ORDINANCE AMENDMENT REVIEW SHEET

Amendment: C20-2022-019 Site Specific SOS amendment and related variances

Description: Amends Land Development Code (LDC) 25-8 Article 13 Save Our Springs Initiative and related variances to Chapter 25-8 Subchapters A (Water Quality) and B (Tree and Natural Area Protection; Endangered Species) of the Land Development Code as minimally required to construct the Slaughter Lane Improvement Project from Loop1 (MOPAC) to East of Brodie Lane, SP-2022-0336D.

Proposed Language: Consider an ordinance granting a site-specific amendment to LDC 25-8-514 (Pollution Prevention Required) of the Save Our Springs Initiative, granting a variance to LDC 25-8-364 (Floodplain Modification) and LDC 25-8-641 (Removal Prohibited) relating to the removal of a heritage tree, and waiving requirements of LDC 25-8-41 (Land Use Commission Variances) to allow construction of the Slaughter Lane Improvement Project from Loop 1 (MoPac) to 650 feet east of Brodie Lane, located at 5015 ½ West Slaughter Lane (C20-2022-019).

Summary of proposed code amendment

The amendment under consideration is related to a mobility project currently under review that is located within the Edwards Aquifer portion of the Barton Springs Zone. The portion of Slaughter Lane within the Barton Springs Zone that is proposed to be reconfigured as part of site plan SP-2022-0336D already exceeds the maximum allowable of 15% net site area impervious cover. The existing impervious cover amount is 54% net site area. Compliance with the SOS Initiative would require the full site described within SP-2022-0336D to be brought into compliance with the required 15% impervious cover limit. Because LDC 25-8-515 prohibits variances from the SOS Initiative, a site-specific amendment to the SOS Initiative approved by a supermajority of the City Council is necessary to allow construction of the Slaughter Lane Improvement Project from Loop 1 (MOPAC) to East of Brodie Lane.

For the Slaughter Lane Improvement Project to complete the site development permit application process, two variances are also necessary:

- 25-8-364(B)(3) (Floodplain Modification) to allow floodplain modification within a floodplain that is in good or excellent condition.
- 25-8-641 (Removal Prohibited) to allow the removal of a heritage tree that has at least one stem that is 30 inches or larger in diameter.

The variance to code section 25-8-641 (Removal Prohibited) related to the removal of a heritage tree is supported by the City Arborist.

Construction of the Slaughter Land Improvement Project from Loop 1 (MOPAC) to East of Brodie Lane will require floodplain modification within a floodplain area designated as good condition as determined by a Functional Assessment of Floodplain Health to build the two new SOS water quality ponds. The new water quality ponds will treat runoff currently impacting a tributary of Slaughter Creek and two downstream Critical Environmental

Features (point recharge features in the creek channel) to the non-degradation standard as required by the SOS Initiative

Background: Initiated by City Council Resolution 20221027-038.

On October 27, 2022, City Council approved Resolution No. 20221027-038 to initiate variances and amendments to the Land Development Code, including site-specific amendments to Chapter 25-8, Subchapter A, Article 13 (Save Our Springs Initiative), as minimally required to address proposed improvements to the mobility and transportation infrastructure located along Slaughter Lane from Loop 1 (MoPac) to 650 feet east of Brodie Lane and return to Council with the proposed variances and amendments as soon as is feasible.

City council also directed staff to minimize departure from code requirements for mobility purposes while maximizing environmental protection and return to Council with an ordinance that:

a. minimizes impervious cover impacts;
b. strives to incorporate additional environmental and resource-efficient strategies;
c. provides water quality improvement opportunities to the proposed design and existing conditions where feasible; and
d. allows the City to maintain and improve its transportation system and maximize mobility and safety for all transportation modes.

Slaughter Lane is one of the nine corridor projects identified for mobility improvements and is part of the City of Austin Corridor Mobility Program, funded by the 2016 Mobility Bond. The Slaughter Lane Improvement Project from Loop 1 (MOPAC) to East of Brodie Lane is shown below in Exhibit 1

The project is sponsored by Transportation and Public Works (TPW) and consists of improvements that include the installation of one added lane in each direction (less than 18" excavation depth), traffic signal improvements at multiple locations (limited excavation), installation of shared use paths and vegetative stirps behind roadway curbs, a pedestrian hybrid beacon near Zuniga Dr., two new SOS non-degradation water quality ponds, refurbished existing water quality ponds, and additional water quality infiltration areas for existing water quality ponds. Overall impervious cover will increase to 69% net site area.

The Slaughter Lane Improvement Project from Loop 1 (MOPAC) to East of Brodie Lane is located within both the Williamson Creek and Slaughter Creek watersheds within the Barton Springs Zone (BSZ) as defined by the City of Austin. The project site contains several Critical Environmental Features, Heritage Trees, Floodplain, CWQZ and WQTZ; Exhibit 2. An amendment to the Save Our Springs Ordinance and variances to code sections 25-8-364 (Floodplain Modification) and 25-8-641 (Prohibited Removal) are required to allow construction of improvements to the roadway.

Staff Recommendation:

Staff recommends approval of the proposed amendment and associated variances for the following reasons:

- The project is providing compliance with SOS non-degradation water quality treatment for all new and reconstructed impervious cover.
- The project is providing improved water quality treatment for all existing impervious cover.
- The project is updating 2 existing water quality ponds to provide SOS non-degradation water quality treatment for 121.6 acres of offsite drainage including 31.9 acres of offsite impervious cover.
- The project will reduce impact to 2 Critical Environmental Features – recharge features within a tributary of Slaughter Creek
- The project will pay into the Riparian Zone Mitigation Fund in lieu of providing mitigation for the Floodplain Modification associated with the new water quality ponds.
- Other than the SOS amendment and variances identified, the project complies with City Code.

Board and Commission Actions
May 1, 2023: Considered by the Codes and Ordinances Joint Committee without recommendation. 3-0-1
May 3, 2023: A public hearing will be held by the Environmental Commission.
May 9, 2023: A public hearing will be held by the Planning Commission.

Council Action
May 18th, 2023: The set date for a public hearing will be approved.
June 1st, 2023: A public hearing will be scheduled.

Ordinance Number: TBD

City Staff: Leslie Lilly **Email:** Leslie.lilly@austintexas.gov

Reasonable Use Memo

To: Kevin Ramberg, Chair, City of Austin Environmental Commission, and Honorable Environmental Commissioners

From: City of Austin Corridor Program

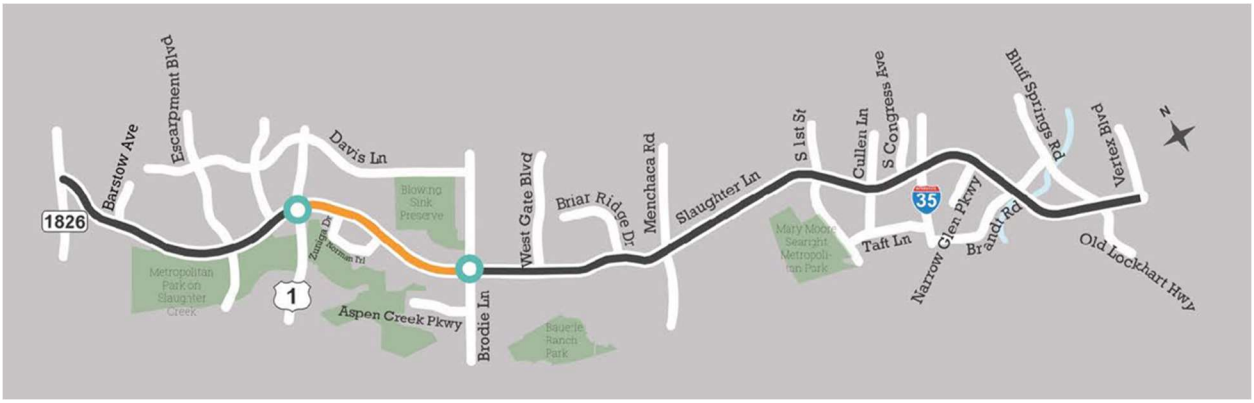
Date: April 24, 2023

Re: AIM: Slaughter Lane Imp. Project Loop 1 (Mopac) to Brodie Lane (C2) CAMPO (Case # SP-2022-0336D) – Reasonable Use Memorandum

SITE:

The Slaughter Lane Segment C2 mobility improvements project is located in the Slaughter Lane Right-of-way (ROW) between Loop 1 (Mopac) to Brodie Lane in Austin, Travis County, Texas. The entire length of the Slaughter Lane corridor improvements is shown in black in Exhibit 1 below; Segment C2 is highlighted in orange.

Exhibit 1



EXISTING SITE CONDITIONS:

Slaughter Lane between Mopac Loop 1 and Brodie Lane is a 4-lane roadway divided by a grassy median. Commercial, residential, and public land uses line the corridor and abut the ROW. There are trees scattered in the median, including Tree #3003. This tree is surrounded by a limestone tree well, a few feet off the back of curb near the intersection of Slaughter Lane and Zuniga Drive at these coordinates: 30.1969, -97.8606. Exhibit 2 shows the location of Tree #3003.

Exhibit 2

REQUEST:

There is one (1) heritage tree with a single stem over 30 inches in diameter that is being requested for removal. Removal of a heritage tree is prohibited by LDC §25-8-641 unless a variance is granted by the Land Use Commission under §25-8-643. Tree #3003 is a 34-inch Live Oak with three co-dominant stems, is approximately 25-feet tall, and is in poor condition The tree is surrounded by a limestone tree well within a few feet behind the curb in the grassy median of Slaughter Lane. The City of Austin Corridor Program is requesting approval to remove this 34-inch Live Oak to implement mobility improvements along Slaughter Lane. This request is based on:

1) The poor condition of the tree (as determined by City Arborist, Naomi Rotramel).

2) The tree is not a good candidate for transplanting because of main stem decay and the elevation difference between the root flare and surrounding overburden (as determined by the consulting arborist, EDI).

3) The tree's location prevents the opening of necessary vehicular traffic lanes in a public street which is an approved criteria for protected tree removal in the Land Development Code §25-8-624 (A)(6)(a).

4) The tree's location restricts development of the Slaughter Lane corridor impeding the reasonable use of the Right of Way.

5) The tree, in its existing location and condition, does not meet the tree preservation criteria outlined in the Environmental Criteria Manual.

6) The tree poses a safety hazard to motorists because of its location near the back of curb. The tree shows extensive damage from being struck several times.

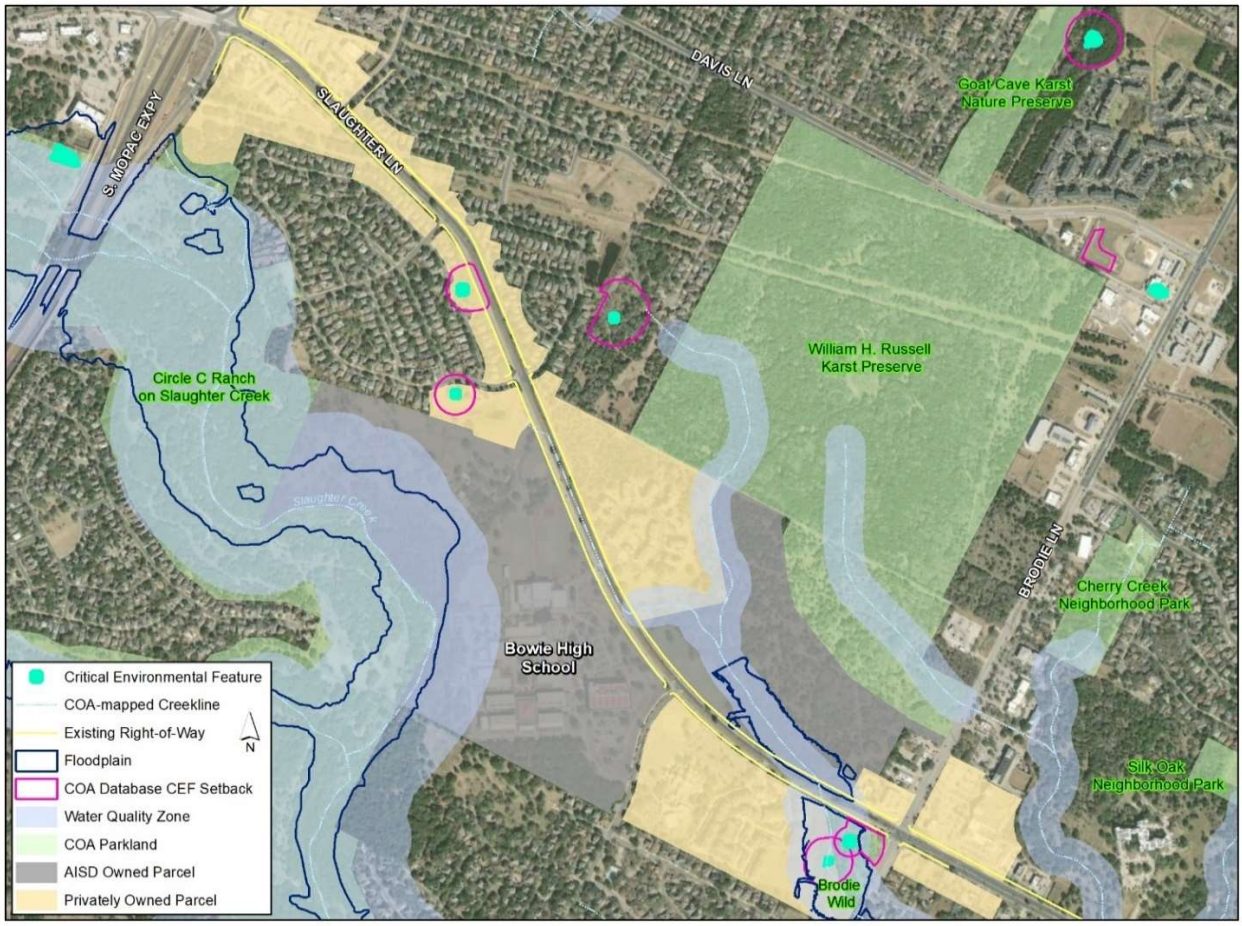
TREE CONDITION:

