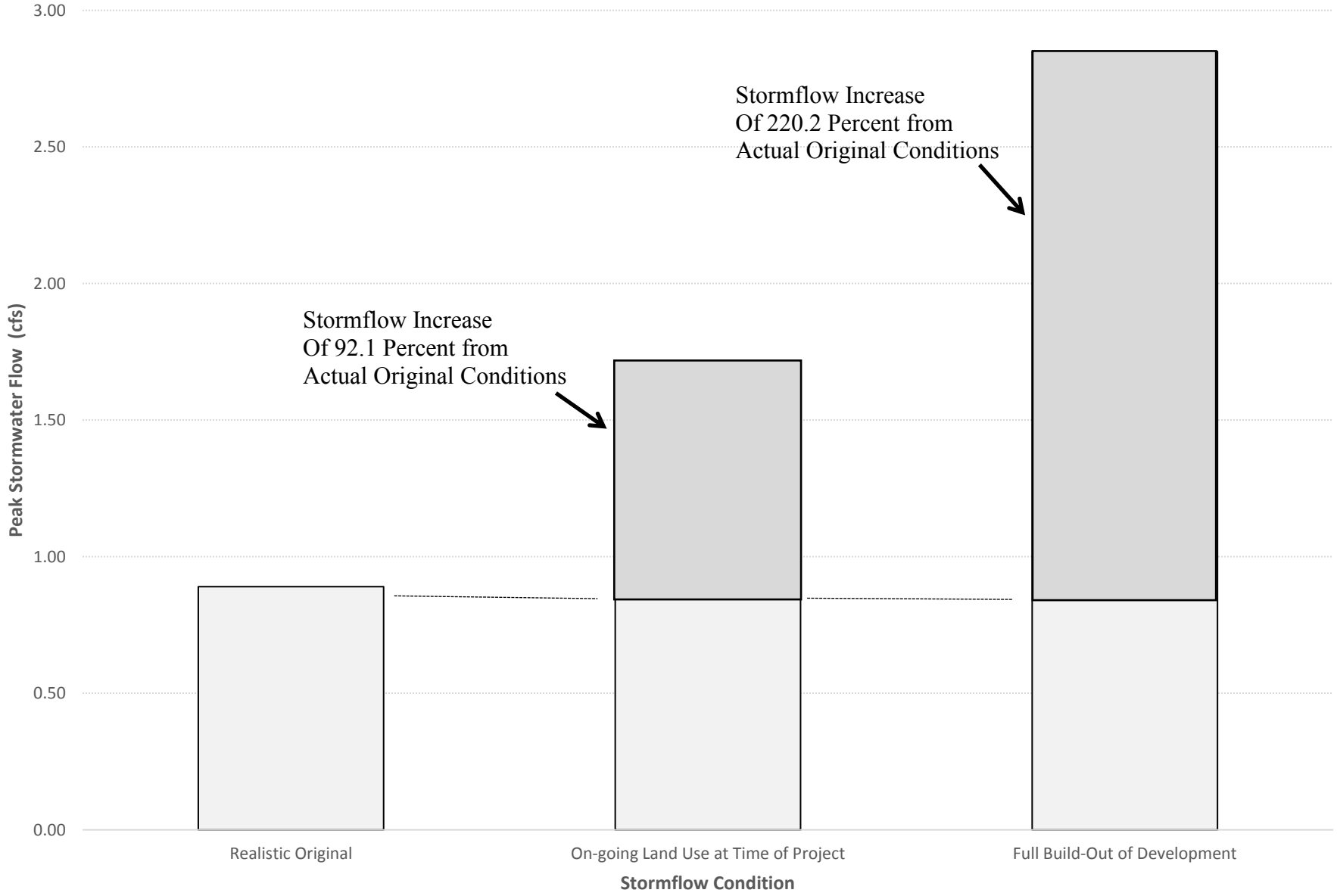


Figure 7. Increased Stormwater Peak Flows to the Lucini Property due to Ongoing Urban Land Use

Comparison based on Actual ORIGINAL Hydrologic Conditions - Prior to 2013



The County did not consider future full build-out construction conditions slated for the drainage above the Lucini property. When this necessary evaluation based on the CWS guidance is considered, the County will be increasing storm flows to the Lucini property by about 220.2 percent.

Table 3 compares IMPLEMENTED stormflows, as determined in this analysis, to the County's stormflows based on faulty subbasin drainage boundaries (see Figures 9 and 10). For the Implemented condition under previous land use, the LEA analysis and the County's analysis of peak flows are equal and no increase in flows is reported.

Table 3. IMPLEMENTED Peak Stormflows
County Values Compared to HEC-HMS

Percent Increases of Projected versus Actual Conditions

	Peak Storm Flow from HEC-HMS		
	Washington County Flows Based on Boones Fy. Road Drainage Analysis (cfs)	**HEC-HMS Flows Based on Actua1 BFR Drainage Areas** (cfs)	**Increase of Storm Flows to Lucini Property** (Percent)
Implemented Washington County - Post-construction (after about early 2015)	*County did not Consider* [16, 17]	0.64	32.8% [18]
Implemented Wash. CO Land Area - Ongoing Land Use (LU)	*County did Not Consider*	1.95	204.7%
Implemented Wash. CO Land Area - Projected Full Build-out (BO)	*County did Not Consider*	3.29	414.1%

The County's Drainage Report did not consider on-going land use changes. Only farming was evaluated. For Implemented peak storm flows, when on-going urbanization and more intense land use are considered, the increased storm flows to the Lucini property increase by about 204.7 percent.

The County did not consider future full build-out conditions construction scheduled for the drainage above the Lucini property. When this necessary evaluation based on the CWS guidance is considered, the County will be increasing storm flows to the Lucini property by about 414.1 percent.

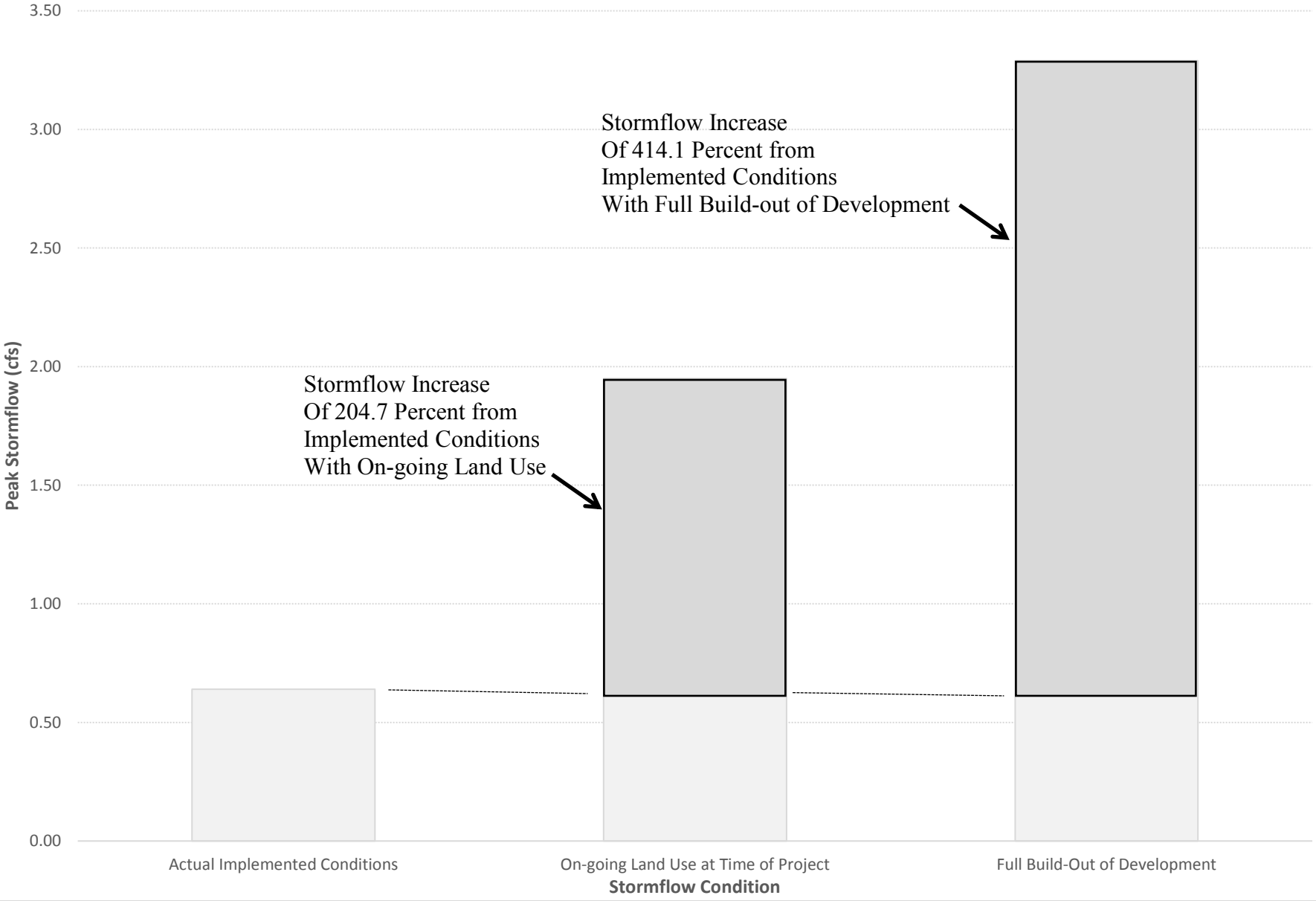
[16] The County simulated Implemented conditions that resulted in a stormflow of 0.85 cfs. The LEA hydrologic model was adjusted to the County's implemented conditions and stormflow of 0.85 cfs.

