

404(b)(1) Alternatives Analysis

**The River District Subdivision
Valley County, Idaho**

Prepared for:
Cascade River, LLC

January 2020



T-O Engineers
2471 S. Titanium Place
Meridian ID 83642

Table of Contents

1.0 Introduction	1
Statement of Project Purpose.....	1
Water Dependency	1
2.0 Proposed Project Description and Impacts.....	2
Location and Setting	2
Project Site Characteristics	2
Proposed Project.....	5
Effects to Waters of the United States	5
3.0 Analysis of Off-Site Alternatives.....	1
Selection Criteria for Off-Site Alternatives	1
1. Project Size.....	1
2. Proximity to State Highway 55.....	1
3. Connection to Utilities and Infrastructure	1
4. Available for Development	1
Analysis of Potential Off-Site Alternatives	1
4.0 Analysis of On-Site Alternatives.....	2
Selection Criteria for On-Site Alternatives.....	2
1. Project Purpose.....	2
2. Environmental Impact.....	2
3. Return on Investment	2
4. Overall.....	2
Analysis of Potential On-Site Alternatives	2
Alternative 1 – No Fill Alternative.....	2
Alternative 2 – Initial Preliminary Plat 2007	3
Alternative 3 – Revised Preliminary Plat 2019.....	4
Alternative 4 - Proposed Project, Final Preliminary Plat 2020.....	5
5.0 Conclusion.....	5
Literature Cited	6
Appendix A: Proposed Project Preliminary Plat.....	7
Appendix B: Proposed Project and Wetland Impacts.....	10

Appendix C: Alternative Plat Designs.....	16
---	----

1.0 Introduction

Cascade River LLC is seeking to construct The River District subdivision (“proposed project”) that will include 12 commercial lots, 135 single family lots, 9 cottage lots, 43 townhome lots, 52 multi-family lots, and 33 common lots. Construction of the proposed project is estimated to result in the placement of fill of 1.59 acres into jurisdictional wetlands. Therefore, Cascade River LLC has filed an application for an Individual Section 404 permit with the U.S. Army Corps of Engineers (USACE).

Any activity requiring an individual permit under Section 404 of the Clean Water Act must undergo an analysis of alternatives in order to identify the least environmentally damaging practicable alternative (LEDPA) pursuant to the requirement of the guidelines established by the EPA, 404(b)(1) Guidelines. The Guidelines prohibit discharge of dredge or fill material to Waters of the United States if there is a "practicable alternative to the proposed discharge that would have less impact on aquatic ecosystem, provided that the alternative does not have other significant environmental consequences" [40 C.F.R. § 230.10(a)]. An alternative is practicable "if it is available and capable of being done after taking into consideration cost, existing technology and logistics in light of the overall project purposes" [40 C.F.R. §§ 230.10(a) and 230.3(q)]. An alternative must meet the overall project purpose and must be consistent with practicable criteria to be deemed the LEDPA.

To assist the USACE, Cascade River LL has analyzed potential off-site alternatives and four on-site alternatives that include the proposed project. This document presents Cascade River LLC’s analysis of these potential alternatives and demonstrates that the proposed project is the LEDPA.

Statement of Project Purpose

To provide mixed-use development that includes single family and multi-family housing, open space, commercial development and associated support facilities near Idaho State Highway 55 in Cascade, Idaho, to meet local demand.

Water Dependency

An activity involving discharge into a special aquatic site, such as wetlands, is considered “water dependent” only if it requires access or proximity to or siting within the special aquatic site to fulfill its basic purpose. Construction of the proposed project is estimated to result in the placement of fill of 1.59 acres into Waters of the United States (“waters”), including wetlands. However, the project is not water dependent, since residential and commercial development that fulfills the project purpose could be built in an upland area without any disturbance to special aquatic sites.

2.0 Proposed Project Description and Impacts

Location and Setting

The proposed project is located adjacent to the city limits of Cascade in Valley County, Idaho, directly east of the North Fork Payette River and northeast of State Highway 55 (SH-55) (**Figure 1**). The project area is located in a valley surrounded by the Sawtooth Mountains and less than 2 miles downstream of Cascade Dam that creates the reservoir referred to as “Lake Cascade”. The City of Cascade has a total area of 4.86 square miles with SH-55 serving as the main corridor through the city.

Project Site Characteristics

The project area is located within the floodplain and lower terrace of the North Fork Payette River and large portions of the project area are within the 100-year floodplain. The existing use is pasture with cattle grazing. The site is relatively flat with a moderate slope from the North Fork Payette River (west) to an existing 25-foot ridgeline (east) that forms a bench-like feature along the eastern border of the project area. There are several low-lying drainage areas containing wetlands that receive water from seasonal runoff originating from the Sawtooth Mountains and proximity to groundwater.

A wetland delineation identified 15.72 acres of palustrine emergent (PEM) wetlands within the project area (T-O Engineers 2019) (**Figure 2**); these wetlands received an approved jurisdictional determination (NWW-2019-0577-B03) by the USACE on November 1, 2019.

Upland vegetation is mostly shrub habitat consisting of Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), Sandburg bluegrass (*Poa secunda*), and cheatgrass (*Bromus tectorum*), with occasional Ponderosa pine (*Pinus ponderosa*) or lodgepole pine (*Pinus contorta*). Wetland vegetation varies depending on location with Nebraska sedge (*Carex nebrascensis*), Baltic rush (*Juncus balticus*), beaked sedge (*Carex rostrata*), and reed canarygrass (*Phalaris arundinacea*) among the most abundant species. Reed canarygrass is a non-native species which has been determined to be invasive in wetland areas. None of the wetlands contain a shrub or tree overstory.

A functional assessment identified all wetlands within the project area as Category III wetlands. In particular, wetlands within the project area ranked moderate to high on sediment, nutrient, and toxicant retention; surface water storage; groundwater recharge and discharge; food chain support; and general wildlife habitat (T-O Engineers 2020).

The project site (Parcel Number RP14N04E310605) is currently zoned for mixed-use (MU) residential, but Cascade River LLC seeks to rezone the area to Residential III (R-3), which allows for multi-family dwellings and retail shops with a special-conditional use permit. The proposed rezone is supported by the City of Cascade (2018) Comprehensive Plan future land use map. Cascade River LLC also seeks to annex the property into the City of Cascade limits.