Tree #3003 was assessed by Environmental Design Inc. (EDI) Transplant Feasibility Specialists, and Bartlett Tree Experts. Tree #3003 is described as a mature Live Oak standing approximately 25 feet tall with three co-dominant stems approximately three feet from grade. Several vines sharing the tree pit grow up the trunk of the oak and into its canopy. The tree has main stem decay confirmed with a mallet and sound testing. EDI described the main stem decay as tremendous and noted that it was not a good candidate for relocation. Additionally, the difference in root flare elevation and surrounding overburden elevation is extreme and renders the tree unsuitable for relocation.

CONSTRAINTS AND CONSIDERATIONS:

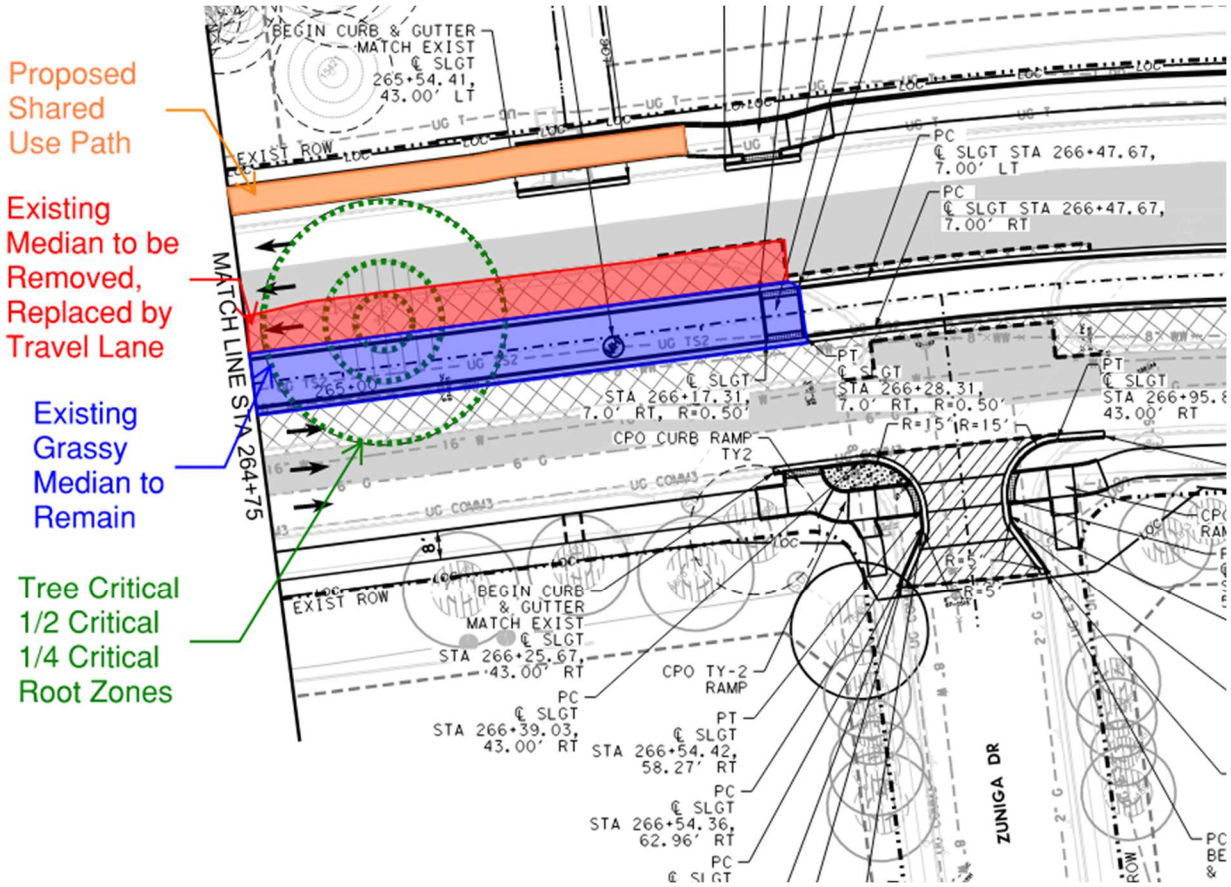
There are multiple site constraints, design considerations, and safety concerns that were evaluated during the planning and design of the project. The exhibit below shows an overview of the project limits and its adjacent land use and environmental constraints.

Exhibit 3



In order to add travel lanes, the roadway could either expand to the north or expand into the median. Adding the westbound travel lane north of the existing roadway was not a viable option because of two main reasons: 1) existing development abuts the ROW and expanding in that direction would impact 14 parcels (including multiple private residences) and between 12,000 and 14,000 SF; and 2) the environmental impacts that could occur because of encountering additional trees and an existing culvert further east which would need to be extended causing construction within the Critical Water Quality Zone and the 100-year floodplain. Thus, the added travel lanes need to stay inside the ROW and expand into the Slaughter Lane median. The location of the tree restricts development of the Slaughter Lane corridor and impedes the reasonable use of the ROW. Furthermore, the tree's location within the median and immediately behind the curb prevents the opening of necessary vehicular traffic lanes in a public street which is an approved criteria for tree removal in the Land Development Code 25-8-624 (A)(6)(a). The proposed improvements are shown in the exhibit below.

Exhibit 4: Proposed Improvements



The tree does not meet tree preservation criteria outlined in the Environmental Criteria Manual §3.5.2. In its existing location, approximately 40% of the critical root zone of the tree is under existing impervious cover with approximately 55% of the root zone containing fill/overburden that was likely placed with the construction of Slaughter Lane. The only portion of the root zone remaining at its natural elevation is the area within the tree well which is perhaps 5% of the critical root zone. The half CRZ already contains more than 4 inches of fill and the ¼ CRZ is already impacted by the tree well.

The tree is in conflict with the Transportation Criteria Manual's (TCM) lateral offset requirements, and it poses a safety hazard to motorists as is evidenced by the tree showing damage from being struck several times. Per TCM §11.1.1, a minimum lateral offset of 18 inches is required for existing trees and a minimum lateral offset of 4.5 feet is required for newly planted trees. While the tree in question is existing and not newly planted it is still best practice to meet this criterion when feasible, as objects within the lateral offset can present an obstruction that pose a collision risk for vehicles.

PROJECT BENEFITS:

The Slaughter Lane project between Loop 1 (MoPac) to east of Brodie Lane is anticipated to implement $16 million in critical mobility, safety, and connectivity improvements including:

- Adding extra lanes for better vehicular travel time

- 8-ft Shared Use Path (SUP) for SAFE community connectivity throughout the corridor for cyclist and pedestrians.
- Increased safety for users of the SUP by creating a vegetated buffer between SUP and vehicles
- New signals and improving existing signals
- ADA-compliant curb ramps at each intersection

Mobility improvements were approved by Austin voters in 2016. That year, improvements to Slaughter Lane were identified as one of nine key corridors to receive these voter-approved mobility funds. Since that time, the City of Austin and the Corridor Program office have been involved in public engagement; project development; coordination with City staff to meet environmental code and criteria; securing federal funding through CAMPO; and design of the improvements. The location of the 34-inch Live Oak tree impacts the developable area of the ROW and would not allow for reasonable use of the ROW to construct the critical mobility improvements that Austin voters approved in 2016.

TRANSPLANT INVESTIGATION AND TREE HEALTH ASSESSMENT

The project team, in a good faith effort to transplant the tree, had the tree evaluated by two reputable arborists who have experience with tree evaluations and transplanting in Austin. Jon Hillis, with Environmental Design Inc., conducted a visual assessment of the tree and provided his professional opinion about its transplant feasibility. Michael Embesi of Bartlett Tree Experts conducted a level three advanced tree assessment for the 34-inch Live Oak.

Bartlett's report identified that a large wound and decay column was observed at the stem union, the vines were adding unnecessary weight to the branches, and the root collar was buried. EDI's report identified that there was a tremendous amount of stem decay that disqualifies it from being a candidate for transplanting. The report goes on to state that the difference in root flare elevation and surrounding overburden elevation is the most extreme of the several trees evaluated along Slaughter Lane.

Exhibit 5: Tree #3003

Exhibit 6: Tree's Proximity to Back of Curb and Tree Well

Exhibit 7: Mainstem Decay and Vines

MITIGATION EFFORTS

The total required mitigation based on removals for this project (Segment C2) is 837.88 inches. The program is planting 102 new trees (490 inches) along the corridor within the existing ROW. After planting the new trees, the amount remaining mitigation amount is $69,576. The Corridor Program plans to transplant three heritage trees (#3000, 3007, and 3018) for an estimated cost of $545,000 which is $475,424 over the mitigation amount required. See summary table below.

	Tree inches	Cost
Required Mitigation	837.88	$167,576 (at $200/ inch)
Trees being planted for mitigation	490.00	$98,000 (at $200/ inch)
Remainder required for tree mitigation	347.88	$69,576 (at $200/ inch)
Transplanting 3 heritage trees (estimate provided by EDI)		$545,000 plus costs for 5-year tree establishment plan for each tree
Overmitigation Amount		$475,424

SUMMARY

To fulfill the promise to Austin voters to implement mobility improvements as part of the 2016 Bond, the City of Austin Corridor Program Office requests to remove Tree #3003, a 34-inch Live Oak located in the ROW of Slaughter Lane. This request is based on the tree's poor condition, its unsuitability to be transplanted, and its location which prevents the opening of necessary vehicular traffic lanes in a public street and impedes the reasonable use of the ROW.

The 34-inch Live Oak tree is described by tree experts as being in poor condition with visible decay, large wounds, and a buried root collar. Existing conditions consisting of approximately 55% of the root zone containing fill/overburden result in unhealthy conditions that do not provide an ideal environment for the continued survival of the tree. In addition, the tree's location close to vehicular travel proves to be a dangerous hazard for motorists as is evidenced by the tree showing damage from being struck several times. In its existing alignment, the corridor is not as safe as current code dictates. The project will make the corridor safer for motorists, cyclists, and pedestrians.

LAND DEVELOPMENT CODE § 25-8-624 – APPROVAL CRITERIA & § 25-8-643 – LAND USE COMMISSION VARIANCE

34-inch Live Oak (#3003)

LAND DEVELOPMENT CODE § 25-8-624 – APPROVAL CRITERIA.

(A) The Planning and Development Review Department may approve an application to remove a protected tree only after determining that the tree:

(1) prevents reasonable access to the Property;
(2) prevents a reasonable use of the Property;
(3) is an imminent hazard to life or property, and the hazard cannot reasonably be mitigated without removing the tree;
(4) is dead;
(5) is diseased, and:
    (a) restoration to sound condition is not practicable; or
    (b) the disease may be transmitted to other trees and endanger their health; or
(6) for a tree located on public property or a public street or easement:
    (a) prevents the opening of necessary vehicular traffic lanes in a street or alley; or
    (b) prevents the construction of utility or drainage facilities that may not feasibly be rerouted.

Response: The 34-inch Live Oak tree meets the criteria of (6)(a) above. The tree is located in the Right of Way and is preventing the opening of necessary vehicular traffic lanes in Slaughter Lane.

The 34-inch Live Oak tree also meets the criteria of (5)(a) above. The City arborist determined the tree was in poor condition.

LAND DEVELOPMENT CODE § 25-8-643 – LAND USE COMMISSION VARIANCE.