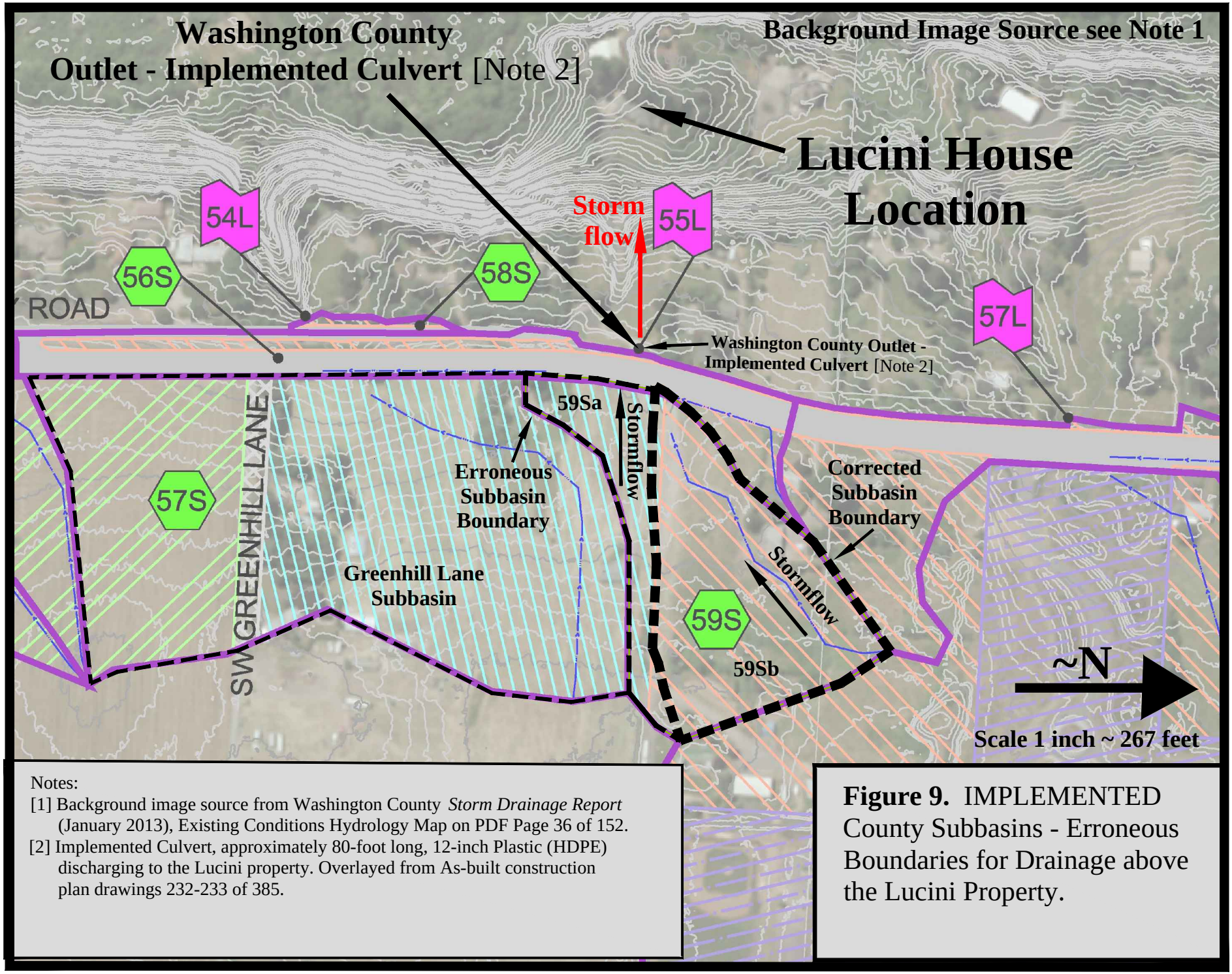
[17] Stormflows less than Original conditions were not considered by the County. The County claimed in its Drainage Report (2013) that it was reducing Original stormflows by about 10 percent.

[18] The calculation is (0.85 – 0.64) / 0.64 equals 0.328 or 32.8 percent. Where 0.85 cfs is the lowest velocity considered by Washington County.

Figure 8. Increased Stormwater Peak Flows to the Lucini Property due to Full Build-Out Land Use

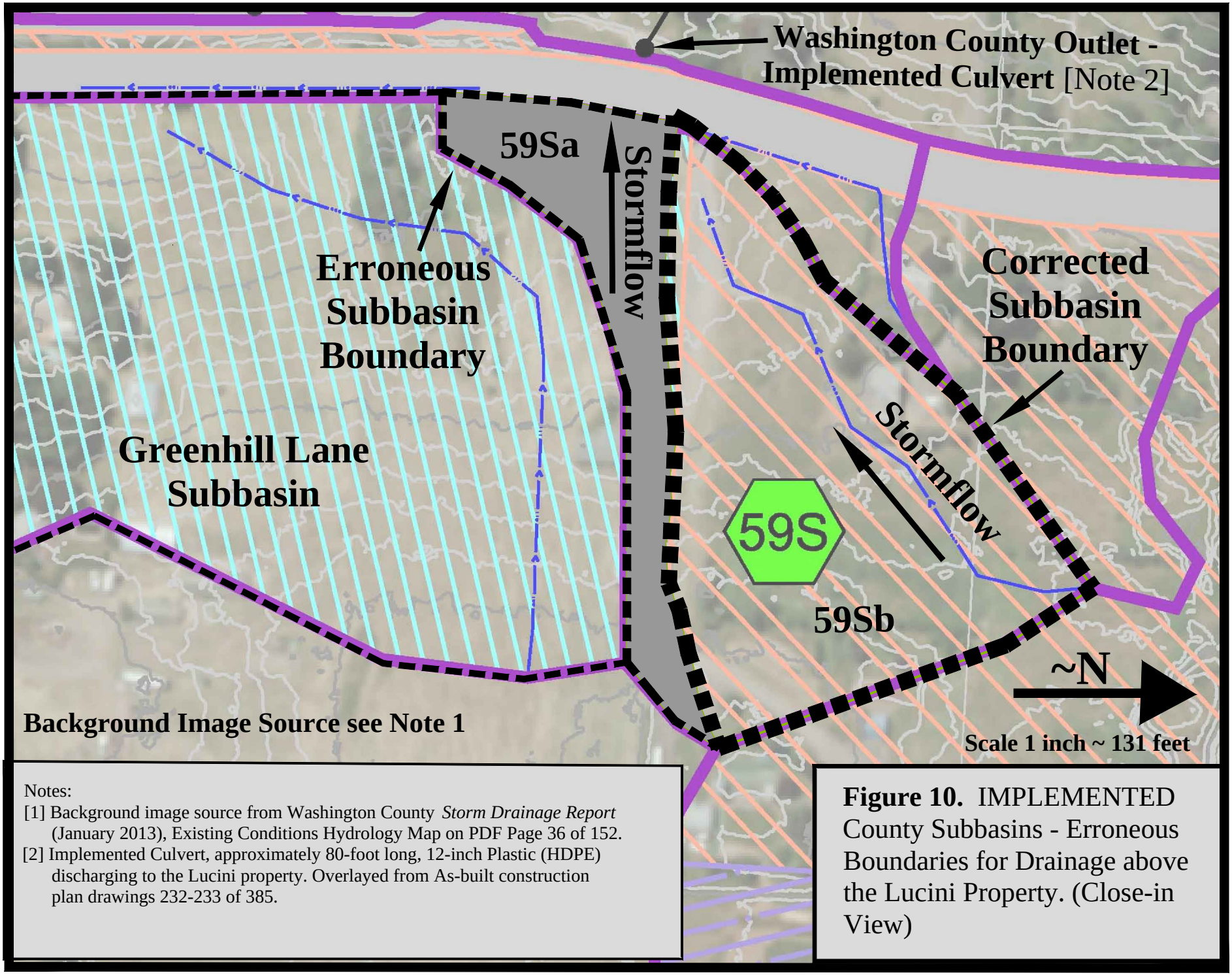
IMPLEMENTED (post-2015) Hydrologic Conditions Comparison to Actual Implemented Hydrologic Conditions based on pre-2013