 Project Area

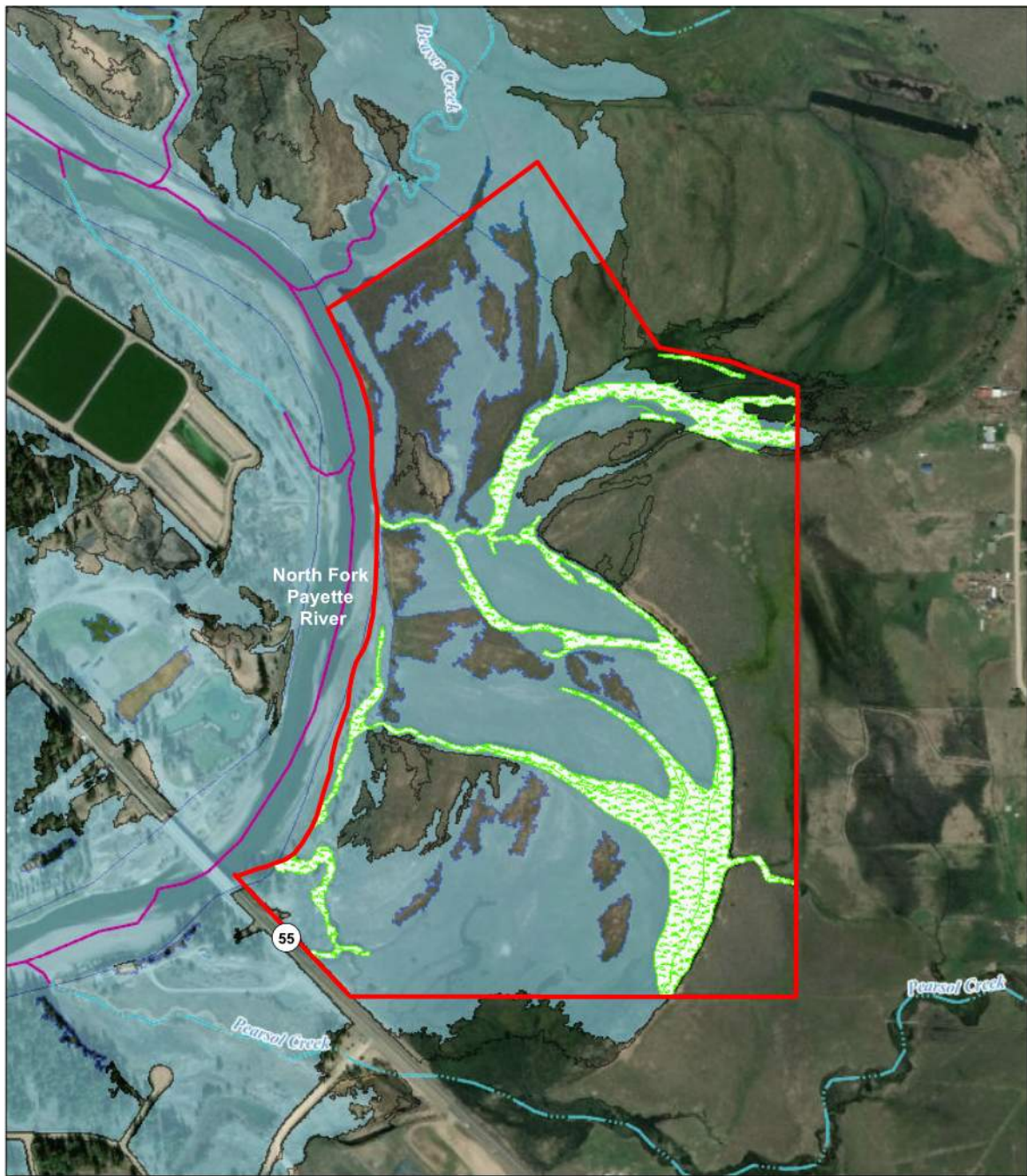
Parcel Number RP14N04E310605



0 0.5 Miles



Figure 1. Project Vicinity Map



- Project Area
- 100-Year Floodplain
- Palustrine Emergent Wetlands

0 0.25 Miles



Figure 2. Aquatic Resources and Delineated Wetlands

Proposed Project

The proposed project purpose is to provide a variety of land uses and housing types, including multi-family housing, commercial lots, and open space that enhances the community of Cascade. Specifically, the proposed project contains 122.41 acres of property divided into the following uses:

- Commercial use - 6.17 acres (12 lots);
- Multi-family - 10.7 acres (52 lots, 256 units);
- Single family – 64.16 acres (135 lots);
- Cottage – 1.23 acres (9 lots);
- Townhome – 4.99 acres (43 lots); and
- Common Areas – 35.78 acres (33 lots), that include 4.08 acres of ponds and 31.71 acres of wetland and park areas.

Please refer to **Appendix A** for the current plat design.

Primary access to the proposed development will be a public road off of SH-55. The proposed project will connect to existing sewer and potable water lines adjacent to the site's southern property line. An existing well and excavated pond areas will be utilized to provide pressurized irrigation.

The primary project constraints are related to proximity to the North Fork Payette River, its associated floodway and floodplain, and the presence of jurisdictional wetlands within the project area.

Development will not occur within the floodway. A preliminary analysis has been conducted to determine amount of fill required to raise proposed lots out of the 100-year floodplain; a pond will be excavated to provide fill and to ensure no net rise. Cascade River LLC shall receive a "no net rise" certification from the Federal Emergency Management Agency (FEMA) and a Flood Plain Development Permit from the U.S. Army Corps of Engineers (USACE).

The proposed development has been designed to avoid and minimize impacts to delineated wetland areas to the greatest extent possible, with roads and lots situated in upland areas and wetland areas retained in common areas (**Appendix B**). As a result, approximately 90% (14.13 acres) of wetlands will be avoided. Due to the extent and dendritic pattern of wetlands throughout the project area, required road connections, and desired lot density, there are no practical measures to entirely avoid wetland impacts.

Effects to Waters of the United States

There are 15.72 acres of jurisdictional PEM wetlands within the 122.41-acre project area. The project area also abuts the North Fork Payette River, a navigable waterway. Total permanent wetland impacts associated with the development of the property are estimated at 1.59 acres (**Appendix B**). These impacts would be mitigated through permittee-responsible, on-site mitigation that established 5.02 acres of Palustrine Scrub-Shrub (PSS) wetlands near existing low-lying wetland areas. The plantings also include wetland species that provide pollinator habitat. Performance goals will be achieved through maintenance, monitoring and adaptive management over five (5) full growing seasons.

3.0 Analysis of Off-Site Alternatives

Selection Criteria for Off-Site Alternatives

Site selection criteria represents the first level of screening for availability of possible off-site alternatives to the proposed project site that achieve the project purpose. These criteria are designed to exclude from further evaluation sites which would clearly not be practicable. Selection criteria used for screening potential alternative sites include the following:

1. Project Size.

To satisfy the project purpose, the parcel must be at least 100 acres in size to accommodate the range of single family, cottage, townhouse and multi-family lots, commercial lots, and common areas. It was determined that a minimum of 100 acres would be necessary to accommodate all the necessary components of the multi-use planned community.

2. Proximity to State Highway 55

State Highway 55 serves as the primary corridor through the City of Cascade. Access to the highway was identified as a necessary component to accommodate the amount of traffic into and out of the proposed development, and to provide easy access to commercial development by the public-at-large directly off State Highway 55.

3. Connection to Utilities and Infrastructure

The site must be adjacent to or in a location where utilities and infrastructure are available or can be extended at a reasonable cost. To be deemed practicable, the utilities and infrastructure must be available within the next two (2) years.

4. Available for Development

The parcel must be available for development. A site is not considered available if it is currently developed, has been approved for alternative development, is designated for other zoning uses, or does not comply with the City of Cascade (2018) Comprehensive Plan future land use map.

Analysis of Potential Off-Site Alternatives

Alternative off-site locations that meet the project purpose as a large-scale, mixed-use development within or near the City of Cascade are limited due to the constrained environmental setting and the small size of the City (less than 5 square miles). During initial analysis of potential off-site alternatives, no properties were identified that met the initial screening criteria with exception to the proposed project site. The proposed project site is over 100 acres in size, has direct access to SH-55, can extend at a reasonable cost to existing utilities and infrastructure, is available (owned by developer), and is consistent with the City of Cascade Comprehensive Plan future land use map for mixed-use development (City of Cascade 2018).

4.0 Analysis of On-Site Alternatives

Selection Criteria for On-Site Alternatives

Four on-site alternative project designs which could potentially reduce impacts to wetlands and waters were identified. Each of these alternatives was analyzed under the criteria defined below to determine if it represented the least environmentally damaging practicable alternative (LEDPA).

1. Project Purpose

The alternative plat design must be of sufficient size and density to provide mixed-use development that includes single family and multi-family housing, open space, and commercial development. To accomplish this purpose the community must include at least 250 residential units, 10 commercial units and common areas designated for wetlands and community amenities, including parks and pathways.

The alternative design must also include a mixture of housing types necessary to provide options for various sectors of the housing market in the City of Cascade.

2. Environmental Impact

The alternative plat design must have equal to or less impact to wetlands and waters than the proposed project, without having other significant environmental impacts.

3. Return on Investment

The alternative plat design must meet current market demands in order to achieve a positive return on investment. A recent market analysis identified the need for commercial lots, multi-family housing, and low-income housing in the City of Cascade.

4. Overall

An alternative is not a practicable alternative unless it meets all of the above criteria.

Analysis of Potential On-Site Alternatives

Alternative 1 – No Fill Alternative

1. Project Purpose

Alternative 1 was designed to test the practicability of avoiding impacts to all of the site's wetland and aquatic resources. Due to the extent and dendritic pattern of wetlands throughout the project area, full avoidance of all Waters of the U.S. would only allow for the development of around 31 acres. The no fill alternative is not of sufficient size or density to provide mixed-use development of at least 250 residential units, 10 commercial units, and common areas. In addition, due to the location of wetlands and Waters near the entry of the property, commercial access to SH-55 would be significantly limited. Alternative 1 does not meet the criteria to satisfy the project's purpose.

2. Environmental

The no fill alternative would have no impact to Waters of the U.S.; thus, Alternative 1 meets the environmental criteria.

3. Return on Investment

While smaller in scale, the developable acres in the no fill alternative could be used exclusively for commercial, low-income or multi-family uses. However, due to the location of wetlands and waters near the entry of the property, commercial access to SH-55 would be significantly limited as compared to the proposed alternative. Further, Alternative 1 results in approximately 91 acres (75%) of undevelopable land, which is unlikely to result in a sufficient return on investment. Alternative 1 does not meet the return on investment criteria.

4. Overall

Alternative 1 is not practicable as it does not meet the project purpose or result in a sufficient return on investment.