(A) The land use commission may grant a variance from Section 25-8-641 (Removal Prohibited) to allow removal of a heritage tree that has at least one stem that is 30 inches or larger in diameter measured four and one-half feet above natural grade only after determining, based on the city arborist's recommendation, that the heritage tree meets the criteria in Section 25-8-624(A) (Approved Criteria) and that:

(1) the applicant has applied for and been denied a variance, waiver, exemption modification, or alternative compliance from another City Code provision which would eliminate the need to remove the heritage tree, as required in Section 25-8-646 (Variance Prerequisites); and

Response: The applicant has no other alternative equivalent compliance available to allow reasonable use of the Right of Way along Slaughter Lane. No variances can be pursued which would eliminate the removal of the heritage trees.

(2) Removal of the heritage tree is not based on a condition caused by the method chosen by the applicant to develop the property, unless removal of the heritage tree will result in a design that will allow for the maximum provision of ecological service, historic, and cultural value of the trees on the site.

Response: The applicant evaluated different options for the addition of the travel lanes. Expanding outside of the existing ROW is not an option thus expanding into the median is the only feasible option.

MEMORANDUM

TO: Kevin Ramberg, Chair and Commissioners
Environmental Commission

FROM: Katie Coyne, Environmental Officer
Watershed Protection

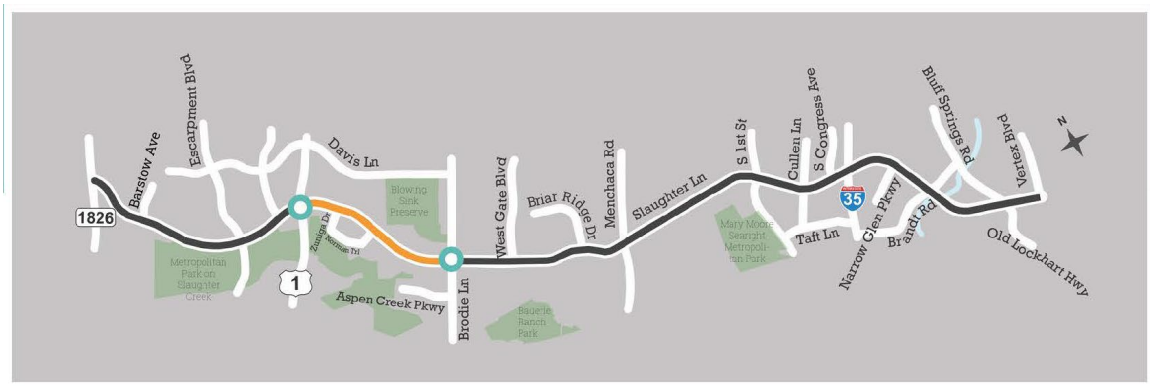
DATE: April 25, 2023

SUBJECT: SOS and Other Code Amendments for Slaughter Lane Improvement Project
SP-2022-0336D

On the May 3, 2023 Environmental Commission agenda is a proposed amendment to the City's Save Our Springs ordinance and related variances to Chapter 25-8 of the Land Development Code. The ordinance is being brought forward to enable the Transportation and Public Works Department (TPW) to proceed with the construction of the Slaughter Lane Improvement Project from Loop 1 (MOPAC) to East of Brodie Lane.

Project Description and Background
Slaughter Lane is one of the nine corridor projects identified for mobility improvements and is part of the City of Austin Corridor Mobility Program, funded by the 2016 Mobility Bond. The Slaughter Lane Improvement Project from Loop 1 (MOPAC) to East of Brodie Lane is shown below in Exhibit 1

Exhibit 1

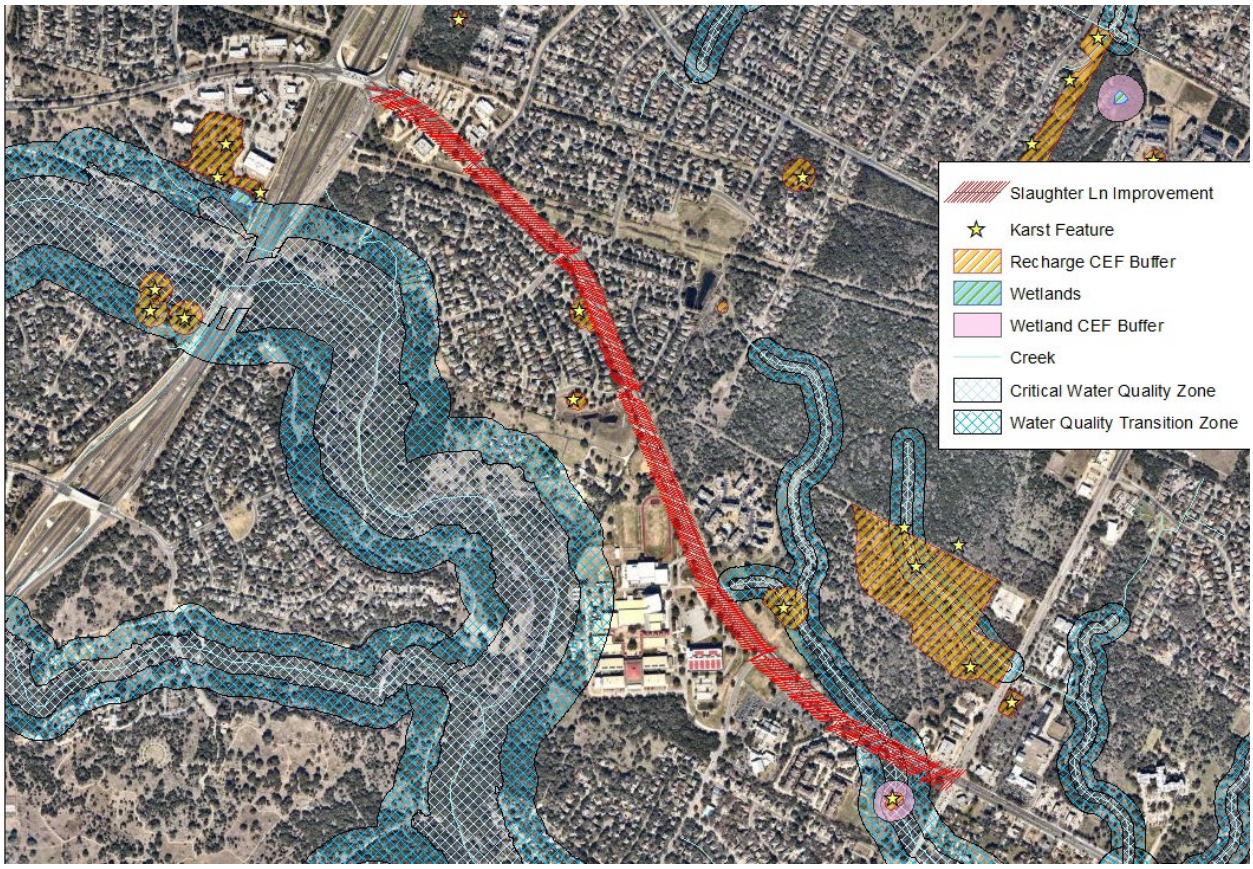


The project is sponsored by TPW and consists of improvements including the installation of one added lane in each direction (less than 18" excavation depth), traffic signal improvements at multiple locations (limited excavation), installation of shared use paths and vegetative stirps behind roadway curbs, a pedestrian hybrid beacon near Zuniga, two new water quality ponds, refurbished existing water quality

ponds, and additional water quality infiltration areas for existing water quality ponds. Overall impervious cover will increase.

The Slaughter Lane Improvement Project from Loop 1 (MOPAC) to East of Brodie Lane is located within both the Williamson Creek and Slaughter Creek watersheds within the Barton Springs Zone (BSZ) as defined by the City of Austin. The project site contains several Critical Environmental Features, Heritage Trees, Floodplain, CWQZ and WQTZ; Exhibit 2. An amendment to the Save Our Springs Ordinance and variances to code sections 25-8-364 (Floodplain Modification) and 25-8-641 (Prohibited Removal) are required to allow construction of improvements to the roadway.

Exhibit 2 Environmental Conditions



Code Amendment and Variance

The potion of Slaughter Lane on SP-2022-0336D within the Barton Springs Zone already exceeds the maximum allowable 15% impervious cover. The existing impervious cover limit is 54%. The SOS Ordinance would require the full site described on SP-2022-0336D to be brought into compliance with the 15% impervious cover limits for areas within the Barton Springs Zone in the Edwards Aquifer Recharge Zone. Because 25-8-515 prohibits variances from the SOS Ordinance, a site-specific amendment to the SOS Ordinance approved by the City Council is necessary to allow construction of the Slaughter Lane Improvement Project from Loop 1 (MOPAC) to East of Brodie Lane.

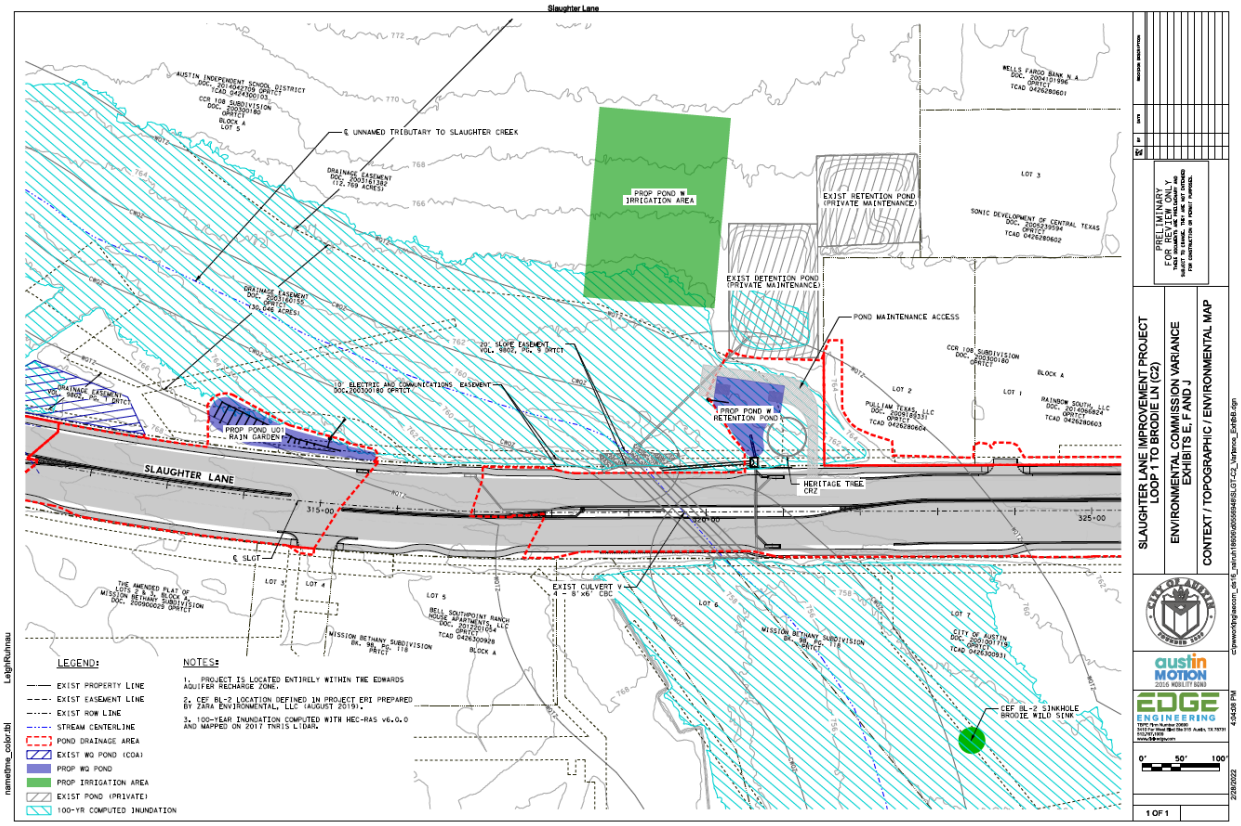
For the Slaughter Lane Improvement Project to complete the site development permit application process, two variances are also necessary:

- 25-8-364(B)(3) (*Floodplain Modification)* to allow floodplain modification within a floodplain that is in good or excellent condition.
- 25-8-641 (*Removal Prohibited)* to allow the removal of a heritage tree that has at least one stem that is 30 inches or larger in diameter.

The variance to code section 25-8-641 (*Removal Prohibited)* related to the removal of a heritage tree is supported by the Development Services and the City Arborist.