Notes:
[1] Background image source from Washington County *Storm Drainage Report* (January 2013), Existing Conditions Hydrology Map on PDF Page 36 of 152.
[2] Implemented Culvert, approximately 80-foot long, 12-inch Plastic (HDPE) discharging to the Lucini property. Overlayed from As-built construction plan drawings 232-233 of 385.

Figure 9. IMPLEMENTED County Subbasins - Erroneous Boundaries for Drainage above the Lucini Property.



Notes:
[1] Background image source from Washington County *Storm Drainage Report* (January 2013), Existing Conditions Hydrology Map on PDF Page 36 of 152.
[2] Implemented Culvert, approximately 80-foot long, 12-inch Plastic (HDPE) discharging to the Lucini property. Overlayed from As-built construction plan drawings 232-233 of 385.

Figure 10. IMPLEMENTED County Subbasins - Erroneous Boundaries for Drainage above the Lucini Property. (Close-in View)

Defective County Topography and Inaccurate Original Curb and Storm Sewer Claims
Stormflows originally directed south into the Greenhill Lane subbasin, through the road right-of-way, were re-routed by the road improvement project onto the Lucini property via the County's Storm Outfall #5. As shown in Figures 4 and 5, the subbasin drainage drawings for the ORIGINAL conditions[19] do not show the actual topography affecting drainage conditions. The IMPLEMENTED drainage basin conditions then re-route increased storm flows to the Lucini property.[20]

The County's Drainage Report says that the original road had curbs and storm sewers routing flows.[21] This is incorrect as there were no curbs or storm sewers for SW Boones Ferry Road above the Lucini property. Drawings 2C-7 and 2C-8 excerpted in Appendix C demonstrate there were no curbs and storm sewers upstream of the Lucini property.[22] Additionally, the photos in Appendix A1 taken by as part of the County's Wetland Delineation Report[23] and by the Lucini's also reveal the lack of curbs and storm sewers above the Lucini property. This is a crucial detail because it determines whether a portion of stormflows go south into the Greenhill Lane subbasin, or north into the subbasin above the Lucini property. In its Drainage Report the County erroneously claims that a portion of the Greenhill Lane subbasin stormwater drains into the Lucini property.

The photos contained in Appendix A1 show the ORIGINAL Drainage of Storm Water from SW Boones Ferry Road. Photo A1a was taken by Washington County September 28, 2012; and Photo A1b was taken by John & Grace Lucini on Dec. 20, 2012. Portions of the subbasins to the east (on the left) historically drained into the Road Alignment and then south away from the Lucini property. This is contrary to the analysis contained in the County's Drainage Report (2013), which wrongly states this road section is curbed including storm sewers, with portions of stormflows being directed into the Lucini property.

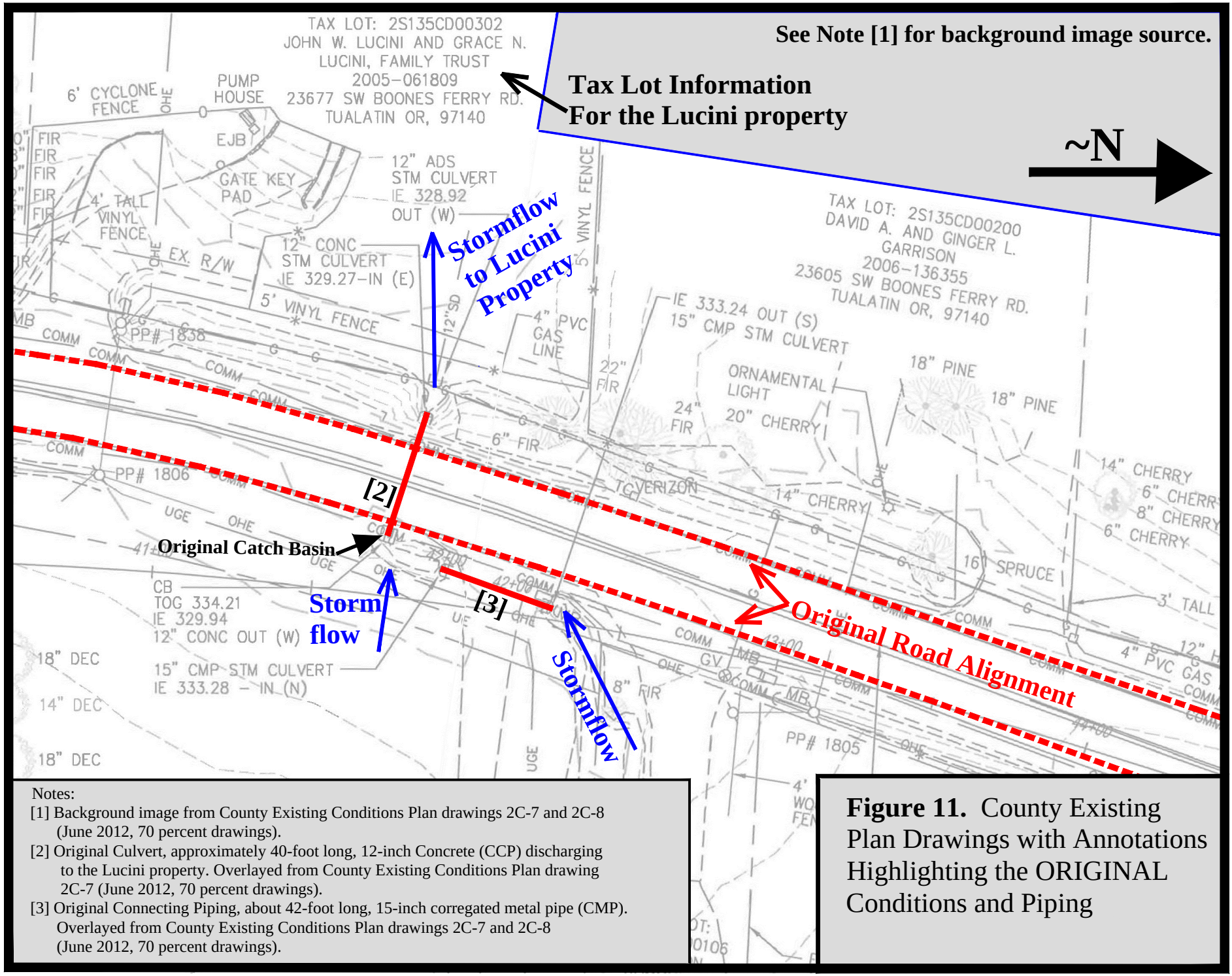
[19] Drainage Report (2013), Sheet No. 1 of 3 labeled "Existing Conditions Hydrology Map" on PDF page 35 of 152.