Alternative 2 – Initial Preliminary Plat 2007

1. Project Purpose

Alternative 2 is 100 acres in size and was designed as a single-family residential neighborhood with 156 lots (**Appendix C**). Access to future commercial lots were designed near the entry of the neighborhood. Alternative 2 does not provide a mixture of housing types, such as multi-family, cottage or townhome lots. Land available for commercial development is limited to less than 5 acres along the main arterial road. By only providing single-family detached units, this alternative fails to provide a mixture of housing types. Alternative 2 does not meet the criteria to satisfy the project's purpose.

2. Environmental Impact

Alternative 2 was designed to avoid impacts to wetlands and waters. In particular, Alternative 2 avoids wetlands and waters associated with a backwater channel of the North Fork Payette River near the entrance to the property. Wetland impacts for Alternative 2 are mostly associated with fill required to construct the main arterial road. As the road layout is similar to the proposed project, wetland impacts are estimated to be around 0.42 acres. Alternative 2 results in less wetland impacts (1.17 acres less) than the proposed project. Thus, Alternative 2 meets the environmental criteria.

3. Return on Investment

A current market analysis for the City of Cascade identified the need for commercial lots, multi-family housing, and low-income housing. Alternative 2 only provides single family housing with space for commercial development less than 5 acres in size. Even with an addition of mixed housing types under this design, placement of the main arterial road significantly limits commercial lot availability. By

providing only single-family housing with limited acreage available for commercial development, Alternative 2 does not meet current market needs or return on investment criteria.

4. Overall

Alternative 2 meets the environmental criteria but does not meet the project purpose or result in a sufficient return on investment. Therefore, Alternative 2 is not a practicable alternative.

Alternative 3 – Revised Preliminary Plat 2019

1. Project Purpose

Alternative 3 is 122.32 acres in size and includes 12 commercial lots, 21 common lots, 145 single family lots, 11 cottage lots, 46 townhome lots, and 64 multi-family lots (**Appendix C**). Alternative 3 provides a mixture of housing types and meets the criteria to satisfy the project's purpose.

2. Environmental

Construction of Alternative 3 is estimated to result in the placement of fill of 1.86 acres into jurisdictional wetlands. (Note that this is higher than indicated on the design sheet in **Appendix C** because total wetland acres, and thus impacts, were calculated to be higher following the 2019 delineation). Impact to wetlands under Alternative 3 are higher than the proposed project mostly due to the placement of townhomes within a wetland area adjacent to the North Fork Payette River. Whereas, the proposed project shifts townhome development out of these wetland areas. Alternative 3 provides a 2.48-acre mitigation area versus the 5.02-acre mitigation area provided by the proposed project. Lastly, the 2019 design places some of the roads and lots in close proximity to the North Fork Payette River that could result in significant loss to floodplain capacity and increased pollution. Alternative 3 results in higher wetland impacts, provides less wetland mitigation area, and has the potential for significant environmental effects. Thus, Alternative 3 does not meet environmental criteria.

3. Return on Investment

When combined, Alternative 3 provides significantly more single-family, multi-family, cottage, and townhome housing than the proposed project, while areas designated for commercial uses remains the same. Alternative 3 meets current market needs and would provide a sufficient return on investment.

4. Overall

Alternative 3 meets the project purpose and return on investment but does not meet environmental criteria. Therefore, Alternative 3 is not a practicable alternative.

Alternative 4 - Proposed Project, Final Preliminary Plat 2020

5. Project Purpose

The proposed project and is 122.41 acres in size would include 12 commercial lots, 135 single family lots, 9 cottage lots, 43 townhome lots, and 52 multi-family lots (256 units) (**Appendix A**). The proposed project provides a mixture of housing types and meets the criteria to that satisfy the project's purpose.

6. Environmental

The proposed development has been designed to avoid and minimize impacts to delineated wetland areas to the greatest extent possible while meeting the project's purpose. T-O Engineer's environmental personnel worked with the design team to situate roads and lots in upland areas and retain the wetland areas in common areas. In particular, the proposed project design shifts lots and roads away from the North Fork Payette River, minimizing impacts to wetlands along the river and avoiding impacts to the River itself. These changes resulted in less developable lots as compared to Alternative 3 but has lowered environmental impact of the proposed project. As a result of project construction, an estimated 1.59 acres of wetlands will be permanently impacted; these impacts are mostly associated with the main arterial road and commercial lot development. The proposed project also offers 5.02 acres of potential wetland mitigation areas (**Appendix B**), which is higher than the required mitigation of 4.51 acres. With the minimization and mitigation measures outlined, the proposed project meets environmental criteria.

7. Return on Investment

The proposed project includes 12 commercial lots, 135 single family lots, 9 cottage lots, 43 townhome lots, 52 multi-family lots (256 units), and 33 common lots. The proposed project meets current market needs and would provide a sufficient return on investment.

8. Overall

The proposed project is practicable and meets all of the screening criteria.

5.0 Conclusion

Through an analysis of off-site alternatives, no other site is available that is capable of practicably supporting the proposed project. An analysis of on-site alternatives found the proposed project to be the least environmentally damaging practicable alternative which satisfies project's purpose.

Literature Cited

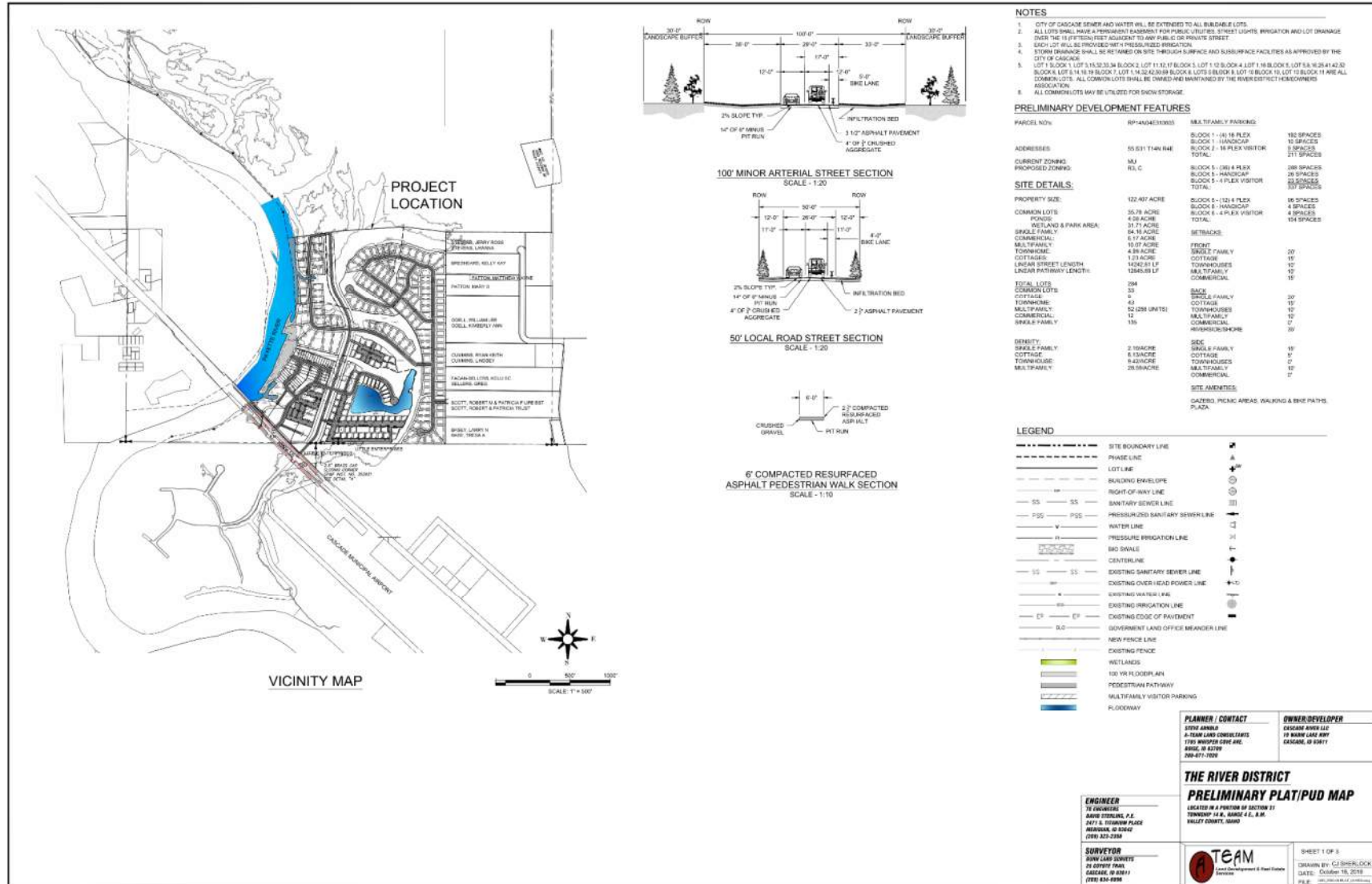
City of Cascade. 2018. Comprehensive Plan Update, 2018. Adopted by City Council, Resolution 18-04, March 12, 2018. City of Cascade, Idaho