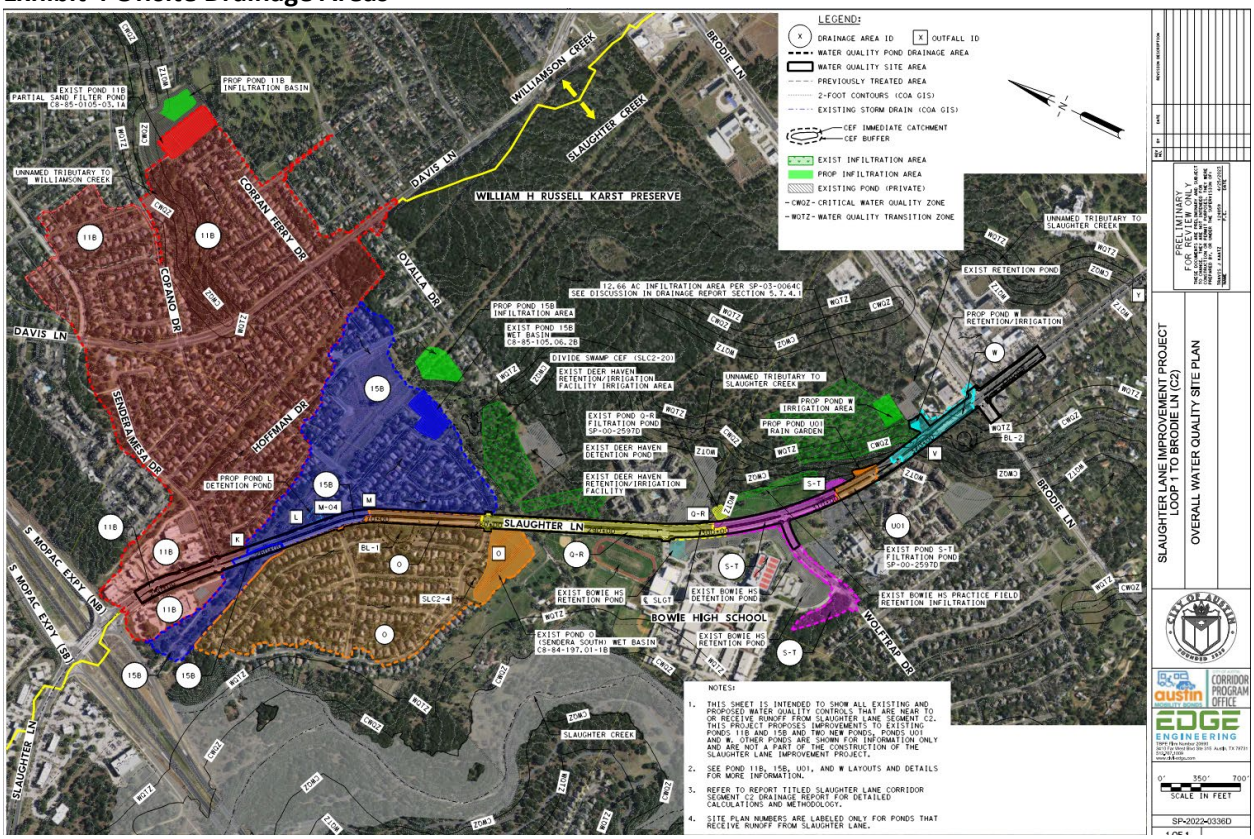
Construction of the Slaughter Land Improvement Project from Loop 1 (MOPAC) to East of Brodie Lane will require floodplain modification within a floodplain area designated as good condition to build the two new SOS water quality ponds (see Exhibit 3 below). The new water quality ponds will treat runoff currently impacting a tributary of Slaughter Creek and two downstream Critical Environmental Features (point recharge features in the creek channel).

Exhibit 3 Proposed Ponds in Floodplain



Due to the substantial improvement to water quality proposed by the project both regionally and for the entire reconstructed section of roadway, the proposed site-specific ordinance will also authorize the SOS amendment and the two necessary variances. The offsite drainage areas improved by the project are shown in Exhibit 5.

Exhibit 4 Offsite Drainage Areas



Project Review

TPW is the project sponsor and has developed the design in consultation with engineering staff from WPD. TPW is pursuing development of the Slaughter Lane Improvement Project under a site plan permit. Staff from Development Services and other City of Austin departments have completed one round of review of the site plan application.

Recommendation

Staff recommends approval of the proposed amendment and associated variances for the following reasons:

- The project is providing compliance with SOS non-degradation water quality treatment for all new and reconstructed impervious cover.
- The project is providing improved water quality treatment for all existing impervious cover.
- The project is updating 2 existing water quality ponds to provide SOS non-degradation water quality treatment for 121.6 acres of offsite drainage including 31.9 acres of offsite impervious cover.
- The project will reduce impact to 2 Critical Environmental Features – recharge features within a tributary of Slaughter Creek
- The project will pay into the Riparian Zone Mitigation Fund in lieu of providing mitigation for the Floodplain Modification associated with the new water quality ponds.
- Other than the SOS amendment and variances identified, the project complies with City Code.

TO	Mark Borenstein, PE | Corridor Program Office
FROM	Travis Kaatz, PE, CFM | EDGE Engineering
CC	Arnold Ashburn, PE | AECOM
DATE	April 13, 2023
SUBJECT	Slaughter Lane Segment C2 Pond/Rain Garden U01 Placement Summary

This document is for interim review and not for construction, bidding or permit purposes.
Engineer: Travis Kaatz, PE
TBPE No. 124859
Date: April 13, 2023

TECHNICAL MEMORANDUM

PURPOSE

The purpose of this technical memorandum (memo) is to summarize the history of Pond/Rain Garden U01, outline why the pond location was chosen, and detail the design restrictions. The design team analyzed over 16 different treatment options and numerous combinations to design a water quality (WQ) plan for Slaughter Lane Segment C2 (SLGT-C2) that meets both the Barton Springs Save Our Spring (SOS) requirements, TCEQ water quality requirements, and the City Drainage and Environmental Criteria. The designed WQ controls including Pond/Rain Garden U01 were the only solution that met all the projects WQ and environmental requirements and Watershed Protection Department (WPD) Staff's requests.

HISTORY

The WPD Staff shared the "Urban Sinkhole Evaluation and Mitigation Preliminary Engineering Report" dated January 31, 2020 with the SLGT-C2 design team during initial WQ meetings in February 2020. The PER identified four potential WQ pond locations along SLGT-C2 just west of Brodie Lane that would treat existing untreated runoff from SLGT-C2 before entering the Brodie Wild Tract which contains the Brodie Cave, see Attachment A. EDGE Engineering (EDGE) evaluated the four PER pond locations along with other combinations of water quality treatment. In a meeting on May 6, 2020 with the SLGT-C2 design team, the Capital Program Office (CPO), and WPD Staff it was determined that Pond/Raingarden U01 and Pond W, which were two of the four ponds analyzed, were the most feasible and beneficial to be incorporated into the SLGT-C2 Project. Meeting minutes are provided in Attachment B.

POND U01 PLACEMENT

Six critical elements determined the location of Pond/Rain Garden U01.

1. Minimize impacts to the floodplain as much as feasible while also meeting all the project WQ and environmental requirements.
2. Providing treatment for untreated runoff from SLGT-C2 to the Brodie Wild Tract at the request of WPD Staff. It was determined that WQ ponds needed to be placed on either side of Culvert V which is located near the sag of SLGT-C2. Storm drain ponding calculations showed runoff needed to be captured west of Culvert V. This runoff cannot be conveyed east across Culvert V and therefore must be treated in a pond to the west of the Culvert.
3. Throughout meetings over the three-year history of the project, WPD Staff expressed desires to minimize excavation in the karst areas surrounding the SLGT-C2 corridor. Pond/Rain Garden U01 was designed to closely match the natural contours in its placement area to minimize excavation and avoid disturbance of the karst area.
4. Retaining walls were avoided to limited footing excavation and keep the pond design as natural as possible. Additionally, the abrupt vertical elements of retaining walls would be more likely to cause localized erosion and undermining as well as limit maintenance access around and into the rain garden.
5. Pond/Rain Garden U01 was placed to avoid protected heritage trees just west of the proposed location. These trees can be seen at the edge of the Pond U01 Pond Layout in Attachment C.

6. The placement of Pond/Rain Garden U01 was also very much controlled by storm drain ponding criteria. Pond/Rain Garden U01 received storm water runoff from Inlet U-00. Flow bypass inlet U-00 continues east to the sag inlet east of Culvert V that drains into Pond W. The placement of Inlet U-00 was optimized to meet ponding criteria approaching the sag as well as capturing as much runoff as possible to meet ponding criteria at the sag. Additionally, due to the limited space available for Pond/Rain Garden U01 and Pond W, capture volume and drainage area to each pond had to be balanced in order to optimize WQ treatment. This meant placing Pond/Rain Garden U01 as far east as possible.

ATTACHMENTS:

- Attachment A: Pages from the Urban Sinkhole Evaluation and Mitigation PER
- Attachment B: Meeting Minutes from May 6, 2020 with CPO and WPD Staff
- Attachment C: Pond U01 Pond Layout

ATTACHMENT A: PAGES FROM THE URBAN SINKHOLE EVALUATION AND MITIGATION PER

City of Austin
Watershed Protection Department

Urban Sinkhole Evaluation and Mitigation
Preliminary Engineering Report

Prepared by

Geosyntec consultants

PRELIMINARY / DRAFT
FOR INTERIM REVIEW ONLY
NOT FOR BIDDING, CONSTRUCTION,
OR PERMIT PURPOSES
MARTIN C. CHRISTMAN
P.E. TEXAS NO. 94737

In Association With
Glenrose Engineering, Inc.,
Michael Barrett, Ph.D, P.E., and
MWM DesignGroup, Inc.

31 January 2020

CIP Subproject # 6660.075

into the existing berm. The design also includes minor grading in the vicinity of the proposed notch to promote drainage.

The primary design objective for this option is to restore recharge to the karst feature. The design would allow treated stormwater from the adjacent Sendera 15B Wet Pond to enter the sinkhole. The existing wet well that is designed to pump water from the area would remain, but it would only be needed when the infiltration capacity of the sinkhole is exceeded.

4.1.8 Brodie Cave Biofilters

The proposed design option for Brodie Cave is shown on Drawing 8. The proposed design consists of four separate biofilters. Biofilter A and Biofilter B are located on the north side of Slaughter Lane within an existing drainage easement on property owned by Austin Independent School District. Biofilters C and D are located on the south side of Slaughter Lane on City of Austin water quality protection land (Brodie Wild). Each of the biofilters is sized with a water quality volume of 400 cubic feet. The proposed biofilters include limestone block borders and are lined with geomembrane. Treated stormwater is discharged via an underdrain with a raised outlet. The proposed outlet pipes include ball valves that can be manually closed in the event of a spill.

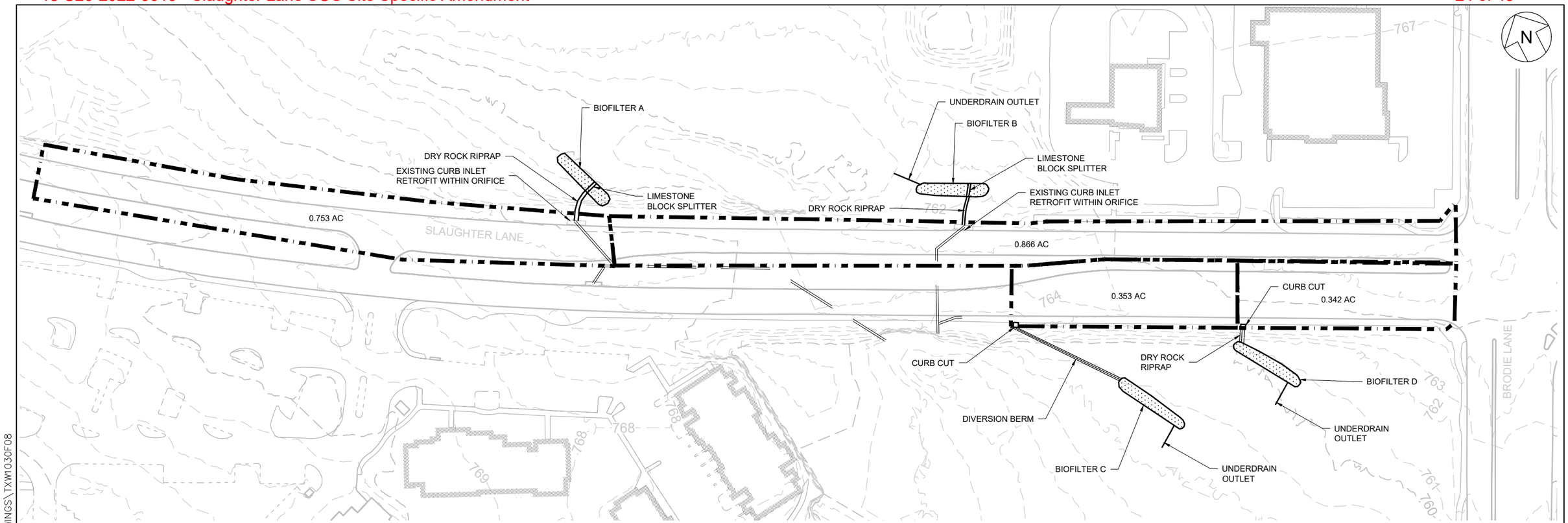
The primary design objective for the biofilters is to intercept and confine potential hazardous material spill on Slaughter Lane. The existing storm drain system routes untreated roadway runoff from approximately 2.3 acres directly into the Slaughter Creek tributary channel, which includes Brodie Cave and another karst feature in the Brodie Wild tract. The biofilter designs would also capture and treat runoff from smaller storms.