[20] Ibid, see Sheet No. 2 of 3 labeled "Proposed Conditions Hydrology Map" on PDF page 36 of 152.

[21] Drainage Report (2013), Storm Drainage Report – SW Boones Ferry Road (SW Day Road to SW Norwood Road, by MacKay Sposito for Washington County, Capital Project Management (CPM), Final January 31, 2013. See PDF page 59 of 152 under Summary of Subcatchment 17S, which is the drainage above the Lucini property. The Drainage Report erroneously states that the drainage is "w/curbs & sewers" which did not exist above the Lucini property. This faulty information and its implications were used in the County's hydrologic analysis.

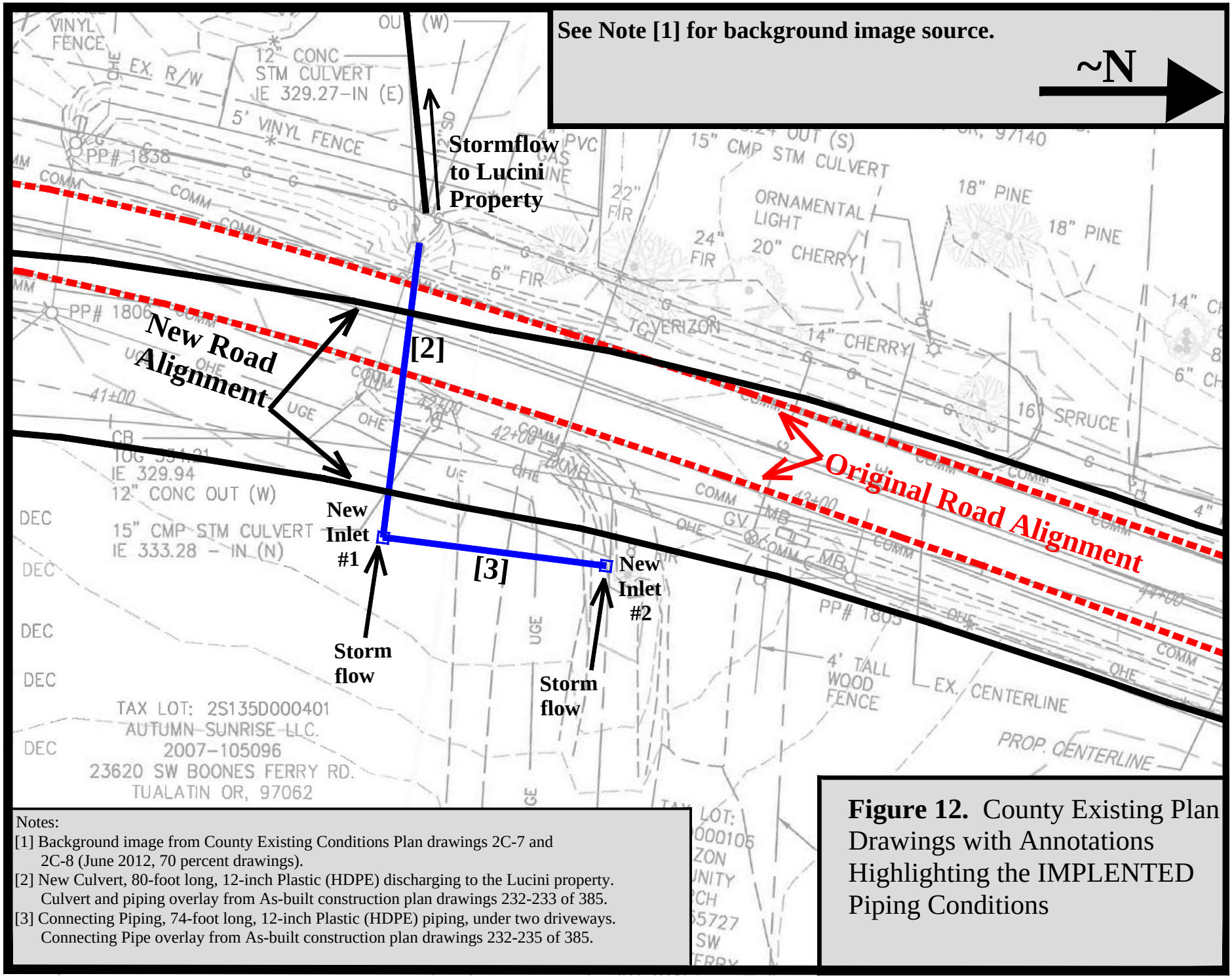
[22] County 2012a, Drawings from MacKay Sposito submittal to the County contained in file: 2012 June Existing Conditions 70% Plans.pdf.

[23] County 2012b, See PDF page 81 of 90 in file: 2012 Dec Wetland Delineation Report-Boones Ferry Rd Improvement Project WD2013-0002.pdf.



Notes:
[1] Background image from County Existing Conditions Plan drawings 2C-7 and 2C-8 (June 2012, 70 percent drawings).
[2] Original Culvert, approximately 40-foot long, 12-inch Concrete (CCP) discharging to the Lucini property. Overlayed from County Existing Conditions Plan drawing 2C-7 (June 2012, 70 percent drawings).
[3] Original Connecting Piping, about 42-foot long, 15-inch corregated metal pipe (CMP). Overlayed from County Existing Conditions Plan drawings 2C-7 and 2C-8 (June 2012, 70 percent drawings).

Figure 11. County Existing Plan Drawings with Annotations Highlighting the ORIGINAL Conditions and Piping



Notes:
[1] Background image from County Existing Conditions Plan drawings 2C-7 and 2C-8 (June 2012, 70 percent drawings).
[2] New Culvert, 80-foot long, 12-inch Plastic (HDPE) discharging to the Lucini property. Culvert and piping overlay from As-built construction plan drawings 232-233 of 385.
[3] Connecting Piping, 74-foot long, 12-inch Plastic (HDPE) piping, under two driveways. Connecting Pipe overlay from As-built construction plan drawings 232-235 of 385.

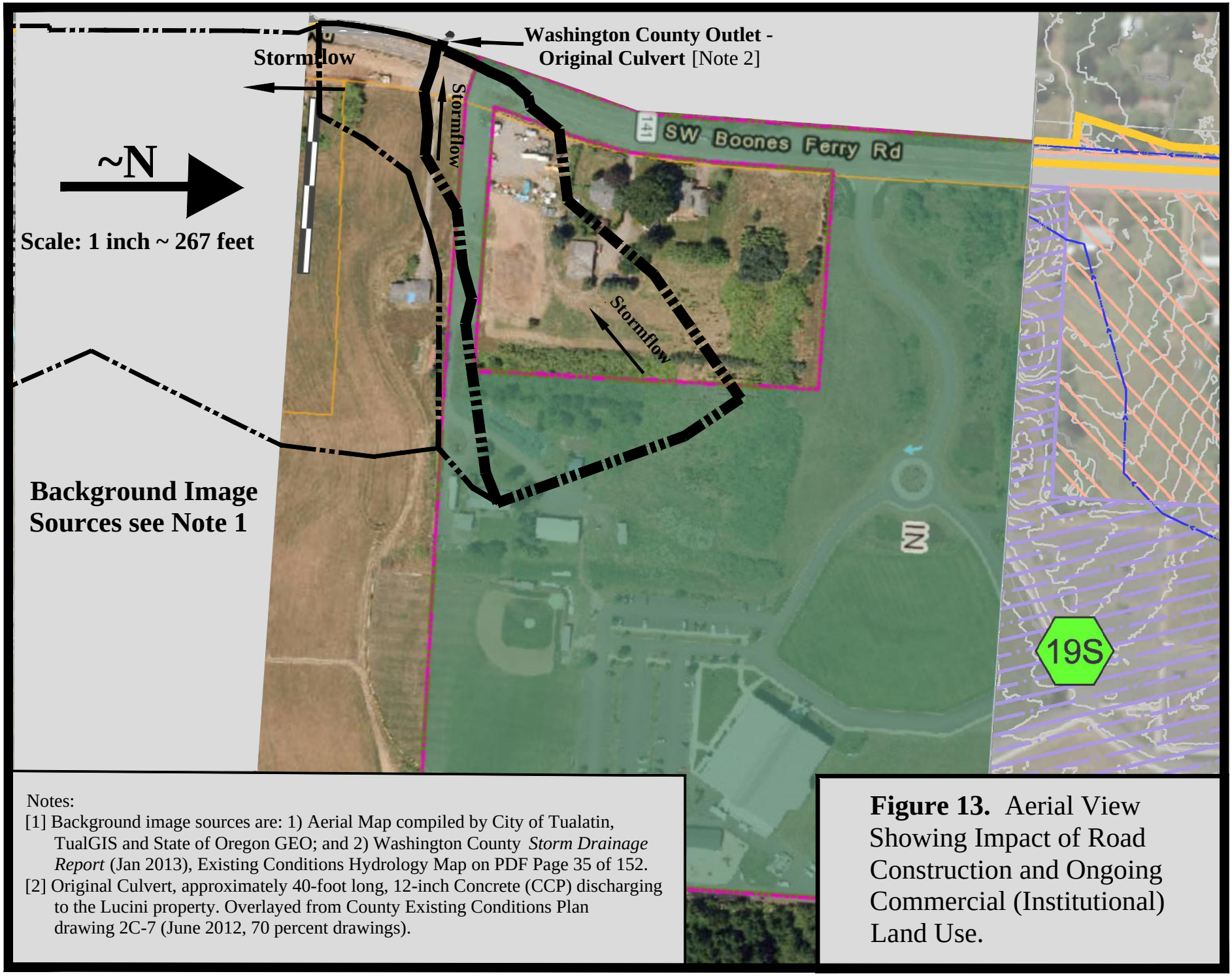
Figure 12. County Existing Plan Drawings with Annotations Highlighting the IMPLENTED Piping Conditions