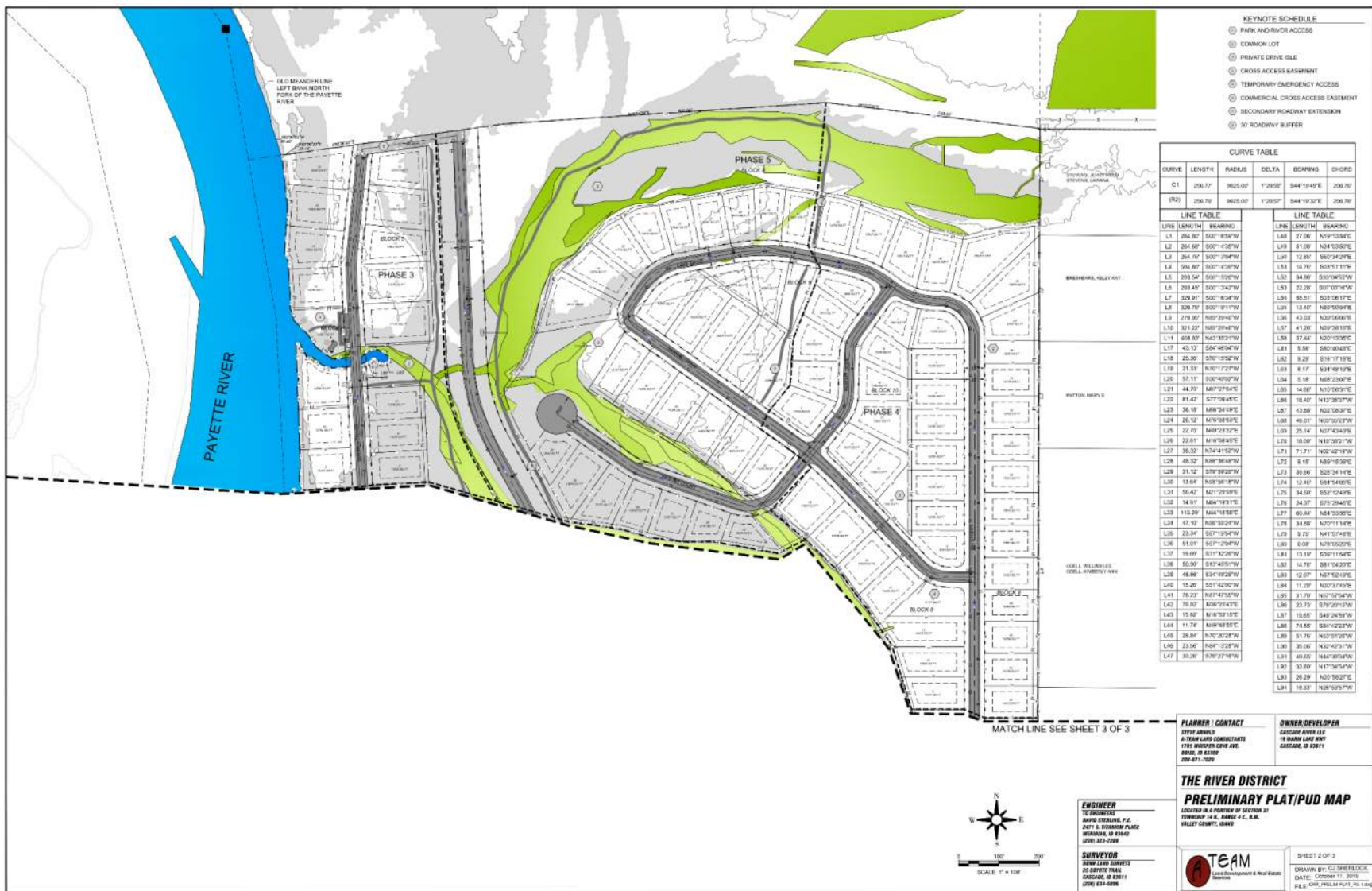
T-O Engineers. 2019. Wetland Delineation: The River District. T-O Engineers, Meridian, Idaho

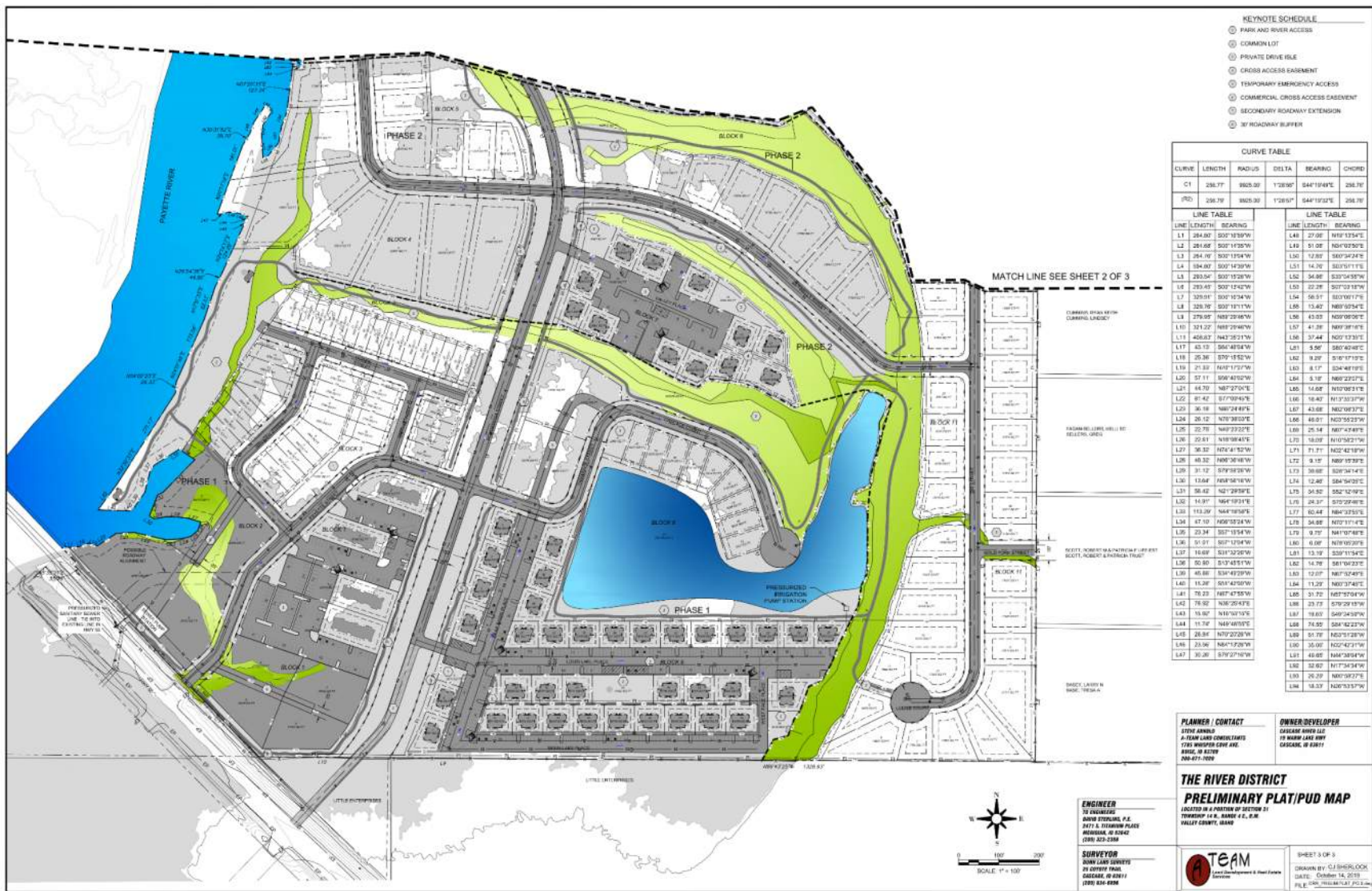
T-O Engineers. 2020. Conceptual Wetland Mitigation Plan: The River District. T-O Engineers, Meridian, Idaho