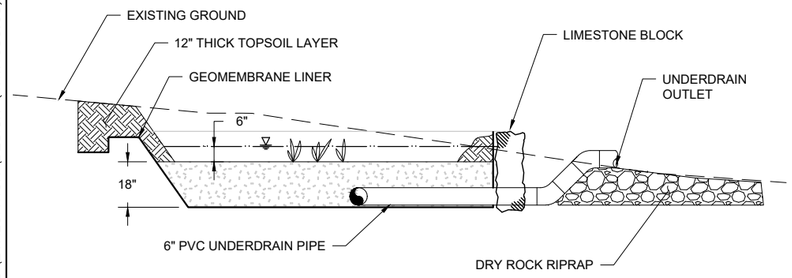
Biofilters A and B would receive runoff from the westbound lanes of Slaughter Lane via existing curb inlets. The back walls of the curb inlets would require retrofitting to include orifices to convey stormwater to the biofilters. The biofilters would include sedimentation chambers and splitters and would be designed to overflow to the adjacent stream channel.

Biofilters C and D would receive runoff from the eastbound lanes of Slaughter Lane via proposed curb cuts. The biofilters are designed with level spreaders to discharge sheet flow to down-gradient areas to the benefit of existing vegetation. The curb cuts will be sized to limit erosive flows. Excessive flows will bypass the curb cuts.

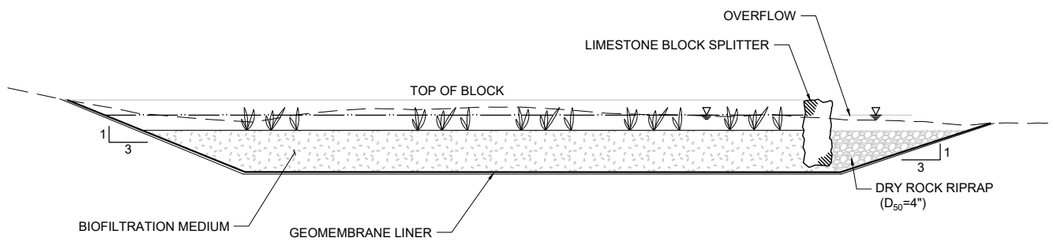
4.1.9 Kentucky Sinkhole Biofilter

The proposed design for the Kentucky Sinkhole biofilter is shown on Drawing 9. The biofilter is located on the east side of Brodie Lane within an existing drainage easement on property owned by the Brodie Springs Home Owners Association. The biofilter is sized with a water quality volume of 1,180 cubic feet. The proposed biofilter includes a limestone block border and is lined





A/9 SECTION (TYP)
UNDERDRAIN SYSTEM
NTS



B/9 SECTION (TYP)
BIOFILTER
NTS

NOTES:

1. ELEVATION CONTOURS FROM TEXAS NATURAL RESOURCES INFORMATION SYSTEM (STRATMAP 2017 50 CM CENTRAL TEXAS LIDAR DATA), DATED DECEMBER 15, 2016 TO MARCH 24, 2017.
2. STORM WATER PIPES AND DRAINAGE CHANNELS PROVIDED BY CITY OF AUSTIN. ESTIMATED BASED ON FIELD OBSERVATIONS.
3. ROADS, BUILDINGS, AND OTHER TOPOGRAPHIC FEATURES MADE AVAILABLE BY THE CITY OF AUSTIN PLANIMETRICS DATA DATED 2017.

LEGEND

- EXISTING GROUND ELEVATION CONTOUR (FT, MSL)(NOTE 1) (900)
- EXISTING BUILDING
- EXISTING ROAD
- EXISTING STORMSEWER / DRAINAGE PIPE
- MITIGATION MEASURE DRAINAGE AREA

PRELIMINARY / DRAFT

FOR INTERIM REVIEW ONLY NOT FOR BIDDING, CONSTRUCTION OR PERMIT PURPOSES
MARTIN C. CHRISTMAN, P.E. TEXAS NO. 94737

0 100'
SCALE IN FEET

PRELIMINARY ENGINEERING DRAWING
NOT FOR BID OR CONSTRUCTION

BRODIE CAVE
BIOFILTER

Geosyntec consultants
TX ENG. FIRM REGISTRATION NO. 1182

JANUARY 2020

DRAWING
8

P:\CADD\PROJECTS\C\CITY OF AUSTIN\SINKHOLES\EVALUATION\DESIGN (TXW1030.03)\DRAWINGS\TXW1030F08

ATTACHMENT B: MEETING MINUTES FROM MAY 6, 2020 WITH CPO AND WPD STAFF

MEETING MINUTES

WHEN	May 6, 2020
WHO	Greg Weems (CPO), Lee Sherman (WPD), Randy Harvey (CPO), Erich Schroeder (WPD), Charles Kaough (CPD), Arnold Ashburn (AECOM), Chad Cormack (EDGE), Leigh Ruhnau (EDGE)
WHERE	Microsoft Teams Meeting
WHAT	SLGT Slaughter Lane Corridor C2 WQ Concepts

MEETING MINUTES

DISCUSSION TOPIC

1. Chad introduced the meeting objective to determine a path forward for the water quality design of the Slaughter Lane Segment C2.
2. Chad described that efforts to date have resulted in some roadblocks. So, EDGE reviewed the entire corridor again and tried to identify all potential solutions for water quality treatment including new ponds within new ROW, existing ponds maintained by WPD, existing ponds maintained by private HOA or developments, and ponds outside of the project area.
    a. This resulted in approximately 16 different treatments options that can be combined to meet the treatment requirements of the corridor.
3. Chad noted that there are three regulatory entities that must be satisfied with the water quality solution for the project to move forward:
    a. The City of Austin: Including WPD and DSD
        - Must meet requirements outlined in the SOS Ordinance
    b. The TCEQ
        - Must remove 80% of the incremental increase in annual TSS loading
    c. USFWS
        - Will need to show through either of the two calculations above that the project will not result in an impact to endangered species (i.e. Barton Springs Salamander)
    d. It was noted that each entity has its own lens and that a solution that satisfies one may not satisfy the other.
4. Chad described each of the 16 different treatments options with a focus on the three large Sendera ponds:
    a. Pond O: Sendera South Wetpond
        - EDGE came up with three options for improvements to Pond O:

- Infiltration Rain Garden within Pond O – In previous meetings this was a front-runner due to the small footprint and lack of ROW or easement required. However, the last meeting with BCCP and TxDOT staff indicated that the entirety of Pond O was located on a sinkhole and digging on the sinkhole any further would be of concern to TCEQ. For this reason, this option was not recommended for further investigation. The group agreed.
- Irrigate approximately 1.8 ac near Pond O – This option would irrigate Pond O on the adjacent AISD property. This mitigates the environmental concern with the sinkhole and provides substantial treatment for the project (about 60% of Zinc). This is the recommended option for Pond O. The group agreed.
- Fully irrigate Pond O – This option would require additional easement from AISD of approximately 6.8 ac. The additional treatment provided through full irrigation is not enough to justify the additional easement cost. The group agreed.

b. Pond 15B:
   - EDGE is exploring the option of infiltrating Pond 15B by intercepting the existing pumped discharge, providing a level spreader and infiltrating in the Karst Preserve.
   - Chad described that many previous discussions of this pond have led us to believe it may not be a feasible option due to an existing level spreader, the existing sinkhole and a diverse set of interests surrounding this area.
     - However, EDGE still thinks this is a good idea for the project because it is inexpensive and achieves approximately 31% of the zinc removal for the project.
     - Challenges include getting a waiver from the infiltration testing requirements on the Karst Preserve, existing level spreader, pump condition, and the interests of other divisions of WPD to enhance recharge to the existing sink hole.
     - The group all agreed that this idea was still worth pursuing.
     - Lee noted that the concept shows an improvement in water quality and that the existing gabion does not have a water quality benefit today. He stated his willingness to help discuss with DSD.
     - Charles suggested that the project could also propose to improve the level spreader along the entire parcel line as there is no evidence that it is functioning as intended today.
     - Charles stated the need to understand the contents of the PER surrounding the sinkhole and that he would help coordinate with Lindsey.

c. Pond 11B:
   - EDGE described a new concept to provide infiltration for Sendera Pond 11B north of Davis Lane.
   - One of the project outfalls discharges to a storm drain system that conveys runoff to Pond 11B.
   - The existing pond is a large sedimentation filtration pond that discharges into a large detention pond. The concept would be to dig down in the detention pond to provide an infiltration rain garden where the sedimentation filtration pond would outfall.
   - Some concerns with the concept was the cost for that large of a rain garden facility, approval from the Sendera HOA (noted that local residents use the pond as a "dog park"), difficulty in excavating in limestone since this is already a large excavation, potential to unearth features when excavating a large area in the limestone.
   - Lee suggested irrigation instead of rain garden and potential to get a waiver.
   - The pond does have potential to provide significant water quality benefit to the project up to about 70% of the zinc removal.
   - The pond also provides a potential benefit being in the Williamson Creek watershed while all other facilities are within the Slaughter Creek watershed.

d. Chad suggested continuing to pursue all the large ponds (Pond O, Pond 15B and Pond 11B). That way if the project hits a roadblock with one, the other two are still options to achieve treatment.

5. Chad walked through the remaining pond options that included:
    a. Retrofit of existing ponds Q-R and S-T adjacent to the AISD practice fields: EDGE explored full infiltration of both facilities or doubling the size of both facilities.
    b. Pond M02 + Infiltration: New Pond on the Continental Homes property – does not provide much benefit, challenging to get enough runoff to that location.
    c. Pond U01 + Infiltration: New Pond on AISD property north of Slaughter and east of Pond S-T. Provides benefit – treats previously untreated runoff.
    d. Pond W + Infiltration: New Pond on AISD property north of Slaughter and west of Brodie. Provides benefit – treats previously untreated runoff.
    e. Pond X + Infiltration: New Pond on Brodie Wild tract – treats Brodie south of Slaughter. Very little benefit. Challenging with the Brodie Wild tract.
    f. Pond Y + Infiltration: New Pond north of Slaughter and east of Brodie – Provides benefit – treats previously untreated runoff. A little outside of the project C2 limits and requires new ROW or easement.
    g. Pond O-Q + Infiltration: New Pond roughly in the middle of the project. North of Slaughter opposite of Pond O. Provides benefit but requires new ROW or easement.
6. Chad then walked through various options to achieve treatment based on the fewest number of facilities, fewest required property owner coordination meetings and options mostly likely to satisfy all (COA, TCEQ and USFWS).
    a. If feasible: Option C includes Pond 15B, Pond O, and Pond Q-R retrofit with infiltration. This option requires only easement from AISD, and retrofit of existing facilities maintained by WPD. This is likely to be the most cost-effective option if the project can get buy off from each entity. This option would likely then include biofilters from the PER on the Brodie Wild site.
    b. Option J is the option that EDGE feels is most likely to satisfy all parties and includes improvements to Pond 11B, Pond O and two new ponds; Pond W and Pond U01. This option provides treatment in both named watersheds and would provide two new facilities that could be easily calculated to show removal rates in terms of both City and TCEQ regulations.
    c. The group discussed the Brodie Wild PER. Randy asked Lee if WPD would prefer to do their own project.
        - Lee said that it would be cleaner to do the project as provided in the PER since this has been vetted through all the stakeholders. WPD would like to piggy back that project on to the corridor project and pay for it as long as the CPO doesn't need it for compliance.
7. The group agreed to continue to pursue Pond options for Pond 11B, Pond 15B, Pond O and all potential facilities located on AISD property to determine the best path forward
    a. Randy noted that AISD has been amenable to the conversations thus far and Lee stated that watershed has a good relationship with AISD.