Hydrologic Modeling and Construction Development

The County's Drainage Report disregarded construction development that increases run-off in the drainage upstream of the Lucini property. The County's hydrologic modeling of the upstream subbasin was characterized as "Farmstead" and single dwelling 2-acre lots. However, the actual additional use of a majority of the subbasin is to support heavy road construction and on-going use as commercial (Institutional), a more intense land-use from a stormwater generation standpoint. This relationship between the subbasin boundary delineation and active road construction (in 2012), equipment parking and material staging can be plainly seen in the aerial view presented in Figures 13 and 14.

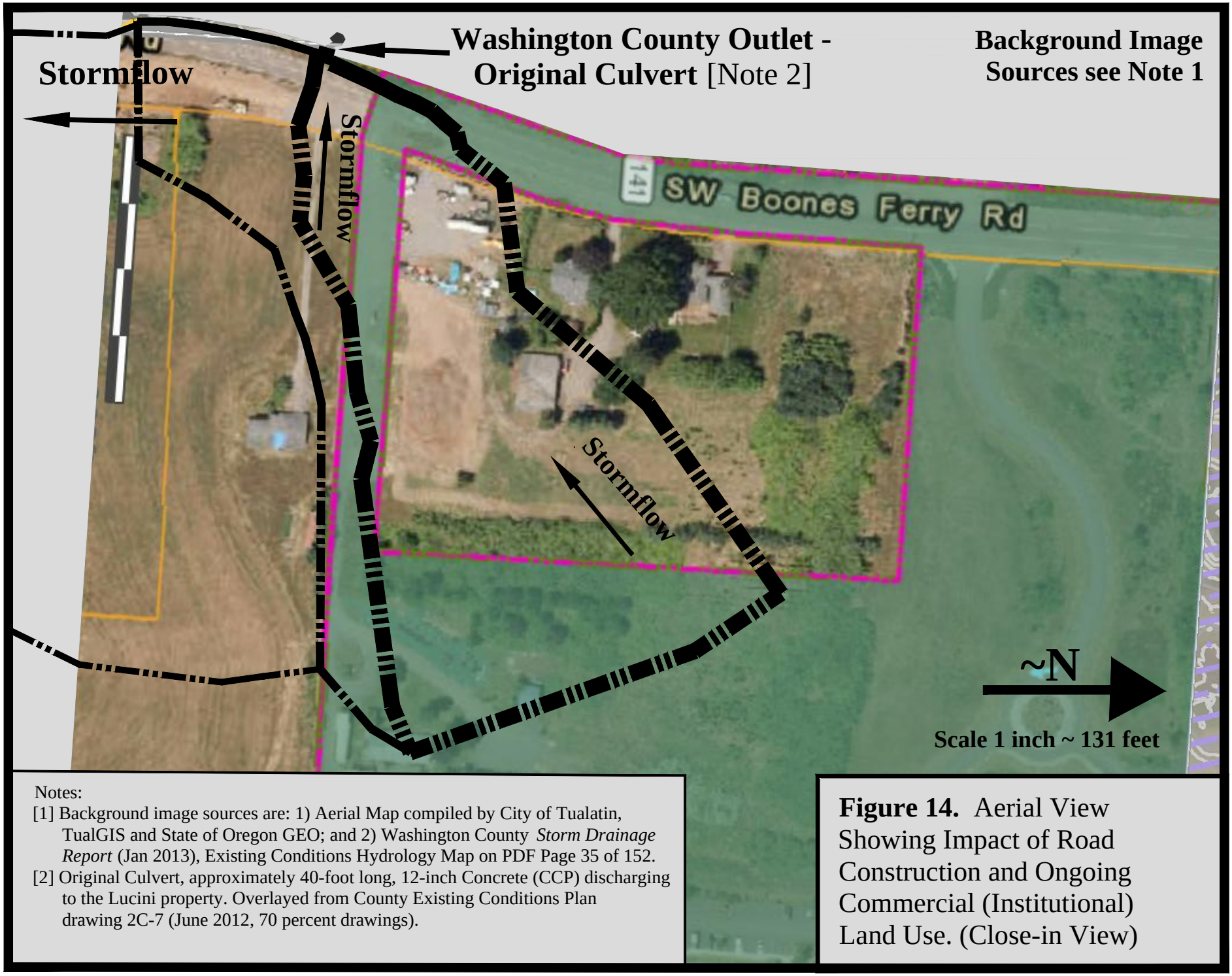
The Natural Resources Conservation Service (NRCS) has commented on this problem of disturbed soil effectively raising runoff flows and has stated:

> **630.0702 Disturbed soils**
>
> As a result of **construction and other disturbances**, the soil profile can be altered from its natural state and the listed group assignments generally no longer apply, nor can any supposition based on the natural soil be made that will accurately describe the **hydrologic properties of the disturbed soil**. In these circumstances, an onsite investigation should be made to determine the hydrologic soil group. A general set of guidelines for estimating **saturated hydraulic conductivity** from field observable characteristics is presented in the Soil Survey Manual (Soil Survey Staff 1993).
>
> [Bold by LEA except subsection title.]



Notes:
[1] Background image sources are: 1) Aerial Map compiled by City of Tualatin, TualGIS and State of Oregon GEO; and 2) Washington County *Storm Drainage Report* (Jan 2013), Existing Conditions Hydrology Map on PDF Page 35 of 152.
[2] Original Culvert, approximately 40-foot long, 12-inch Concrete (CCP) discharging to the Lucini property. Overlayed from County Existing Conditions Plan drawing 2C-7 (June 2012, 70 percent drawings).

Figure 13. Aerial View Showing Impact of Road Construction and Ongoing Commercial (Institutional) Land Use.



Notes:
[1] Background image sources are: 1) Aerial Map compiled by City of Tualatin, TualGIS and State of Oregon GEO; and 2) Washington County *Storm Drainage Report* (Jan 2013), Existing Conditions Hydrology Map on PDF Page 35 of 152.
[2] Original Culvert, approximately 40-foot long, 12-inch Concrete (CCP) discharging to the Lucini property. Overlayed from County Existing Conditions Plan drawing 2C-7 (June 2012, 70 percent drawings).