Appendix A: Proposed Project Preliminary Plat

Alternative 4 – Proposed Project Preliminary Plat

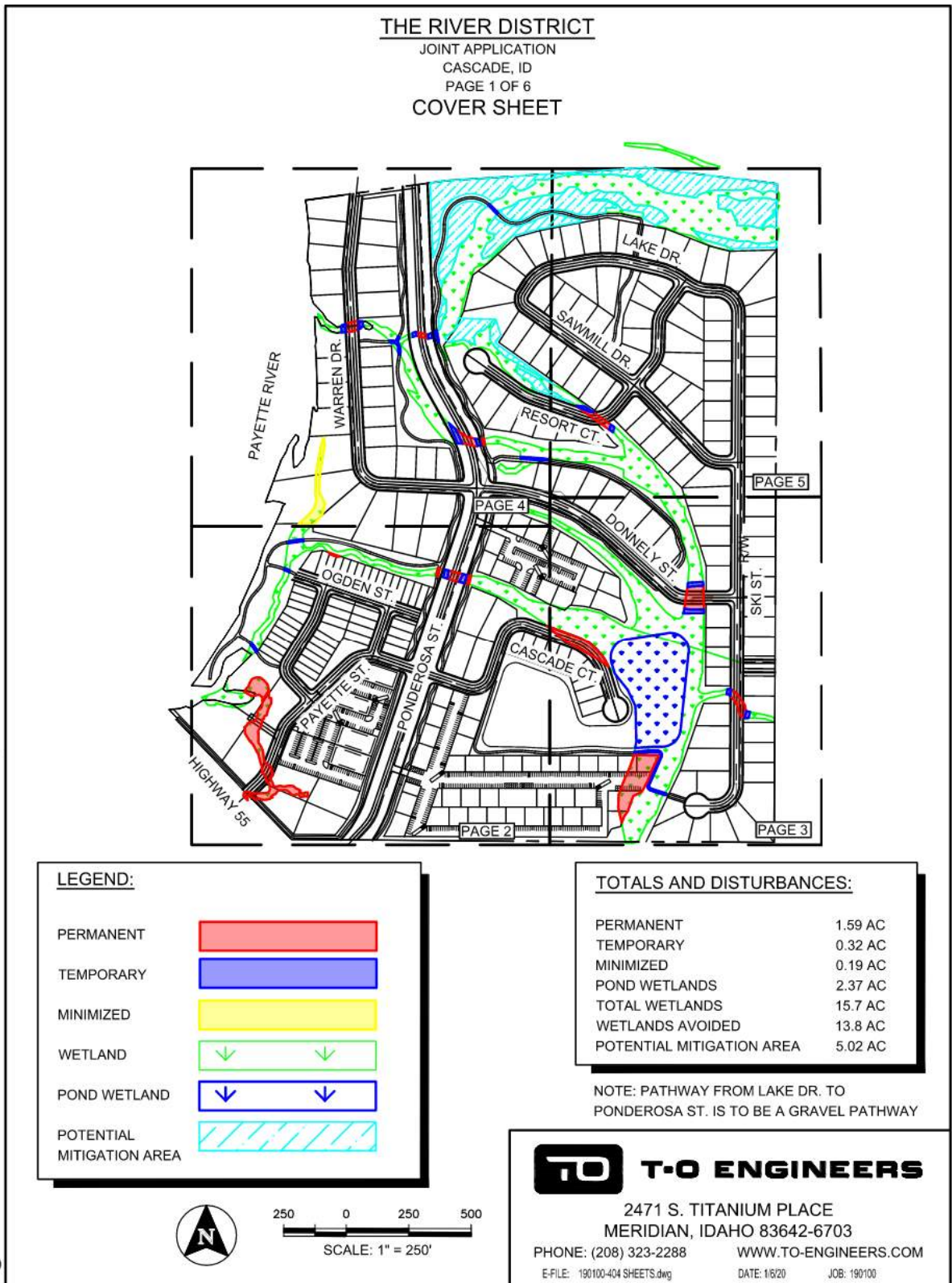


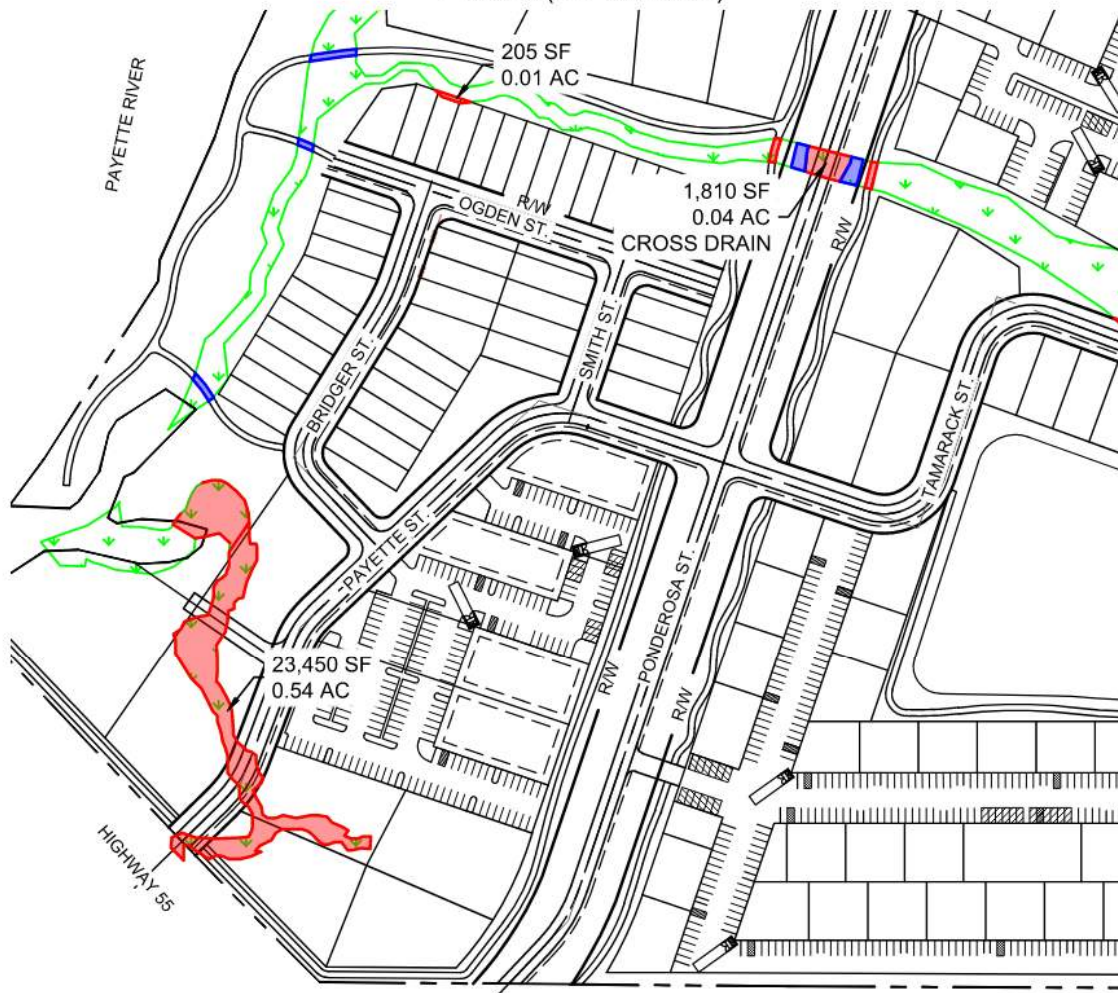




Appendix B: Proposed Project and Wetland Impacts

H:\1901003_Acaddwg\Sheets\404-PERMIT\190100-404 SHEETS.dwg, 1/6/2020 4:05:15 PM, Aston Carpenter, _DWG To PDF.pc3
© 2019 T-O ENGINEERS. THIS INSTRUMENT IS THE PROPERTY OF T-O ENGINEERS. ANY REPRODUCTION, REUSE OR MODIFICATION OF THIS INSTRUMENT OR ITS CONTENTS WITHOUT SPECIFIC WRITTEN PERMISSION OF T-O ENGINEERS IS STRICTLY PROHIBITED.