ACTION ITEMS

Responsible Party	Action Item
Charles Kaough	Coordinate with Lindsey to set up a meeting and get thoughts on 15B improvements.
EDGE	Create exhibits for CPO to use in coordination meetings with Sendera HOA and AISD
Greg Weems	Set up meetings with: Sendera HOA, AISD. For Pond 15B: DSD and Karst Preserve

ATTACHMENT C: POND U01 POND LAYOUT

Slaughter Lane

POINT ID	NORTHING	EASTING	ELEVATION	DESCRIPTION
U30	10041060.76	3080497.90	761.73	6" PVC FL
U31	10041072.76	3080505.89	761.73	6" PVC FL
U32	10041018.11	3080514.06	761.73	6" PVC FL
U33	10041031.99	3080534.88	761.73	6" PVC FL
U34	10040981.87	3080563.55	761.73	6" PVC FL
U35	10040986.09	3080567.52	761.73	6" PVC FL
U36	10040956.49	3080598.89	761.73	6" PVC FL
U37	10040944.96	3080611.12	761.73	6" PVC FL
U38	10040913.45	3080639.15	765.59	ROCK RIPRAP
U39	10040922.97	3080623.86	766.25	ROCK RIPRAP
U40	10040963.27	3080627.45	763.53	ROCK RIPRAP
U41	10040935.66	3080659.58	762.76	ROCK RIPRAP
U42	10040925.67	3080651.00	765.50	ROCK RIPRAP
U43	10040922.97	3080634.35	764.06	ROCK RIPRAP
U44	10040928.35	3080638.83	764.06	ROCK RIPRAP

NOTES:

1. SEE POND DETAIL SHEET.
2. ALL POND BOTTOMS, SIDE SLOPES, AND EARTHERN EMBANKMENTS SHALL BE COMPACTED TO NINETY-FIVE (95) PERCENT MAXIMUM DENSITY IN ACCORDANCE WITH CITY OF AUSTIN SPECIFICATION.
3. POND SHALL BE LINED WITH AN IMPERMEABLE GEOMEMBRANE LINER. SEE POND LINER DETAILS SHEET FOR MORE INFORMATION.
4. PONDS SHALL BE CONSTRUCTED FIRST IN THE SEQUENCE OF CONSTRUCTION WITH ADEQUATE INFLOW AND A STABALIZED DISCHARGE SPILLWAY TO ACT AS EFFECTIVE TEMPORARY SEDIMENT BASINS DURING THE CONSTRUCTION PERIOD.
5. ALL WATER QUALITY PIPE IS 6" PERFORATED PVC INSTALLED AT 0.00% SLOPE UNLESS OTHERWISE NOTED.
6. THE TOP OF THE CLEANOUTS SHALL BE INSTALLED LEVEL WITH THE TOP BED/FINISHED GRADE ELEVATION INDICATED ON THE POND LAYOUTS.
7. INSTALL BIOFILTRATION MEDIA LAST IN THE SEQUENCE OF CONSTRUCTION TO AVOID CLOGGING AND COMPACTING THE MEDIA.
8. THE CITY WATERSHED PROTECTION DEPARTMENT SHALL MAINTAIN THE RAIN GARDEN.
9. 100-YR INUNDATION COMPUTED WITH HEC-RAS v6.0.0 AND MAPPED ON 2017 TNRIS LiDAR.

LEGEND:

- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXIST ROW
- PROPOSED EASEMENT
- EXIST EASEMENT
- TOP OF POND
- TOE OF SLOPE
- PROPOSED ROCK RIPRAP
- CWQZ — CRITICAL WATER QUALITY ZONE
- WQTZ — WATER QUALITY TRANSITION ZONE
- LIMITS OF SOIL MEDIA
- 100-YR COMPUTED INUNDATION

APPROX LIMITS OF GEOMEMBRANE LINER INSTALLATION

5' BERM
EL 765.50

R=19.8'

COA PROPOSED DRAINAGE EASEMENT
DOC NO _____

INSTALL CLEANOUTS AT EVERY PIPE CONNECTION AND END.

U-04
PROP HEADWALL (SEE U-04 HEADWALL DETAIL)
NORTHING 10040977.14
EASTING 3080633.41

RAIN GARDEN TOP
EL 765.50

START OF BERM

R=19.8'

FL OF ALL UNDERDRAIN
761.73

10' ELECTRIC AND COMMUNICATIONS EASEMENT
DOC.200300180 OPRTCT

COA PROPOSED DRAINAGE EASEMENT
DOC NO _____

DETENTION AND WATER QUALITY POND EASEMENT
DOC. 2003168051 OPRTCT
WATER QUALITY POND EASEMENT #1

DRAINAGE EASEMENT
DOC. 2003160122
OPRTCT

LINE U-03
27 LF X 6" PVC
@0.50%

GRADE TO DRAIN

6" ROCK RIPRAP
SEE U-04 HEADWALL DETAIL

FL 762.60

6" GATE VALVE

U-03
PROP 48IN MANH (506S-3)
NORTHING 10040965.44
EASTING 3080607.33

RAIN GARDEN
FINISHED GRADE
EL 763.90

RAISED OUTLET
FL 762.73

11.25° BEND

43 CY OF 6" MORTARED ROCK RIPRAP

36 FT WEIR
EL 764.90

20' SLOPE EASEMENT
VOL. 9802, PG. 9 DRTCT

R=4.8'

END OF BERM

STORMWATER FACILITY SIGN
SEE DETAIL 662S-3

INLET U-00

SLAUGHTER LANE

℄ SGLT

POINT ID	NORTHING	EASTING	ELEVATION	DESCRIPTION
U01	10041075.56	3080492.44	765.50	TOP
U02	10041069.87	3080519.59	765.50	TOP
U03	10041003.92	3080563.56	765.50	TOP
U04	10041001.45	3080565.52	765.50	TOP
U05	10040952.08	3080617.84	765.50	TOP
U06	10040948.66	3080619.07	764.90	WEIR
U07	10040925.20	3080646.37	764.90	WEIR
U08	10040916.78	3080643.33	765.50	TOP
U09	10040912.82	3080643.99	765.50	TOP
U10	10040914.74	3080637.66	765.50	TOP
U11	10040939.57	3080606.99	765.50	TOP
U12	10041005.78	3080512.22	765.50	TOP
U13	10041010.55	3080507.41	765.50	TOP
U14	10041041.06	3080485.73	765.50	TOP
U15	10041045.30	3080483.44	765.50	TOP
U16	10041049.68	3080481.72	765.50	TOP
U17	10041073.39	3080489.17	765.50	TOP
U18	10041071.37	3080494.80	763.90	BOTTOM
U19	10041067.21	3080515.60	763.90	BOTTOM
U20	10041000.55	3080560.04	763.90	BOTTOM
U21	10040997.96	3080562.23	763.90	BOTTOM
U22	10040948.59	3080614.55	763.90	BOTTOM
U23	10040943.50	3080609.74	763.90	BOTTOM
U24	10041009.72	3080514.96	763.90	BOTTOM
U25	10041013.33	3080511.33	763.90	BOTTOM
U26	10041043.84	3080489.65	763.90	BOTTOM
U27	10041047.05	3080487.91	763.90	BOTTOM
U28	10041051.44	3080486.19	763.90	BOTTOM
U29	10041069.40	3080491.83	763.90	BOTTOM

REV NO.	BY	DATE	REVISION DESCRIPTION

Leigh E. Ruhnau
STATE OF TEXAS
LEIGH E. RUHNAU
131184
LICENSED
PROFESSIONAL ENGINEER
4/11/2023

SLAUGHTER LANE IMPROVEMENT PROJECT
LOOP 1 TO BRODIE LN (C2)

POND U01
POND LAYOUT

FULL FILTRATION RAIN GARDEN

CITY OF AUSTIN
FOUNDED 1839

austin MOBILITY BONDS | CITY OF AUSTIN CORRIDOR PROGRAM OFFICE

EDGE ENGINEERING
TBPE Firm Number 20690
3410 Far West Blvd Ste 315 Austin, TX 78731
512.767.1009
www.civil-edge.com

0' 10' 20'
SCALE IN FEET

SP-2022-0336D

1 OF 1

4/11/2023

100% SUBMITTAL

aecompw15ics01$

nametime.tbl

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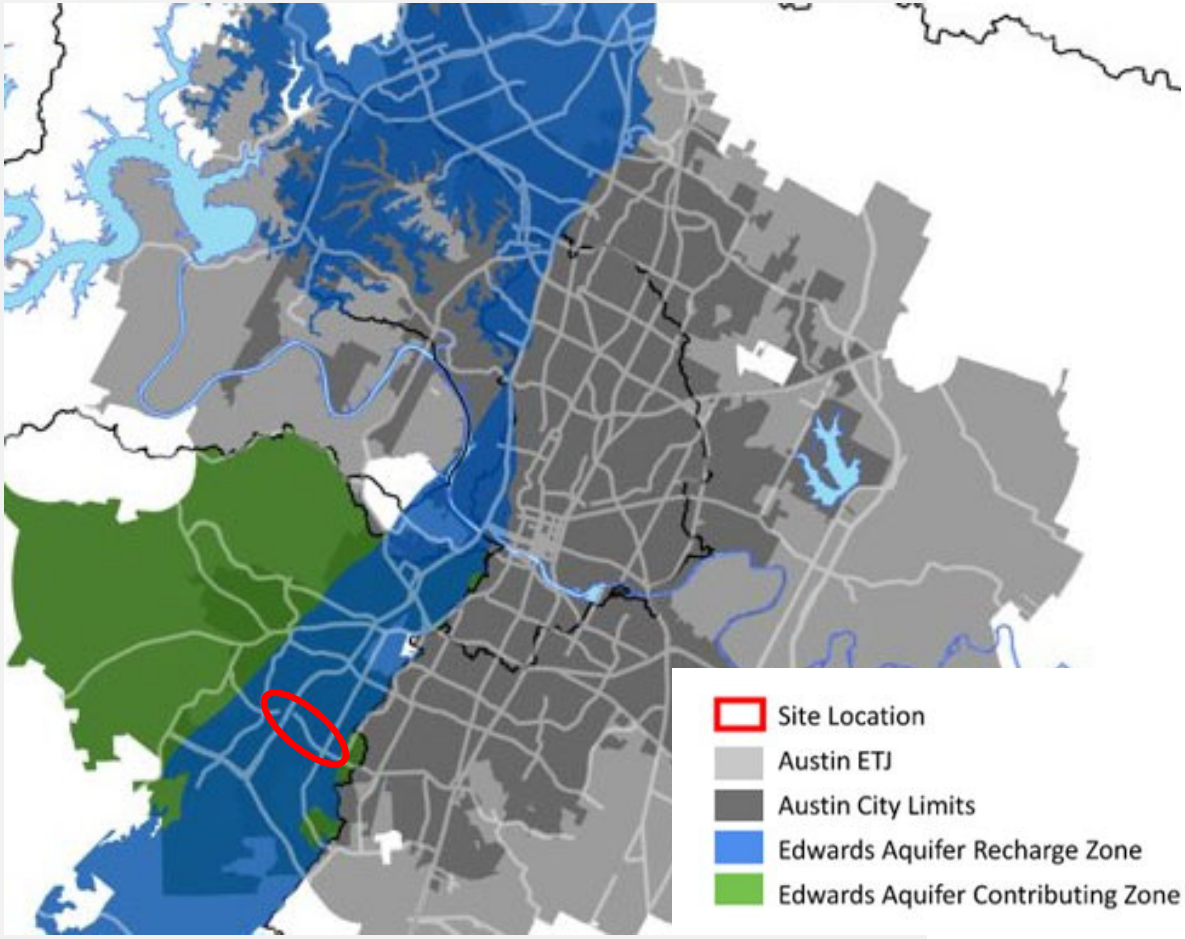
SLAUGHTER LANE IMPROVEMENTS

CORRIDOR PROGRAM OFFICE

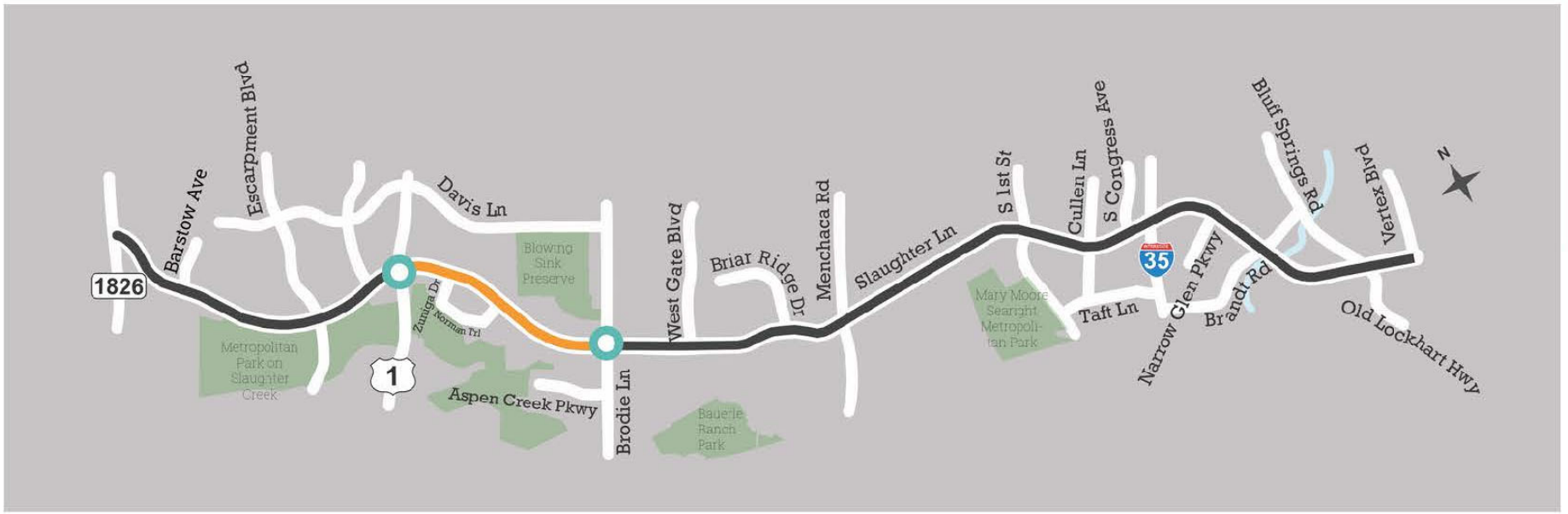
Presenter: Randy Harvey

PROJECT OVERVIEW



PROJECT OVERVIEW

DESIGN UNDERWAY
SLAUGHTER LANE CORRIDOR



The Corridor Program Office is finalizing designs for multimodal safety and mobility improvements to Slaughter Lane between Loop 1 (Mopac) and Brodie Lane.