Figure 14. Aerial View Showing Impact of Road Construction and Ongoing Commercial (Institutional) Land Use. (Close-in View)

4. Stormflow Hydraulics

The County's Drainage Report did not perform a hydraulic analysis to assess the effects of its stormflow above and through the Lucini property. The Corps hydraulic model, HEC-RAS[24], is used in this analysis to partly[25] fill-in this crucial lack of stormflow hydraulic information.

Rainfall runoff flows generated by the hydrologic model HEC-HMS are supplied as inputs to the HEC-RAS hydraulic model to consider the impact on drainage channels, piping, and other features of the drainage system. Specifically, the hydraulic effects resulting from stormflows passing through the drainage system subbasins, stormflow routing, channels, culverts (piping), land use conditions, channel and piping materials, and other parameters can be assessed.

Cross-sections and Other Hydraulic Information

The HEC-RAS hydraulic model requires the input of cross-sectional information that demarcate the channel with elevation versus distance from the bank. Additional information supplied to the model includes distance between cross-sections, hydraulic losses and other stormflow parameters.

The County has not provided the public with complete topography of the subbasin draining to the Lucini property, and other properties, below its Boones Ferry Road project site. Accordingly, channel and pipe cross-section information are estimated for input into the HEC-RAS hydraulic model. Summary input and output hydraulic information for the HEC-RAS simulation is contained in Appendix I.

The County did not consider the hydraulic effects of increased stormflow conditions on the Lucini property resulting from its Boones Ferry Road Improvement construction project. As discussed previously, increased stormflows onto the Lucini project are likely because of inaccurate subbasin delineation by the County. The County also failed to consider the effects of ongoing and future development, with increasingly intense land use and full-build-out conditions, contributing to increased stormflows.

Hydraulic Analysis Results

The County did not consider stormflow cases that take into account greater land use conditions and future development above the Lucini property. For example, the County disregarded the impact of its own road construction efforts, plainly visible in the aerial views in Figures 13 and 14 as well as Appendix F, on lands draining to the Lucini property. The County characterizes these activities as "farming" or single dwelling 2-acre lots.

[24] HEC-RAS refers to the River Analysis System hydraulic model developed by the Corps.

[25] This hydraulic analysis using HEC-RAS performs a steady-state evaluation for a range of peak stormflow conditions inputted from the HEC-HMS hydrologic model. A more detailed time-varying analysis employing unsteady stormflow conditions, with stormflow storage, may be warranted in future evaluation with additional planning information but is beyond the timing and scope of this report.

The analysis presented herein does take into account actual land use intensity and development circumstances as previously discussed in the Hydrologic Modeling section. This analysis evaluates conditions for both ORIGINAL and IMPLEMENTED hydraulic configurations for the range of runoff conditions presented in Tables 2 and 3, respectively. Appendix I contains the results of the hydraulic analysis.

Figure 15 depicts the hydraulic profile generated by HEC-RAS for the ORIGINAL configuration using runoff stormflows based on future full build-out development conditions at 2.85 cfs. Stormflow existing prior to the County's road project[26] (0.89 cfs) and additional profiles are also contained in Appendix I.

A key consideration in reviewing these figures is that the ground slope goes from moderate above (east) the Lucini property to very steep (west) on the Lucini property. The County's Drainage Report (2013) analysis did not consider this substantial change of slope and its likely effect, which is to cause high stormflow velocities and extremely erosive conditions, on the Lucini property.

Comparing velocities with likely stormflows demonstrates the value of reducing runoff flow peaks. High stormwater flows cause erosion and clog ditch and pipe locations. In this HEC-RAS analysis, 25-yr design storm events were varied by correcting for actual subbasin areas and using genuine land use conditions as described in the hydrologic Tables 2 and 3 of this report for the ORIGINAL and IMPLEMENTED configurations, respectively.

Figure 16 for the ORIGINAL configuration illustrates velocities for the upstream and downstream stations along the Lucini property approximate 150-foot ditch[27]. This figure shows that as stormflows increase from 0.89 cfs to 2.85 cfs, highly erosive storm velocities occur.

As charted in Figure 16, flow velocities in excess of 4.0 feet-per-second (fps) produce adverse conditions that erode soil.[28] This is consistent with the stormwater damage to the ditches, and pipe blockage, on the Lucini property (see photos in Appendix A2).

Figure 17 for the IMPLEMENTED configuration illustrates velocities for the upstream and downstream stations along the Lucini property approximate 150-foot ditch. This figure shows that as stormflows increase from 0.85 cfs to 3.29 cfs, highly erosive storm velocities will occur into the future.

The two lower flow conditions at 0.64 cfs and 0.85 cfs do not produce excessive storm velocities. The 0.64 cfs value is what the peak 25-year storm event should be if the County was actually reducing stormflows onto the Lucini property consistent with what it

[26] Prior to early 2013.

[27] This ditch is alongside the Lucini driveway and runs generally from east to west. See Figures 2 and 3 for the alignment of this drainage ditch relative to the County's road construction and the Lucini property.

[28] Linsley, Ray K. and Franzini, Joseph B., Water-Resources Engineering, published by McGraw-Hill, 1979.

is saying in its Drainage Report. The 0.85 cfs value simulated by the County is for farmland only and does not include actual urbanization and increased runoff in the subbasin above the Lucini property. When actual ongoing land use is considered, stormflow of 1.95 cfs more accurately reflects actual runoff being discharged from the County's culvert (Outfall #5) onto the Lucini property.

An orifice plate can be used to reduce storm pipe flow diameter and flow area during peak flow events. This physical measure decreases peak stormflows and lowers storm flow velocities on the Lucini property. The location of the proposed orifice plate is shown in Figure 12 as indicated in the IMPLEMENTED new storm inlet #1.

The construction and installation plans for the orifice plate is shown in the guidance document relied upon by the County (CWS 2007). For convenience, the orifice plate drawings are presented in Appendix G (see CWA Drawings Nos. 720 and 730).

Figure 15. HEC_RAS Hydraulic Profile of ORIGINAL Pipe and Ditch Conditions at 2.85 cfs
Above and On the Lucini Property