PERMANENT	0.60 AC
TEMPORARY	0.05 AC



T-O ENGINEERS

2471 S. TITANIUM PLACE
MERIDIAN, IDAHO 83642-6703

PHONE: (208) 323-2288

WWW.TO-ENGINEERS.COM

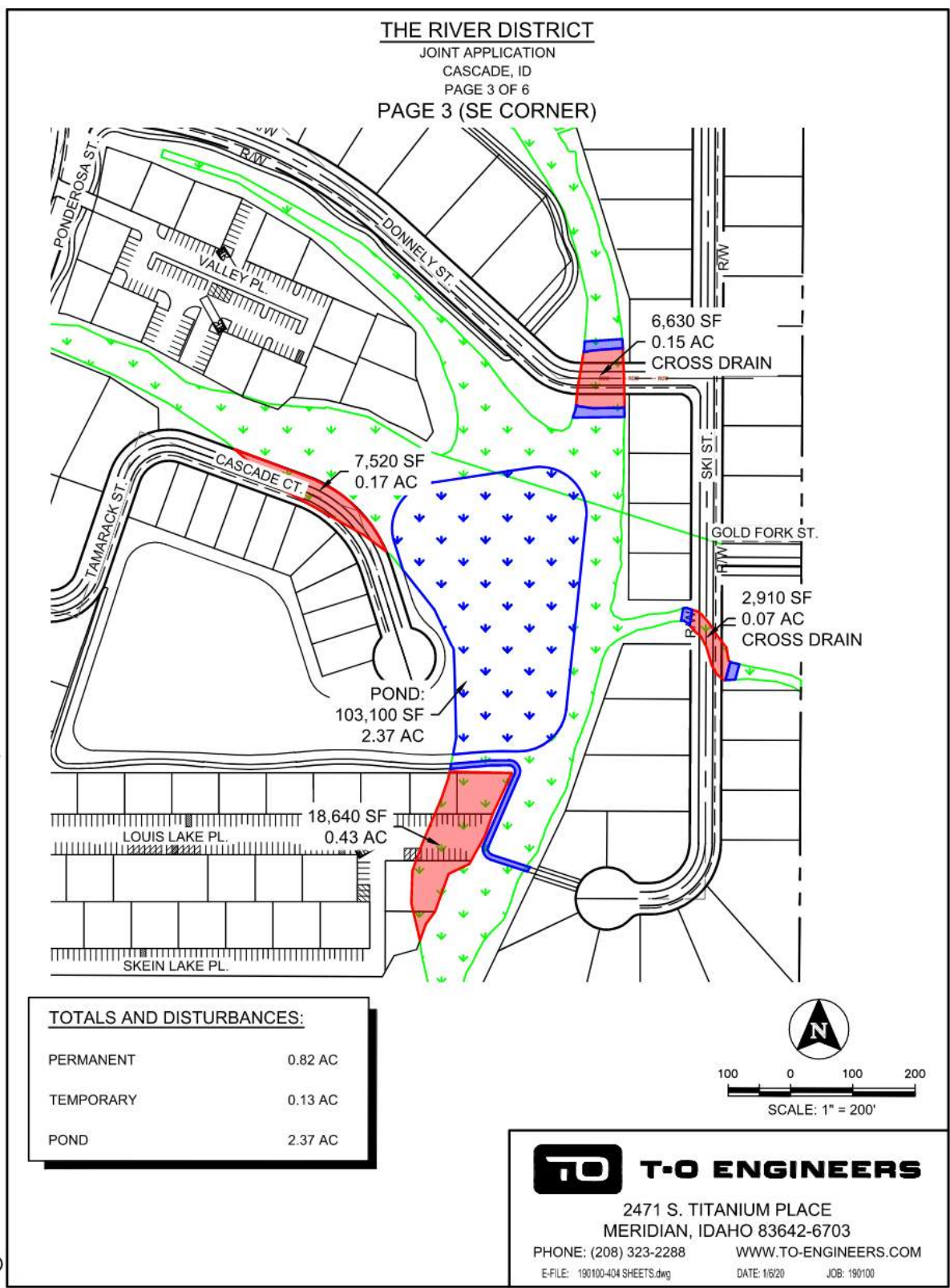
E-FILE: 190100-404 SHEETS.dwg

DATE: 1/6/20

JOB: 190100

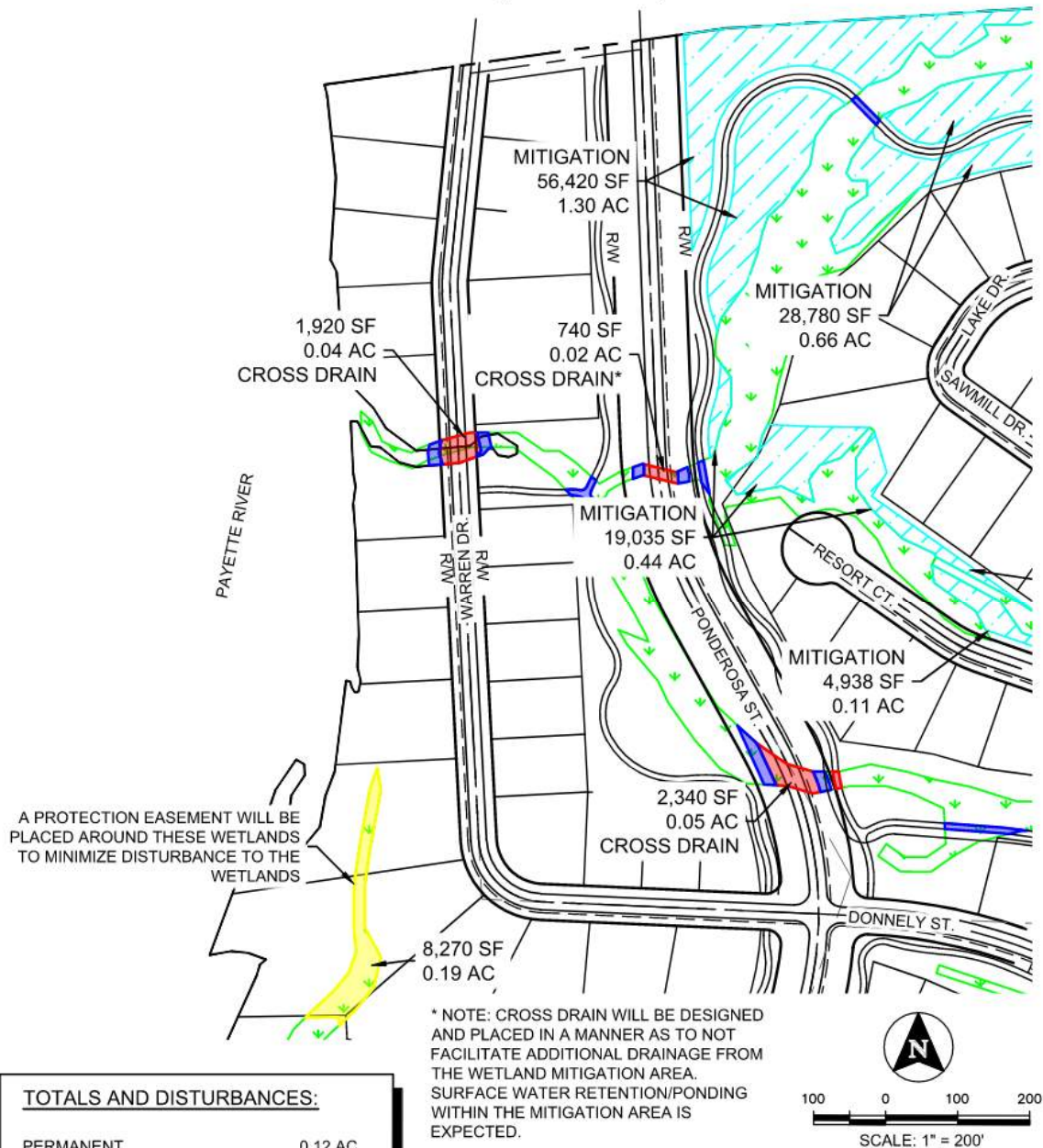


H:\190100\3_Acaddwg\Sheets\404-PERMIT\190100-404 SHEETS.dwg, 1/8/2020 4:05:22 PM, Aston Carpenter, _DWG To PDF.pc3
© 2019 T-O ENGINEERS. THIS INSTRUMENT IS THE PROPERTY OF T-O ENGINEERS. ANY REPRODUCTION, REUSE OR MODIFICATION OF THIS INSTRUMENT WITHOUT SPECIFIC WRITTEN PERMISSION OF T-O ENGINEERS IS STRICTLY PROHIBITED.



H:\190100\3_Acaddwg\Sheets\404-PERMIT\190100-404 SHEETS.dwg, 1/6/2020 4:05:27 PM, Aston Carpenter, _DWG To PDF.pc3
© 2019 T-O ENGINEERS. THIS INSTRUMENT IS THE PROPERTY OF T-O ENGINEERS. ANY REPRODUCTION, REUSE OR MODIFICATION OF THIS INSTRUMENT OR ITS CONTENTS WITHOUT SPECIFIC WRITTEN PERMISSION OF T-O ENGINEERS IS STRICTLY PROHIBITED.