SLAUGHTER LANE IMPROVEMENTS

CORRIDOR PROGRAM OFFICE

The Slaughter Lane project between Loop 1 (MoPac) to east of Brodie Lane is anticipated to implement $16 million in critical mobility, safety, and connectivity improvements including:

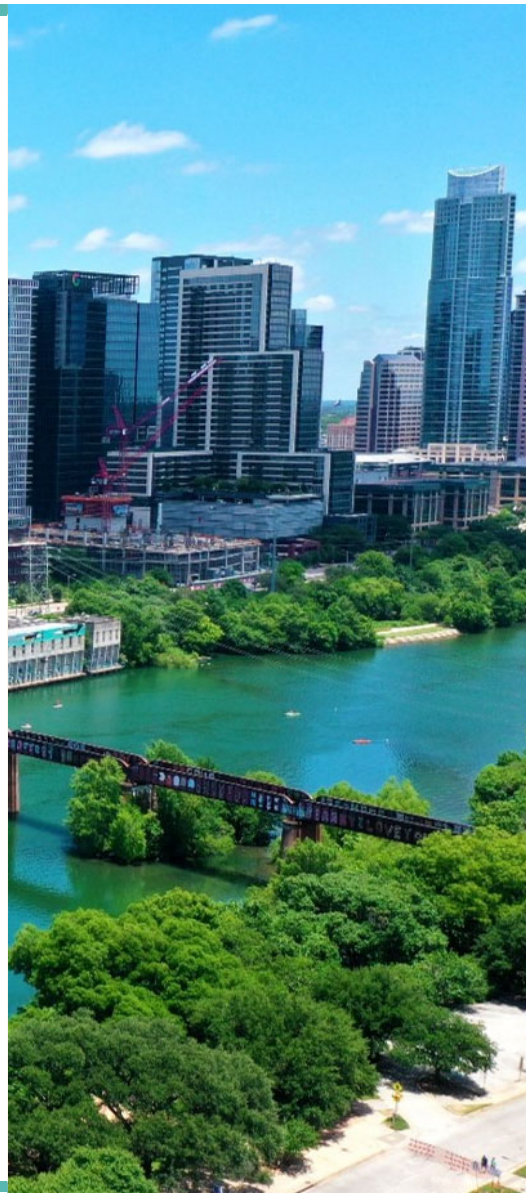
- Adding extra lanes for better vehicular travel time – **reducing travel time by 27% in peak hour**
- 8-ft Shared Use Path (SUP) for SAFE community connectivity through out the corridor for cyclist and pedestrians.
- Increased safety for users of the SUP by creating a vegetated buffer between SUP and vehicles
- New signals (Norman Trail & PHB at Zuniga Dr) and improving existing signals
- ADA-compliant curb ramps at each intersection w/ high visibility crosswalks


JAMES BOWIE


E Slaughter Ln
JAMES BOWIE
HIGH SCHOOL

CORRIDOR PROGRAM

THANK YOU



Slaughter Lane Improvement SOS Amendment

5015 ½ W Slaughter Ln

C20-2022-019

Leslie Lilly

Environmental Program Coordinator

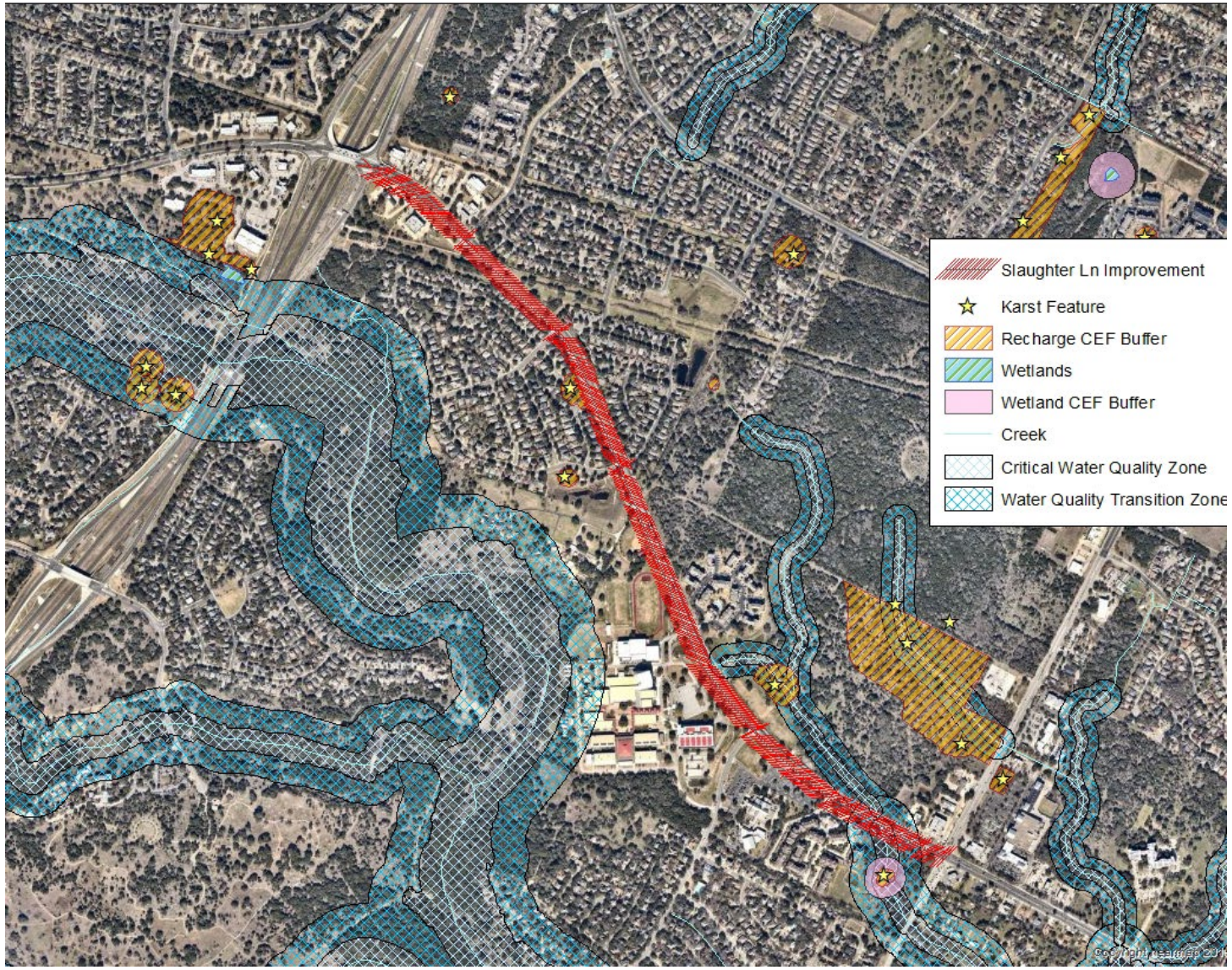
Watershed Protection

Slaughter Lane Improvement Project

- Slaughter Lane constructed in ~ 1987 (before SOS)
- One of the nine corridor projects identified for improvements in City of Austin Corridor Mobility Program
- Improvement funding provided in 2016 Mobility Bond
- Requires SOS amendment to impervious cover limits to construct improvements
- Council Resolution 20221027-038 on October 27, 2022:
  " The City Manager is directed to initiate site specific variances .....

Environmental Features

- Williamson Creek and Slaughter Creek Watersheds
- Barton Springs Zone
- Edward Aquifer Recharge and Contributing Zone
- 54% Impervious Cover
- Karst and Wetland CEFs
- Non-compliant with SOS water quality requirements



SOS Amendment

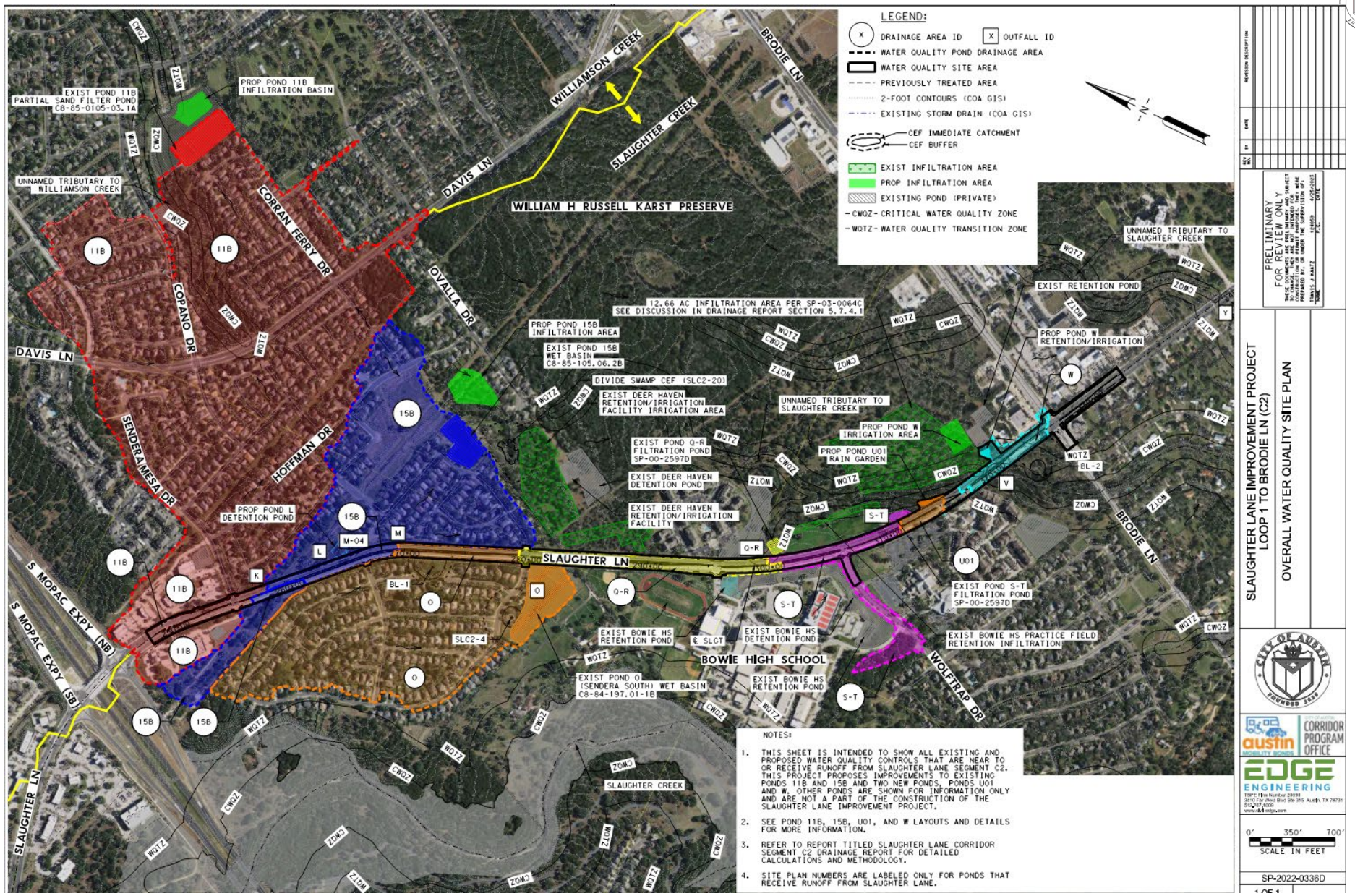
- **Section A of 25-8-514 (Pollution Prevention Required)** shall be modified to allow a maximum impervious cover for the site of 69% net site area.