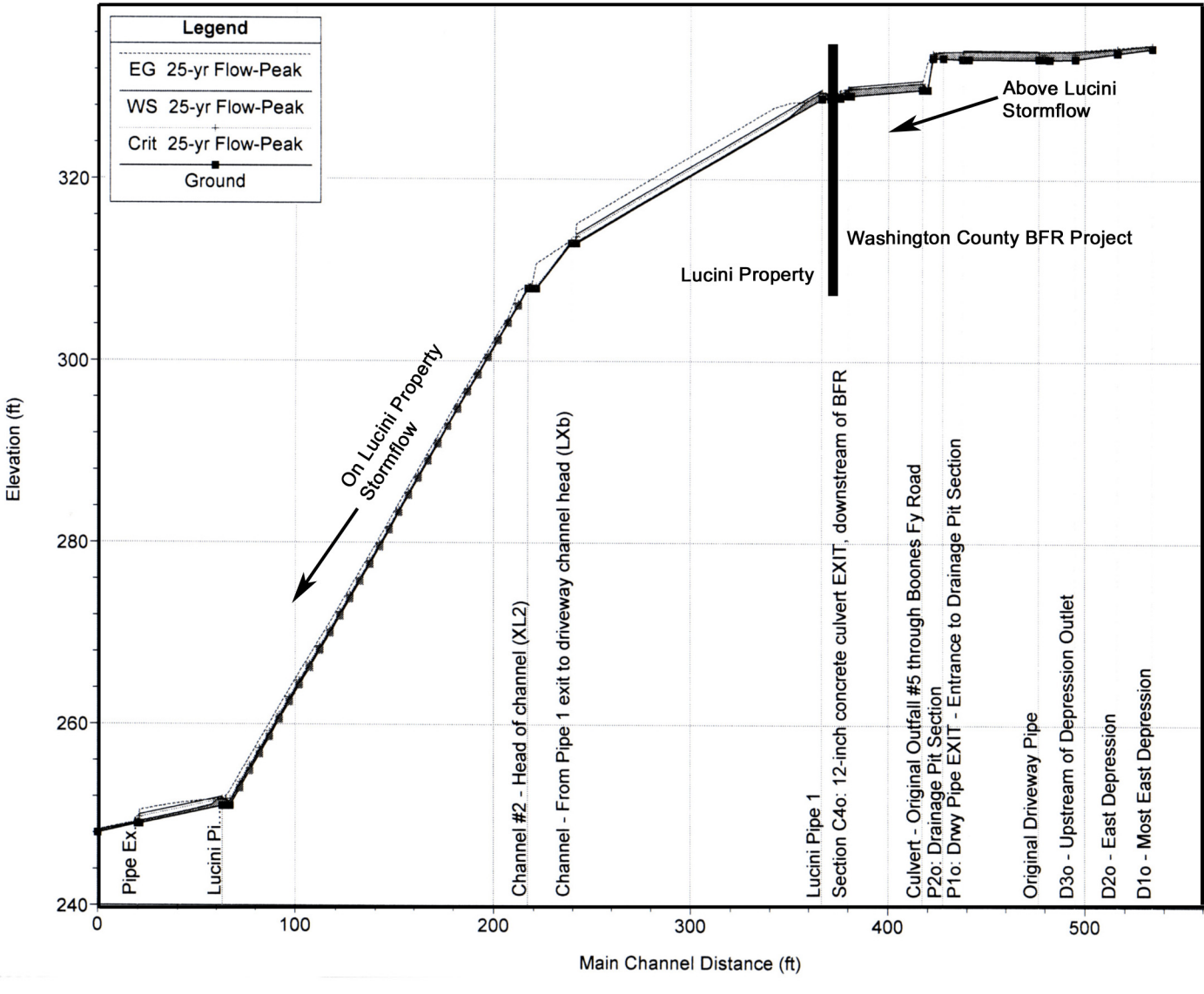


Figure 16. ORIGINAL Configuration - Velocities at Likely Flows 25-yr Design Storm Event
Upstream and Downstream Stations along the Lucini property approximate 150-foot Ditch

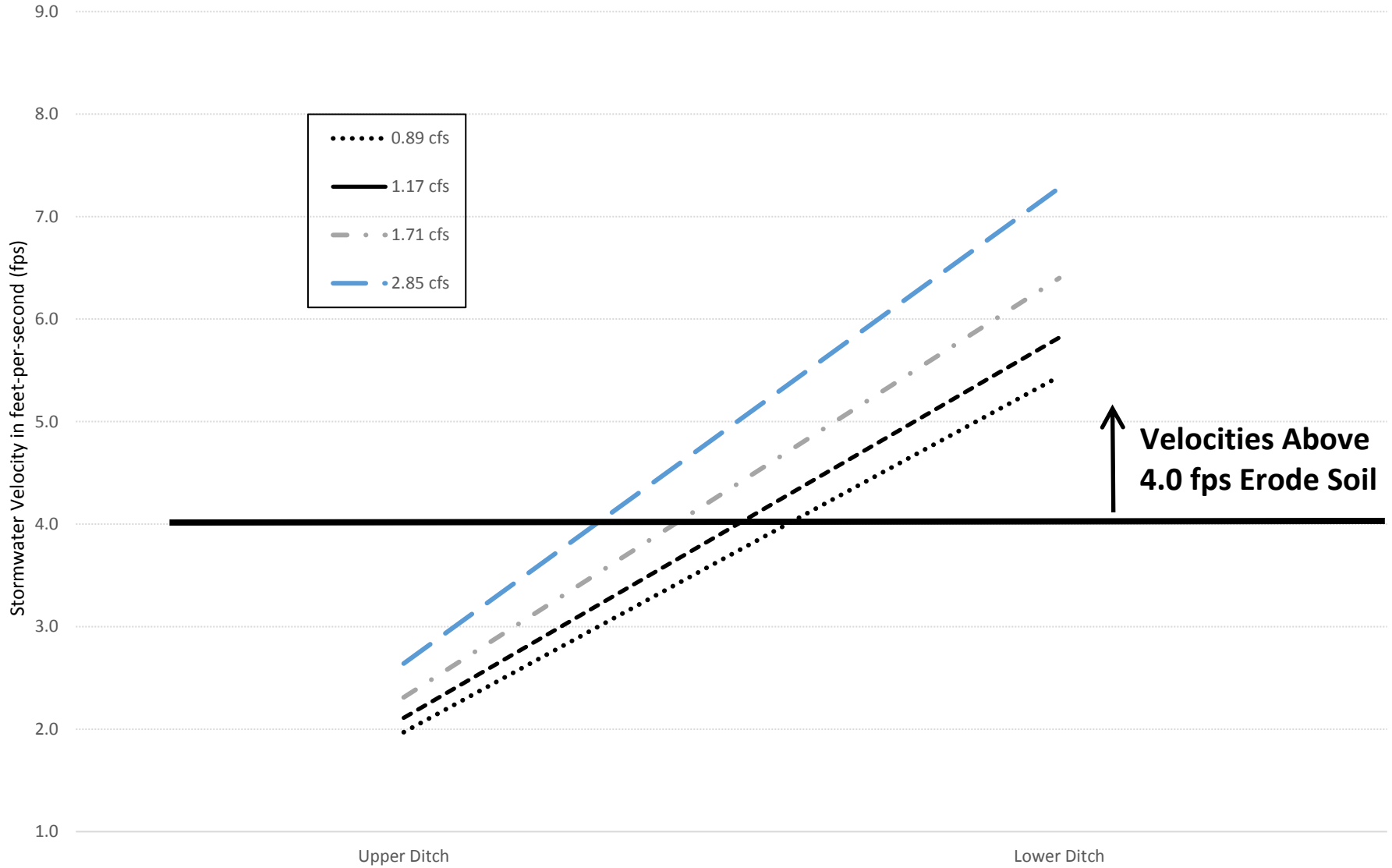
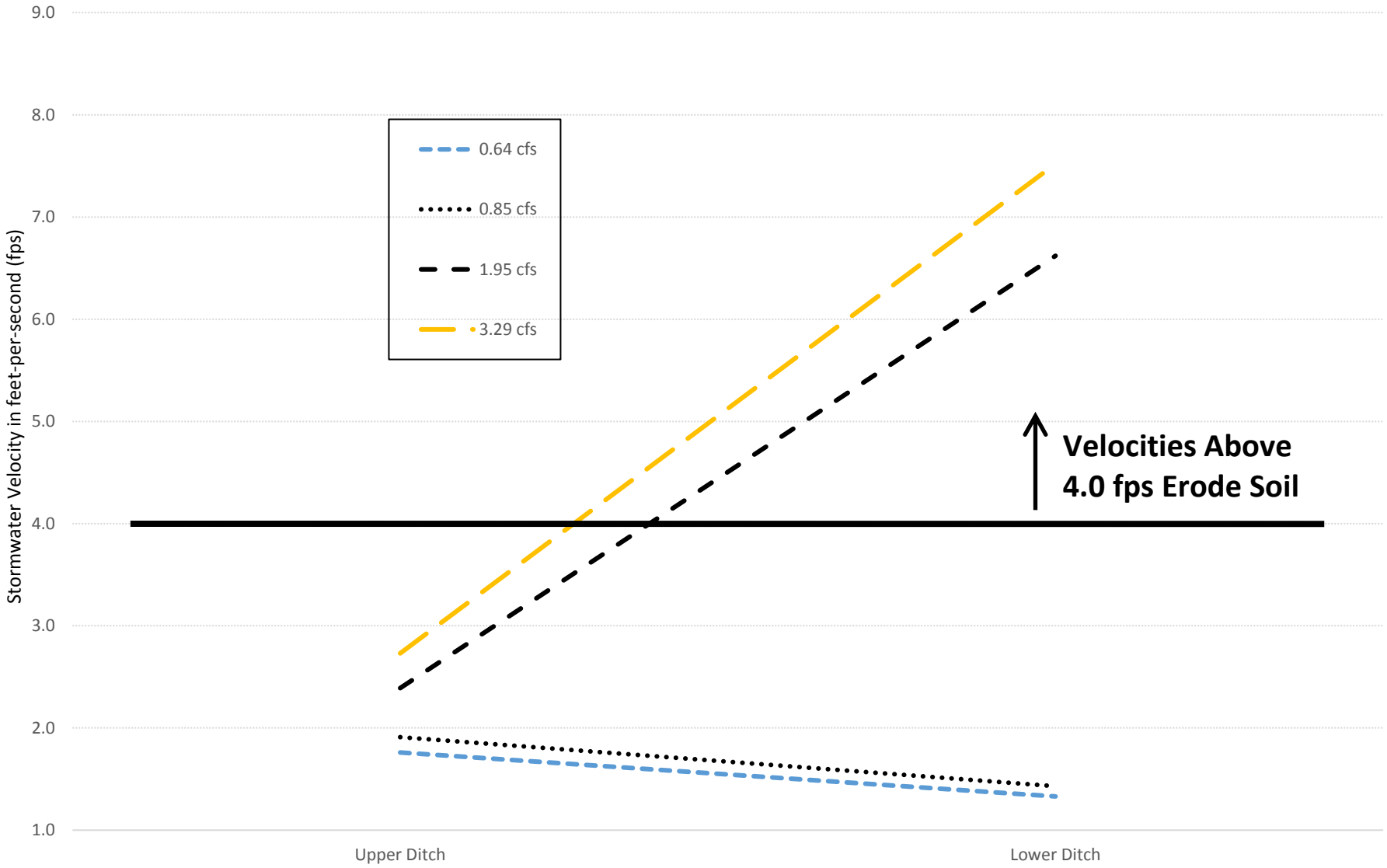