THE RIVER DISTRICT
JOINT APPLICATION
CASCADE, ID
PAGE 4 OF 6
PAGE 4 (NW CORNER)



TOTALS AND DISTURBANCES:

PERMANENT	0.12 AC
TEMPORARY	0.12 AC
MINIMIZED	0.19 AC
POTENTIAL MITIGATION AREA	2.51 AC



T-O ENGINEERS

2471 S. TITANIUM PLACE
MERIDIAN, IDAHO 83642-6703

PHONE: (208) 323-2288

WWW.TO-ENGINEERS.COM

E-FILE: 190100-404 SHEETS.dwg

DATE: 1/6/20

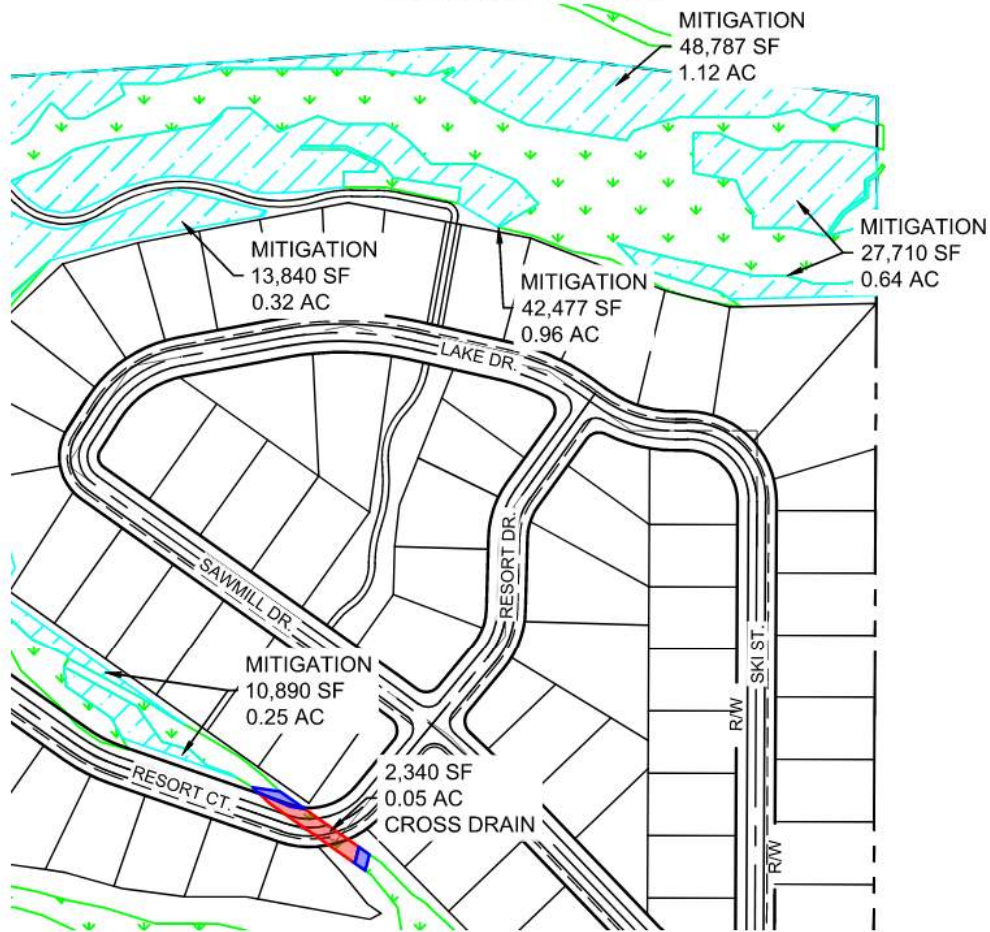
JOB: 190100



T-O ENGINEERS

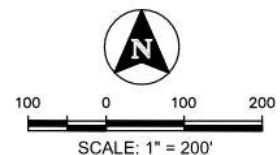
H:\1901003_Acad\dwg\Sheets\404-PERMIT\190100-404 SHEETS.dwg, 1/6/2020 4:05:32 PM, Aston Carpenter, _DWG To PDF, pc3
 © 2019 T-O ENGINEERS. THIS INSTRUMENT IS THE PROPERTY OF T-O ENGINEERS. ANY REPRODUCTION, REUSE OR MODIFICATION OF THIS INSTRUMENT WITHOUT SPECIFIC WRITTEN PERMISSION OF T-O ENGINEERS IS STRICTLY PROHIBITED.

THE RIVER DISTRICT
 JOINT APPLICATION
 CASCADE, ID
 PAGE 5 OF 6
PAGE 5 (NE CORNER)



TOTALS AND DISTURBANCES:

PERMANENT	0.05 AC
TEMPORARY	0.02 AC
POTENTIAL MITIGATION AREA	3.29 AC



T-O ENGINEERS
 2471 S. TITANIUM PLACE
 MERIDIAN, IDAHO 83642-6703

PHONE: (208) 323-2288

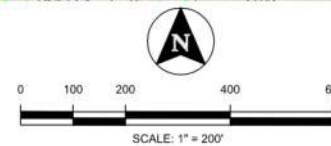
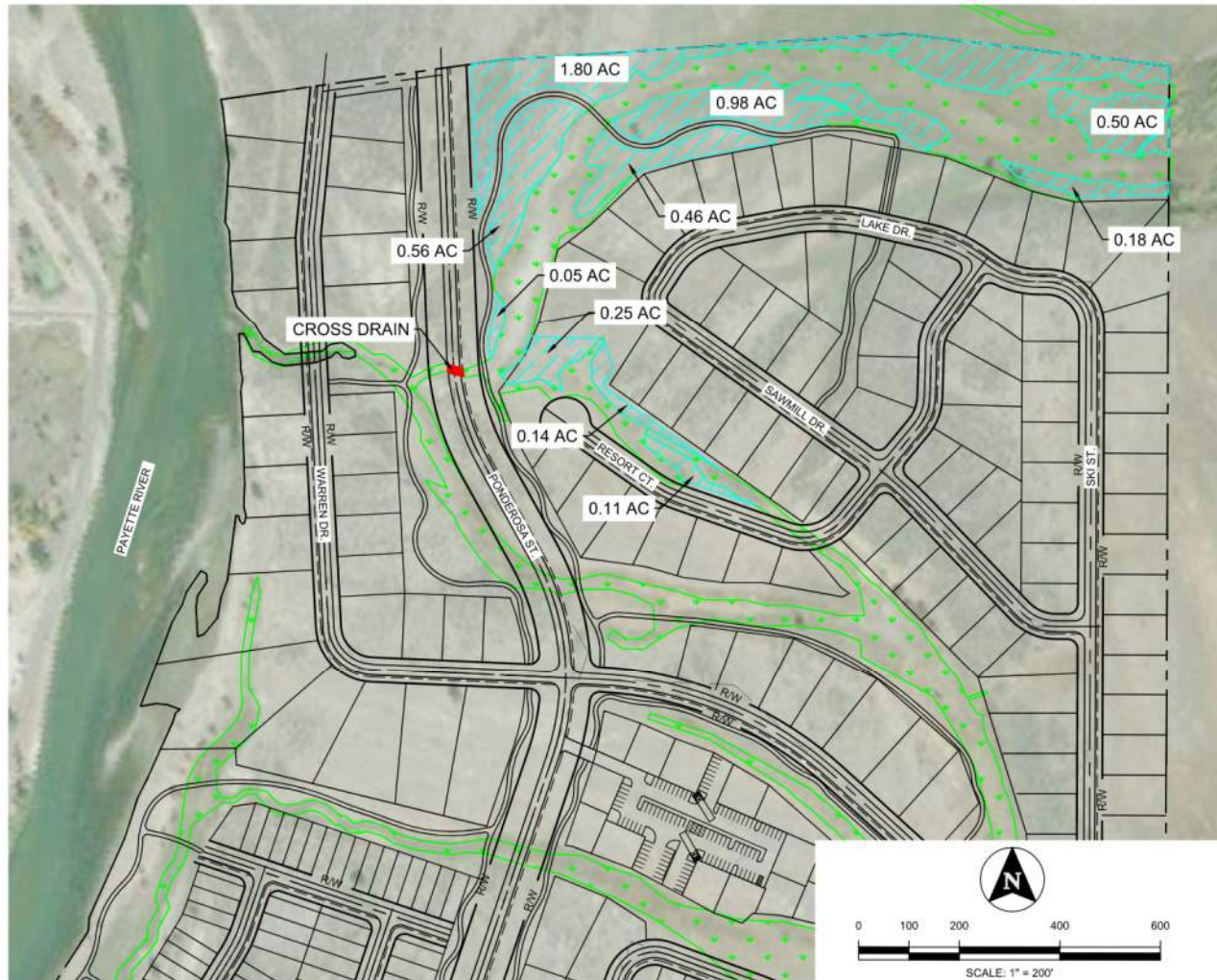
WWW.TO-ENGINEERS.COM