ALLOWABLE Impervious Cover / Zone	Existing Impervious Cover in ROW	Proposed Impervious Cover in ROW
15% / Recharge Zone	**54%**	**69%**

SOS Amendment

Slaughter Lane Water Quality improvements

Pollutant	Unit of Measure	SOS Required Annual Pollutant Removals	Project Annual Pollutant Removal (increase over existing)	Project Annual Pollutant Removal Beyond SOS Requirements	Project Annual % Removals Above SOS Requirement
Total Suspended Solids (TSS)	**lbs/yr**	4,965.04	11,211.42	6,246.38	**226%**
Chemical Oxygen Demand (COD)	**lbs/yr**	3,433	8,694	5,261	**253%**
E Coli	**10^6 MPN/yr**	3,385,403	10,824,715	7,435,312	**320%**
Total Lead (Pb)	**lbs/yr**	1.27	2.33	1.06	**184%**
Total Nitrogen (TN)	**lbs/yr**	66.4	344.75	278.35	**519%**
Total Phosphorus (TP)	**lbs/yr**	11.84	42.55	30.69	**359%**
Zinc (Zn)	**lbs/yr**	5.67	10.33	4.66	**182%**


LEGEND:
DRAINAGE AREA ID
OUTFALL ID
WATER QUALITY POND DRAINAGE AREA
WATER QUALITY SITE AREA
PREVIOUSLY TREATED AREA
2-FOOT CONTOURS (COA GIS)
EXISTING STORM DRAIN (COA GIS)
CEF IMMEDIATE CATCHMENT
CEF BUFFER
EXIST INFILTRATION AREA
PROP INFILTRATION AREA
EXISTING POND (PRIVATE)
CWQZ- CRITICAL WATER QUALITY ZONE
WQTZ- WATER QUALITY TRANSITION ZONE
WILLIAMSON CREEK
SLAUGHTER CREEK
BRODIE LN
DAVIS LN
WILLIAM H RUSSELL KARST PRESERVE
CORRAN FERRY DR
COPANO DR
OVALLA DR
HOFFMAN DR
SENDERA MESA DR
SLAUGHTER LN
S MOPAC EXPY (NB)
S MOPAC EXPY (SB)
WOLFTRAP DR
BOWIE HIGH SCHOOL
EXIST POND 11B PARTIAL SAND FILTER POND C8-85-0105-03.1A
PROP POND 11B INFILTRATION BASIN
UNNAMED TRIBUTARY TO WILLIAMSON CREEK
12.66 AC INFILTRATION AREA PER SP-03-0064C SEE DISCUSSION IN DRAINAGE REPORT SECTION 5.7.4.1
PROP POND 15B INFILTRATION AREA
EXIST POND 15B WET BASIN C8-85-105.06.2B
DIVIDE SWAMP CEF (SLC2-20)
EXIST DEER HAVEN RETENTION/IRRIGATION FACILITY IRRIGATION AREA
EXIST POND Q-R FILTRATION POND SP-00-2597D
EXIST DEER HAVEN DETENTION POND
EXIST DEER HAVEN RETENTION/IRRIGATION FACILITY
PROP POND L DETENTION POND
UNNAMED TRIBUTARY TO SLAUGHTER CREEK
PROP POND W IRRIGATION AREA
PROP POND U01 RAIN GARDEN
EXIST RETENTION POND
PROP POND W RETENTION/IRRIGATION
EXIST POND S-T FILTRATION POND SP-00-2597D
EXIST BOWIE HS RETENTION POND
EXIST BOWIE HS DETENTION POND
EXIST BOWIE HS PRACTICE FIELD RETENTION INFILTRATION
EXIST POND O (SENDERA SOUTH) WET BASIN C8-84-197.01-1B
SLAUGHTER CREEK
NOTES:
1. THIS SHEET IS INTENDED TO SHOW ALL EXISTING AND PROPOSED WATER QUALITY CONTROLS THAT ARE NEAR TO OR RECEIVE RUNOFF FROM SLAUGHTER LANE SEGMENT C2. THIS PROJECT PROPOSES IMPROVEMENTS TO EXISTING PONDS 11B AND 15B AND TWO NEW PONDS, PONDS U01 AND W. OTHER PONDS ARE SHOWN FOR INFORMATION ONLY AND ARE NOT A PART OF THE CONSTRUCTION OF THE SLAUGHTER LANE IMPROVEMENT PROJECT.
2. SEE POND 11B, 15B, U01, AND W LAYOUTS AND DETAILS FOR MORE INFORMATION.
3. REFER TO REPORT TITLED SLAUGHTER LANE CORRIDOR SEGMENT C2 DRAINAGE REPORT FOR DETAILED CALCULATIONS AND METHODOLOGY.
4. SITE PLAN NUMBERS ARE LABELED ONLY FOR PONDS THAT RECEIVE RUNOFF FROM SLAUGHTER LANE.
PRELIMINARY FOR REVIEW ONLY
SLAUGHTER LANE IMPROVEMENT PROJECT
LOOP 1 TO BRODIE LN (C2)
OVERALL WATER QUALITY SITE PLAN
CORRIDOR PROGRAM OFFICE
EDGE ENGINEERING
0' 350' 700'
SCALE IN FEET
SP-2022-0336D

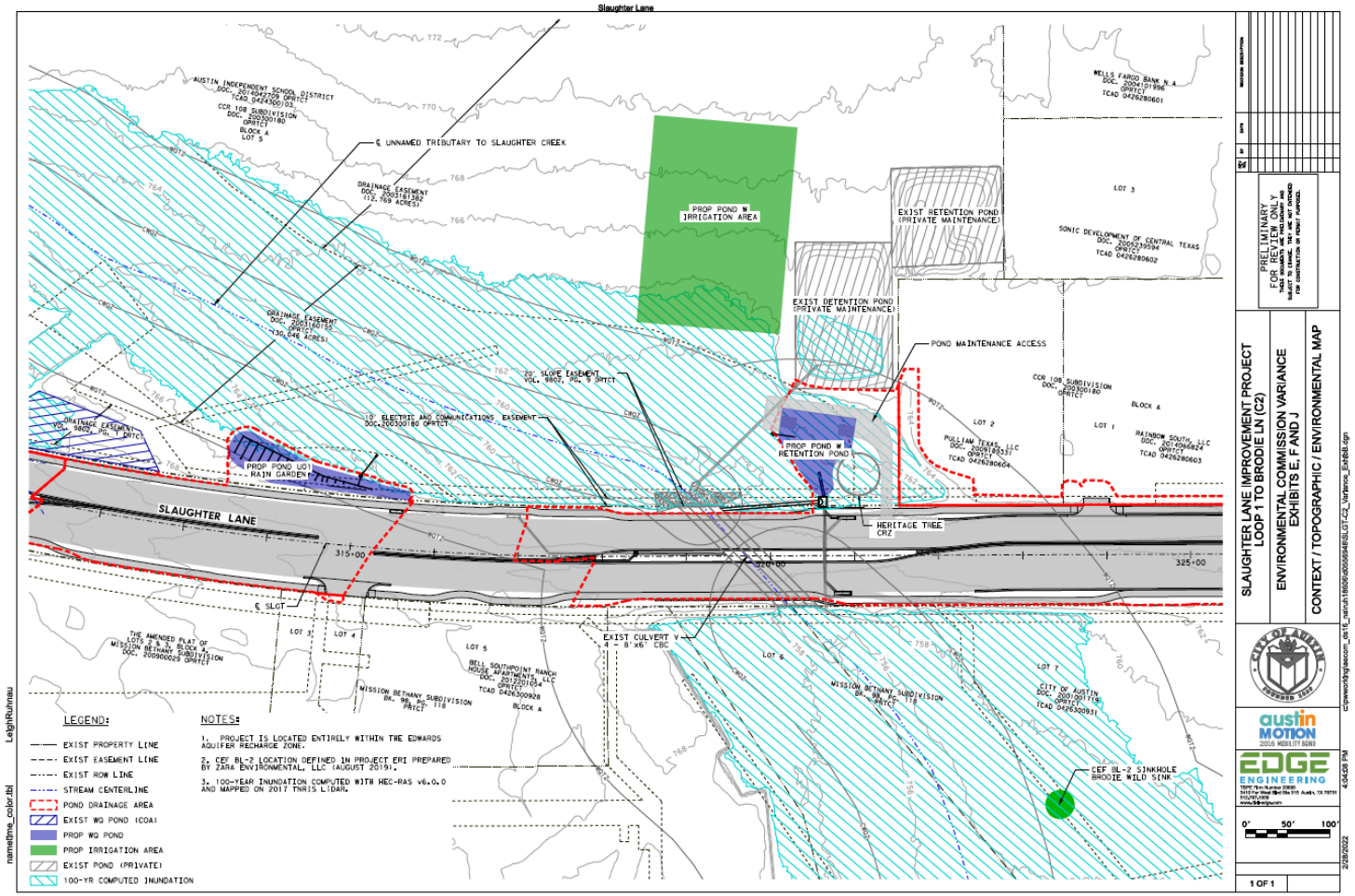
Variances

- **25-8-364(B)(3) (*Floodplain Modification)*** to allow floodplain modification within a floodplain that is in good or excellent condition.
- **25-8-641 (*Removal Prohibited)*** to allow the removal of a heritage tree that has at least one stem that is 30 inches or larger in diameter.

Floodplain Modification

Considerations

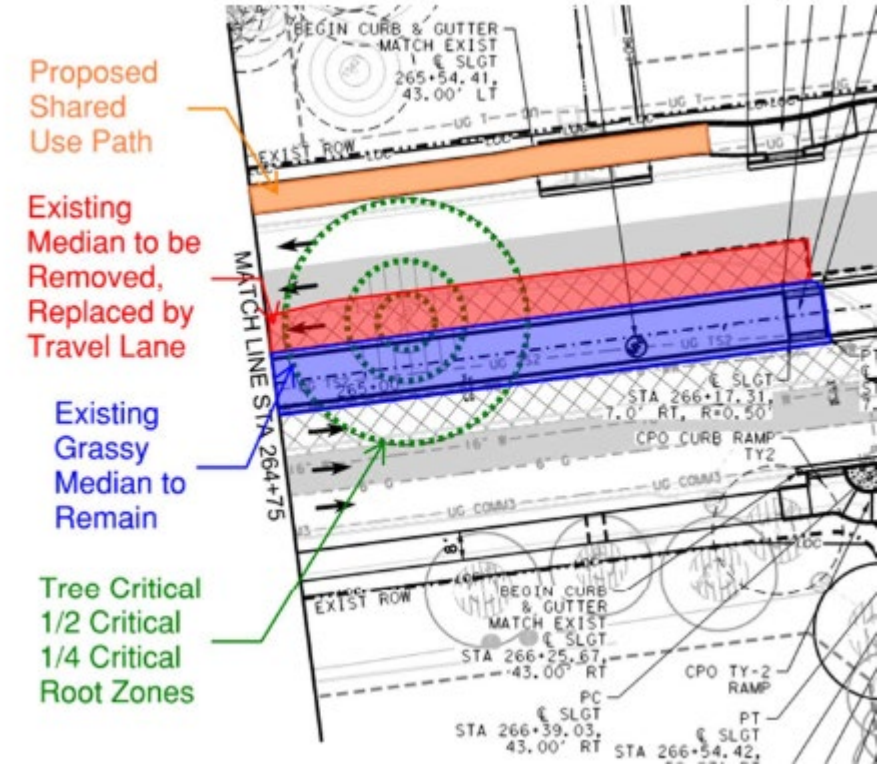
- Floodplain modification for water quality treatment
- Down stream CEFs
- Environmental constraints on other locations
- Limited area in ROW
- Existing development and real estate constraints
- 20+ locations examined



Heritage Tree Removal

Considerations

- Poor condition as determined by City Arborist
- Not a good candidate for transplanting
- Location prevents opening of traffic lanes in a public street (criteria for removal)
- Prevents development and reasonable use of the Right of Way
- Does not meet ECM tree preservation criteria
- Poses safety hazard



Staff Recommendation

Staff recommends approval of the proposed amendment and associated variances with the following conditions:

- The project is providing compliance with SOS non-degradation water quality treatment for all new and reconstructed impervious cover.
- The project is providing improved water quality treatment for all existing impervious cover.
- The project is updating 2 existing water quality ponds to provide SOS non-degradation water quality treatment for 121.6 acres of offsite drainage including 31.9 acres of offsite impervious cover.
- The project will reduce impact to 2 Critical Environmental Features – recharge and wetland features within a tributary of Slaughter Creek
- The project will pay into the Riparian Zone Mitigation Fund in lieu of providing mitigation for the Floodplain Modification associated with the new water quality ponds.
- Other than the SOS amendment and variances identified, the project complies with City Code.

Questions?

Contact Information:

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