Figure 17. IMPLEMENTED Configuration - Velocities at Likely Flows 25-yr Design Storm Event
Upstream and Downstream Stations along the Lucini property approximate 150-foot Ditch



5. Planning Level Costs

There are three levels of estimated capital costs associated with fixing problems on the Lucini property resulting from the County's SW Boones Ferry Road project:

1) Immediate Shorter Term Remedy using Orifice Plate ($4,500 to $6,500 installed)
2) Ongoing Flow and Water Quality Control Facilities ($12,157 to $17,560 installed)
3) Longer Term Detention/Retention Facilities (to several hundred thousand dollars)

These capital costs include equipment, materials, labor, and construction contractor overhead and profit. Design, engineering and construction management costs are separately considered. An estimate of 20 percent of the final construction capital cost for this relatively small scale project is considered. For the high range estimates above, the design cost estimates are $1,300 for number 1 and $3,572 for number 2.

These are planning level capital costs and are presented in a range between the lower cost that is 10 percent below the estimated base cost; and the high cost that is 30 percent above the estimated base cost. Presenting only a single estimated base cost is not adequate for planning purposes and providing costs as a range is more convenient. Planning level costs for construction are presented using this cost range method because direct bid costs are not part of this study. While actual bid costs may come in lower (e.g., 10 percent), if actual potential bid costs are higher (e.g., up to 30 percent) then the outcome is undesirable if unaccounted for.

1) Immediate Shorter Term Remedy

This remedy alleviates the immediate problem on a short-term basis by reducing peak stormflows and consequent erosion on the Lucini property. This can be accomplished by using an orifice plate at the County's New Inlet #1 (this is the south inlet). The proposed orifice location is shown in Figure 12 at the New Inlet #1. The orifice would be installed at the upstream end of the implemented 80-foot long, 12-inch diameter culvert comprising the County's Outfall #5.

The County has indicated it is using CWS 2007 for guidance, which contains the Drawing No. 730 "Orifice Plate and Guide" that can be installed in New Inlet #1. For convenience, the CWS Drawing No. 730 is contained in Appendix G of this report. Orifice plate openings of 6, 8 and 10 inches can be fabricated and each used separately until it is determined which size best reduces peak flows and most efficiently uses storage in the IMPLEMENTED pipes, ditches and depressions.

The installed orifice fits into the new inlet without structural changes to the inlet. Construction materials are not extensive or expensive. Accordingly, the cost of installation of this immediate remedy is estimated in the range of $4,500 to $6,500.

2) Ongoing Flow and Water Quality Control Facilities

Estimated costs of the intermediate remedy facilities are listed in Table 4.[29] Both flow and water quality (WQ) control are needed because high stormflow velocities cause erosion upstream as well as on the Lucini property. Debris and sediment transport are a significant threat to the Lucini property because it clogs downstream piping and causes flooding. The County did not evaluate stormwater conveyance from its road project through the Lucini property. Increased amounts of runoff directed to the Lucini property, and its effects, were disregarded in the County's drainage assessment.

Table 4. Capital Costs of Ongoing Flow and Water Quality Control Facilities

Control Unit	**Base Cost**
Flow Control Manhole Installed to the East of BFR at the south New Inlet #1 location.	$8,046
Water Quality Manhole Installed to the West of BFR just above the Lucini property.	$5,462
Total Estimated Base Costs	**$13,800**
Estimation Range Between (-10% and +30%)	**$12,157** to **$17,560**

The County provided storm grates on its two new stormwater inlets in the subbasin above the Lucini property as shown in Figure 12. The County neglected to provide a storm grate for the pipe entrance to the Lucini property (see Figure 12). The Lucini property drainage receives stormwater passing through SW Boones Ferry Road culvert (Outfall #5). The County supposed that its generated stormflow will be conveyed successfully through the Lucini property. The Corps HEC-HMS and HEC-RAS demonstrate that this is not the case for the 25-year design storm cases presented in this analysis.

It is important to note that the Greenhill Lane subbasin, to the south of the Lucini property, has received flow and water quality control. The Greenhill Lane subbasin and the Lucini property both drain to the Basalt Creek wetlands. For the Greenhill Lane subbasin, which has dual outfalls the County used at least three (3) manholes to control

[29] Costs are based on *RS Means Building Construction Cost Data* (2010). Costs are adjusted for inflation based on the cost index as published by the Engineering News Review (ENR). In this case the index is set at 8800.66 for 2010 and 10337.05 for 2016. This is calculated as an inflation ratio of 1.175, i.e., an inflation rate of 17.5 percent from 2010 to 2016.

flow and a water quality manhole to control pollution. The subbasin draining to the Lucini property has no manholes to control flow nor a water quality manhole to control pollution including eroded sediment and debris.

While the Greenhill Lane subbasin typically will have greater stormflows, the necessity of controlling excess stormflows to the Lucini property is no less significant. This is especially true because the County performed no downstream system evaluation for hydraulic conditions on the Lucini property and has no basis for discharging excess flows to the Lucini property.

The County has indicated it is using CWS 2007 for guidance, which contains: Drawing No. 270 "Flow Control Structure Detail" that can be installed at the New Inlet #1 location; and Drawing No. 240 "Water Quality Manhole (Mechanical)" that can be installed just upstream of the Lucini property pipe entrance. For convenience, CWS Drawing Nos. 270 and 240 are contained in Appendix G of this report. See Figure 12 for the locations of these proposed flow and water quality control facilities.

3) Longer Term Detention/Retention Facility
Future full build-out development in the subbasin draining to the Lucini property was not considered by the County's Drainage Report (2013). This is surprising because the subbasin is zoned for future development (FD-20)[30] and includes Tualatin's Institutional (IN) development as characterized by the Horizon Community Church with its large buildings, extensive driveways, parking lots, and numerous support facilities. Ongoing development in the subbasin above the Lucini's, including the construction of the BFR widening project itself, demonstrate that the trend of more intense urban development is already underway and having an effect on the Lucini property.

As shown in the hydrologic and hydraulic evaluations in this report, ongoing urban development is already producing stormflows that exceed ORIGINAL conditions, by about 220 percent, that the Lucini property has historically been subjected to (see Figure 7). Urban development above the Lucini property, under full build-out conditions, pose a still greater threat. These stormflow projections exceed, by about 414 percent, the ORIGINAL stormflow conditions that the Lucini property has historically been subject to as depicted in Figure 8.

Stormflows with ongoing development and full build-out conditions draining to the Lucini property require substantial detention (flow control) and retention (WQ control) measures. These stormwater control units are absent from the Drainage Report (2013) and have not been considered by the County.

The design and detailed costing of detention/retention facilities is beyond the scope of this report but construction and land costs could be as high as several hundred thousand dollars.

[30] Washington County 20-year Future Development (FD-20), see PDF Page 33 of 152