E-FILE: 190100-404 SHEETS.dwg

DATE: 1/6/20

JOB: 190100

H:\1901003_Avalanche\Shawanda PERMIT\1901003-004 SHEETS.dwg 1/6/2020 4:05:37 PM, Alisha Carpenter, DWG To PDF a3
 © 2019 T-O ENGINEERS. THIS INSTRUMENT IS THE PROPERTY OF T-O ENGINEERS. ANY REPRODUCTION, REUSE OR MODIFICATION OF THIS INSTRUMENT OR ITS CONTENTS WITHOUT SPECIFIC WRITTEN PERMISSION OF T-O ENGINEERS IS STRICTLY PROHIBITED.



THE RIVER DISTRICT
 JOINT APPLICATION
 CASCADE, ID
 PAGE 6 OF 6
PAGE 6 (MITIGATION AREAS)

NOTES:

POTENTIAL MITIGATION AREA 5.02 AC

- CROSS DRAIN WILL BE DESIGNED AND PLACED IN A MANNER AS TO NOT FACILITATE ADDITIONAL DRAINAGE FROM THE WETLAND MITIGATION AREA. SURFACE WATER RETENTION/PONDING WITHIN THE MITIGATION AREA IS EXPECTED.

LEGEND:

WETLAND 
 POTENTIAL MITIGATION AREA 

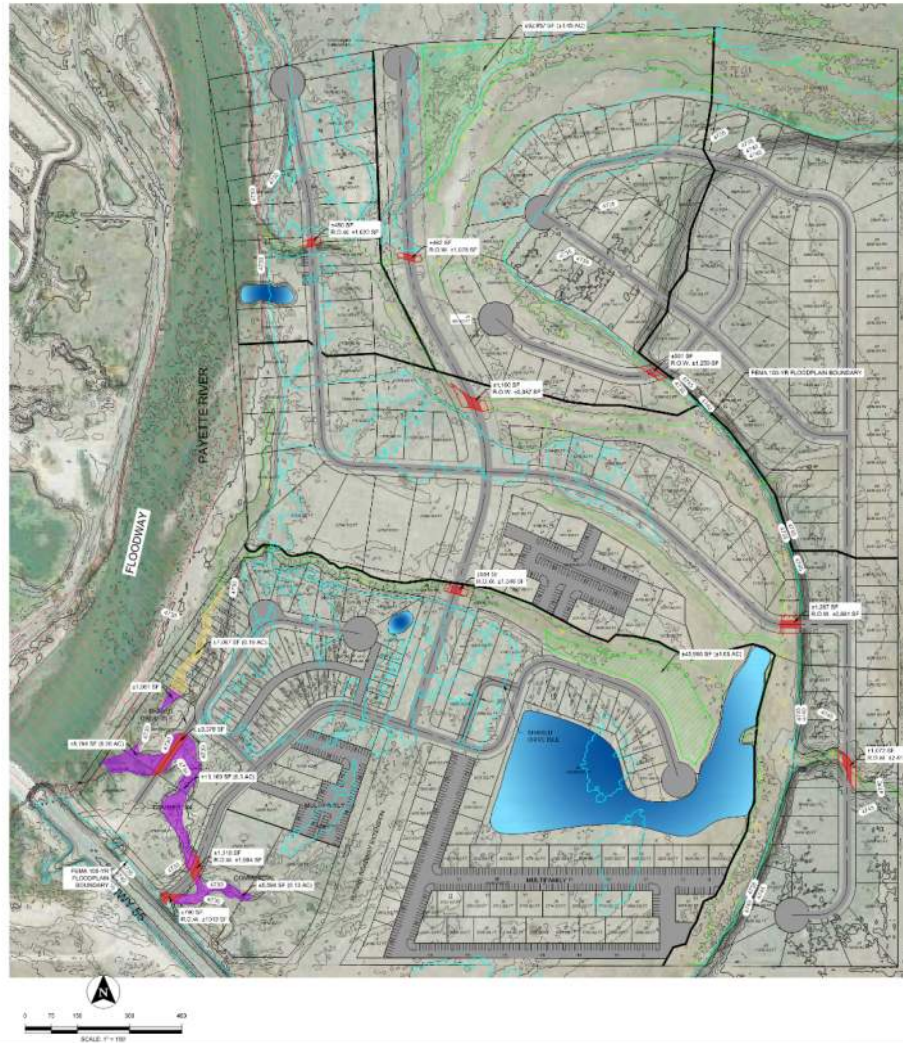
T-O ENGINEERS
 2471 S. TITANIUM PLACE
 MERIDIAN, IDAHO 83642
 PHONE: (208) 323-2288 WWW.T-O-ENGINEERS.COM
 E-FILE: 1901003-004 SHEETS.dwg DATE: 1/6/20 JOB: ---

Appendix C: Alternative Plat Designs

Alternative 2– Initial Preliminary Plat 2007



Alternative 3 – Initial Preliminary Plat 2019



CASCADE RIVER RANCH

CASCADE RIVER LLC
19 WARM LAKE HWY
CASCADE, ID 83611

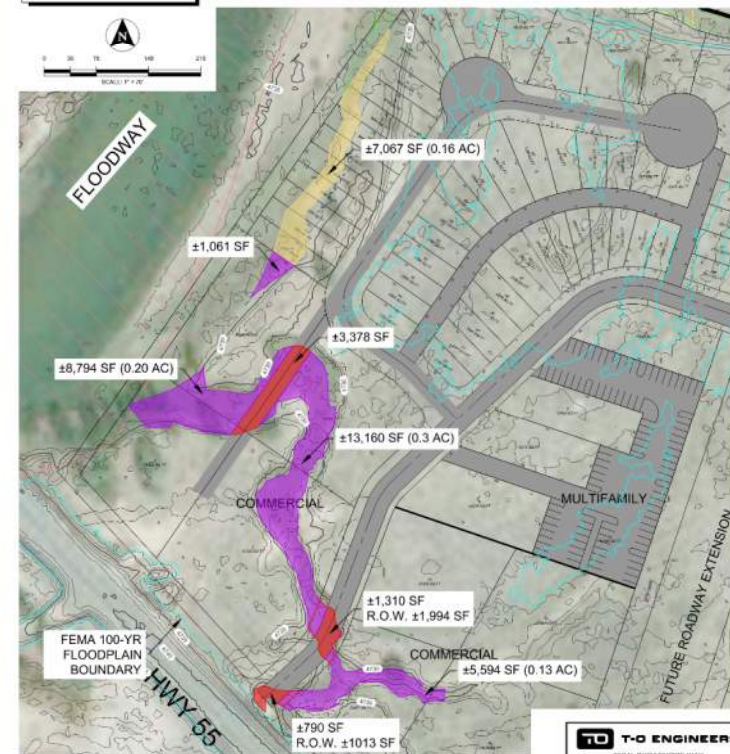


NOTES

- TOTAL PERMANENT WETLAND IMPACTS: 41,007 SF
- ROAD IMPACT AREA: 40,000 AC (1,011,000 SF)
- COMMERCIAL IMPACT AREA: 40,000 AC (1,011,000 SF)
- TOWNHOME IMPACT AREA: 40,000 AC (1,011,000 SF)
- POTENTIAL WETLAND AREA: 41,007 SF
- NET 10-YR FLOODPLAIN: 1,000,000 SF

HORNET CASE SCENARIOS

- TOTAL PERMANENT WETLAND IMPACTS: 41,007 SF
- ROAD IMPACT AREA: 40,000 AC (1,011,000 SF)
- COMMERCIAL IMPACT AREA: 40,000 AC (1,011,000 SF)
- TOWNHOME IMPACT AREA: 40,000 AC (1,011,000 SF)



T-O ENGINEERS
332 N. BRIDGEMORE WAY
TAMPA, FL 33607
PHONE: (813) 442-0000 FAX: (813) 442-0001
WWW.T-OENGINEERS.COM
DATE: 10/18/2019 BY: JLD/2019